Configurar e verificar EVPN/VxLAN no ambiente multilocal

Contents

Introduction

Este documento descreve como configurar e verificar no ambiente multisite Ethernet VPN/Virtual Extensible LAN (EVPN/VxLAN) com switches Cisco Nexus 9000 Series.

Prerequisites

Requirements

A Cisco recomenda que você tenha conhecimento destes tópicos:

- VPN de Camada 3 Multiprotocol Label Switching (MPLS)
- Protocolo de gateway de borda multiprotocolo (MP-BGP)
- EVPN

Componentes Utilizados

As informações neste documento são baseadas nestas versões de software e hardware:

leaf1#	N5K-C5672UP-16G-SUP	sistema: versão 7.3(0)N1(1)
leaf2#	N9K-C92160YC-X	NXOS: versão 9.2(3)
spine1#	N9K-C9396PX	NXOS: versão 9.2(3)
spine2#	N9K-C9396PX	NXOS: versão 9.2(3)
Nº BG1 multisite	N9K-C93108TC-EX	NXOS: versão 9.2(3)
Nº BG2 multisite	N9K-C93108TC-FX	NXOS: versão 9.3(1)
multisitespine2#	N9K-C9372TX-E	NXOS: versão 9.2(3)

| Multistespine1# | N9K-C92160YC-X | NXOS: versão 9.2(3) |
| Multiste Leaf1# | N9K-C93108TC-EX | NXOS: versão 7.0(3)I7(5) |

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. Se a rede estiver ativa, certifique-se de que você entenda o impacto potencial de qualquer comando.

Produtos Relacionados

Requisitos mínimos de software e hardware Gateway de borda de múltiplos locais EVPN

Item	Requisito
hardware do Cisco Nexus	• Plataforma Cisco Nexus 9300 EX • Plataforma Cisco Nexus 9300 FX • Plataforma Cisco Nexus 9332C • Plataforma Cisco Nexus 9364C • Plataforma Cisco Nexus 9500 com placa de linha X9700-EX • Plataforma Cisco Nexus 9500 com placa de linha X9700-FX
Software Cisco NX-OS	Software Cisco NX-OS versão 7.0(3)I7(1) ou posterior

Os requisitos de hardware e software para os nós internos do site de um site VXLAN BGP EVPN permanecem os mesmos sem o BGW multi-site EVPN

Informações de Apoio

O data center é um pool de recursos que contém - potência computacional, armazenamento e aplicativos necessários para oferecer suporte a qualquer ambiente de negócios. O planejamento adequado do projeto da infraestrutura do data center é vital. Agora, veja quais são os requisitos críticos e como eles são superados. As implantações modernas de infraestrutura de TI e data center precisam de HA, capacidade de dimensionamento a uma taxa mais rápida, alto desempenho, sempre ACESO.

Alguns requisitos vitais explorados no espaço de projeto/arquitetura de DC:

- A Densidade de porta é aprimorada pelo FEX.

- A capacidade de computação é aprimorada pela virtualização de hardware (UCS).

- A largura de banda do uplink da camada de acesso é aprimorada pelo FI, Port-Channel.

- A redundância no nível do chassi é aprimorada pelo vPC.

- A estrutura de SDN é aprimorada pela ACI - automatizando a sobreposição e a sobreposição em uma estrutura.

- A implantação rápida e o suporte a novos serviços são aprimorados pelo DCNM.

- Os requisitos de largura de banda para aplicações de longo alcance são aprimorados pelo serviço de fibra escura ou de comprimento de onda.

- Acima de tudo, a redundância geográfica e o dimensionamento são atributos-chave para o roubo/dimensionamento do ambiente de data center, o VxLAN/EVPN de vários locais nos ajuda a ter melhores soluções de DCI.

Como a multissite é útil?

A conectividade externa inclui a conexão do data center com o resto da rede: à Internet, à WAN ou ao campus. Todas as opções fornecidas para conectividade externa são sensíveis ao multilocatário e se concentram no transporte da Camada 3 para os domínios de rede externos.

- O EVPN é uma solução VPN multifuncional de próxima geração.

- Ele não só faz o trabalho de muitas outras tecnologias de VPN, como também é melhor.

- Integração com redes antigas.

- Anúncio/extensão seletiva: Estenda o único L2 - VLANs/sub-redes específicas que podem ser estendidas usando rotas Tipo 2.Estenda o único L3 - domínios L3 específicos podem ser estendidos usando rotas Tipo 5.
- Descoberta automática de grupo de redundância usando rotas Tipo 4.
- Aliasing, Retirada em Massa de Endereços, Indicação de SH/AA MH usando rotas Tipo 1.
- Descoberta automática de endpoints de túnel multicast e tipo de túnel MCAST usando rotas tipo 3.

Outros benefícios

- Balanceamento de carga de trabalho entre data centers e nuvens.

- Resposta proativa a interrupções - reduz os riscos de se abordar desastres, como furacões, inundações, etc.,
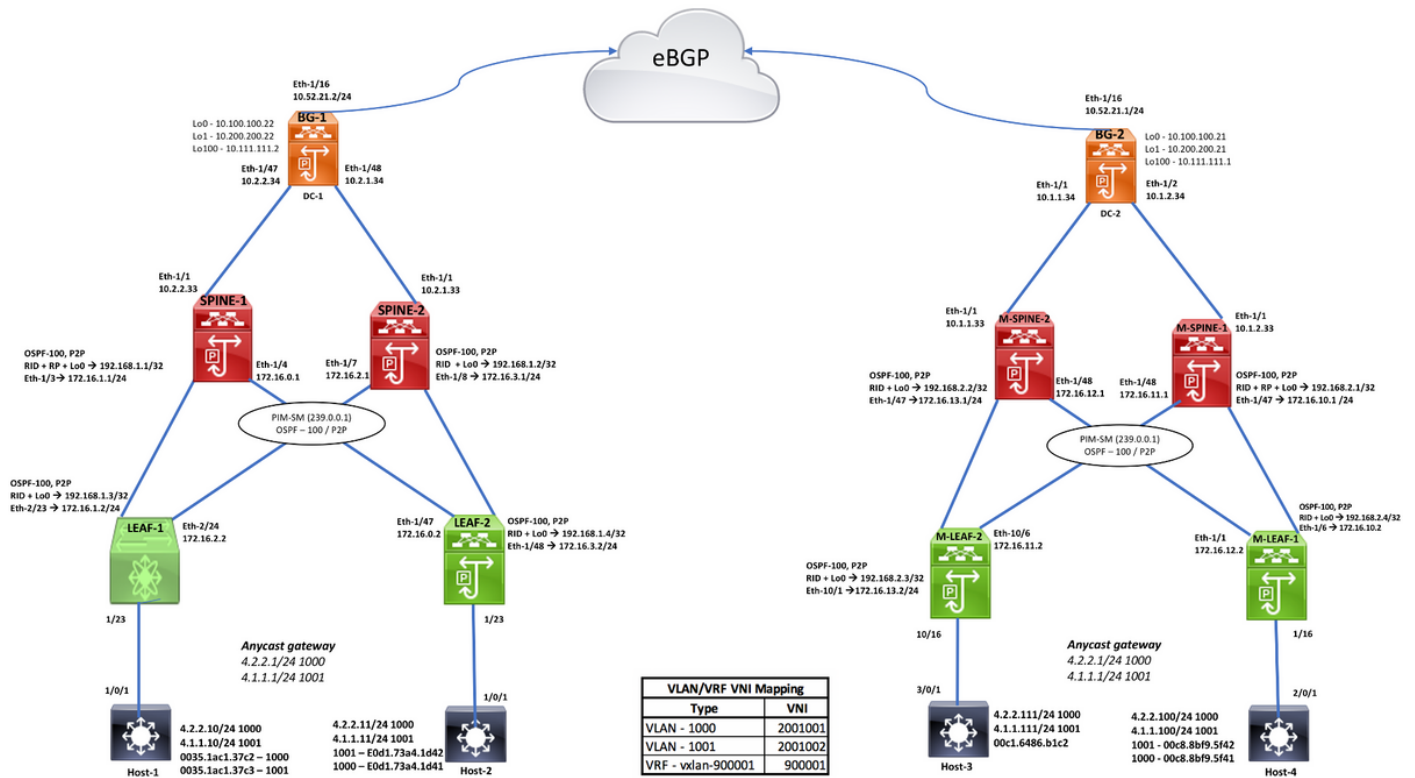
Manutenção e migrações do data center - eventos planejados programados ao longo do tempo, Integração com redes antigas.

Backup e recuperação de desastres aaS.

Topologias suportadas

- Modelo BGW-to-Cloud
- BGWs entre spine e modelo Super spine
- BGWs no modelo Spine
- Modelo back-to-back de BGWs

Topologia

eBGP

Eth-1/16
10.52.21.2/24

BG-1
Lo0 - 10.100.100.22
Lo1 - 10.200.200.22
Lo100 - 10.111.111.2
Eth-1/47 10.2.2.34   Eth-1/48 10.2.1.34
DC-1

Eth-1/16
10.52.21.1/24

BG-2
Lo0 - 10.100.100.21
Lo1 - 10.200.200.21
Lo100 - 10.111.111.1
Eth-1/1 10.1.1.34   Eth-1/2 10.1.2.34
DC-2

Eth-1/1 10.2.2.33   **SPINE-1**   **SPINE-2**   Eth-1/1 10.2.1.33

OSPF-100, P2P
RID + RP + Lo0 → 192.168.1.1/32
Eth-1/3 → 172.16.1.1/24
Eth-1/4 172.16.0.1   Eth-1/7 172.16.2.1

OSPF-100, P2P
RID + RP + Lo0 → 192.168.1.2/32
Eth-1/8 → 172.16.3.1/24

PIM-SM (239.0.0.1)
OSPF – 100 / P2P

Eth-1/1 10.1.1.33   **M-SPINE-2**   **M-SPINE-1**   Eth-1/1 10.1.2.33

OSPF-100, P2P
RID + Lo0 → 192.168.2.2/32
Eth-1/47 172.16.13.1/24
Eth-1/48 172.16.12.1

OSPF-100, P2P
RID + RP + Lo0 → 192.168.2.1/32
Eth-1/47 → 172.16.10.1/24
Eth-1/48 172.16.11.1

PIM-SM (239.0.0.1)
OSPF – 100 / P2P

OSPF-100, P2P
RID + Lo0 → 192.168.1.3/32
Eth-2/23 → 172.16.1.2/24
LEAF-1   Eth-2/24 172.16.2.2

Eth-1/47 172.16.0.2   **LEAF-2**   Eth-2/24
OSPF-100, P2P
RID + Lo0 → 192.168.1.4/32
Eth-1/48 → 172.16.3.2/24

OSPF-100, P2P
RID + Lo0 → 192.168.2.3/32
Eth-10/1 → 172.16.13.2/24
M-LEAF-2   Eth-10/6 172.16.11.2

Eth-1/1 172.16.12.2   **M-LEAF-1**
OSPF-100, P2P
RID + Lo0 → 192.168.2.4/32
Eth-1/6 → 172.16.10.2

1/23   1/23   10/16   1/16

Anycast gateway
4.2.2.1/24 1000
4.1.1.1/24 1001

Anycast gateway
4.2.2.1/24 1000
4.1.1.1/24 1001

1/0/1   **Host-1**   4.2.2.10/24 1000
4.1.1.10/24 1001
0035.1ac1.37c2 – 1000
0035.1ac1.37c3 – 1001

4.2.2.11/24 1000
4.1.1.11/24 1001
1001 – E0d1.73a4.1d42
1000 – E0d1.73a4.1d41
1/0/1   **Host-2**

3/0/1   **Host-3**   4.2.2.111/24 1000
4.1.1.111/24 1001
00c1.6486.b1c2

4.2.2.100/24 1000
4.1.1.100/24 1001
1001 - 00c8.8bf9.5f42
1000 - 00c8.8bf9.5f41
2/0/1   **Host-4**

VLAN/VRF VNI Mapping	
Type	**VNI**
VLAN - 1000	2001001
VLAN - 1001	2001002
VRF - vxlan-900001	900001

Configurar

DC-1, LEAF-1 CONFIGURATION

Enable Features	VLAN-VNI Mapping	VTEP Config	LEAF to SPINE interfaces/OSPF Config	BGP Config
	vlan 1	interface nve1	interface Ethernet2/23	router bgp 200
install feature-set fabric	vlan 101	no shutdown	no switchport	router-id 192.168.1.3
feature-set fabric	vn-segment 900001	source-interface loopback0	ip address 172.16.1.2/24	address-family ipv4 unicast
hostname leaf1	vlan 1000	host-reachability protocol bgp	ip ospf network point-to-point	address-family l2vpn evpn
feature fabric forwarding	vn-segment 2001002	member vni 900001 associate-vrf	ip router ospf 100 area 0.0.0.0	neighbor 192.168.1.1
nv overlay evpn	vlan 1001	member vni 2001001	ip pim sparse-mode	remote-as 200
feature ospf	vn-segment 2001001	suppress-arp		update-source loopback0
feature bgp		mcast-group 239.0.0.1	interface Ethernet2/24	address-family ipv4 unicast
feature pim	**VLAN Config**	member vni 2001002	no switchport	address-family l2vpn evpn
feature interface-vlan	interface Vlan101	suppress-arp	ip address 172.16.2.2/24	send-community extended
feature fabric access	no shutdown	mcast-group 239.0.0.1	ip ospf network point-to-point	neighbor 192.168.1.2
feature nv overlay	vrf member vxlan-900001		ip router ospf 100 area 0.0.0.0	remote-as 200
feature vn-segment-vlan-based	ip forward		ip pim sparse-mode	update-source loopback0
				address-family ipv4 unicast
	interface Vlan1000		interface loopback0	address-family l2vpn evpn
Enabling Store-and-Forward Switching	no shutdown		ip address 192.168.1.3/24	send-community extended
switching-mode store-forward	mtu 9216		ip router ospf 100 area 0.0.0.0	
	vrf member vxlan-900001		ip pim sparse-mode	evpn
	ip address 4.2.2.1/24			vni 2001001 l2 <<<<<<< L2VNI Config
Interface towards HOST	ipv6 address 4:2:0:1::1/64			rd auto
interface Ethernet1/23	fabric forwarding mode anycast-gateway		router ospf 100	route-target import auto
switchport mode trunk			router-id 192.168.1.3	route-target export auto
switchport trunk allowed vlan 1000-1001	interface Vlan1001			vni 2001002 l2
speed 1000	no shutdown			rd auto
	mtu 9216			route-target import auto
	vrf member vxlan-900001			route-target export auto
	ip address 4.1.1.1/24			
	ipv6 address 4:1:0:1::1/64			vrf context vxlan-900001
	fabric forwarding mode anycast-gateway			vni 900001 <<<<<<< L3VNI Config
				rd auto
	Anycast GW mapping			address-family ipv4 unicast
	fabric forwarding anycast-gateway-mac 0000.2222.3333			route-target both auto
				route-target both auto evpn
	Static RP Config			address-family ipv6 unicast
	ip pim rp-address 192.168.1.1 group-list 224.0.0.0/4			route-target both auto
	ip pim rp-address 192.168.1.2 group-list 224.0.0.0/4			route-target both auto evpn
	ip pim ssm range 232.0.0.0/8			
	ip multicast multipath none			

DC-1 SPINE -1 Configuration

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

DC-1 Border Gateway-1 Configuration

Enabling Features, RouteMap, B-G Config	VLAN,VNI,VTEP Config	OSPF Configuration	BGP/EVPN Configuration
	VLAN-VNI Mapping	interface Ethernet1/47	router bgp 200
	vlan 101	ip address 10.2.2.34/30	router-id 10.100.100.22
	vn-segment 900001	ip ospf network point-to-point	address-family ipv4 unicast
	vlan 1000	ip router ospf 100 area 0.0.0.0	redistribute direct route-map RMAP-REDIST-DIRECT
	vn-segment 2001002	ip pim sparse-mode	neighbor 10.52.21.1
	vlan 1001	evpn multisite fabric-tracking	remote-as 100
hostname MultisiteBG1	vn-segment 2001001	no shutdown	update-source Ethernet1/16
boot nxos bootflash:/nxos.9.2.3.bin			address-family ipv4 unicast
nv overlay evpn	interface Vlan101	interface Ethernet1/48	neighbor 10.100.100.21
feature ospf	no shutdown	ip address 10.2.1.34/30	remote-as 100
feature bgp	mtu 9192	ip ospf network point-to-point	update-source loopback0
feature pim	vrf member vxlan-900001	ip router ospf 100 area 0.0.0.0	ebgp-multihop 5
feature fabric forwarding	ip forward	ip pim sparse-mode	peer-type fabric-external
feature interface-vlan		evpn multisite fabric-tracking	address-family l2vpn evpn
feature vn-segment-vlan-based	**VTEP Config**	no shutdown	send-community
feature lldp	interface nve1		send-community extended
feature nv overlay	no shutdown		rewrite-evpn-rt-asn
	host-reachability protocol bgp	interface loopback0	neighbor 192.168.1.1
	source-interface loopback1	ip address 10.100.100.22/32 tag 54321	remote-as 200
evpn multisite border-gateway 200	multisite border-gateway interface loopback100	ip router ospf 100 area 0.0.0.0	update-source loopback0
delay-restore time 300	member vni 900001 associate-vrf	ip pim sparse-mode	address-family l2vpn evpn
	member vni 2001001		send-community
	multisite ingress-replication	interface loopback1	send-community extended
	ingress-replication protocol bgp	ip address 10.200.200.22/32 tag 54321	neighbor 192.168.1.2
	member vni 2001002	ip router ospf 100 area 0.0.0.0	remote-as 200
	multisite ingress-replication	ip pim sparse-mode	update-source loopback0
route-map RMAP-REDIST-DIRECT permit 10	ingress-replication protocol bgp		address-family l2vpn evpn
match tag 54321		interface loopback100	send-community
		ip address 10.111.111.2/32 tag 54321	send-community extended
	Core-Facing Interface Config	ip router ospf 100 area 0.0.0.0	evpn <==L2VNI Config
	interface Ethernet1/16		vni 2001001 l2
	mtu 9216	router ospf 100	rd auto
	ip address 10.52.21.2/30 tag 54321	router-id 10.100.100.22	route-target import auto
	evpn multisite dci-tracking		route-target export auto
	no shutdown		vni 2001002 l2
			rd auto
			route-target import auto
			route-target export auto
			vrf context vxlan-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-2 Border Gateway-2 Configuration

Enabling Features, RouteMap, B-G Config	VLAN,VNI,VTEP Config	OSPF Configuration	BGP/EVPN Configuration
boot nxos bootflash:nxos.9.3.0.221.bin	interface Vlan101	interface Ethernet1/1	router bgp 100
hostname MultisiteBG2	no shutdown	description SITE-INTERNAL INTERFACE	router-id 10.100.100.21
nv overlay evpn	vrf member vxlan-900001	mtu 9216	address-family ipv4 unicast
feature ospf	ip forward	medium p2p	redistribute direct route-map RMAP-REDIST-DIRECT
feature bgp		ip address 10.1.1.34/30	maximum-paths 4
feature pim		ip ospf network point-to-point	neighbor 10.52.21.2
feature fabric forwarding	interface nve1	ip router ospf 100 area 0.0.0.0	remote-as 200
feature interface-vlan	no shutdown	ip pim sparse-mode	update-source Ethernet1/16
feature vn-segment-vlan-based	host-reachability protocol bgp	evpn multisite fabric-tracking	address-family ipv4 unicast
feature lldp	source-interface loopback1	no shutdown	neighbor 10.100.100.22
feature nv overlay	multisite border-gateway interface loopback100		remote-as 200
	member vni 900001 associate-vrf	interface Ethernet1/2	update-source loopback0
evpn multisite border-gateway 100	member vni 2001001	description SITE-INTERNAL INTERFACE	ebgp-multihop 5
delay-restore time 300	multisite ingress-replication	mtu 9216	peer-type fabric-external
	ingress-replication protocol bgp	medium p2p	address-family l2vpn evpn
	member vni 2001002	ip address 10.1.2.34/30	send-community
	multisite ingress-replication	ip ospf network point-to-point	send-community extended
	ingress-replication protocol bgp	ip router ospf 100 area 0.0.0.0	rewrite-evpn-rt-asn
vlan 1,101,1000-1001		ip pim sparse-mode	neighbor 192.168.2.1
vlan 101	vrf context vxlan-900001	evpn multisite fabric-tracking	remote-as 100
vn-segment 900001	vni 900001	no shutdown	update-source loopback0
vlan 1000	rd auto		address-family l2vpn evpn
vn-segment 2001002	address-family ipv4 unicast	interface loopback0	send-community
vlan 1001	route-target both auto	description RID AND BGP PEERING	send-community extended
vn-segment 2001001	route-target both auto evpn	ip address 10.100.100.21/32 tag 54321	neighbor 192.168.2.2
	address-family ipv6 unicast	ip router ospf 100 area 0.0.0.0	remote-as 100
route-map RMAP-REDIST-DIRECT permit 10	route-target both auto	ip pim sparse-mode	update-source loopback0
match tag 54321	route-target both auto evpn		address-family l2vpn evpn
		interface loopback1	send-community
interface Ethernet1/16		description NVE INTERFACE (PIP VTEP)	send-community extended
mtu 9216		ip address 10.200.200.21/32 tag 54321	evpn
ip address 10.52.21.1/30 tag 54321		ip router ospf 100 area 0.0.0.0	vni 2001001 l2
evpn multisite dci-tracking		ip pim sparse-mode	rd auto
no shutdown			route-target import auto
		interface loopback100	route-target export auto
		description MULTI-SITE INTERFACE (VIP VTEP)	vni 2001002 l2
		ip address 10.111.111.1/32 tag 54321	rd auto
		ip router ospf 100 area 0.0.0.0	route-target import auto
			route-target export auto
		router ospf 100	
		router-id 10.100.100.21	

DC-2 SPINE -1 Configuration

Enabling Features, RP Config	OSPF Configuration	BGP/EVPN Configuration
	interface Ethernet1/1	router bgp 100
boot nxos bootflash:/nxos.9.2.3.bin	mtu 9216	router-id 192.168.2.1
hostname Multistespine1	ip address 10.1.2.33/30	address-family ipv4 unicast
nv overlay evpn	ip ospf network point-to-point	address-family l2vpn evpn
feature ospf	ip router ospf 100 area 0.0.0.0	neighbor 10.100.100.21
feature bgp	ip pim sparse-mode	remote-as 100
feature pim	no shutdown	update-source loopback0
feature interface-vlan		address-family l2vpn evpn
feature vn-segment-vlan-based	interface Ethernet1/47	send-community
feature nv overlay	ip address 172.16.10.1/24	send-community extended
	ip ospf network point-to-point	route-reflector-client
	ip router ospf 100 area 0.0.0.0	neighbor 192.168.2.3
	ip pim sparse-mode	remote-as 100
ip pim rp-address 192.168.2.1 group-list 224.0.0.0/4	no shutdown	update-source loopback0
		address-family ipv4 unicast
	interface Ethernet1/48	send-community extended
	ip address 172.16.11.1/24	route-reflector-client
	ip ospf network point-to-point	address-family l2vpn evpn
	ip router ospf 100 area 0.0.0.0	send-community extended
	ip pim sparse-mode	route-reflector-client
	no shutdown	neighbor 192.168.2.4
		remote-as 100
		update-source loopback0
	interface loopback0	address-family ipv4 unicast
	ip address 192.168.2.1/32	send-community extended
	ip router ospf 100 area 0.0.0.0	route-reflector-client
	ip pim sparse-mode	address-family l2vpn evpn
		send-community extended
	router ospf 100	route-reflector-client
	router-id 192.168.2.1	

DC-2, LEAF -1 Configuration

Enabling Features, RP, VTEP Config	VLAN,VNI Configuration	OSPF Configuration	BGP/EVPN Configuration

boot nxos bootflash:/nxos.7.0.3.I7.5.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
	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
		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
			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

Verificar

LEAF-1 VERIFICATION

```
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-24S
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
```

```
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#
```

```
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
    VPNID: 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
```

CONTROL PLANE LEARNING: Destination Prefix is 4.2.2.100 <===> 00c8.8bf9.5f41 <===> Vlan1000 <===> VNI2001002

Destination Prefix is learnt on host-connected LEAF 192.168.2.4	Host-Connected Leaf is advertising this prefix to its SPINE (192.168.2.1)	SPINE is advertising the same prefix to Border Gateway (BG-2 === 10.100.100.21)

```
MultisteLeaf1# 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, hmm
MultisteLeaf1#
MultisteLeaf1# 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
MultisteLeaf1#
MultisteLeaf1# sh nve peers
Interface Peer-IP       State LearnType Uptime  Router-Mac
--------- --------------- ----- --------- ------- ------------------
nve1      10.111.111.1   Up    CP        4w2d    0200.0a6f.6f01
nve1      10.200.200.21  Up    CP        4w2d    n/a

MultisteLeaf1# 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 [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
MultisteLeaf1#
```

```
MultisteLeaf1# 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-i
njected
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: 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)
*>l[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[0]:[0.0.0.0]/216
                               192.168.2.4        100      32768 i
*>l[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)
*>l[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[0]:[0.0.0.0]/216
                               192.168.2.4        100      32768 i
*>l[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)

MultisteLeaf1#
```

```
Multistespine1# 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-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - b
est2

   Network          Next Hop       Metric   LocPrf   Weight Path
Route Distinguisher: 10.100.100.21:27001

Route Distinguisher: 10.100.100.21:33767

Route Distinguisher: 10.100.100.21:33768

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
*>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
Multistespine1#
```

eBGP Neighborship 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#


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#


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-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - b
est2

   Network          Next Hop       Metric   LocPrf   Weight Path
*>r10.52.21.0/30     0.0.0.0             0      100    32768 ?
*>r10.100.100.21/32  0.0.0.0             0      100    32768 ?
*>r10.111.111.1/32   0.0.0.0             0      100    32768 ?
*>r10.200.200.21/32  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#


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 [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
10.52.21.1      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
*>r10.52.21.0/30     0.0.0.0             0      100    32768 ?
*>r10.100.100.22/32  0.0.0.0             0      100    32768 ?
*>r10.111.111.2/32   0.0.0.0             0      100    32768 ?
*>r10.200.200.22/32  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

```
MultisiteBG2# sh bgp l2vpn 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-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - b
est2

   Network          Next Hop            Metric     LocPrf     Weight Path
Route Distinguisher: 10.100.100.21:27001   (ES [0300.0000.0000.6400.0309 0])
*>l[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)
*>l[2]:[0]:[0]:[48]:[005d.738e.a337]:[0]:[0.0.0.0]/216
                    10.200.200.21                    100      32768 i
*>l[3]:[0]:[32]:[10.200.200.21]/88
                    10.200.200.21                    100      32768 i

Route Distinguisher: 10.100.100.21:33768   (L2VNI 2001001)
*>l[2]:[0]:[0]:[48]:[005d.738e.a337]:[0]:[0.0.0.0]/216
                    10.200.200.21                    100      32768 i
*>l[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#
```

```
MultisiteBG1# sh bgp l2vpn 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-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - b
est2

   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                             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                             0 100 i

Route Distinguisher: 10.100.100.22:27001   (ES [0300.0000.0000.c800.0309 0])
*>l[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)
*>l[2]:[0]:[0]:[48]:[6cb2.ae91.38bf]:[0]:[0.0.0.0]/216
                    10.200.200.22                    100      32768 i
*>l[3]:[0]:[32]:[10.200.200.22]/88
                    10.200.200.22                    100      32768 i

Route Distinguisher: 10.100.100.22:33768   (L2VNI 2001001)
*>l[2]:[0]:[0]:[48]:[6cb2.ae91.38bf]:[0]:[0.0.0.0]/216
                    10.200.200.22                    100      32768 i
*>l[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#
```

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

```
spinel# sh bgp ipv4 unicast summary
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
spinel#

spinel# 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
spinel#

spinel# sh bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 192.168.1.1, local AS number 200
BGP table version is 31, L2VPN EVPN config peers 3, capable peers 3
19 network entries and 19 paths using 4256 bytes of memory
BGP attribute entries [17/2788], BGP AS path entries [1/6]
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   44002   43993     31    0    0 4w2d 11
192.168.1.3     4  200   43991   43989     31    0    0 4w2d 4
192.168.1.4     4  200   43996   43992     31    0    0 4w2d 4
spinel#
```

```
spinel# sh bgp l2vpn evpn 00c8.8bf9.5f41
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 i
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]/2
72, version 29
Paths: (1 available, best #1)
Flags: (0x000202) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not i
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.6f
2

  Path-id 1 advertised to peers:
    192.168.1.3       192.168.1.4
spinel#
```

```
leaf1# sh bgp l2vpn evpn summary
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 [32/4608], 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 4w1d 14
192.168.1.2     4  200   42565   42552     52    0    0 4w1d 14
leaf1#

leaf1# show bgp ip unicast 4.2.2.100 vrf vxlan-900001
BGP routing table information for VRF vxlan-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,
  vpn: version 7, (0x100002) on xmit-list

  Advertised path-id 1, VPN 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

  VPN AF advertise information:
  Path-id 1 not advertised to any peer
leaf1#
```

```
                           ┌──────────────────────────────────────────────────────────┐
                           │          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 │
│      Host Reachability  Verification from DC-1 to DC-2 │ * 1000   00c8.8bf9.5f41  dynamic  0           F    F  nve1/10.111.111.2 │
├───────────────────────────────────────────────────┤ leaf1#                                                                     │
│ ToLeaf1#show ip int br | e down                    │                                                                            │
│ Interface       IP-Address    OK? Method Status Protocol │ leaf1# show ip interface bri vrf all          leaf1# show ip route vrf vxlan-900001 4.2.2.100 │
│ Vlan1000        4.2.2.10      YES NVRAM  up   up   │ IP Interface Status for VRF "default"(1)      IP Route Table for VRF "vxlan-900001" │
│ Vlan1001        4.1.1.10      YES NVRAM  up   up   │ Interface     IP Address   Interface Status    '*' denotes best ucast next-hop │
│ GigabitEthernet1/0/1 unassigned YES unset up up   │ Lo0           192.168.1.3  protocol-up/link-up/admin-up  '**' denotes best mcast next-hop │
│ ToLeaf1#                                           │ Eth1/18       1.1.1.1      protocol-down/link-down/admin-d '[x/y]' denotes [preference/metric] │
│                                                    │ Eth2/23       172.16.1.2   protocol-up/link-up/admin-up   '%<string>' in via output denotes VRF <string> │
│ ToLeaf1#ping 4.2.2.100                             │ Eth2/24       172.16.2.2   protocol-up/link-up/admin-up │
│ Type escape sequence to abort.                     │                                               4.2.2.100/32, ubest/mbest: 1/0 │
│ Sending 5, 100-byte ICMP Echos to 4.2.2.100, timeout is 2 seconds: │ IP Interface Status for VRF "management"(2)    *via 10.111.111.2%default, [200/2000], 4w2d, bgp-200, internal, tag 100, (m │
│ !!!!!                                              │ Interface     IP Address   Interface Status   pls-vpn)segid 900001 tunnel: 175075074 encap: 1 │
│ Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/9 ms │ mgmt0      10.31.121.19 protocol-up/link-up/admin-up │
│ ToLeaf1#                                           │                                               leaf1# │
│                                                    │ IP Interface Status for VRF "vxlan-900001"(3) │
│ ToLeaf1#show ip arp 4.2.2.100                      │ Interface     IP Address   Interface Status   leaf1# traceroute 10.111.111.2 │
│ Protocol  Address     Age (min) Hardware Addr Type Interface │ Vlan101  forward-enabled protocol-up/link-up/admin-up  traceroute to 10.111.111.2 (10.111.111.2), 30 hops max, 40 byte packets │
│ Internet  4.2.2.100     54    00c8.8bf9.5f41 ARPA Vlan1000 │ Vlan1000       4.2.2.1      protocol-up/link-up/admin-up  1  172.16.1.1 (172.16.1.1) 1.066 ms  0.816 ms  0.664 ms │
│ ToLeaf1#                                           │ Vlan1001       4.1.1.1      protocol-up/link-up/admin-up  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 │
│ toMultisiteLeaf1#sh ip interf bri | ex down        │ leaf1# show ip arp vrf vxlan-900001           Mac Address    Prod Host IP            Next Hop (s) │
│ Interface       IP-Address    OK? Method Status Protocol │                                          -------------- ---- -----------------------  ------------ │
│ Vlan1000        4.2.2.100     YES NVRAM  up   up   │ Flags: * - Adjacencies learnt on non-active FHRP router  0035.1ac1.37c2 HMM  4.2.2.10    N/A │
│ Vlan1001        4.1.1.100     YES NVRAM  up   up   │        + - Adjacencies synced via CFSoE      00c8.8bf9.5f41 BGP  4.2.2.100   10.111.111.2 │
│ GigabitEthernet2/0/1 unassigned YES unset up up   │        # - Adjacencies Throttled for Glean   e0d1.73a4.1d41 BGP  4.2.2.11    192.168.1.4 │
│                                                    │        D - Static Adjacencies attached to down interface  leaf1# │
│ toMultisiteLeaf1#sh ip arp 4.2.2.100               │                                              │
│ Protocol  Address     Age (min) Hardware Addr Type Interface │ IP ARP Table for context vxlan-900001     leaf1# show nve internal bgp rnh database | i Encap|10.111.111.2 │
│ Internet  4.2.2.100     -     00c8.8bf9.5f41 ARPA Vlan1000 │ Total number of entries: 2             VNI    Peer-IP       Peer-MAC   Tunnel-ID Encap  (A/S) Flags │
│ toMultisiteLeaf1#                                  │ Address    Age    MAC Address    Interface  900001 10.111.111.2 0200.0a6f.6f02 0xa6f6f02 vxlan (1/0) 0 │
└───────────────────────────────────────────────────┘ 4.1.1.10  00:03:56 0035.1ac1.37c3 Vlan1001   200100110.111.111.2 0000.0000.0000 0x0  vxlan (1/0) 0 │
                                                       │ 4.2.2.10  00:13:10 0035.1ac1.37c2 Vlan1000   200100210.111.111.2 0000.0000.0000 0x0  vxlan (1/0) 0 │
                                                       │ leaf1#                                        leaf1# │
                                                       └────────────────────────────────────────────────────────────────────────────────┘
```

```
┌────────────────────────────────────┐
│   Leaf-1 MAC Address Verification  │
├────────────────────────────────────┴──────────────────────────────────────────────────────────────────────────────────────────┐
│ leaf1# sh mac address-table vlan 1000                                │ leaf1# show mac address-table vlan 1001                              │
│ Legend:                                                               │ Legend:                                                             │
│      * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC │      * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC │
│      age - seconds since last seen,+ - primary entry using vPC Peer-Link │      age - seconds since last seen,+ - primary entry using vPC Peer-Link │
│    VLAN   MAC Address    Type   age   Secure NTFY  Ports/SWID.SSID.LID │    VLAN   MAC Address    Type   age   Secure NTFY  Ports/SWID.SSID.LID │
│ --------+--------------+-------+-----+------+----+------------------    │ --------+--------------+-------+-----+------+----+------------------   │
│ * 1000    0000.2222.3333  static  0     F    F  sup-eth2            │ * 1001    0000.2222.3333  static  0     F    F  sup-eth2           │
│ * 1000    0035.1ac1.37c2  dynamic 730   F    F  Eth1/23            │ * 1001    0035.1ac1.37c3  dynamic 630   F    F  Eth1/23           │
│ * 1000    005d.738e.a337  static  0     F    F  nve1/10.111.111.2   │ * 1001    005d.738e.a337  static  0     F    F  nve1/10.111.111.2  │
│ * 1000    00c8.8bf9.5f42  dynamic 0     F    F  nve1/10.111.111.2   │ * 1001    00c8.8bf9.5f42  dynamic 0     F    F  nve1/10.111.111.2  │
│ * 1000    6cb2.ae91.38bf  static  0     F    F  nve1/10.200.200.22  │ * 1001    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    │ * 1001    e0d1.73a4.1d42  dynamic 0     F    F  nve1/192.168.1.4   │
│ leaf1#                                                               │ leaf1#                                                             │
│                                                                                                                                     │
│ leaf1# sh system internal l2rib event-history mac | i 0035.1ac1.37c2                                                               │
│ [04/24/20 13:10:09.721 UTC 3 4173]  Received MAC ROUTE msg: addr: (1000-0035.1ac1.37c2) 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]  (1000,0035.1ac1.37c2,3):MAC route created with seq num:0, flags:L (), soo:0, peerid:0        │
│ [04/24/20 13:10:09.732 UTC c 4173]  (1000,0035.1ac1.37c2,3):Encoding MAC best route (ADD, client id 4)                          │
│ [04/24/20 13:10:09.871 UTC e 4173]  (1000,0035.1ac1.37c2):Bound MAC-IP(4.2.2.10) to MAC, Total MAC-IP linked: 1                 │
│                                                                                                                                     │
│ leaf1# show system internal l2rib event-history mac | i 0035.1ac1.37c3                                                            │
│ [04/24/20 13:10:09.721 UTC 8 4173]  Received MAC ROUTE msg: addr: (1001-0035.1ac1.37c3) 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]  (1001,0035.1ac1.37c3,3):MAC route created with seq num:0, flags:L (), soo:0, peerid:0        │
│ [04/24/20 13:10:09.732 UTC d 4173]  (1001,0035.1ac1.37c3,3):Encoding MAC best route (ADD, client id 4)                          │
│ [04/24/20 13:10:09.871 UTC f 4173]  (1001,0035.1ac1.37c3):Bound MAC-IP(4.1.1.10) to MAC, Total MAC-IP linked: 1                 │
│                                                                                                                                     │
│ leaf1# sh system internal l2rib event-history mac-ip | i 0035.1ac1.37c2                                                           │
│ [04/24/20 13:10:09.871 UTC 2 4173]  Received MAC-IP ROUTE msg: addr: (1000-0035.1ac1.37c2) 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]  (1000,0035.1ac1.37c2,4.2.2.10):MAC-IP entry created                                         │
│ [04/24/20 13:10:09.871 UTC 4 4173]  (1000,0035.1ac1.37c2,4.2.2.10,12):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]  (1000,0035.1ac1.37c2,4.2.2.10,12):Encoding MAC-IP best route (ADD, client id 4)             │
│ leaf1#                                                                                                                             │
│                                                                                                                                     │
│ leaf1# show system internal l2rib event-history mac-ip | i 0035.1ac1.37c3                                                         │
│ [04/24/20 13:10:09.871 UTC 6 4173]  Received MAC-IP ROUTE msg: addr: (1001-0035.1ac1.37c3) 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]  (1001,0035.1ac1.37c3,4.1.1.10):MAC-IP entry created                                         │
│ [04/24/20 13:10:09.871 UTC 8 4173]  (1001,0035.1ac1.37c3,4.1.1.10,12):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]  (1001,0035.1ac1.37c3,4.1.1.10,12):Encoding MAC-IP best route (ADD, client id 4)             │
│ leaf1#                                                                                                                             │
└─────────────────────────────────────────────────────────────────────────────────────────────────────────────────────────────────┘
```

Troubleshoot

Para solucionar problemas, consulte
tohttps://www.cisco.com/c/en/us/support/docs/switches/nexus-9000-series-switches/215780-troubleshoot-evpn-vxlan-in-multisite-env.html

Informações Relacionadas

- [VXLAN EVPN Multi-Site Design and Deployment White Paper](#)
- [Configuração de VXLAN EVPN Multi-Site](#)