

EVPN Vxlan IPV6オーバーレイの設定例

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概要

このドキュメントでは、Nexus 9000でL2イーサネットVPN(EVPN)Virtual Extensible LAN(VXLAN)IPV6オーバーレイを展開する方法について説明します。

前提条件

要件

次の項目に関する知識があることが推奨されます。

- ボーダー ゲートウェイ プロトコル (BGP)
- Open Shortest Path First (OSPF)
- EVPN
- IPV6

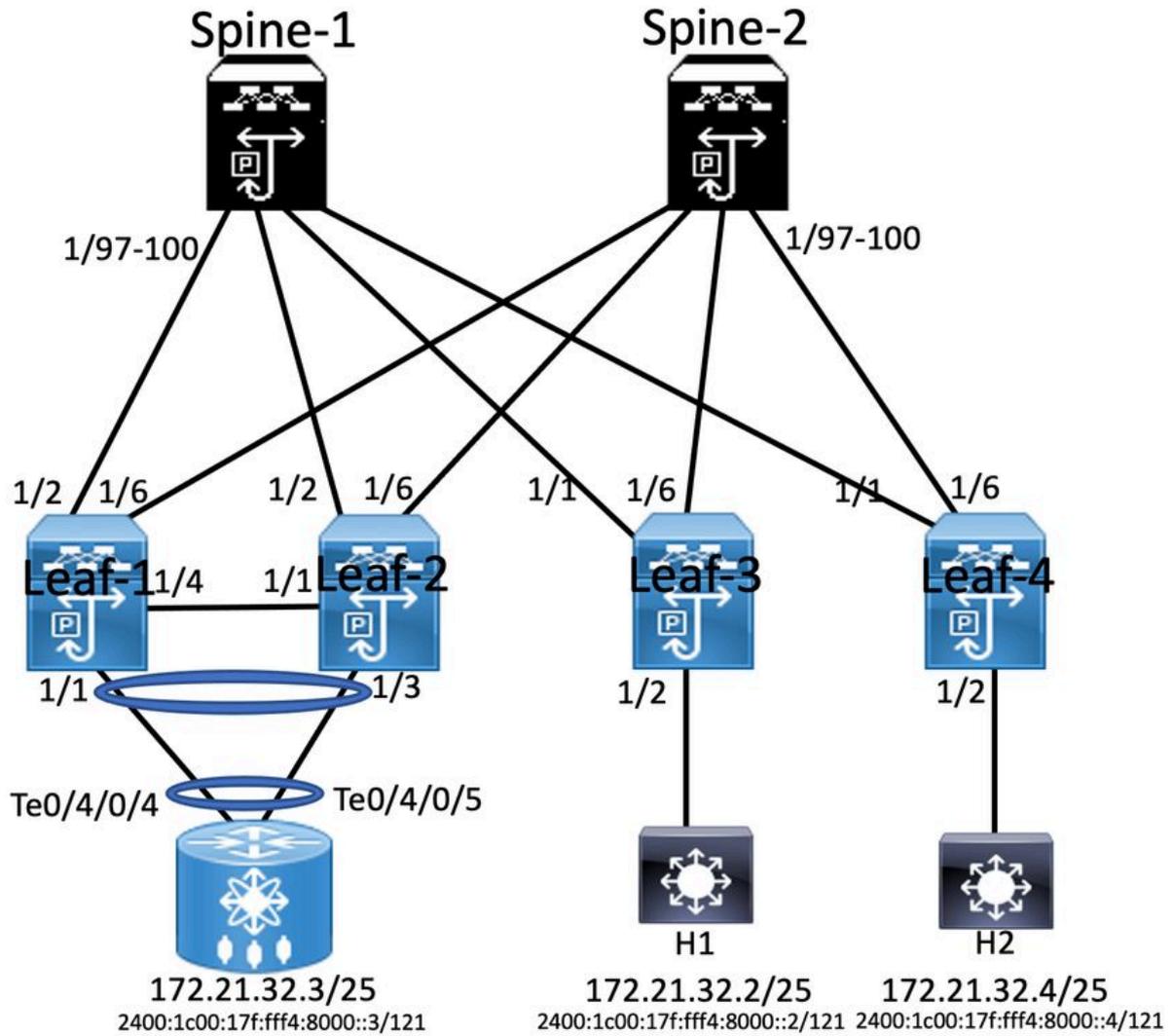
使用するコンポーネント

このドキュメントの情報は、次のソフトウェアとハードウェアのバージョンに基づいています。

- リリース9.3.931809)が稼働するCisco N9K-C128YC-FX
- リリース9.3(7)が稼働するCisco N9K-C93216TC-FX2
- IPv4およびIPv6に対応したエンドホストを備えたシスコアグリゲーションサービスルータ (ASR)
- リリース9.3931808)が稼働するCisco N9K-C100YC-EX

このドキュメントの情報は、特定のラボ環境にあるデバイスに基づいて作成されました。このドキュメントで使用するすべてのデバイスは、初期 (デフォルト) 設定の状態から起動しています。本稼働中のネットワークでは、各コマンドによって起こる可能性がある影響を十分確認してください。

ネットワーク図



ハイレベル設定

1. 機能のインストール
2. IPアドレスの設定 - アンダーレイ
3. IGPの設定 : OSPF
4. MP - BGPの設定
5. VLANおよびEVPNオーバーレイの設定
6. ホストとリーフ間のe-BGPの設定

コンフィギュレーション

Enabling Features	Interface Configuration	BGP/EVPN Configuration	VPC Configuration	VTEP Configuration
<pre> nv overlay evpn feature ospf feature bgp feature pim feature fabric forwarding feature interface-plan feature vn-segment-vlan-based feature l3cp feature vpc feature nv overlay fabric forwarding anycast-gateway-mac 0000.2222.3333 ip pim rp-address 10.3.1.1 group-list 224.0.0.0/4 ip pim ssm range 232.0.0.0/8 vlan 1,10,20,100,511-513,708-709,711,1179,1664-1665,1667-1668,1894 vlan 100 vn-segment 10100 vlan 511 vn-segment 10511 route-map PERMIT-ALL permit 10 router ospf 100 router-id 10.1.1.1 </pre>	<pre> interface loopback0 ip address 10.1.1.1/32 ip address 10.10.10.10/32 secondary ip router ospf 100 area 0.0.0.0 ip pim sparse-mode ipam monitor scale interface ethernet1/2 mtu 9216 ip address 192.168.0.1/24 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode vrf context SGI_IAC vni 10100 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 auto evpn </pre>	<pre> router bgp 6500 router-id 10.1.1.1 address-family ipv4 unicast address-family ipv6 unicast address-family l2vpn evpn advertise-pip neighbor 10.3.1.1 remote-as 6500 update-source loopback0 address-family l2vpn evpn send-community extended send-community extended vrf SGI_IAC Address-family ipv4 unicast evpn vni 10511 l2 rd auto route-target import auto route-target export auto </pre>	<pre> vpc domain 10 peer-switch peer-keepalive destination 10.122.163.140 source 10.122.176.45 peer-gateway ipv6 nd synchronize ip arp synchronize interface port-channel10 switchport switchport mode trunk spanning-tree port type network vpc peer-link interface ethernet 1/4 switchport switchport mode trunk channel-group 10 mode trunk interface port-channel 20 switchport switchport mode trunk switchport trunk allowed vlan 511 switchport switchport mode trunk switchport trunk allowed vlan 511 channel-group 20 </pre>	<pre> interface vlan100 vrf member SGI_IAC no ip redirects ip forward no ipv6 redirects interface vlan511 vrf member SGI_IAC no ip redirects ip address 172.21.32.6/25 ip6 address 2400:1c00:17f:fff4:8000::4/121 no ipv6 redirects fabric forwarding mode any-cast-gateway interface vte1 advertise virtual-rmac host-reachability-protocol bgp source-interface loopback0 member vni 10100 associate-vhf member vni 10511 suppress-arp mcast-group 239.1.1.1 </pre>

Leaf-2				
Enabling Feature	Interface Configuration	BGP/EVPN Configuration	Vpc Configuration	VTEP Configuration
<pre> nv overlay evpn feature ospf feature bgp feature pim feature fabric forwarding feature interface-plan feature vn-segment-vlan-based feature lacp feature vpc feature nv overlay fabric forwarding anycast-gateway-mac 0000.2222.3333 ip pim rp-address 1.1.1.1 group-list 224.0.0.0/4 ip pim ssm range 232.0.0.0/8 vlan 1,10,20,100,511-513,708-709,711,1179,1664-1665,1667-1668,1894 vlan 100 vn-segment 10100 vlan 511 vn-segment 10511 route-map PERMIT-ALL permit 10 router ospf 100 router-id 10.2.1.1 </pre>	<pre> interface loopback0 ip address 10.2.1.1/32 ip address 10.10.10.10/32 secondary ip router ospf 100 area 0.0.0.0 ip pim sparse-mode icam monitor scale interface ethernet1/2 mtu 9216 ip address 192.168.3.2/24 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode vrf context SGI_IAC vni 10100 rd auto address-family ipv4 unicast route-target both auto evpn address-family ipv6 unicast route-target both auto route-target auto evpn </pre>	<pre> router bgp 6500 router-id 10.2.1.1 address-family ipv4 unicast address-family ipv6 unicast address-family l2vpn evpn advertise-pip neighbour 10.3.1.1 remote-as 6500 update-source loopback0 address-family l2vpn evpn send-community send-community extended vrf SGI_IAC Address-family ipv4 unicast evpn vni 10511 l2 rd auto route-target import auto route-target export auto </pre>	<pre> vpc domain 10 peer-switch peer-keepalive destination 10.122.176.45 source 10.122.163.140 peer-gateway ipv6 rd synchronize ip arp synchronize interface port-channel10 switchport switchport mode trunk spanning-tree port type network vpc peer-link interface ethernet 1/4 switchport switchport mode trunk channel-group 10 mode trunk interface port-channel 20 switchport switchport mode trunk switchport trunk allowed vlan 511 vpc 10 interface ethernet1/1 switchport switchport mode trunk switchport trunk allowed vlan 511 channel-group 20 </pre>	<pre> interface vian100 vrf member SGI_IAC no ip redirects ip forward no ipv6 redirects interface vian511 vrf member SGI_IAC no ip redirects ip address 172.21.32.6/25 ipv6 address 2400:1c00:17f:fff4:8000::4/121 no ipv6 redirects fabric forwarding mode any cast-gateway interface vne1 advertise virtual-rmac host-reachability protocol bgp source-interface loopback0 member vni 10100 associate-vhf member vni 10511 suppress-arp mcast-group 239.1.1.1 </pre>

Spine-1 Configuration		
Enabling Features	Interface Configuration	BGP/EVPN Configuration
<pre> nv overlay evpn feature ospf feature bgp feature pim feature fabric forwarding feature interface-plan feature vn-segment-vlan-based feature lacp feature nv overlay ip pim rp-address 10.3.1.1 group-list 224.0.0.0/4 ip pim ssm range 232.0.0.0/8 vlan 1,10,20,100,511-513,708-709,711,1179,1664-1665,1667-1668,1894 Interface loopback0 IP address 1.1.1.1/32 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode icam monitor scale Router ospf 100 Router-id 10.3.1.1 Router bgp 6500 Router-id 10.3.1.1 </pre>	<pre> interface Ethernet1/97 mtu 9216 ip address 172.168.0.2/24 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode interface Ethernet1/98 mtu 9216 ip address 172.168.2.2/24 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode interface Ethernet1/99 mtu 9216 ip address 192.168.1.2/24 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode interface Ethernet1/100 mtu 9216 ip address 172.168.3.1/24 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode </pre>	<pre> router bgp 6500 address-family ipv4 unicast address-family ipv6 unicast address-family l2vpn evpn neighbour 10.1.1.1 remote-as 6500 update-source loopback0 address-family l2vpn evpn send-community send-community extended route-reflector-client neighbour 10.2.1.1 remote-as 6500 update-source loopback0 address-family l2vpn evpn send-community send-community extended route-reflector-client neighbour 10.4.1.1 remote-as 6500 update-source loopback0 address-family l2vpn evpn send-community send-community extended route-reflector-client </pre>

Leaf-3			
Enabling Features	Interface Configuration	BGP/EVPN Configuration	VTEP Configuration
<pre> nv overlay evpn feature ospf feature bgp feature pim feature fabric forwarding feature interface-plan feature vn-segment-vlan-based feature lacp feature nv overlay fabric forwarding anycast-gateway-mac 0000.2222.3333 ip pim rp-address 10.3.1.1 group-list 224.0.0.0/4 ip pim ssm range 232.0.0.0/8 vlan 1,10,20,100,511-513,708-709,711,1179,1664-1665,1667-1668,1894 vlan 100 vn-segment 10100 vlan 511 vn-segment 10511 route-map PERMIT-ALL permit 10 router ospf 100 router-id 10.4.1.1 </pre>	<pre> interface loopback0 ip address 10.4.1.1/32 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode icam monitor scale interface ethernet1/1 mtu 9216 ip address 192.168.1.1/24 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode vrf context SGI_IAC vni 10100 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 auto evpn </pre>	<pre> router bgp 6500 router-id 10.4.1.1 address-family ipv4 unicast address-family ipv6 unicast address-family l2vpn evpn neighbour 10.3.1.1 remote-as 6500 update-source loopback0 address-family l2vpn evpn send-community send-community extended vrf SGI_IAC address-family ipv4 unicast address-family ipv6 unicast evpn vni 10511 l2 rd auto route-target import auto route-target export auto </pre>	<pre> interface vian100 vrf member SGI_IAC no ip redirects ip forward no ipv6 redirects interface vian511 vrf member SGI_IAC no ip redirects ip address 172.21.32.6/25 ipv6 address 2400:1c00:17f:fff4:8000::4/121 no ipv6 redirects fabric forwarding mode any cast-gateway interface vne1 no shutdown host-reachability protocol bgp source-interface loopback0 member vni 10100 associate-vhf member vni 10511 suppress-arp mcast-group 239.1.1.1 </pre>

Host 1 Configuration	ASR Router	Host 2 Configuration
<pre> interface Bundle-Ether1.511 description JE-PCN01-PC-UP-SGI_IAC vrf SGI_IAC ipv4 address 172.21.32.2 255.255.255.128 ipv6 address 2400:1c00:17f:fff4:8000::2/121 encapsulation dot1q511 </pre>	<pre> interface Bundle-Ether1.511 description JE-PCN01-PC-UP-SGI_IAC vrf SGI_IAC ipv4 address 172.21.32.3 255.255.255.128 ipv6 address 2400:1c00:17f:fff4:8000::3/121 encapsulation dot1q511 </pre>	<pre> interface Bundle-Ether1.511 description JE-PCN01-PC-UP-SGI_IAC vrf SGI_IAC ipv4 address 172.21.32.4 255.255.255.128 ipv6 address 2400:1c00:17f:fff4:8000::5/121 encapsulation dot1q511 </pre>

確認

ここでは、設定が正常に機能しているかどうかを確認します。

<pre>RP/0/RSP1/CPU0:ASR-9906-A#ping vrf SGI_IAC 172.21.32.2 Tue Jul 12 03:35:33.528 UTC Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 172.21.32.2, timeout is 2 seconds: !!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/3 ms RP/0/RSP1/CPU0:ASR-9906- A#ping vrf SGI_IAC 2400:1c00:17f:fff4:8000::2 Tue Jul 12 03:35:36.536 UTC Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 2400:1c00:17f:fff4:8000::2, timeout is 2 seconds: !!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms</pre>	<pre>H1#ping 172.21.32.3 Tue Jul 12 03:36:00.993 UTC Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 172.21.32.3, timeout is 2 seconds: !!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms H1#ping vrf SGI_IAC 2400:1c00:17f:fff4:8000::3 Tue Jul 12 03:36:03.789 UTC Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 2400:1c00:17f:fff4:8000::3, timeout is 2 seconds: !!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/3 ms</pre>
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トラブルシューティング

ここでは、設定のトラブルシューティングに使用できる情報を示します。

設定をトラブルシューティングするには、次のコマンドを使用します。

#show bgp l2vpn evpn

#show nve peer

#show nve vni

show ip arp <> >> On host side

翻訳について

シスコは世界中のユーザにそれぞれの言語でサポート コンテンツを提供するために、機械と人による翻訳を組み合わせて、本ドキュメントを翻訳しています。ただし、最高度の機械翻訳であっても、専門家による翻訳のような正確性は確保されません。シスコは、これら翻訳の正確性について法的責任を負いません。原典である英語版（リンクからアクセス可能）もあわせて参照することを推奨します。