

# NX-OSとWindows Server 2022を使用したNexus 9000用のVxLANファブリックでのDHCPの設定と確認

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## はじめに

このドキュメントでは、Nexus 9000スイッチを使用してVxLANファブリックのDHCPを設定およびトラブルシューティング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。

- Nexus NX-OS ソフトウェア
- 仮想ポートチャネル(vPC)。
- VxLAN BGP L2VPN EVPN
- BGPアドレスファミリIPv4
- OSPF
- マルチキャストPIM ( スパースモード )
- DHCP

### 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。

- Cisco Nexus 9000とCisco NX-OS
  - N9K-C93180YC-EX
  - N9K-C93180YC-FX
  - NX-OS 10.3(4a)
- Windows Server 2022データセンター

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、クリアな ( デフォルト ) 設定で作業を開始しています。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。

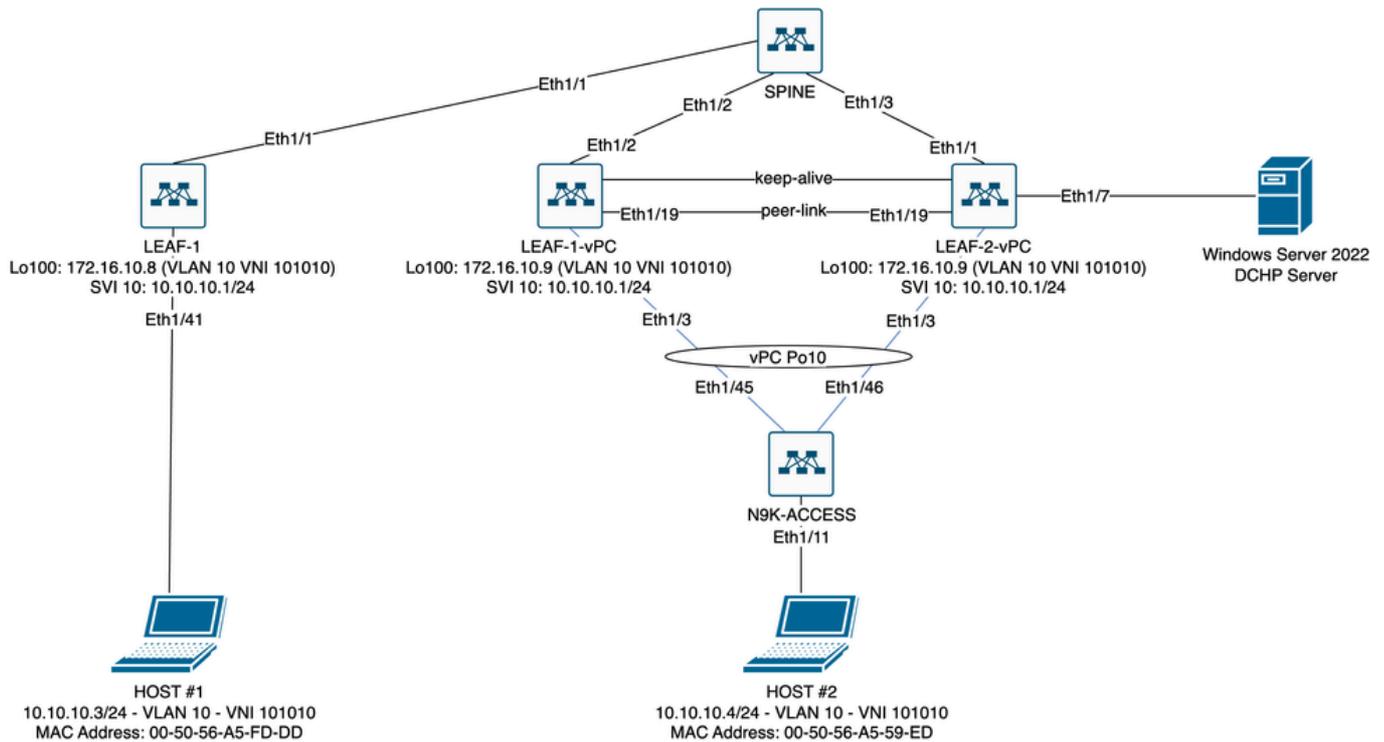


注：サードパーティ製のソフトウェアまたはハードウェアの構成と統合性に関する質問は、シスコのサポート外です。サードパーティ製ツールの使用は、シスコ機器の設定と動作をお客様にデモンストレーションするためのベストエフォートです。

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## 背景説明

### 実習でのVxLANのアンダーレイとオーバーレイの設定



ラボのVxLANファブリック図

## • スパイン :

- このNexusスイッチは、このシナリオではカプセル化解除されずにDHCP(Discover、Offer、Request、Ack)パケットを送信します。外側のヘッダーだけが使用されます。
- ネットワークファブリックの中央ルーティングポイントとして機能します。
- すべてのリーフスイッチを相互接続し、リーフスイッチ間のデータフローを容易にする。
- BGPに参加して、EVPNルートをリーフスイッチに配布します。
- IPルーティングを実行し、外部IPヘッダーを調べることで、異なるサブネット間またはVxLANセグメント間でトラフィックをルーティングできます。
- オーバーレイネットワーク(VxLAN)をアンダーレイ物理ネットワークから分離します
- 従来のIPルーティングプロトコルでアンダーレイを管理し、BGP EVPNを使用したVxLANでオーバーレイを管理して、スケーラブルで柔軟なネットワークアーキテクチャを提供します。

## • リーフ1:

- リーフスイッチは、サーバ、ストレージデバイス、およびその他のネットワークアプリケーションなどのエンドポイントに物理接続を提供します。
- リーフスイッチは、VTEPとして機能します。つまり、VxLANパケットをカプセル化およびカプセル化解除します。
- このシナリオでは、HOST#1がIPアドレスを要求します。
- LEAF-1は、VxLANヘッダー内のDCHPパケットのカプセル化を担当します。
- HOST#1は、DCHPパケットをクラシックイーサネットとして透過的に受信します。

## • リーフ1-vPCとリーフ2-vPC:

- リーフスイッチは、BGPを実行してルート情報を交換することで、EVPNコントロールプレーンに参加します。これにより、MACアドレスとIPアドレス情報の配布が可能

になり、トラフィックをVxLANファブリック経由で効率的にルーティングできるようになります。

- このシナリオでは、DHCPサーバはVLAN 10とVNI 101010(HOST#1)に関連付けられています。これは、VxLANブリッジングだけであることを意味します。
- DHCPサーバがHOST#1以外のVNIに関連付けられている場合、L3VNIはルーティングに不可欠です。送信元および宛先VNIを作成する必要があります。
- DHCPサーバは、DHCPパケットをクラシックイーサネットとして透過的に受信します。
- BUMトラフィックはvPC内の両方のNexusスイッチで受信されますが、トラフィックを送信するのはvPC内の動作しているプライマリNexusスイッチだけです。セカンダリNexusスイッチがトラフィックをドロップします。このシナリオでは、LEAF-1-vPCは運用上プライマリです。
- リーフ2-vPCとスパイン間のインターフェイスがダウンすると、DHCPパケットを送信できないため、infra-vlanの使用は必須です。VxLANカプセル化トラフィックをLEAF-1-vPCに送信するには、このバックアップVLANが必要です。このようにして、LEAF-1-vPCはDHCPパケットをスパインに送信できます。

#### • N9Kアクセス :

- このNexusスイッチは、vPCポートチャネルを使用して両方のリーフへの接続を提供するだけで、ホスト#2への冗長性を実現します

## スパイン

```
nv overlay evpn
feature ospf
feature bgp
feature pim
feature netconf
feature nv overlay
```

```
ip pim rp-address 192.168.11.11 group-list 224.10.10.0/24
ip pim ssm range 232.0.0.0/8
ip pim anycast-rp 192.168.11.11 192.168.0.11
```

```
ip prefix-list direct_routes seq 5 permit 10.104.11.0/30 le 32
route-map redistribution permit 10
  match ip address prefix-list direct_routes
```

```
interface Ethernet1/1
  speed 1000
  ip address 10.104.11.1/30
  ip ospf network point-to-point
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode
  no shutdown
```

```
interface Ethernet1/2
  ip address 10.102.11.1/30
  ip ospf network point-to-point
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode
  no shutdown
```

```

interface Ethernet1/3
  speed 1000
  ip address 10.103.11.1/30
  ip ospf network point-to-point
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description ANYCAST-RP
  ip address 192.168.0.11/32
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description ANYCAST-RP-CANDIDATE
  ip address 192.168.11.11/32
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode

router ospf 1

router bgp 65000
  neighbor 192.168.3.3
    remote-as 65000
    update-source loopback0
    address-family 12vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 192.168.4.4
    remote-as 65000
    update-source loopback0
    address-family 12vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 192.168.5.5
    remote-as 65000
    update-source loopback0
    address-family 12vpn evpn
      send-community
      send-community extended
      route-reflector-client

```

## リーフ1

```

nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature dhcp
feature nv overlay

```

```

fabric forwarding anycast-gateway-mac 0000.0a0a.0a0a

```

```
ip pim rp-address 192.168.11.11 group-list 224.10.10.0/24
ip pim ssm range 232.0.0.0/8

vlan 1,10,20,300
vlan 10
    vn-segment 101010
vlan 20
    vn-segment 202020
vlan 300
    vn-segment 303030

spanning-tree vlan 10 priority 4096

ip prefix-list host_subnets seq 5 permit 10.10.10.0/24 le 32
ip prefix-list host_subnets seq 10 permit 192.168.20.0/24 le 32
ip prefix-list host_subnets seq 15 permit 172.16.10.8/32
route-map direct_routes_tenant-a permit 10
    match ip address prefix-list host_subnets

vrf context tenant-a
    vni 303030
    rd auto
    address-family ipv4 unicast
        route-target both auto
        route-target both auto evpn

interface Vlan10
    no shutdown
    vrf member tenant-a
    no ip redirects
    ip address 10.10.10.1/24
    no ipv6 redirects
    fabric forwarding mode anycast-gateway
    ip dhcp relay address 10.10.10.150
    ip dhcp relay source-interface loopback100

interface Vlan20
    no shutdown
    vrf member tenant-a
    no ip redirects
    ip address 192.168.20.1/24
    no ipv6 redirects
    fabric forwarding mode anycast-gateway

interface Vlan300
    no shutdown
    vrf member tenant-a
    no ip redirects
    ip forward
    no ipv6 redirects

interface nve1
    no shutdown
    host-reachability protocol bgp
    source-interface loopback0
    member vni 101010
        suppress-arp
        mcast-group 224.10.10.10
    member vni 202020
        suppress-arp
        mcast-group 224.10.10.10
```

```

member vni 303030 associate-vrf

interface Ethernet1/1
 ip address 10.104.11.2/30
 ip ospf network point-to-point
 ip router ospf 1 area 0.0.0.0
 ip pim sparse-mode
 no shutdown

interface loopback0
 description UNDERLAY-VERIFICATION
 ip address 192.168.5.5/32
 ip router ospf 1 area 0.0.0.0
 ip pim sparse-mode

interface loopback100
 vrf member tenant-a
 ip address 172.16.10.8/32

router ospf 1

router bgp 65000
 address-family ipv4 unicast
 neighbor 192.168.0.11
 remote-as 65000
 update-source loopback0
 address-family l2vpn evpn
 send-community
 send-community extended
 vrf tenant-a
 address-family ipv4 unicast
 redistribute direct route-map direct_routes_tenant-a
 evpn
 vni 101010 l2
 rd auto
 route-target import auto
 route-target export auto
 vni 202020 l2
 rd auto
 route-target import auto
 route-target export auto

```

## リーフ1-vPC

```

nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature dhcp
feature vpc
feature nv overlay

fabric forwarding anycast-gateway-mac 0000.0a0a.0a0a

```

```
ip pim rp-address 192.168.11.11 group-list 224.10.10.0/24
ip pim ssm range 232.0.0.0/8

vlan 1,10,300,777
vlan 10
  vn-segment 101010
vlan 300
  vn-segment 303030
vlan 777
  name BACKUP_VLAN_ROUTING_NVE_INFRA
spanning-tree vlan 1,10,300 hello-time 4

ip prefix-list host_subnets seq 5 permit 10.10.10.0/24 le 32
ip prefix-list host_subnets seq 15 permit 172.16.10.9/32
route-map direct_routes_tenant-a permit 10
  match ip address prefix-list host_subnets

vrf context tenant-a
  vni 303030
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn
system nve infra-vlans 777

vpc domain 1
  peer-switch
  peer-keepalive destination 10.88.238.195
  peer-gateway
  layer3 peer-router
  ip arp synchronize

interface Ethernet1/3
  switchport
  switchport mode trunk
  switchport trunk allowed vlan 1,10,20
  channel-group 10 mode active
  no shutdown

interface Ethernet1/19
  switchport
  switchport mode trunk
  channel-group 1 mode active
  no shutdown

interface port-channel1
  switchport
  switchport mode trunk
  spanning-tree port type network
  vpc peer-link

interface port-channel10
  switchport
  switchport mode trunk
  switchport trunk allowed vlan 1,10
  vpc 10

interface mgmt0
  vrf member management
  ip address 10.88.238.194/29

interface loopback0
```

```
description UNDERLAY-VERIFICATION
ip address 192.168.3.3/32
ip router ospf 1 area 0.0.0.0
ip pim sparse-mode

interface loopback1
description OVERLAY-NVE
ip address 192.168.13.1/32
ip address 192.168.13.254/32 secondary
ip router ospf 1 area 0.0.0.0
ip pim sparse-mode

interface loopback10
vrf member tenant-a
ip address 172.16.10.1/32

interface loopback100
vrf member tenant-a
ip address 172.16.10.9/32

interface Vlan10
no shutdown
vrf member tenant-a
no ip redirects
ip address 10.10.10.1/24
no ipv6 redirects
fabric forwarding mode anycast-gateway
ip dhcp relay address 10.10.10.150
ip dhcp relay source-interface loopback100

interface Vlan300
no shutdown
vrf member tenant-a
no ip redirects
ip forward
no ipv6 redirects

interface Vlan777
description BACKUP_UNDERLAY_INFRA-VLAN
no shutdown
no ip redirects
ip address 10.255.77.1/30
no ipv6 redirects
ip ospf network point-to-point
ip router ospf 1 area 0.0.0.0
ip pim sparse-mode

interface Ethernet1/2
ip address 10.102.11.2/30
ip ospf network point-to-point
ip router ospf 1 area 0.0.0.0
ip pim sparse-mode
no shutdown

interface nve1
no shutdown
host-reachability protocol bgp
advertise virtual-rmac
source-interface loopback1
member vni 101010
suppress-arp
mcast-group 224.10.10.10
```

```

member vni 303030 associate-vrf

router ospf 1

router bgp 65000
  address-family ipv4 unicast
  address-family l2vpn evpn
  advertise-pip
  neighbor 192.168.0.11
  remote-as 65000
  update-source loopback0
  address-family l2vpn evpn
  send-community
  send-community extended
  neighbor 192.168.88.2
  remote-as 65000
  description OVERLAY_BACKUP
  update-source Vlan888
  address-family l2vpn evpn
  send-community
  send-community extended
  vrf tenant-a
  address-family ipv4 unicast
  redistribute direct route-map direct_routes_tenant-a
evpn
  vni 101010 l2
  rd auto
  route-target import auto
  route-target export auto
  vni 202020 l2
  rd auto
  route-target import auto
  route-target export auto

```

## リーフ2-vPC

```

nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature dhcp
feature vpc
feature nv overlay

fabric forwarding anycast-gateway-mac 0000.0a0a.0a0a

ip pim rp-address 192.168.11.11 group-list 224.10.10.0/24
ip pim ssm range 232.0.0.0/8

vlan 1,10,20,300,777
vlan 10
  vn-segment 101010
vlan 20
  vn-segment 202020

```

```
vlan 300
  vn-segment 303030
vlan 777
  name BACKUP_VLAN_ROUTING_NVE_INFRA

spanning-tree vlan 1,10,20,300 hello-time 4

ip prefix-list host_subnets seq 5 permit 10.10.10.0/24 le 32
ip prefix-list host_subnets seq 10 permit 192.168.20.0/24 le 32
ip prefix-list host_subnets seq 15 permit 172.16.10.10/32
route-map direct_routes_tenant-a permit 10
  match ip address prefix-list host_subnets

vrf context tenant-a
  vni 303030
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

system nve infra-vlans 777

vpc domain 1
  peer-switch
  peer-keepalive destination 10.88.238.194
  peer-gateway
  layer3 peer-router
  ip arp synchronize

interface Ethernet1/1
  ip address 10.103.11.2/30
  ip ospf network point-to-point
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/19
  switchport
  switchport mode trunk
  channel-group 1 mode active
  no shutdown
interface port-channel1
  switchport
  switchport mode trunk
  spanning-tree port type network
  vpc peer-link

interface port-channel10
  switchport
  switchport mode trunk
  switchport trunk allowed vlan 1,10,20
  vpc 10

interface mgmt0
  vrf member management
  ip address 10.88.238.195/29

interface loopback0
  description UNDERLAY-VERIFICATION
  ip address 192.168.4.4/32
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode
```

```
interface loopback1
  description OVERLAY-NVE
  ip address 192.168.13.2/32
  ip address 192.168.13.254/32 secondary
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode

interface loopback10
  vrf member tenant-a
  ip address 172.16.10.2/32

interface loopback100
  vrf member tenant-a
  ip address 172.16.10.10/32

interface Vlan10
  no shutdown
  vrf member tenant-a
  no ip redirects
  ip address 10.10.10.1/24
  no ipv6 redirects
  fabric forwarding mode anycast-gateway
  ip dhcp relay address 10.10.10.150
  ip dhcp relay source-interface loopback100

interface Vlan20
  no shutdown
  vrf member tenant-a
  no ip redirects
  ip address 192.168.20.1/24
  no ipv6 redirects
  fabric forwarding mode anycast-gateway

interface Vlan300
  no shutdown
  vrf member tenant-a
  no ip redirects
  ip forward
  no ipv6 redirects

interface Vlan777
  description BACKUP_UNDERLAY_INFRA-VLAN
  no shutdown
  no ip redirects
  ip address 10.255.77.2/30
  no ipv6 redirects
  ip ospf network point-to-point
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode

interface nve1
  no shutdown
  host-reachability protocol bgp
  advertise virtual-rmac
  source-interface loopback1
  member vni 101010
    suppress-arp
    mcast-group 224.10.10.10
  member vni 202020
    suppress-arp
    mcast-group 224.10.10.10
```

```
member vni 303030 associate-vrf

router ospf 1

router bgp 65000
address-family ipv4 unicast
address-family l2vpn evpn
advertise-pip
neighbor 192.168.0.11
remote-as 65000
update-source loopback0
address-family l2vpn evpn
send-community
send-community extended
neighbor 192.168.88.1
remote-as 65000
description OVERLAY_BACKUP
update-source Vlan888
address-family l2vpn evpn
send-community
send-community extended
vrf tenant-a
address-family ipv4 unicast
redistribute direct route-map direct_routes_tenant-a
evpn
vni 101010 l2
rd auto
route-target import auto
route-target export auto
vni 202020 l2
rd auto
route-target import auto
route-target export auto
```

## N9Kアクセス

```
feature lacp

vlan 1,10

interface port-channel10
switchport
switchport mode trunk

interface Ethernet1/11
switchport
switchport access vlan 10
no shutdown

interface Ethernet1/45
switchport
switchport mode trunk
channel-group 10 mode active
no shutdown

interface Ethernet1/46
switchport
```

```
switchport mode trunk
channel-group 10 mode active
no shutdown
```

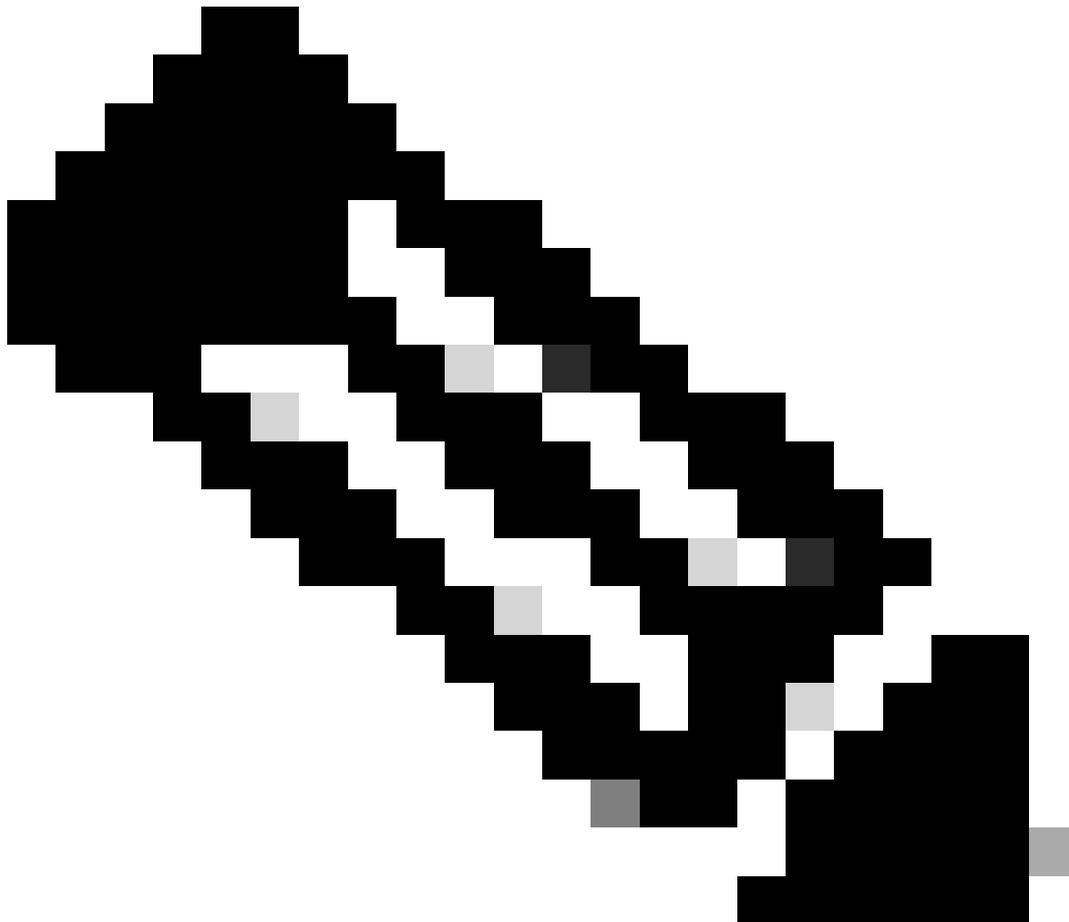
## NexusスイッチでのDHCPの設定

### リーフ1

ステップ 1 : DHCP機能を有効にします。

```
LEAF-1(config)# feature dhcp
```

---



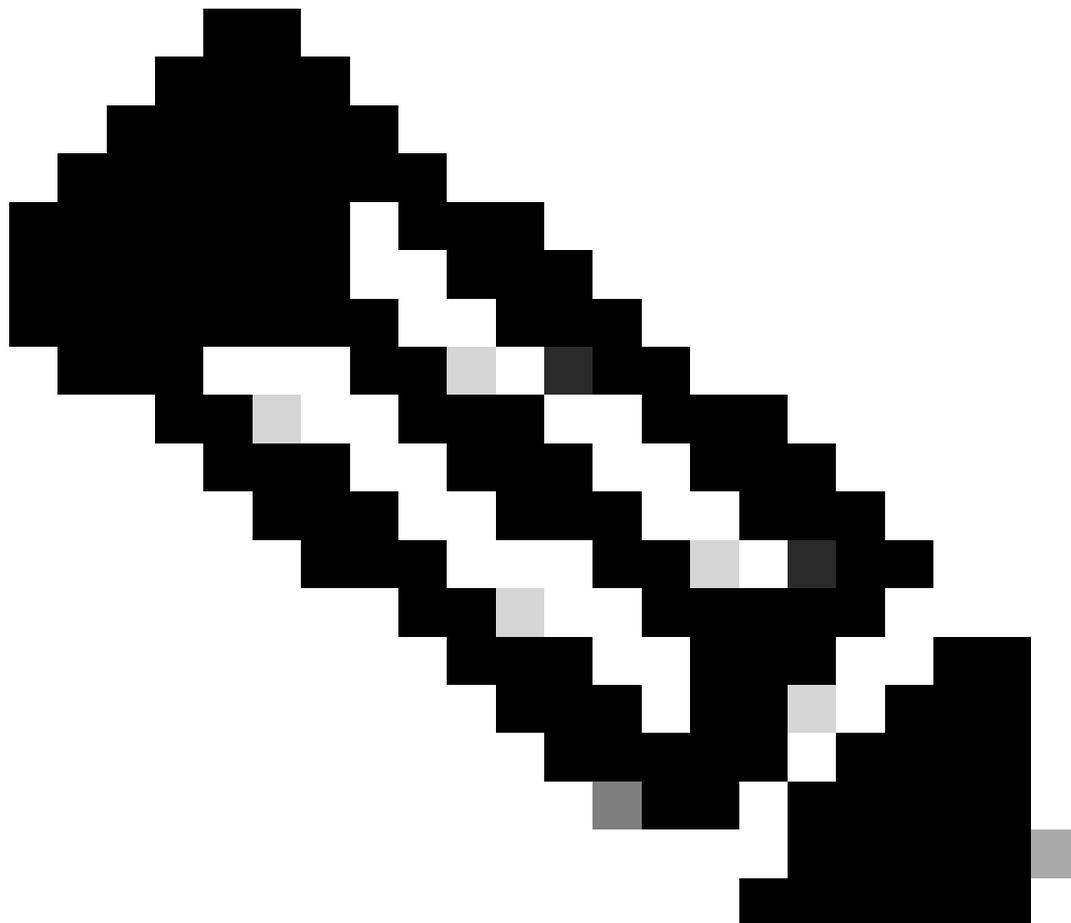
注:NX-OS 7.x以降、DHCPサーバおよびリレーエージェントコマンドservice dhcp、ip dhcp relay、およびipv6 dhcp relayはデフォルトで有効になっています。

---

ステップ 2 : コマンド ip dhcp relay information option を適用します。

```
LEAF-1(config)# ip dhcp relay information option
```

---

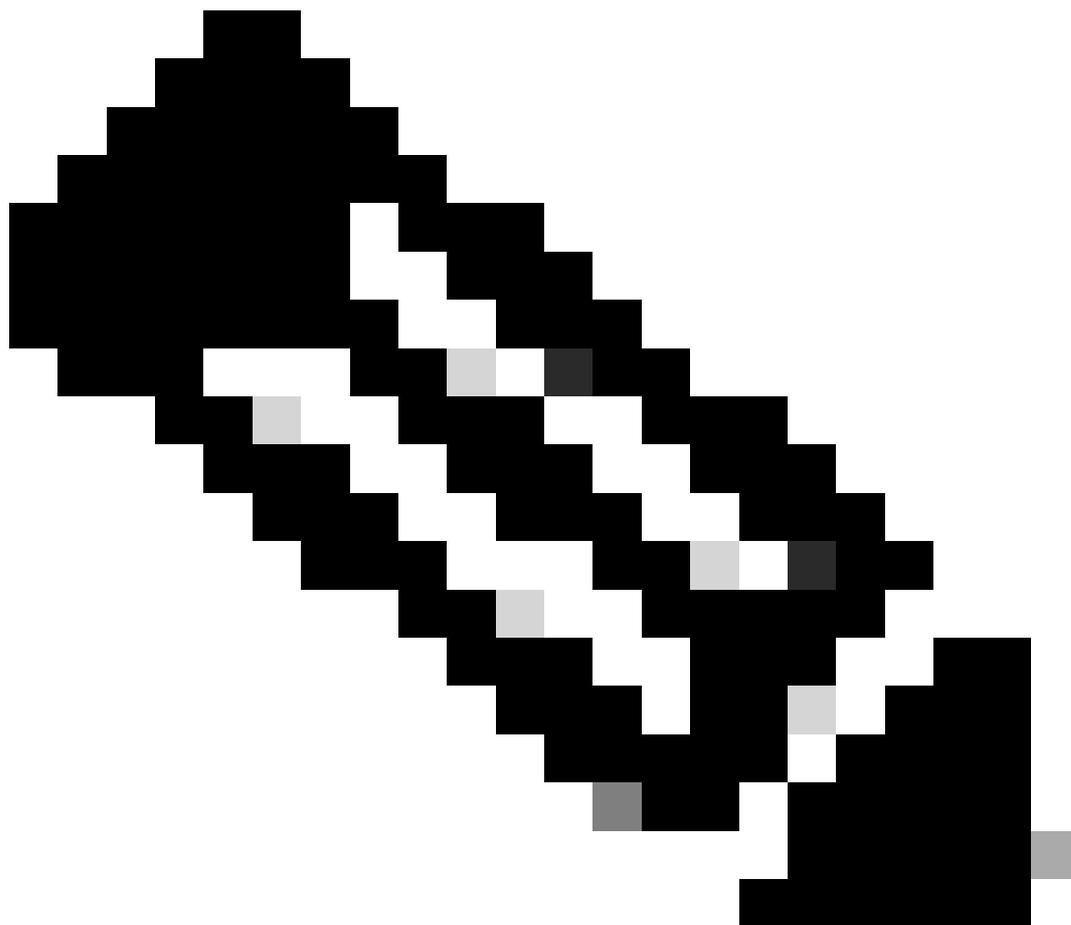


注 : このコマンドを使用すると、DHCPリレーエージェントは、転送されるパケットに関するOption 82情報の挿入と削除を実行できます。

---

ステップ 3 : コマンド ip dhcp relay information option vpn を適用します。

```
LEAF-1(config)# ip dhcp relay information option vpn
```



注：このコマンドは、DHCPサーバが属している異なるVRFに到着するDHCPリレー要求をイネーブルにします。

---

ステップ 4：コマンド「ip dhcp relay address [ip address of DHCP server]」を適用します。

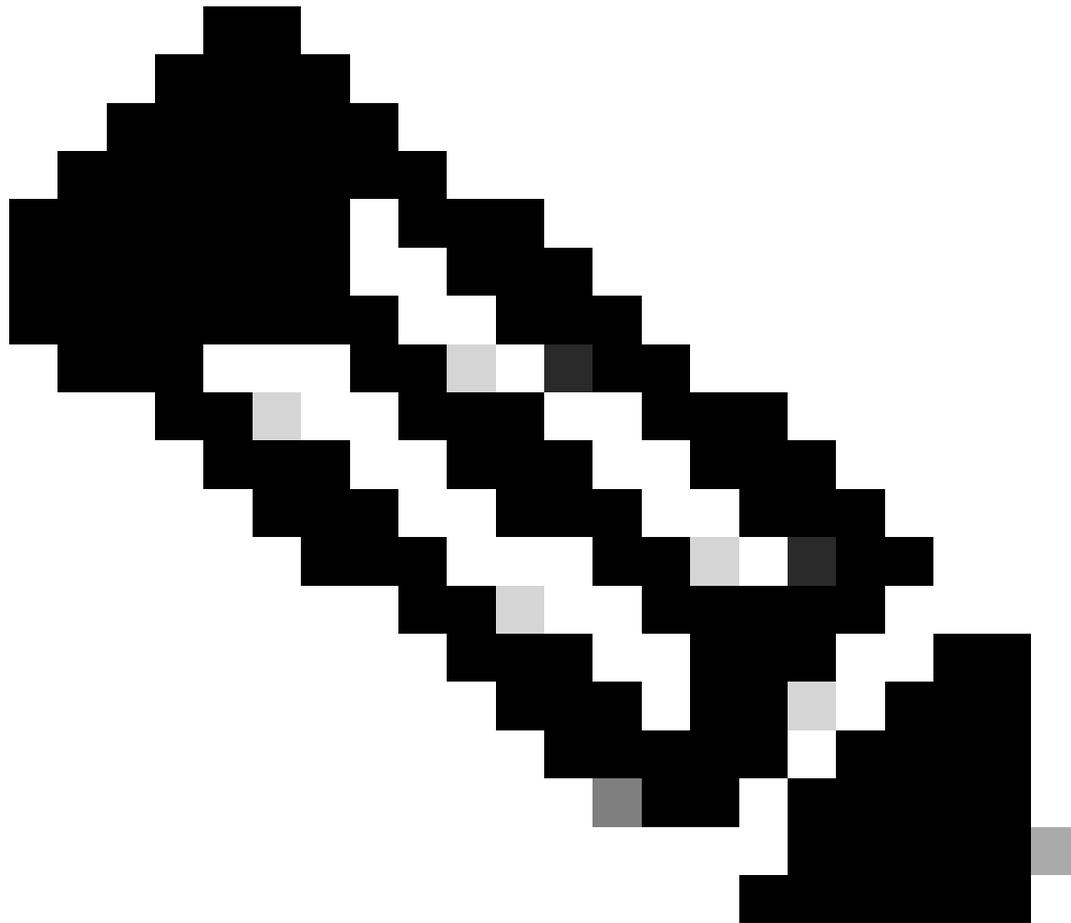
---

注：この例では、DHCPサーバのIPアドレスは10.10.10.150です。

---

```
LEAF-1(config)# interface v1an 10
LEAF-1(config-if)# ip dhcp relay address 10.10.10.150
```

ステップ 5：コマンド「ip dhcp relay source-interface [unique loopback]」を適用します。



注：このコマンドは、DHCPリレーエージェントがユニキャスト通信の検出、オファー、要求、およびACKを処理するために送信元IPアドレスを設定します。ユニキャスト通信では、DHCPリレーエージェントはSVIのIPアドレスをDHCPリレーエージェントの送信元IPアドレスとして使用します。このIPアドレスは複数のVTEPによって共有され、DHCPパケットのブラックホール化が発生する可能性があるため、これは望ましくありません。これを回避するには、一意のIPアドレス（ループバックインターフェイスを使用）を使用して各VTEPを区別する必要があります。

---

```
LEAF-1(config)# interface vlan 10
LEAF-1(config-if)# ip dhcp relay source-interface loopback100
```

手順 6：BGP内のVRF対応テナントで、ループバックインターフェイスのIPアドレスを含むプレフィックスリストとルートマップによる直接ルート再配布。

---

注：このループバックインターフェイスはSVIのテナントに属しています。

---

```
LEAF-1(config)# show running-config interface loopback 100
interface loopback100
  vrf member tenant-a
  ip address 172.16.10.8/32

LEAF-1(config)# ip prefix-list host_subnets seq 15 permit 172.16.10.8/32
LEAF-1(config)# route-map direct_routes_tenant-a permit 10
LEAF-1(config-route-map)# match ip address prefix-list host_subnets
LEAF-1(config-route-map)# router bgp 65000
LEAF-1(config-router)# vrf tenant-a
LEAF-1(config-router-vrf)# address-family ipv4 unicast
LEAF-1(config-router-vrf-af)# redistribute direct route-map direct_routes_tenant-a
```

手順 7： コマンド `show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]` を使用して、ループバックインターフェイスのIPアドレスがBGP L2VPN EVPNでスパインにアドバタイズされていることを確

認めます。

```
LEAF-1(config)# show bgp l2vpn evpn 172.16.10.8 vrf tenant-a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.5.5:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.8]/224, version 421
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn
```

```
Advertised path-id 1
Path type: local, path is valid, is best path, no labeled nexthop
Gateway IP: 0.0.0.0
AS-Path: NONE, path locally originated
 192.168.5.5 (metric 0) from 0.0.0.0 (192.168.5.5)
  Origin incomplete, MED 0, localpref 100, weight 32768
  Received label 303030
  Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:707d.b9b8.4daf
```

```
Path-id 1 advertised to peers:
 192.168.0.11 <<<< Spine
```

ステップ 8 : ループバックインターフェイスのIPアドレスが、DHCPサーバが配置されている BGP L2VPN EVPNに挿入されていることを確認します。

---

注：vPCにNexusスイッチがある場合は、両方ともBGP L2VPN EVPNのループバックインターフェイスのIPアドレスを学習していることを確認します。

---

```
LEAF-1# show bgp l2vpn evpn 172.16.10.8
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.5.5:4
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.8]/224, version 754
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in HW

Advertised path-id 1
Path type: internal, path is valid, is best path, no labeled nexthop
  Imported to 2 destination(s)
  Imported paths list: tenant-a L3-303030
Gateway IP: 0.0.0.0
AS-Path: NONE, path sourced internal to AS
  192.168.5.5 (metric 45) from 192.168.0.11 (192.168.0.11)
  Origin incomplete, MED 0, localpref 100, weight 0
  Received label 303030
  Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:707d.b9b8.4daf
  Originator: 192.168.5.5 Cluster list: 192.168.0.11
```

Path-id 1 not advertised to any peer

Route Distinguisher: 192.168.3.3:4 (L3VNI 303030)  
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.8]/224, version 761  
Paths: (1 available, best #1)  
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in HW

Advertised path-id 1  
Path type: internal, path is valid, is best path, no labeled nexthop  
Imported from 192.168.5.5:4:[5]:[0]:[0]:[32]:[172.16.10.8]/224  
Gateway IP: 0.0.0.0  
AS-Path: NONE, path sourced internal to AS  
192.168.5.5 (metric 45) from 192.168.0.11 (192.168.0.11)  
Origin incomplete, MED 0, localpref 100, weight 0  
Received label 303030  
Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:707d.b9b8.4daf  
Originator: 192.168.5.5 Cluster list: 192.168.0.11

Path-id 1 not advertised to any peer

ステップ 9 : show ip route [DHCP server IP] vrf [tenant vrf]コマンドを使用して、送信元テナント上にDHCPサーバへのルートが存在することを確認します。

---

注：使用するルートエントリは、VxLANからデフォルトのVRFである必要があります。  
使用可能なルートがない場合は、VTEPがDCHPサーバのIPアドレスをローカルに認識しているかどうかを確認します。

---

```
LEAF-1# show running-config interface vlan 10
interface Vlan10
  no shutdown
  vrf member tenant-a <<<< source tenant
  no ip redirects
  ip address 10.10.10.1/24
  no ipv6 redirects
  fabric forwarding mode anycast-gateway
  ip dhcp relay address 10.10.10.150 <<<< DHCP server
  ip dhcp relay source-interface loopback100
```

```
LEAF-1# show ip route 10.10.10.150 vrf tenant-a
10.10.10.150/32, ubest/mbest: 1/0
  *via 192.168.13.254%default, [200/0], 2w0d, bgp-65000, internal, tag 65000, segid: 303030 tunnelid:
```

ステップ 10 : ループバックインターフェイスを使用してDHCPサーバIPに到達できること、およびVRFソースとして対応するVRFに到達できることを、ping [DHCP server IP] source-interface loopback [x] vrf [tenant vrf]コマンドで確認します。

```
LEAF-1# ping 10.10.10.150 source-interface loopback 100 vrf tenant-a
PING 10.10.10.150 (10.10.10.150): 56 data bytes
64 bytes from 10.10.10.150: icmp_seq=0 ttl=126 time=1.262 ms
64 bytes from 10.10.10.150: icmp_seq=1 ttl=126 time=0.833 ms
64 bytes from 10.10.10.150: icmp_seq=2 ttl=126 time=0.808 ms
64 bytes from 10.10.10.150: icmp_seq=3 ttl=126 time=0.795 ms
64 bytes from 10.10.10.150: icmp_seq=4 ttl=126 time=0.78 ms

--- 10.10.10.150 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
```

ステップ 11DHCPリレーエージェントのステータスを確認します。

```
LEAF-1# show ip dhcp status
Current CLI Operation: show ip dhcp status
Last CLI Operation: DME: ip dhcp relay information option enable
Last CLI Operation Status: SUCCESS
```

ステップ 12vpnオプションなどのoption82と、リレーエージェントの下にある正しいリレーIPアドレスを確認します。

```
LEAF-1# show ip dhcp relay
DHCP relay service is enabled <<<<<<
Insertion of option 82 is enabled <<<<<<
Insertion of option 82 customize circuitid is disabled
TLV format in CircuitId and RemoteId suboptions is enabled
Insertion of VPN suboptions is enabled <<<<<<<
Insertion of cisco suboptions is disabled
Global smart-relay is disabled
Relay Trusted functionality is disabled
Relay Trusted Port is Globally disabled
V4 Relay Source Address HSRP is Globally disabled
Server-ID-override-disable is disabled
```

Smart-relay is enabled on the following interfaces:

-----

Subnet-broadcast is enabled on the following interfaces:

-----

Relay Trusted Port is enabled on the following interfaces:

-----

Relay Source Address HSRP is enabled on the following interfaces:

-----  
Helper addresses are configured on the following interfaces:

Interface	Relay Address	VRF Name
Vlan10	10.10.10.150	<<<<<<<<<

ステップ 13処理および転送されたパケットの統計情報を確認します。

```
LEAF-1# show ip dhcp global statistics
Packets processed 1297177
Packets received through cfsoe 0
Packets forwarded 1297175
Packets forwarded on cfsoe 0
Total packets dropped 0
Packets dropped from untrusted ports 0
Packets dropped due to MAC address check failure 0
Packets dropped due to Option 82 insertion failure 0
Packets dropped due to o/p intf unknown 0
Packets dropped which were unknown 0
Packets dropped due to no trusted ports 0
Packets dropped due to dhcp relay not enabled 0
Packets dropped due to no binding entry 0
Packets dropped due to interface error/no interface 0
Packets dropped due to max hops exceeded 0
Packets dropped due to Queue full 0
```

ステップ 14 : リレーパケットの統計情報を確認します。

```
LEAF-1# show ip dhcp relay statistics
```

```
-----
Message Type           Rx             Tx             Drops
-----
Discover                260521         260520         0
Offer                   289330         289330         0
Request(*)              267162         267161         0
Ack                      8322          8322          0
Release(*)              181121         181121         0
Decline                  1              1              0
Inform(*)                0              0              0
Nack                     289280         289280         0
-----
Total                   1295737         1295735         0
-----
```

DHCP L3 FWD:

```
Total Packets Received      :      0
Total Packets Forwarded     :      0
Total Packets Dropped       :      0
Non DHCP:
Total Packets Received      :      0
Total Packets Forwarded     :      0
```

```
Total Packets Dropped          :          0
DROP:
DHCP Relay not enabled         :          0
Invalid DHCP message type      :          0
Interface error                 :          0
Tx failure towards server      :          0
Tx failure towards client      :          0
Unknown output interface       :          0
Unknown vrf or interface for server :          0
Max hops exceeded              :          0
Option 82 validation failed    :          0
Packet Malformed                :          0
DHCP Request dropped on MCT    :          0
Relay Trusted port not configured :          0
* - These counters will show correct value when switch
receives DHCP request packet with destination ip as broadcast
address. If request is unicast it will be HW switched
```

## リーフ1-vPC DHCP

ステップ 1 : DHCP機能を有効にします。

```
LEAF-1-VPC(config)#feature dhcp
```

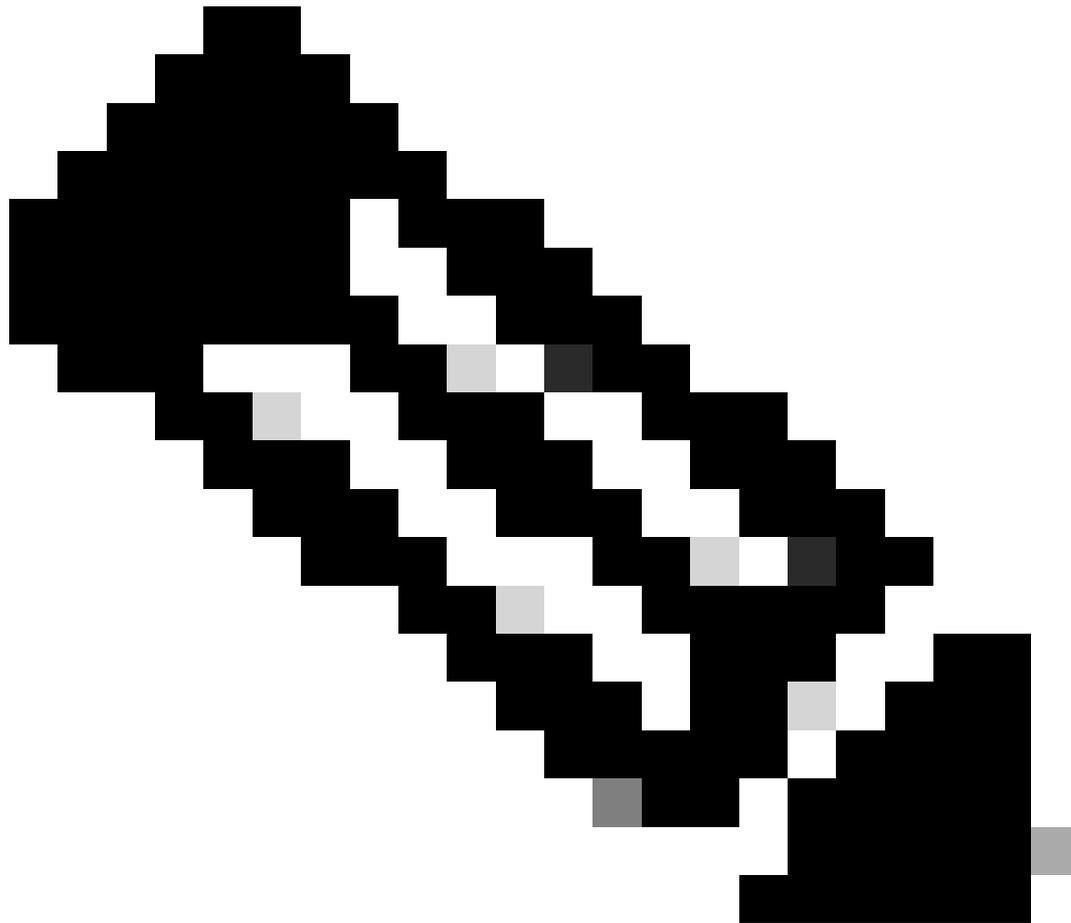
---

注:NX-OS 7.x以降、DHCPサーバおよびリレーエージェントコマンドservice dhcp、ip dhcp relay、およびipv6 dhcp relayはデフォルトで有効になっています。

---

ステップ 2 : コマンドip dhcp relay information optionを適用します。

```
LEAF-1-VPC(config)#ip dhcp relay information option
```

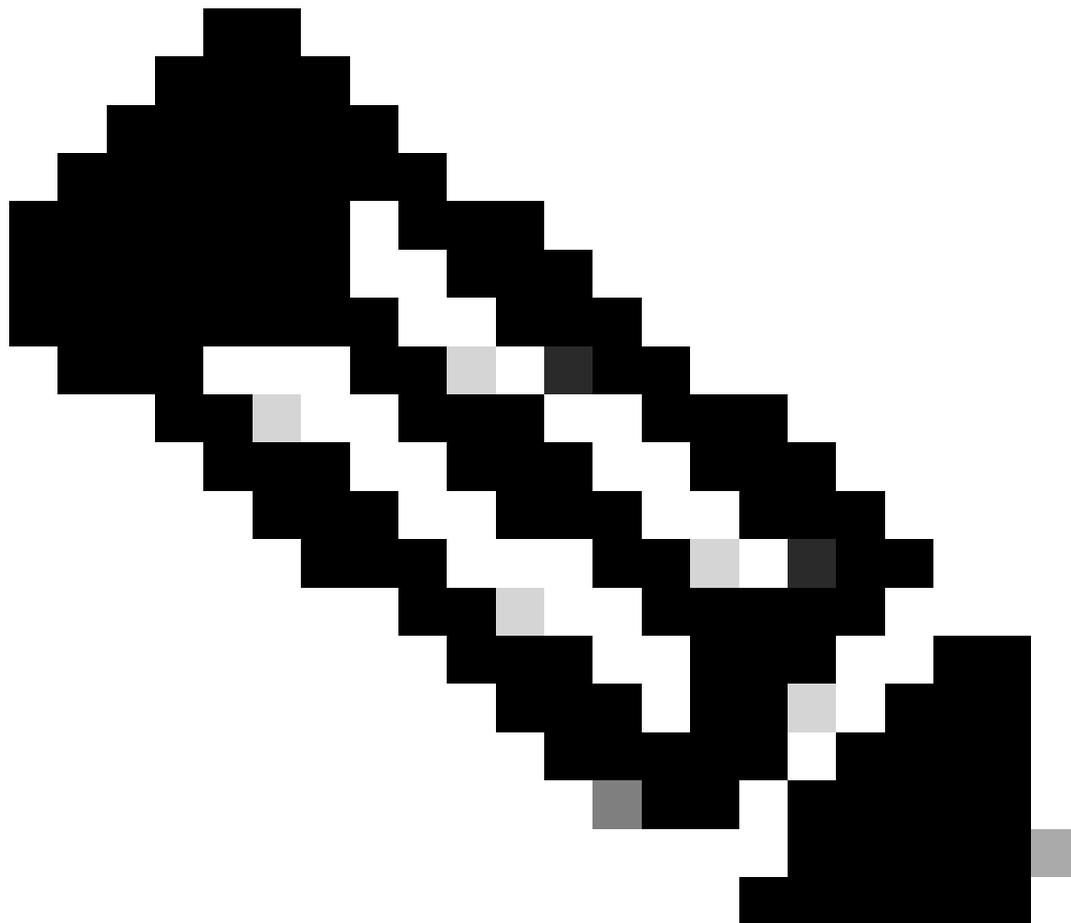


注：このコマンドを使用すると、DHCPリレーエージェントは、転送されるパケットに関するOption 82情報の挿入と削除を実行できます。

---

ステップ 3：コマンド「ip dhcp relay information option vpn」を適用します。

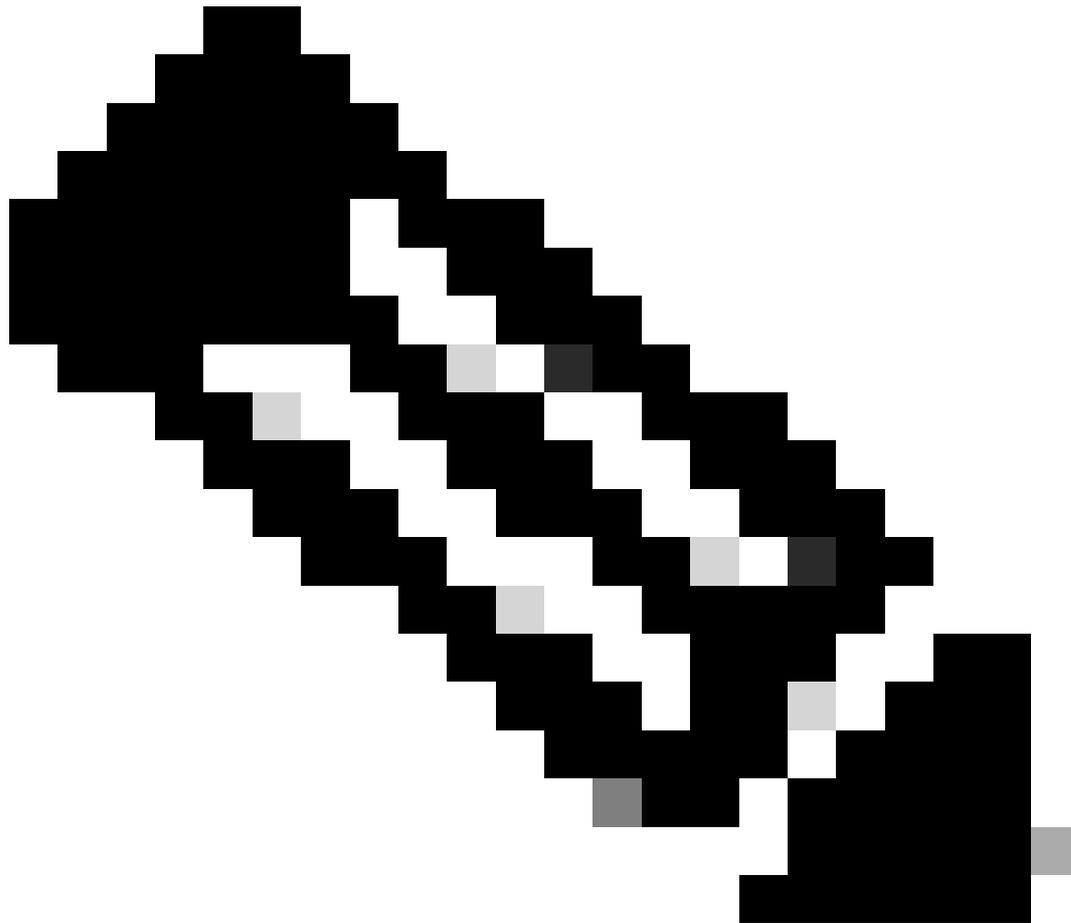
```
LEAF-1-VPC(config)# ip dhcp relay information option vpn
```



注：このコマンドは、DHCPサーバが属している異なるVRFに到着するDHCPリレー要求をイネーブルにします。

---

ステップ 4 : コマンド `ip dhcp relay address [ip address of DHCP server]` を適用します。

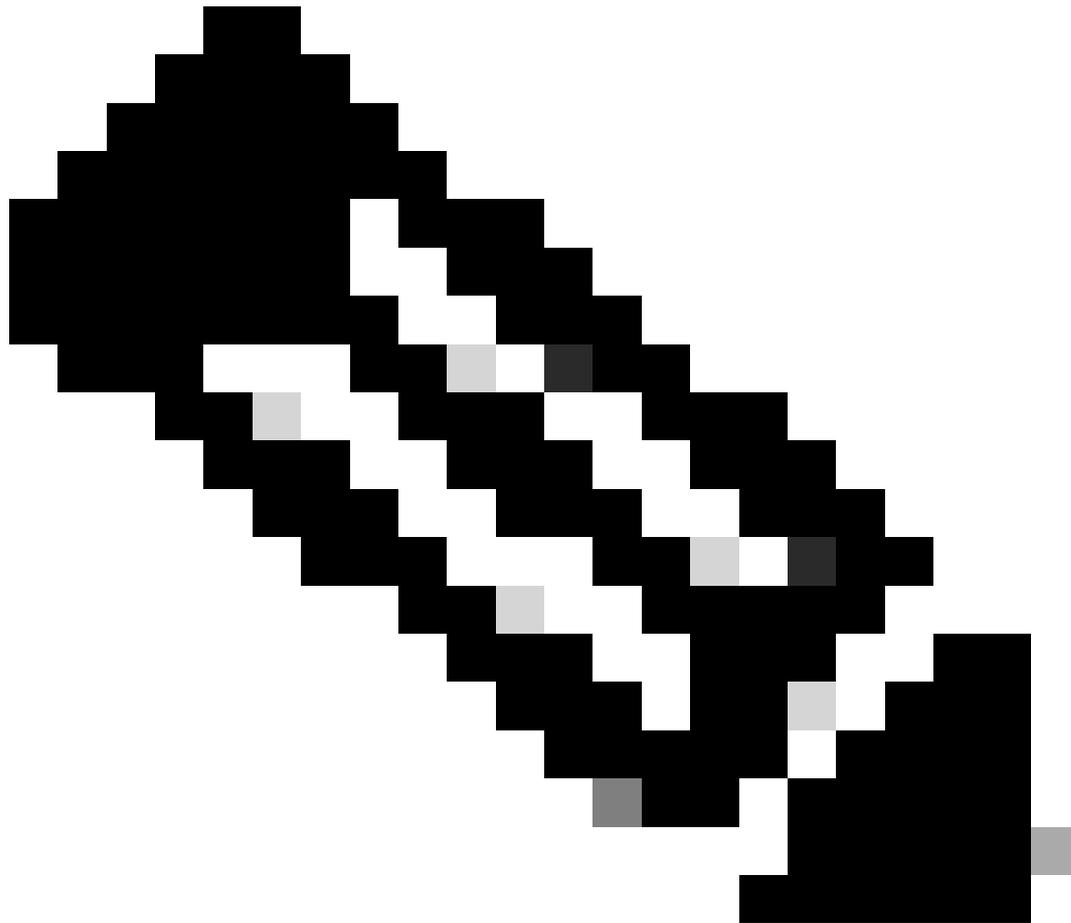


注：この例では、DCHPサーバのIPアドレスは10.10.10.150です。

---

```
LEAF-1-VPC(config)#interface vlan 10  
LEAF-1-VPC(config-if)#ip dhcp relay address 10.10.10.150
```

ステップ 5 : コマンド「ip dhcp relay source-interface [unique loopback]」を適用します。



注：このコマンドは、DHCPリレーエージェントがユニキャスト通信の検出、オファー、要求、およびACKを処理するために送信元IPアドレスを設定します。ユニキャスト通信では、DHCPリレーエージェントはSVIのIPアドレスをDHCPリレーエージェントの送信元IPアドレスとして使用します。このIPアドレスは複数のVTEPによって共有され、DHCPパケットのブラックホール化が発生する可能性があるため、これは望ましくありません。これを回避するには、一意のIPアドレス（ループバックインターフェイスを使用）を使用して各VTEPを区別する必要があります。

---

```
LEAF-1-VPC(config)#interface vlan 10  
LEAF-1-VPC(config-if)# ip dhcp relay source-interface loopback100
```

手順 6：BGP内のVRF対応テナントで、ループバックインターフェイスのIPアドレスを含むプレフィックスリストとルートマップによる直接ルート再配布。

---

注：このループバックインターフェイスはSVIのテナントに属しています。

---

```
LEAF-1-VPC(config)# show running-config interface loopback 100
interface loopback100
  vrf member tenant-a
  ip address 172.16.10.9/32

LEAF-1-VPC(config)# ip prefix-list host_subnets seq 15 permit 172.16.10.9/32
LEAF-1-VPC(config)# route-map direct_routes_tenant-a permit 10
LEAF-1-VPC(config-route-map)# match ip address prefix-list host_subnets
LEAF-1-VPC(config-route-map)# router bgp 65000
LEAF-1-VPC(config-router)# vrf tenant-a
LEAF-1-VPC(config-router-vrf)# address-family ipv4 unicast
LEAF-1-VPC(config-router-vrf-af)# redistribute direct route-map direct_routes_tenant-a
```

手順 7：コマンド `show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]` を使用して、ループバックインターフェイスのIPアドレスがBGP L2VPN EVPNでスパインにアドバタイズされていることを確認します。

```
LEAF-1-VPC# show bgp l2vpn evpn 172.16.10.9 vrf tenant-a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.3.3:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.9]/224, version 637
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn
```

```
Advertised path-id 1
Path type: local, path is valid, is best path, no labeled nexthop
Gateway IP: 0.0.0.0
AS-Path: NONE, path locally originated
  192.168.13.1 (metric 0) from 0.0.0.0 (192.168.3.3)
    Origin incomplete, MED 0, localpref 100, weight 32768
    Received label 303030
    Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:6026.aa85.9887
```

```
Path-id 1 advertised to peers:
  192.168.0.11
```

ステップ 8 : ループバックインターフェイスのIPアドレスが、DHCPサーバが配置されている BGP L2VPN EVPNに挿入されていることを確認します。

---

注：vPCにNexusスイッチがある場合は、両方ともBGP L2VPN EVPNのループバックインターフェイスのIPアドレスを学習していることを確認します。

---

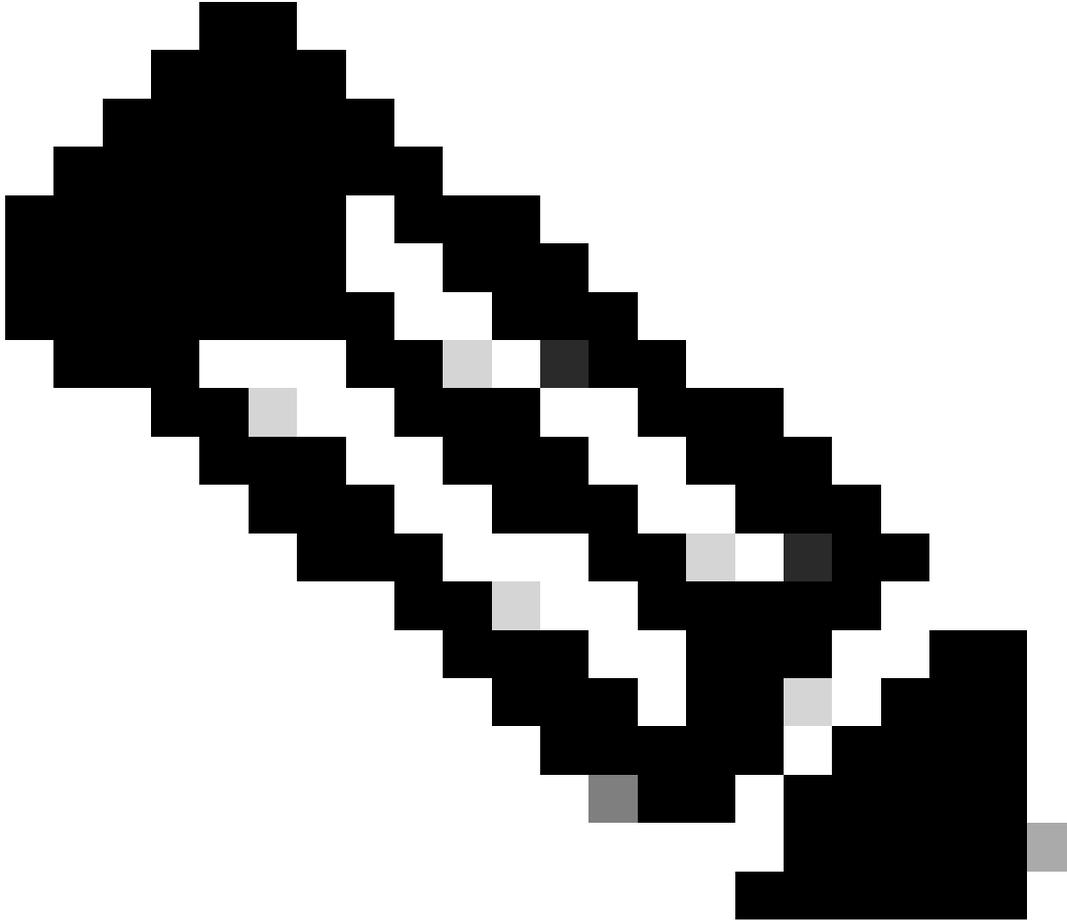
```
LEAF-1-VPC# show bgp l2vpn evpn 172.16.10.9
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.3.3:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.9]/224, version 637
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn
```

```
Advertised path-id 1
Path type: local, path is valid, is best path, no labeled nexthop
Gateway IP: 0.0.0.0
AS-Path: NONE, path locally originated
 192.168.13.1 (metric 0) from 0.0.0.0 (192.168.3.3)
  Origin incomplete, MED 0, localpref 100, weight 32768
  Received label 303030
  Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:6026.aa85.9887
```

```
Path-id 1 advertised to peers:
 192.168.0.11
```

ステップ 9 : show ip route [DHCP server IP] vrf[tenant vrf]コマンドを使用して、送信元テナント上にDHCPサーバへのルートが存在することを確認します。

---



注 : 使用するルートエントリは、VxLANからデフォルトのVRFである必要があります。使用可能なルートがない場合は、VTEPがDCHPサーバのIPアドレスをローカルに認識しているかどうかを確認します。

---

```
LEAF-1-VPC# show running-config interface vlan 10
interface Vlan10
  no shutdown
  vrf member tenant-a <<<< source tenant
  no ip redirects
  ip address 10.10.10.1/24
  no ipv6 redirects
  fabric forwarding mode anycast-gateway
  ip dhcp relay address 10.10.10.150
  ip dhcp relay source-interface loopback100
```

```
LEAF-1-VPC# show ip route 10.10.10.150 vrf tenant-a
10.10.10.150/32, ubest/mbest: 1/0, attached
    *via 10.10.10.150, Vlan10, [190/0], 6d07h, hmm
```

ステップ 10 : コマンド ping [DHCP server IP] source-interface loopback [x] vrf [tenvrf] を使用して、ループバックインターフェイスと VRF ソースとしての対応する VRF を使用して DHCP サーバ IP に到達できることを確認します。

```
LEAF-1-VPC# ping 10.10.10.150 source-interface loopback 100 vrf tenant-a
PING 10.10.10.150 (10.10.10.150): 56 data bytes
64 bytes from 10.10.10.150: icmp_seq=0 ttl=126 time=0.965 ms
64 bytes from 10.10.10.150: icmp_seq=1 ttl=126 time=0.57 ms
64 bytes from 10.10.10.150: icmp_seq=2 ttl=126 time=0.488 ms
64 bytes from 10.10.10.150: icmp_seq=3 ttl=126 time=0.524 ms
64 bytes from 10.10.10.150: icmp_seq=4 ttl=126 time=0.502 ms

--- 10.10.10.150 ping statistics ---
```

ステップ 11 DHCP リレーエージェントのステータスを確認します。

```
LEAF-1-VPC# show ip dhcp status
Current CLI Operation: show ip dhcp status
Last CLI Operation: DME: ip dhcp relay information option vpn enable
Last CLI Operation Status: SUCCESS
```

ステップ 12 vpn オプションなどの option 82 と、リレーエージェントの下にある正しいリレー IP アドレスを確認します。

```
LEAF-1-VPC# show ip dhcp relay
DHCP relay service is enabled <<<<<<
Insertion of option 82 is enabled <<<<<<<
Insertion of option 82 customize circuitid is disabled
TLV format in CircuitId and RemoteId suboptions is enabled
Insertion of VPN suboptions is enabled <<<<<<<
Insertion of cisco suboptions is disabled
Global smart-relay is disabled
Relay Trusted functionality is disabled
Relay Trusted Port is Globally disabled
V4 Relay Source Address HSRP is Globally disabled
Server-ID-override-disable is disabled
```

Smart-relay is enabled on the following interfaces:

-----

Subnet-broadcast is enabled on the following interfaces:

-----

Relay Trusted Port is enabled on the following interfaces:

Relay Source Address HSRP is enabled on the following interfaces:

Helper addresses are configured on the following interfaces:

Interface	Relay Address	VRF Name
Vlan10	10.10.10.150	<<<<<<<<<

ステップ 13処理および転送されたパケットの統計情報を確認します。

```
LEAF-1-VPC# show ip dhcp global statistics
Packets processed 263162
Packets received through cfsoe 0
Packets forwarded 263161
Packets forwarded on cfsoe 0
Total packets dropped 0
Packets dropped from untrusted ports 0
Packets dropped due to MAC address check failure 0
Packets dropped due to Option 82 insertion failure 0
Packets dropped due to o/p intf unknown 0
Packets dropped which were unknown 0
Packets dropped due to no trusted ports 0
Packets dropped due to dhcp relay not enabled 0
Packets dropped due to no binding entry 0
Packets dropped due to interface error/no interface 0
Packets dropped due to max hops exceeded 0
Packets dropped due to Queue full 0
```

ステップ 14 : リレーパケットの統計情報を確認します。

LEAF-1-VPC# show ip dhcp relay statistics

Message Type	Rx	Tx	Drops
Discover	8	7	0
Offer	29304	29304	0
Request(*)	5029	5029	0
Ack	6535	6535	0
Release(*)	191482	191482	0
Decline	0	0	0
Inform(*)	3	3	0
Nack	29281	29281	0
Total	261642	261641	0

DHCP L3 FWD:

Total Packets Received : 0

```
Total Packets Forwarded      :      0
Total Packets Dropped        :      0
Non DHCP:
Total Packets Received       :      0
Total Packets Forwarded     :      0
Total Packets Dropped       :      0
DROP:
DHCP Relay not enabled      :      0
Invalid DHCP message type   :      0
Interface error             :      0
Tx failure towards server   :      0
Tx failure towards client   :      0
Unknown output interface    :      0
Unknown vrf or interface for server :      0
Max hops exceeded           :      0
Option 82 validation failed :      0
Packet Malformed            :      0
DHCP Request dropped on MCT :      0
Relay Trusted port not configured :      0
* - These counters will show correct value when switch
receives DHCP request packet with destination ip as broadcast
address. If request is unicast it will be HW switched
```

## リーフ2-vPC DHCP

ステップ 1 : DHCP機能を有効にします。

```
LEAF-2-VPC(config)# feature dhcp
```

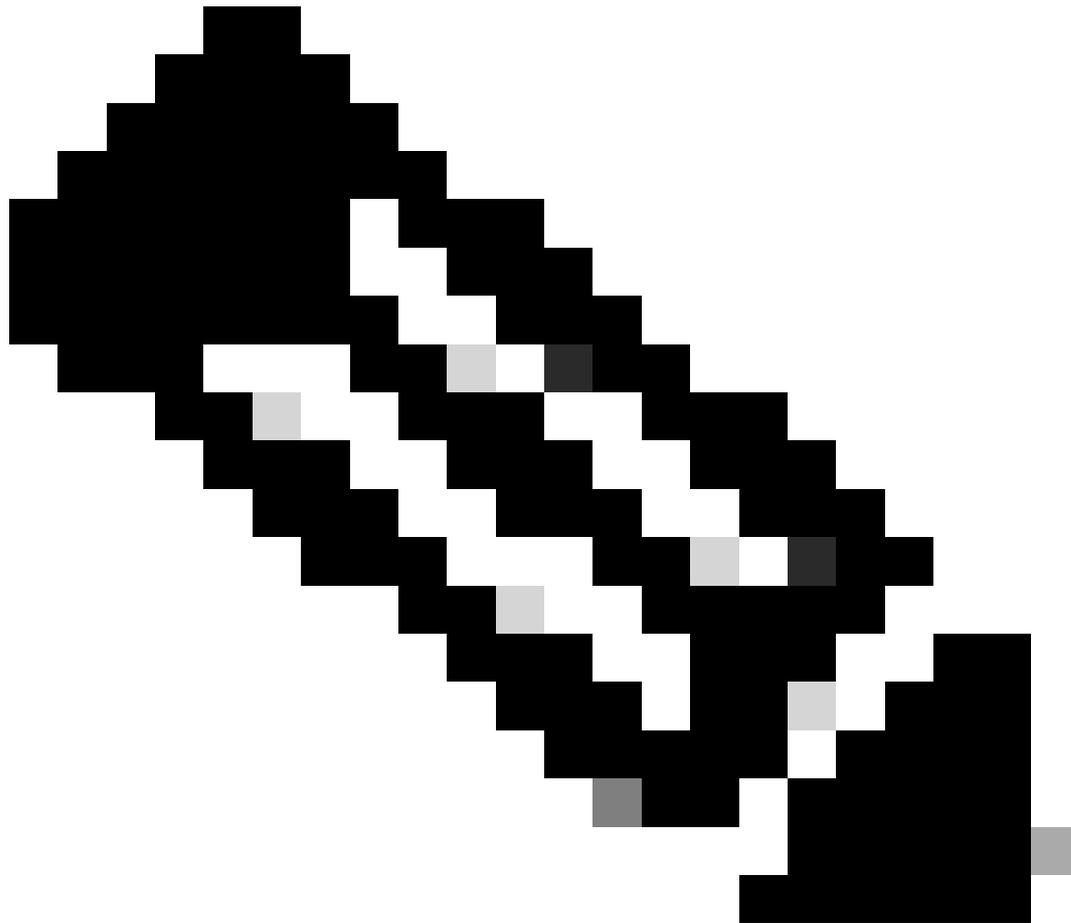
---

注：NX-OS 7.x以降、DHCPサーバおよびリレーエージェントコマンドservice dhcp、ip dhcp relay、およびipv6 dhcp relayはデフォルトで有効になっています。

---

ステップ 2：コマンド「ip dhcp relay information option」を適用します。

```
LEAF-2-VPC(config)# ip dhcp relay information option
```

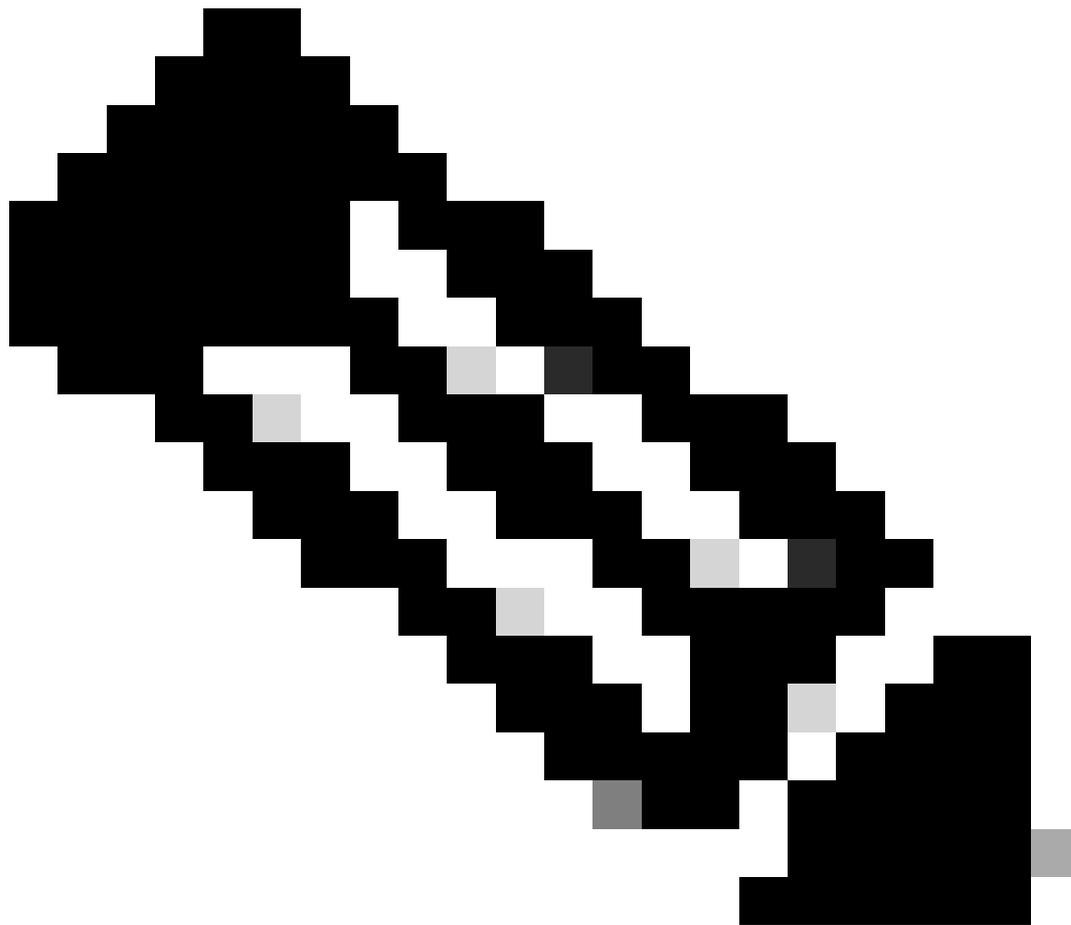


注：このコマンドを使用すると、DHCPリレーエージェントは、転送されるパケットに関するOption 82情報の挿入と削除を実行できます。

---

ステップ 3：コマンド「ip dhcp relay information option vpn」を適用します。

```
LEAF-2-VPC(config)# ip dhcp relay information option vpn
```



注：このコマンドは、DHCPサーバが属している異なるVRFに到着するDHCPリレー要求をイネーブルにします。

---

ステップ 4：コマンド「ip dhcp relay address [ip address of DHCP server]」を適用します。

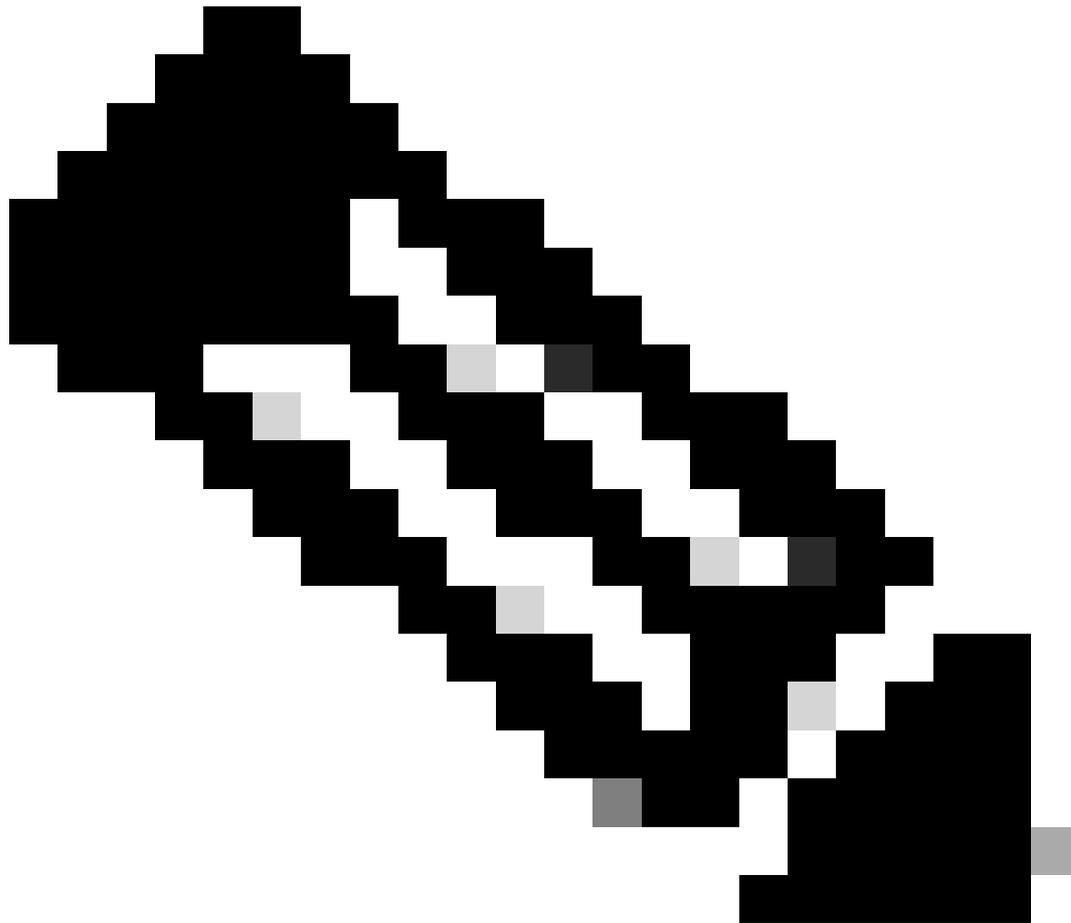
---

注：この例では、DCHPサーバのIPアドレスは10.10.10.150です。

---

```
LEAF-2-VPC(config)# interface vlan 10
LEAF-2-VPC(config-if)# ip dhcp relay address 10.10.10.150
```

ステップ 5 : コマンド「ip dhcp relay source-interface [unique loopback]」を適用します。



注：このコマンドは、DHCPリレーエージェントがユニキャスト通信の検出、オファー、要求、およびACKを処理するために送信元IPアドレスを設定します。ユニキャスト通信では、DHCPリレーエージェントはSVIのIPアドレスをDHCPリレーエージェントの送信元IPアドレスとして使用します。このIPアドレスは複数のVTEPによって共有され、DHCPパケットのブラックホール化が発生する可能性があるため、これは望ましくありません。これを回避するには、一意のIPアドレス（ループバックインターフェイスを使用）を使用して各VTEPを区別する必要があります。

```
LEAF-2-VPC(config)# interface vlan 10  
LEAF-2-VPC(config-if)# ip dhcp relay source-interface loopback 100
```

手順 6：BGP内のVRF対応テナントで、ループバックインターフェイスのIPアドレスを含むプレフィックスリストとルートマップによる直接ルート再配布。

---

注：このループバックインターフェイスはSVIのテナントに属しています。

---

```
LEAF-2-VPC(config-if)# show running-config interface loopback 100
interface loopback100
  vrf member tenant-a
  ip address 172.16.10.10/32

LEAF-2-VPC(config)# ip prefix-list host_subnets seq 15 permit 172.16.10.10/32
LEAF-2-VPC(config)# route-map direct_routes_tenant-a permit 10
LEAF-2-VPC(config-route-map)# match ip address prefix-list host_subnets
LEAF-2-VPC(config-route-map)# router bgp 65000
LEAF-2-VPC(config-router)# vrf tenant-a
LEAF-2-VPC(config-router-vrf)# address-family ipv4 unicast
LEAF-2-VPC(config-router-vrf-af)# redistribute direct route-map direct_routes_tenant-a
```

手順 7：コマンド `show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]` を使用して、ループバックインターフェイスのIPアドレスがBGP L2VPN EVPNでスパインにアドバタイズされていることを確認します。

```
LEAF-2-VPC(config-if)# show bgp l2vpn evpn 172.16.10.10 vrf tenant-a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.4.4:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.10]/224, version 49
5
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn

Advertised path-id 1
Path type: local, path is valid, is best path, no labeled nexthop
Gateway IP: 0.0.0.0
AS-Path: NONE, path locally originated
 192.168.13.2 (metric 0) from 0.0.0.0 (192.168.4.4)
  Origin incomplete, MED 0, localpref 100, weight 32768
  Received label 303030
  Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:6026.aa85.9587

Path-id 1 advertised to peers:
 192.168.0.11 <<<<< Spine
```

ステップ 8 : ループバックインターフェイスのIPアドレスが、DHCPサーバが配置されている BGP L2VPN EVPNに挿入されていることを確認します。

---

注：vPCにNexusスイッチがある場合は、両方ともBGP L2VPN EVPNのループバックインターフェイスのIPアドレスを学習していることを確認します。

---

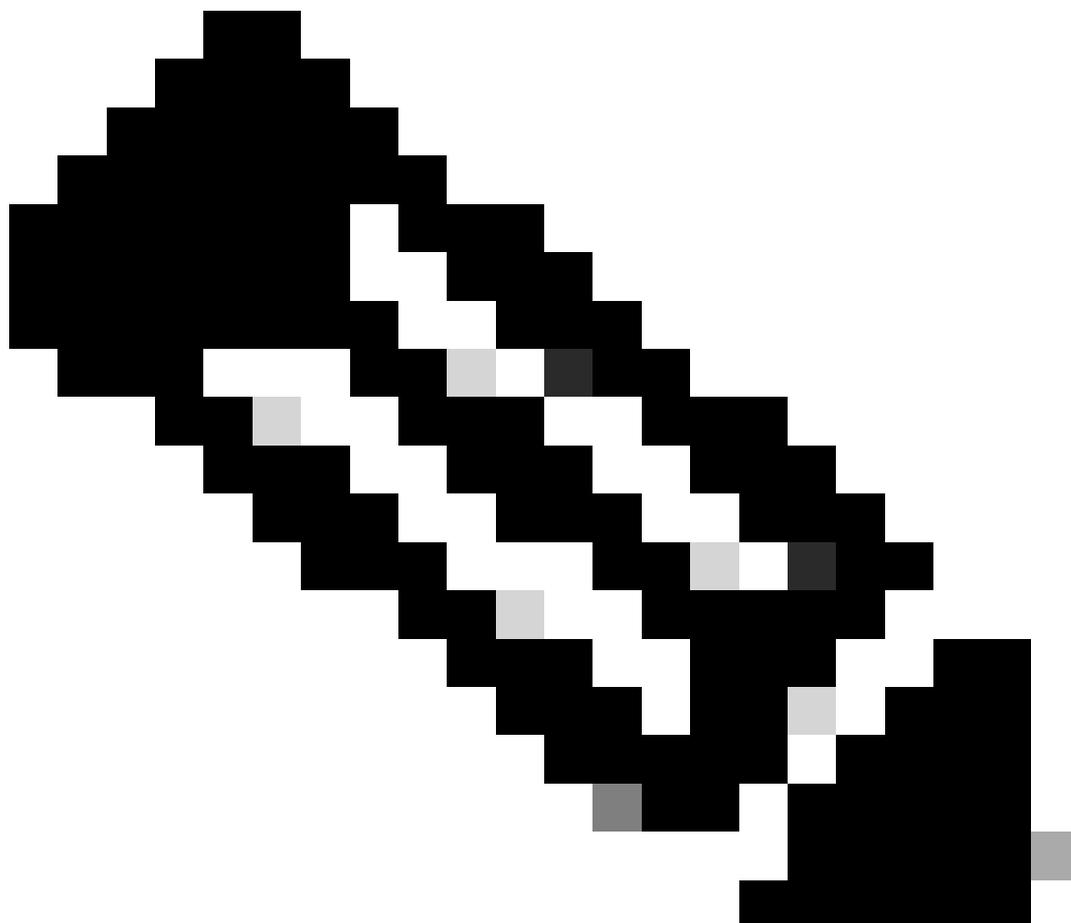
```
LEAF-2-VPC(config-if)# show bgp l2vpn evpn 172.16.10.10
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.4.4:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.10]/224, version 49
5
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn

Advertised path-id 1
Path type: local, path is valid, is best path, no labeled nexthop
Gateway IP: 0.0.0.0
AS-Path: NONE, path locally originated
 192.168.13.2 (metric 0) from 0.0.0.0 (192.168.4.4)
  Origin incomplete, MED 0, localpref 100, weight 32768
  Received label 303030
  Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:6026.aa85.9587

Path-id 1 advertised to peers:
```

ステップ 9 : show ip route [DHCP server IP] vrf[tenvrf]コマンドを使用して、送信元テナント上に DHCPサーバへのルートが存在することを確認します。

---



注：使用するルートエントリは、VxLANからデフォルトのVRFである必要があります。使用可能なルートがない場合は、VTEPがDCHPサーバのIPアドレスをローカルに認識しているかどうかを確認します。

---

```
LEAF-2-VPC(config-if)# show running-config interface vlan 10
interface Vlan10
  no shutdown
  vrf member tenant-a
  no ip redirects
  ip address 10.10.10.1/24
  no ipv6 redirects
  fabric forwarding mode anycast-gateway
  ip dhcp relay address 10.10.10.150
```

```
ip dhcp relay source-interface loopback100
```

```
LEAF-2-VPC(config-if)# show ip route 10.10.10.150 vrf tenant-a  
10.10.10.150/32, ubest/mbest: 1/0, attached  
*via 10.10.10.150, Vlan10, [190/0], 01:01:28, hmm
```

ステップ 10 : ループバックインターフェイスを使用してDHCPサーバIPに到達できること、およびVRFソースとして対応するVRFに到達できることを、ping [DHCP server IP] source-interface loopback [x] vrf [tenant vrf]コマンドで確認します。

```
LEAF-2-VPC(config-if)# ping 10.10.10.150 source-interface loopback 100 vrf tenant-a  
PING 10.10.10.150 (10.10.10.150): 56 data bytes  
64 bytes from 10.10.10.150: icmp_seq=0 ttl=127 time=0.928 ms  
64 bytes from 10.10.10.150: icmp_seq=1 ttl=127 time=0.475 ms  
64 bytes from 10.10.10.150: icmp_seq=2 ttl=127 time=0.455 ms  
64 bytes from 10.10.10.150: icmp_seq=3 ttl=127 time=0.409 ms  
64 bytes from 10.10.10.150: icmp_seq=4 ttl=127 time=0.465 ms  
  
--- 10.10.10.150 ping statistics ---
```

ステップ 11DHCPリレーエージェントのステータスを確認します。

```
LEAF-2-VPC(config)# show ip dhcp status  
Current CLI Operation: show ip dhcp status  
Last CLI Operation: DME: ip dhcp relay information option vpn enable  
Last CLI Operation Status: SUCCESS
```

ステップ 12vpnオプションなどのoption82と、リレーエージェントの下にある正しいリレーIPアドレスを確認します。

```
LEAF-2-VPC(config)# show ip dhcp relay  
DHCP relay service is enabled <<<<<<<<<  
Insertion of option 82 is enabled <<<<<<<<<<<<  
Insertion of option 82 customize circuitid is disabled  
TLV format in CircuitId and RemoteId suboptions is enabled  
Insertion of VPN suboptions is enabled <<<<<<<<  
Insertion of cisco suboptions is disabled  
Global smart-relay is disabled  
Relay Trusted functionality is disabled  
Relay Trusted Port is Globally disabled  
V4 Relay Source Address HSRP is Globally disabled  
Server-ID-override-disable is disabled
```

```
Smart-relay is enabled on the following interfaces:  
-----
```

```
Subnet-broadcast is enabled on the following interfaces:
```

-----  
Relay Trusted Port is enabled on the following interfaces:  
-----

Relay Source Address HSRP is enabled on the following interfaces:  
-----

Helper addresses are configured on the following interfaces:

Interface	Relay Address	VRF Name
Vlan10	10.10.10.150	<<<<

ステップ 13処理および転送されたパケットの統計情報を確認します。

```
LEAF-2-VPC(config)# show ip dhcp global statistics
Packets processed 103030
Packets received through cfsoe 0
Packets forwarded 103030
Packets forwarded on cfsoe 0
Total packets dropped 0
Packets dropped from untrusted ports 0
Packets dropped due to MAC address check failure 0
Packets dropped due to Option 82 insertion failure 0
Packets dropped due to o/p intf unknown 0
Packets dropped which were unknown 0
Packets dropped due to no trusted ports 0
Packets dropped due to dhcp relay not enabled 0
Packets dropped due to no binding entry 0
Packets dropped due to interface error/no interface 0
Packets dropped due to max hops exceeded 0
Packets dropped due to Queue full 0
```

ステップ 14 : リレーパケットの統計情報を確認します。

```
LEAF-2-VPC# show ip dhcp relay statistics
```

Message Type	Rx	Tx	Drops
Discover	29312	29311	0
Offer	300001	300001	0
Request(*)	29324	29324	0
Ack	1574	1574	0
Release(*)	191493	191493	0
Decline	0	0	0
Inform(*)	1540	1540	0
Nack	472890	472890	0
Total	1026134	1026133	0

```

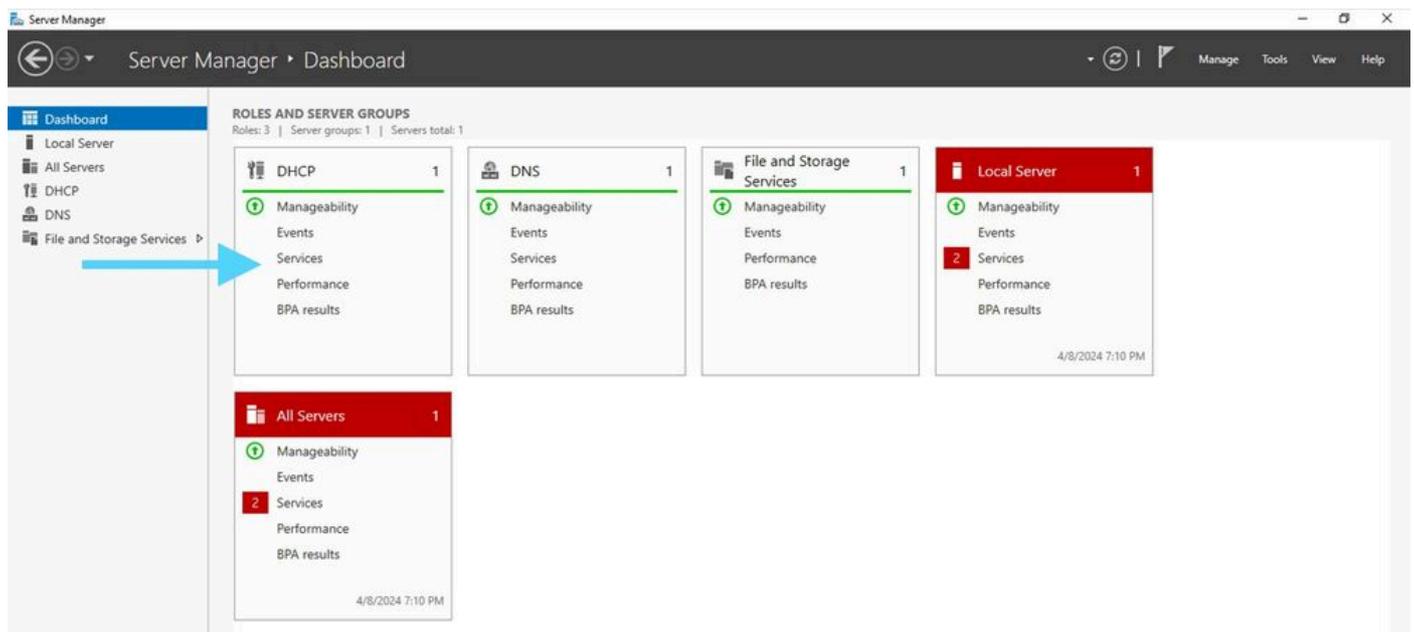
DHCP L3 FWD:
Total Packets Received      :      0
Total Packets Forwarded    :      0
Total Packets Dropped      :      0
Non DHCP:
Total Packets Received      :      0
Total Packets Forwarded    :      0
Total Packets Dropped      :      0
DROP:
DHCP Relay not enabled     :      0
Invalid DHCP message type  :      0
Interface error            :      0
Tx failure towards server  :      0
Tx failure towards client  :      0
Unknown output interface   :      0
Unknown vrf or interface for server :      0
Max hops exceeded          :      0
Option 82 validation failed :      0
Packet Malformed           :      0
DHCP Request dropped on MCT :      0
Relay Trusted port not configured :      0
* - These counters will show correct value when switch
receives DHCP request packet with destination ip as broadcast
address. If request is unicast it will be HW switched

```

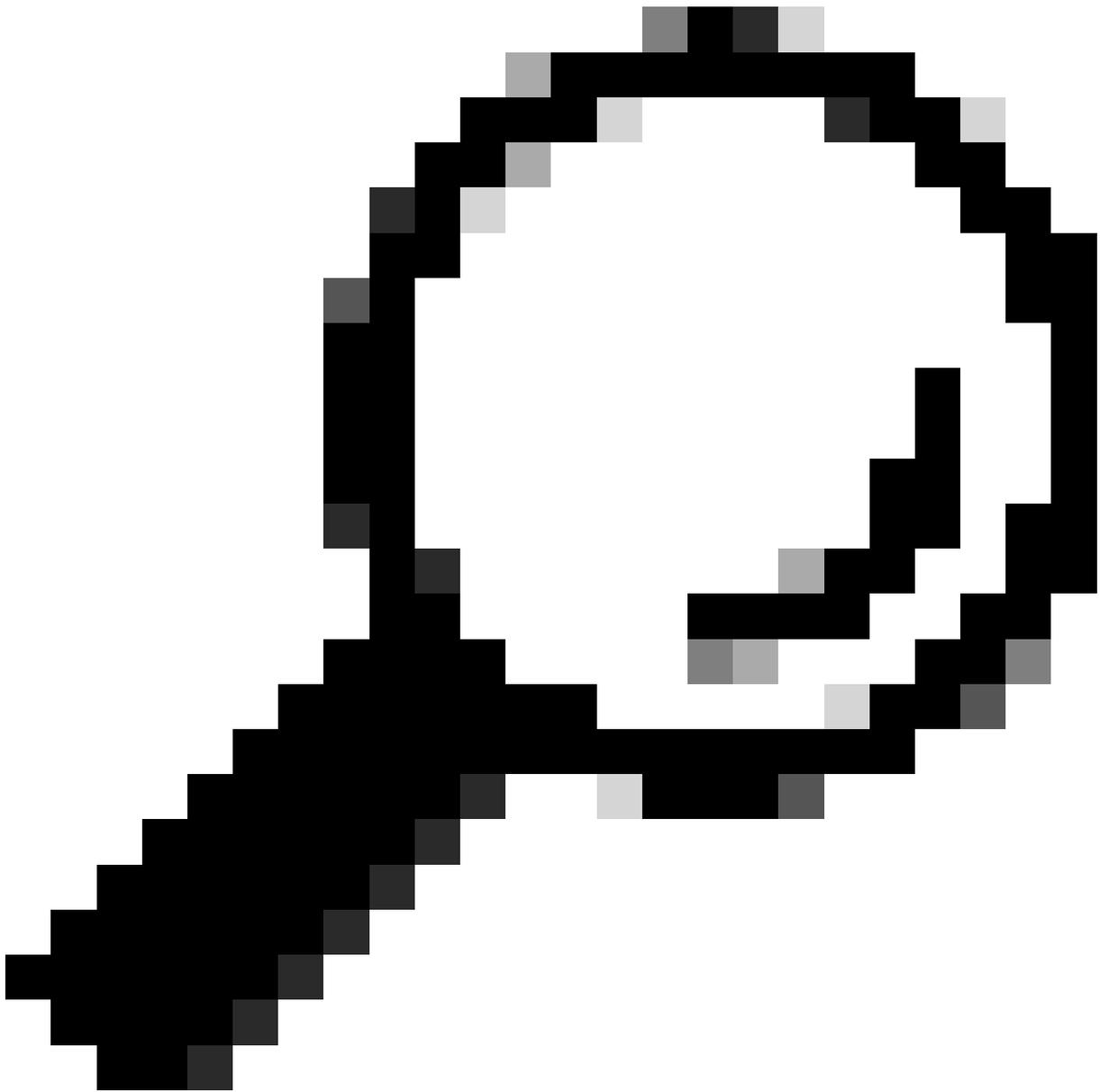
## Windows Server 2022でのDHCPサーバの設定

ホストのIPアドレス範囲の設定。

ステップ 1：サーバマネージャを開き、ダッシュボードにDCHPサーバのアラームがないことを確認します。



Windows Server 2022のサーバマネージャーからのダッシュボード



ヒント：ダブルクリックすると画像が拡大します。

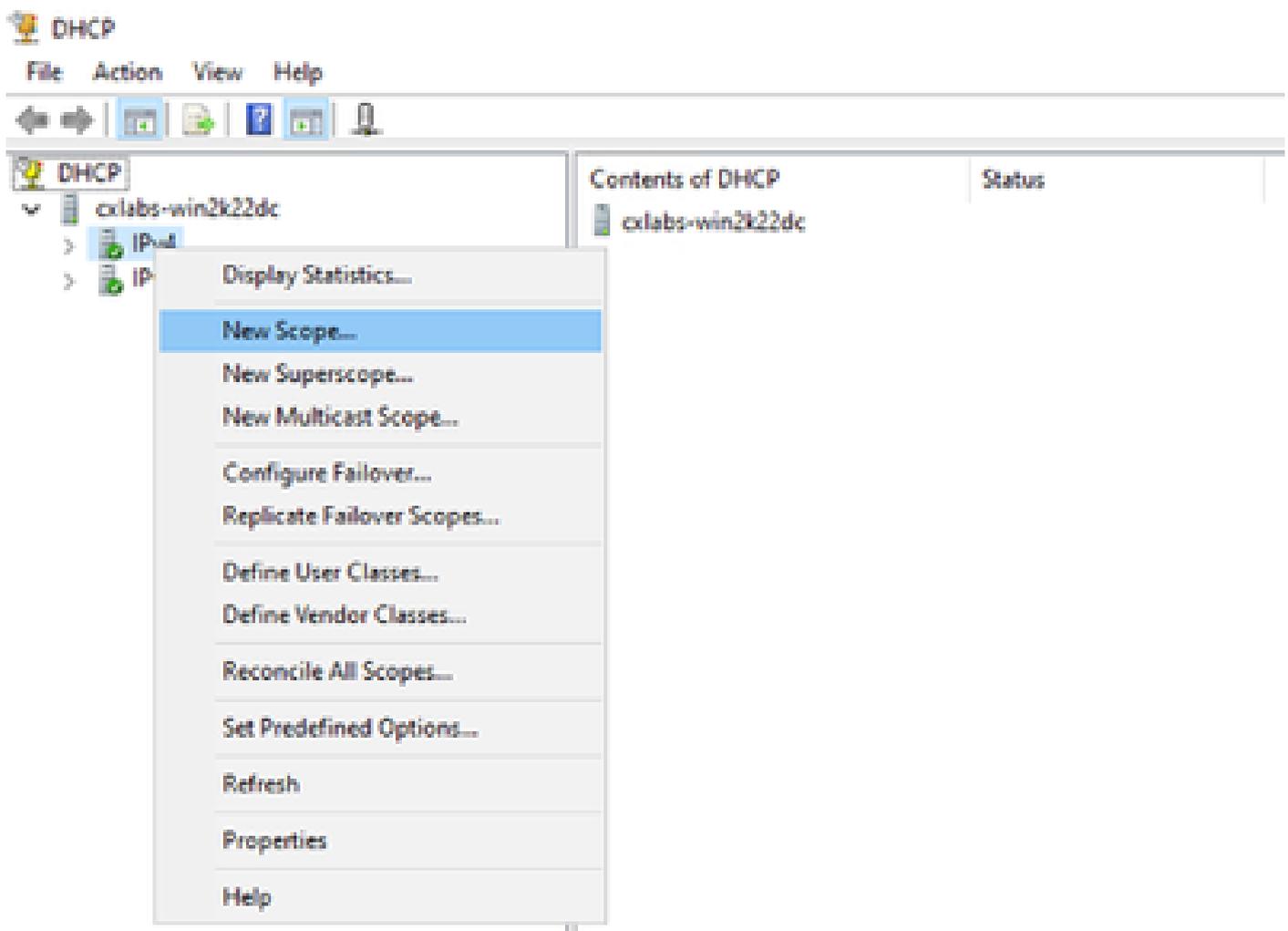
---

ステップ 2：DHCPサーバアプリケーションを開きます。

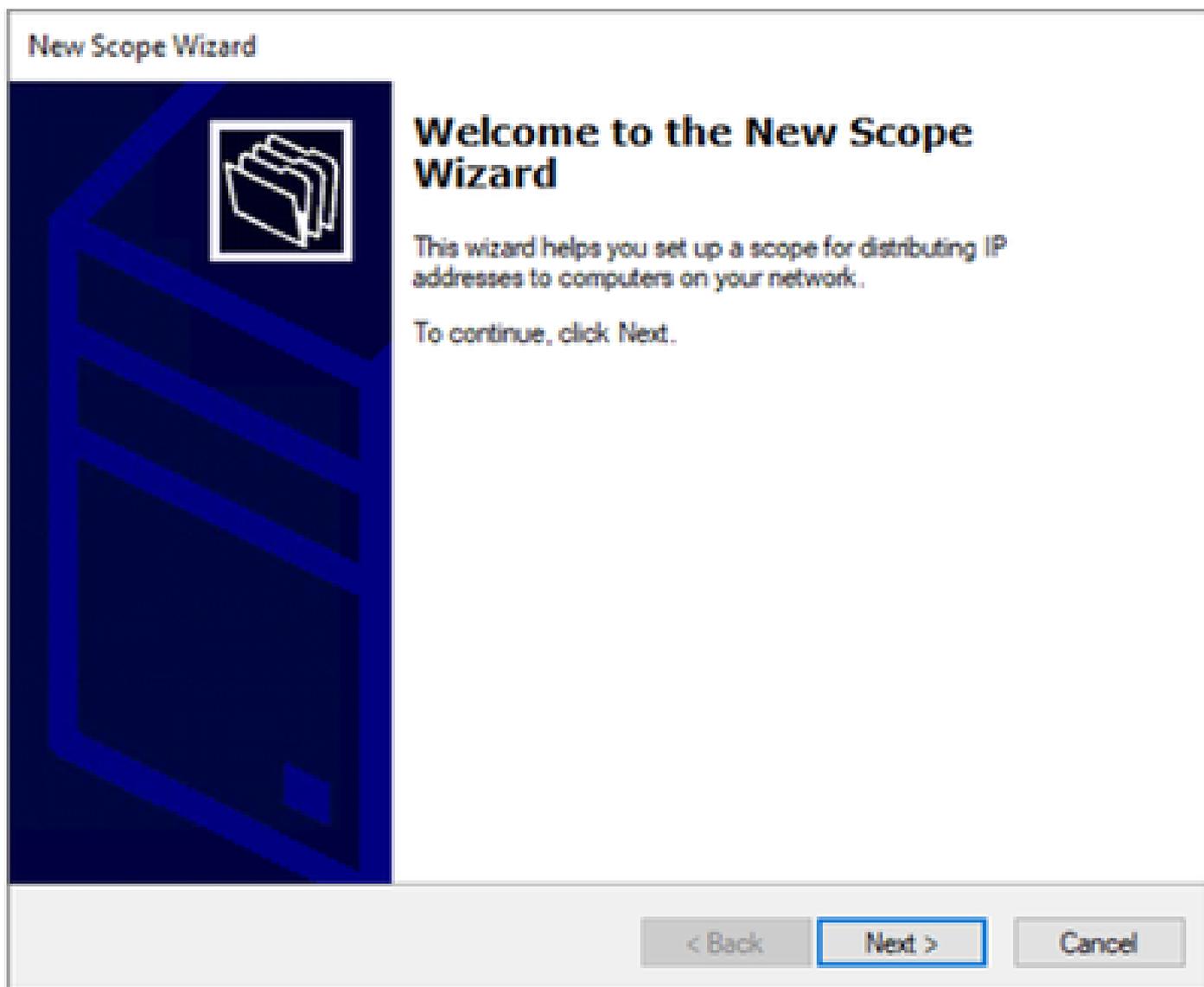


Windows Server 2022上のDHCPサーバ

ステップ 3 : IPv4を右クリックし、New Scopeをクリックします。



ステップ 4 : [Next] をクリックします。



ステップ 5 : 名前と説明を入力します。この例では、名前はVLAN 10に属するサブネットで、説明はVLAN 10にリストされているL2VNIとしてのL2VNIです。

## New Scope Wizard

### Scope Name

You have to provide an identifying scope name. You also have the option of providing a description.



Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.

Name:

Description:

< Back

Next >

Cancel

手順 6 : IPアドレス範囲を設定します。これはホスト用のプールです。

## New Scope Wizard

### IP Address Range

You define the scope address range by identifying a set of consecutive IP addresses.



#### Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

#### Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back

Next >

Cancel

手順 6 : VTEPのSVI設定から共有IPアドレスを除外します。この例では、インターフェイス VLAN 10のアドレスはIP.10.10.1/24です。



警告: SVI (またはデフォルトゲートウェイ) からIPアドレスを除外しないと、IPアドレスが重複し、トラフィック配信に影響を与える可能性があります。

---

```
LEAF-1# show running-config interface v1an 10
<snip>
interface V1an10
  no shutdown
  vrf member tenant-a
  no ip redirects
  ip address 10.10.10.1/24
  no ipv6 redirects
  fabric forwarding mode anycast-gateway
  ip dhcp relay address 10.10.10.150
  ip dhcp relay source-interface loopback100
```

## New Scope Wizard

### Add Exclusions and Delay

Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCP OFFER message.



Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.

Start IP address:

End IP address:

Add

Excluded address range:

Address 10.10.10.1

Remove

Subnet delay in milli second:

< Back

Next >

Cancel

手順 7 : IPアドレスのリース期間を設定します。これは、ホストが割り当てられたIPアドレスを更新する前に使用できる時間を示します。

## New Scope Wizard

### Lease Duration

The lease duration specifies how long a client can use an IP address from this scope.



Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days:

Hours:

Minutes:

< Back

Next >

Cancel

ステップ 8 : Yes, I want to configure these options nowを選択します。

## New Scope Wizard

### Configure DHCP Options

You have to configure the most common DHCP options before clients can use the scope.



When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that scope.

The settings you select here are for this scope and override settings configured in the Server Options folder for this server.

Do you want to configure the DHCP options for this scope now?

- Yes, I want to configure these options now
- No, I will configure these options later

< Back

Next >

Cancel

ステップ 9 : デフォルトゲートウェイのIPアドレスを設定します。

## New Scope Wizard

### Router (Default Gateway)

You can specify the routers, or default gateways, to be distributed by this scope.



To add an IP address for a router used by clients, enter the address below.

IP address:

Add

Remove

Up

Down

< Back

Next >

Cancel

ステップ 10 : ドメイン名とDNSサーバを設定します。

## New Scope Wizard

### Domain Name and DNS Servers

The Domain Name System (DNS) maps and translates domain names used by clients on your network.



You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

Parent domain:

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name:

IP address:

ステップ 11 必要に応じて WINS サーバを設定します。情報が不明な場合は、この操作をスキップできます。

## New Scope Wizard

### WINS Servers

Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.



Entering server IP addresses here enables Windows clients to query WINS before they use broadcasts to register and resolve NetBIOS names.

Server name:

Resolve

IP address:

Add

Remove

Up

Down

To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.

< Back

Next >

Cancel

ステップ 12 Yes, I want to activate this scope now を選択します。

## New Scope Wizard

### Activate Scope

Clients can obtain address leases only if a scope is activated.



Do you want to activate this scope now?

- Yes, I want to activate this scope now
- No, I will activate this scope later

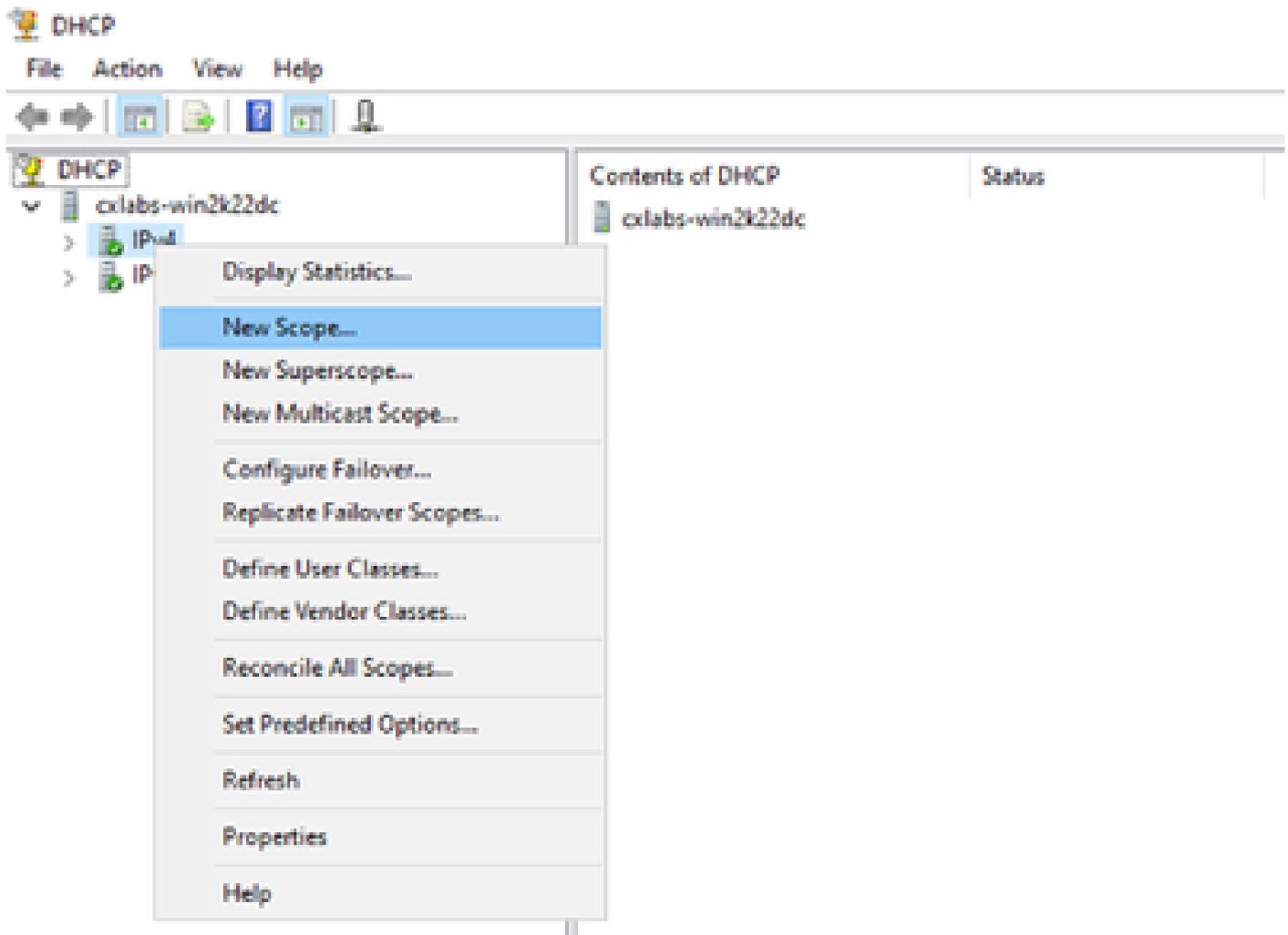
< Back

Next >

Cancel

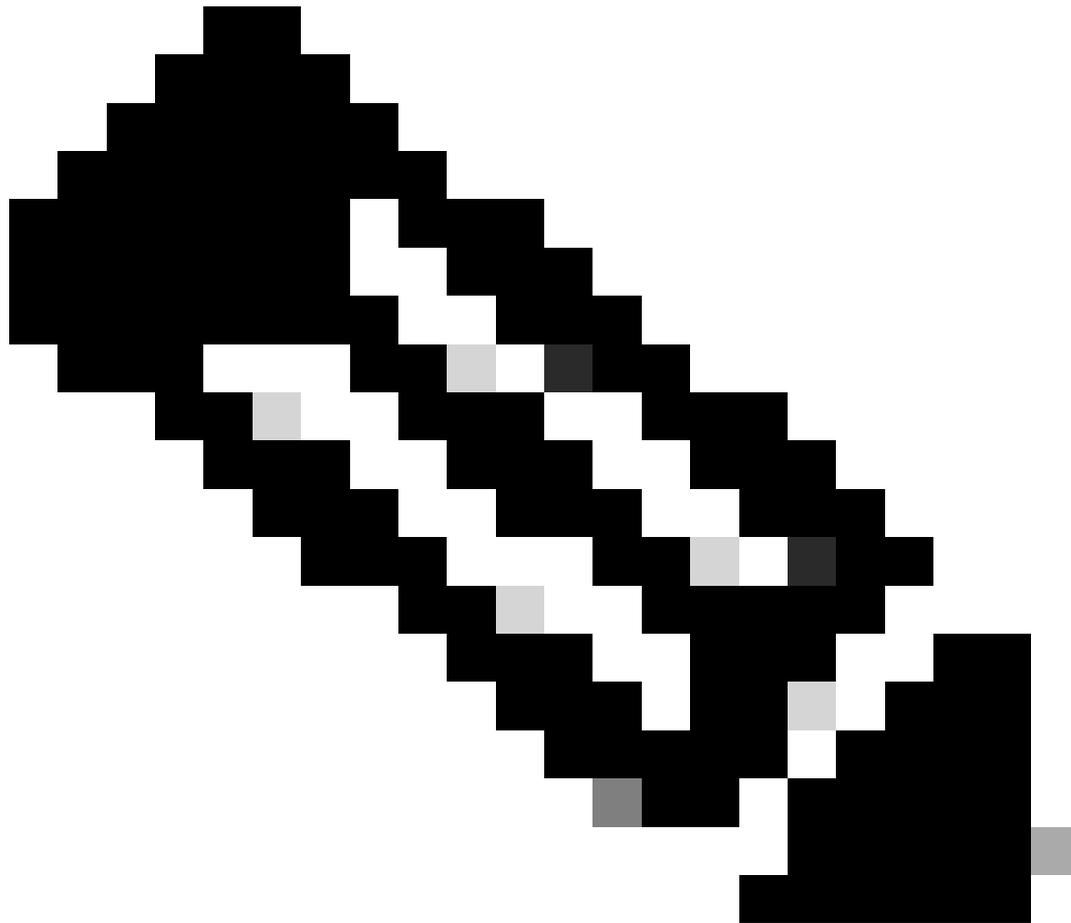
SVIのループバックから一意のIPアドレスのスコープをDCHPリレーエージェントとして設定する。

ステップ 1 : IPv4を右クリックし、IPv4Scopeを選択します。



DCHPの新しいスコープ

ステップ 2：名前と説明を入力します。この例では、nameはループバックアドレスのサブネットに使用されるサブネットです。



IPte : ループバックは、VxLANテナントのVxLANファブリック全体でループバックの一  
意のIPアドレスとして使用されます。これは、IPv4アドレスfamIPv4内の対応するテナン  
トのVRF内のBGP L2VPN EVPNルート再配布でアドバタイズする必要があります

---

```
LEAF-1# show running-config interface loopback 100
<snip>
interface loopback100
  vrf member tenant-a
  ip address 172.16.10.8/32
```

## New Scope Wizard

### Scope Name

You have to provide an identifying scope name. You also have the option of providing a description.



Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.

Name:

Description:

ステップ 3 : IPアドレスrangeIPを設定します。これはループバック用のプールです。

## New Scope Wizard

### IP Address Range

You define the scope address range by identifying a set of consecutive IP addresses.



#### Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

#### Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back

Next >

Cancel

ステップ 4 : 除外を設定します ( DHCPサーバがこのサブネットに属するIPアドレスをリースするため、オプションです )。

## New Scope Wizard

### Add Exclusions and Delay

Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCP OFFER message.



Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.

Start IP address:

End IP address:

Add

Excluded address range:

Remove

Subnet delay in milli second:

< Back

Next >

Cancel

ステップ 5 : リース期間をスキップして、Nextをクリックします。

## New Scope Wizard

### Lease Duration

The lease duration specifies how long a client can use an IP address from this scope.



Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days:

Hours:

Minutes:

< Back

Next >

Cancel

手順 6 : No, I will configure these options laterを選択します。

## New Scope Wizard

### Configure DHCP Options

You have to configure the most common DHCP options before clients can use the scope.



When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that scope.

The settings you select here are for this scope and override settings configured in the Server Options folder for this server.

Do you want to configure the DHCP options for this scope now?

- Yes, I want to configure these options now
- No, I will configure these options later

< Back

Next >

Cancel

手順 7 : [Finish] をクリックします。



## Completing the New Scope Wizard

You have successfully completed the *New Scope* wizard.

Before clients can receive addresses you need to do the following:

1. Add any scope specific options (optional).
2. Activate the scope.

To provide high availability for this scope, configure failover for the newly added scope by right clicking on the scope and clicking on *configure failover*.

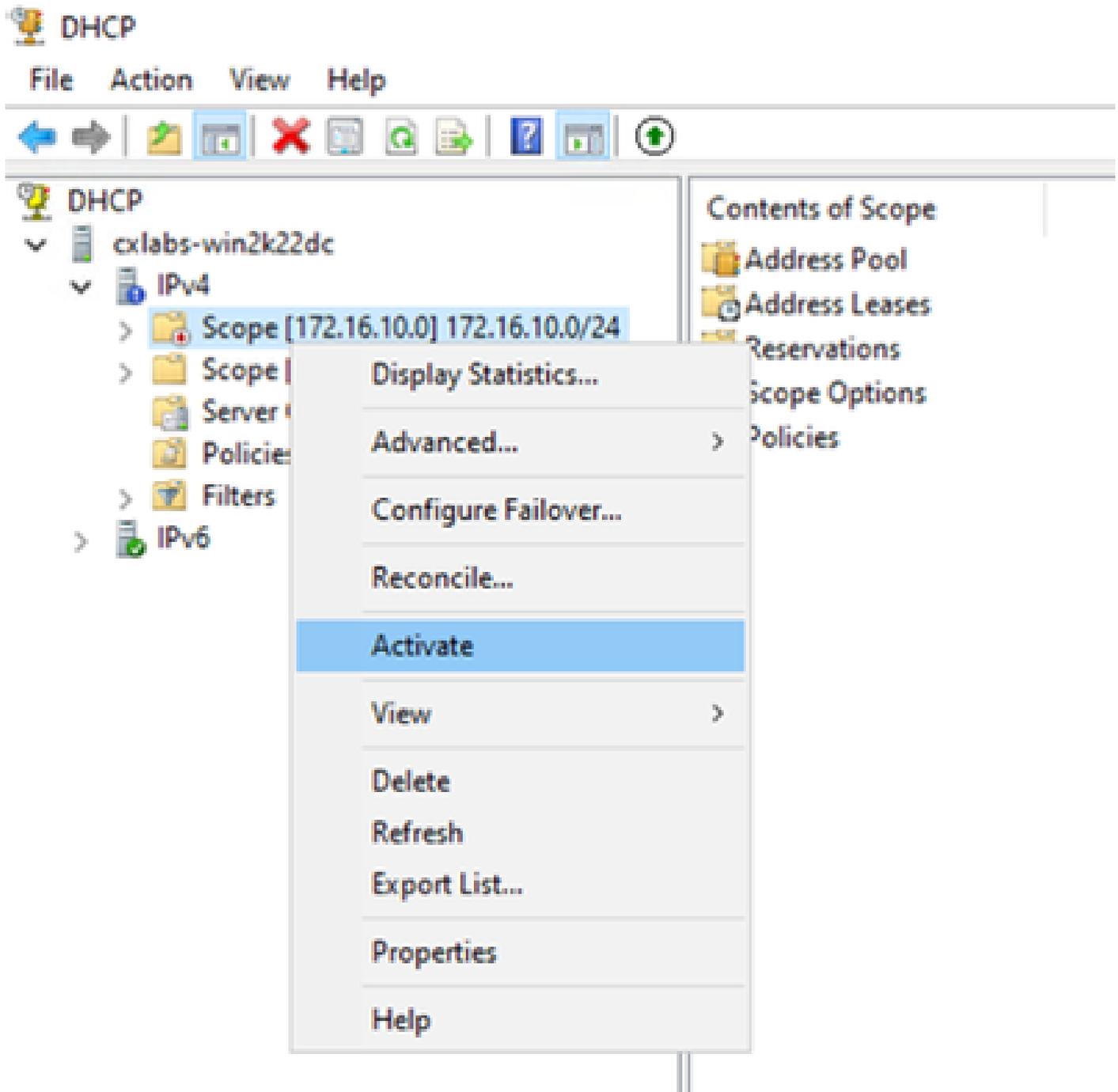
To close this wizard, click *Finish*.

< Back

Finish

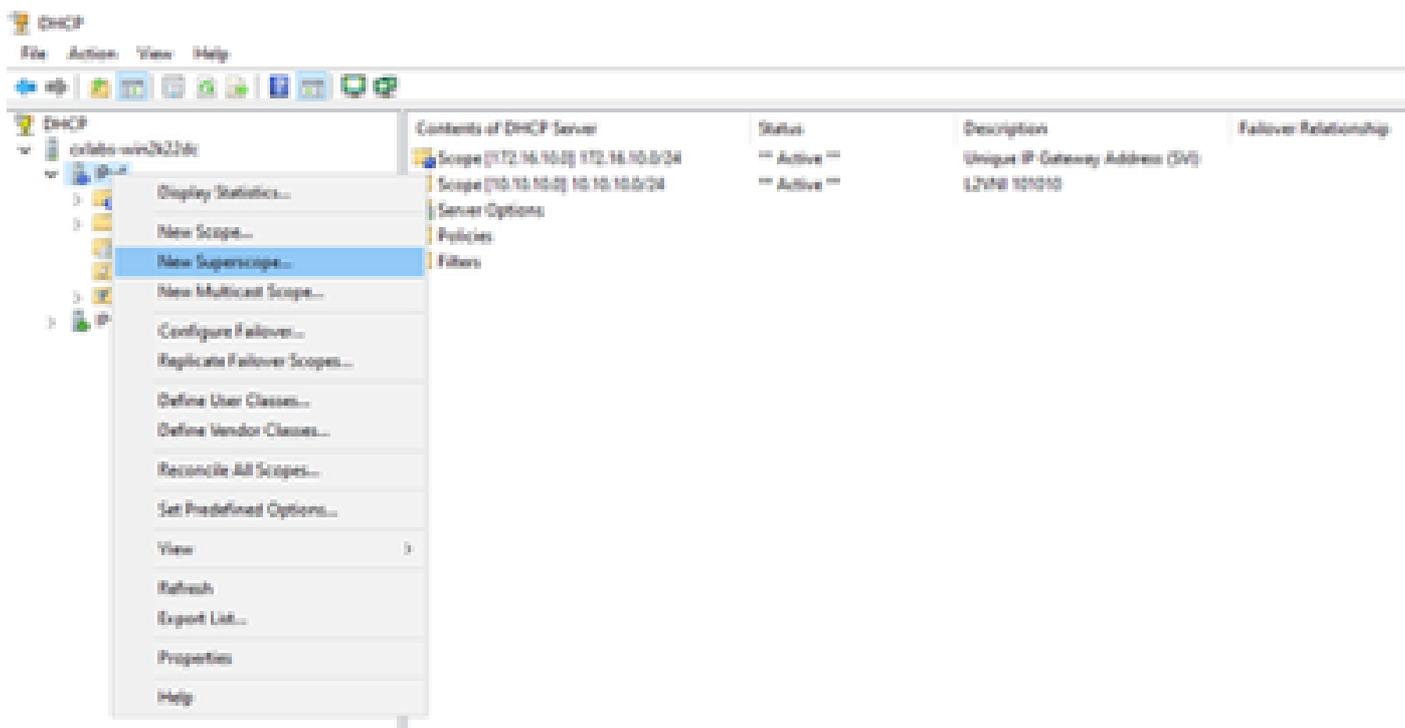
Cancel

ステップ 8 : 作成したスコープを右クリックし、activateを選択します。

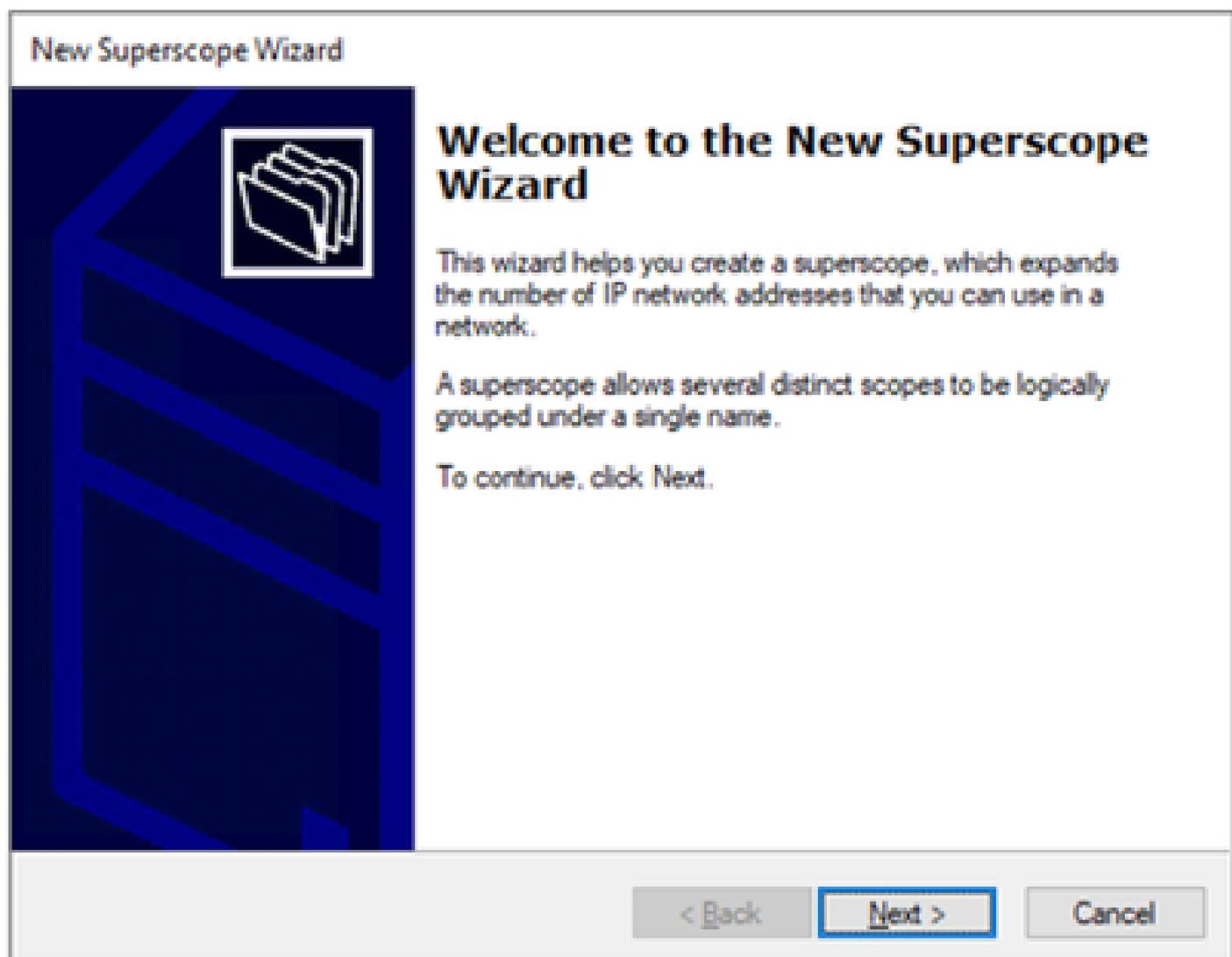


VxLANファブリックのスーパースコープを構成しています。

ステップ 1 : IPv4を右クリックし、New Superscopeを選択します。



ステップ 2 : [Next] をクリックします。



ステップ 3 : スーパースコープ名を書き込みます。

New Superscope Wizard

**Superscope Name**  
You have to provide an identifying superscope name.



Name:

< Back   Next >   Cancel

ステップ 4 : VxLANファブリックに属するすべてのスコープを選択します。

## New Superscope Wizard

### Select Scopes

You create a superscope by building a collection of scopes.



Select one or more scopes from the list to add to the superscope.

Available scopes:

[10.10.10.0] 10.10.10.0/24  
[172.16.10.0] 172.16.10.0/24

< Back

Next >

Cancel

ステップ 5 : VxLANファブリックに属するすべてのスコープを選択します。

## New Superscope Wizard

### Select Scopes

You create a superscope by building a collection of scopes.



Select one or more scopes from the list to add to the superscope.

Available scopes:

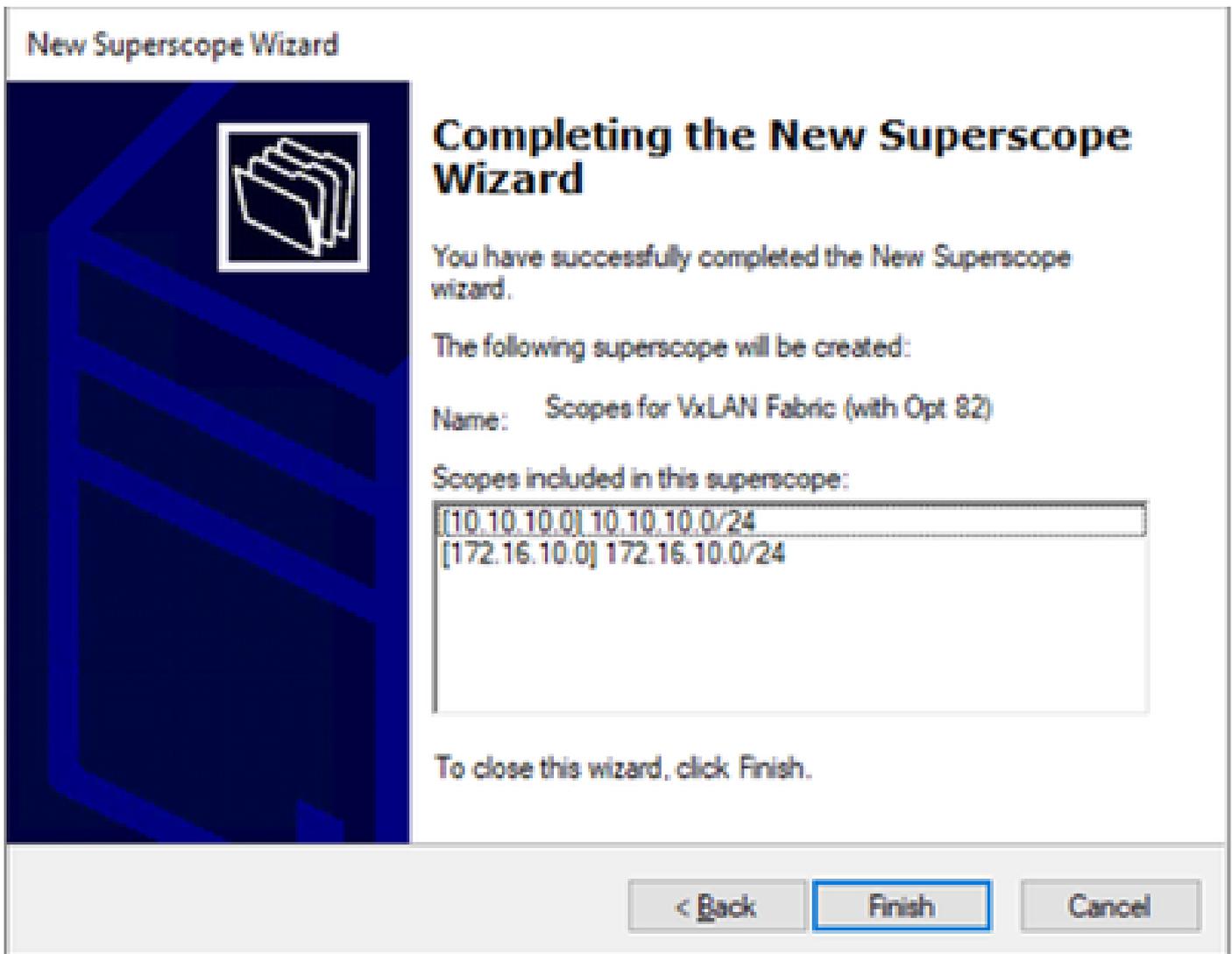
[10.10.10.0] 10.10.10.0/24  
[172.16.10.0] 172.16.10.0/24

< Back

Next >

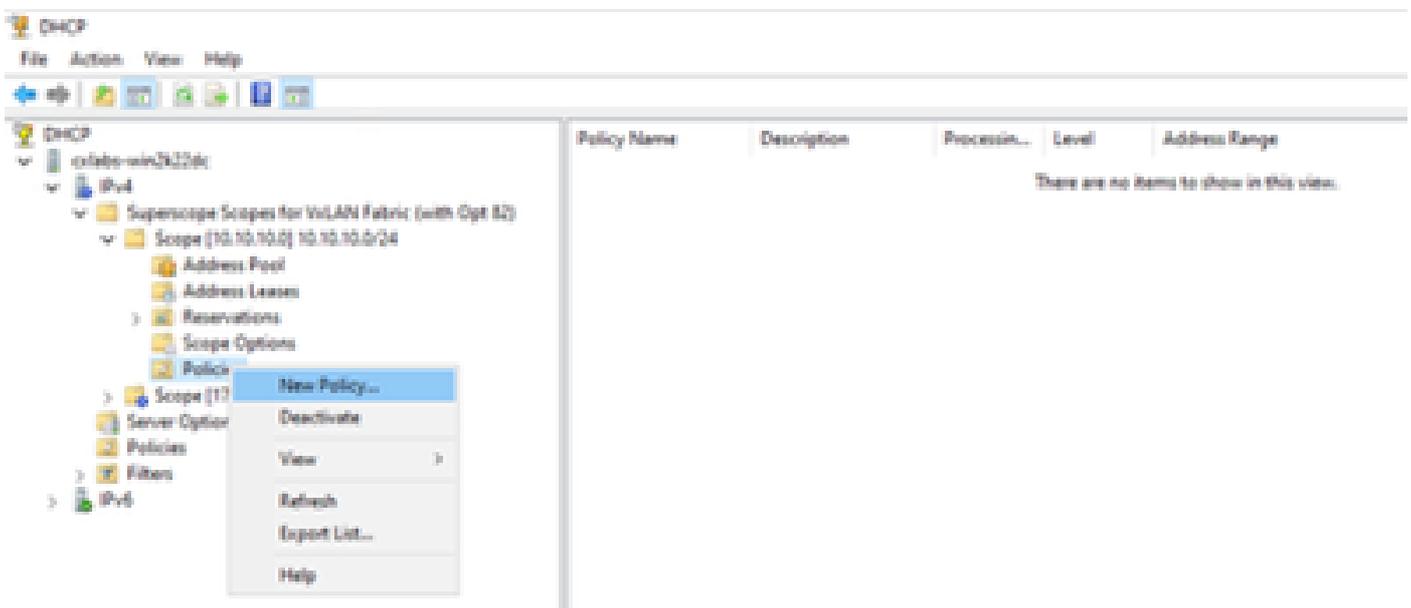
Cancel

手順 6 : すべてのVxLANファブリックスコープが所定の位置にあることを確認し、Finishをクリックします。



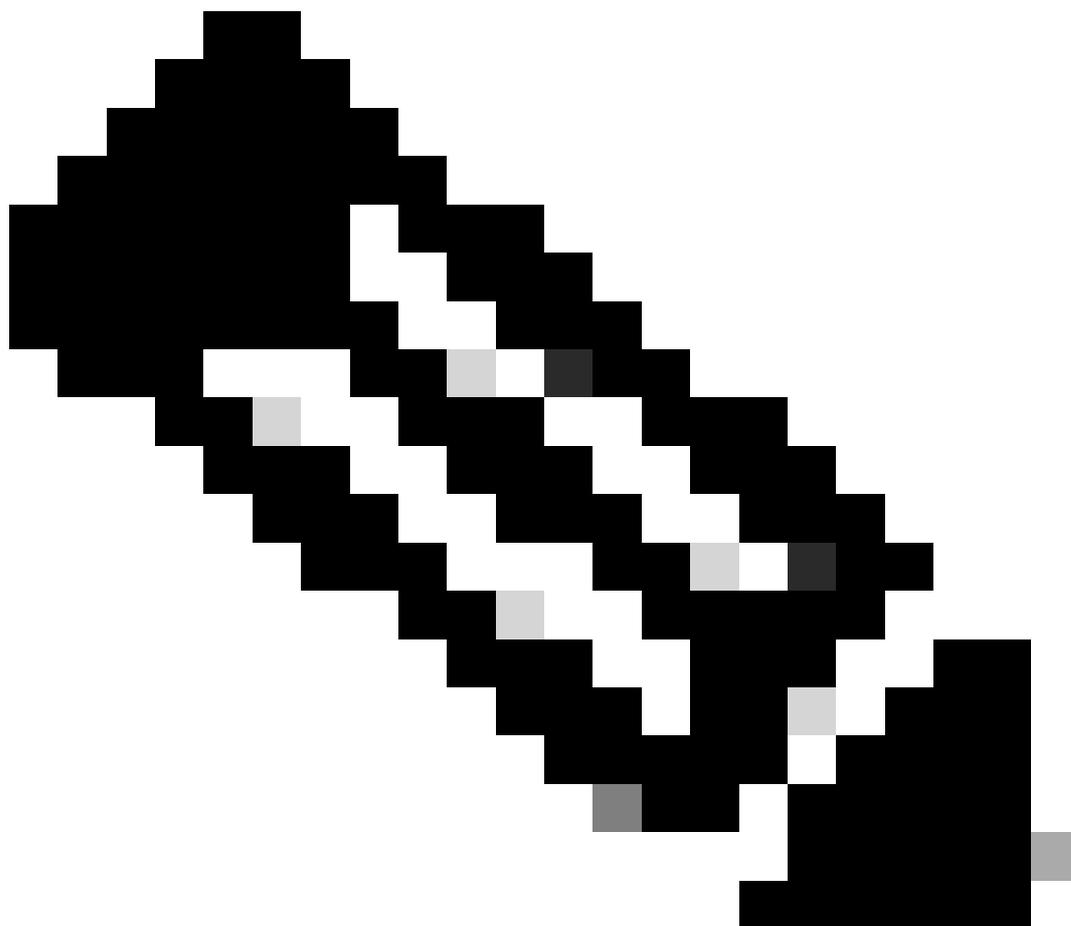
ホストスコープでオプション82を設定します。

ステップ 1 : hostのスコープ内でPolicies (最後のオプション) を右クリックし、New Policyをクリックします。



ステップ 2 : 名前と説明を入力し、Nextをクリックします。

---



注 : この例では、ポリシーはVNI 101010ベースのLeaf-1内のホストに対してIPアドレスシングpaIPicularlyを選択するように作成されます。VNI Remote-ID ( オプション82のパラメータ )。

---

## DHCP Policy Configuration Wizard

### Policy based IP Address and Option Assignment



This feature allows you to distribute configurable settings (IP address, DHCP options) to clients based on certain conditions (e.g. vendor class, user class, MAC address, etc.).

This wizard will guide you setting up a new policy. Provide a name (e.g. VoIP Phone Configuration Policy) and description (e.g. NTP Server option for VoIP Phones) for your policy.

Policy Name:

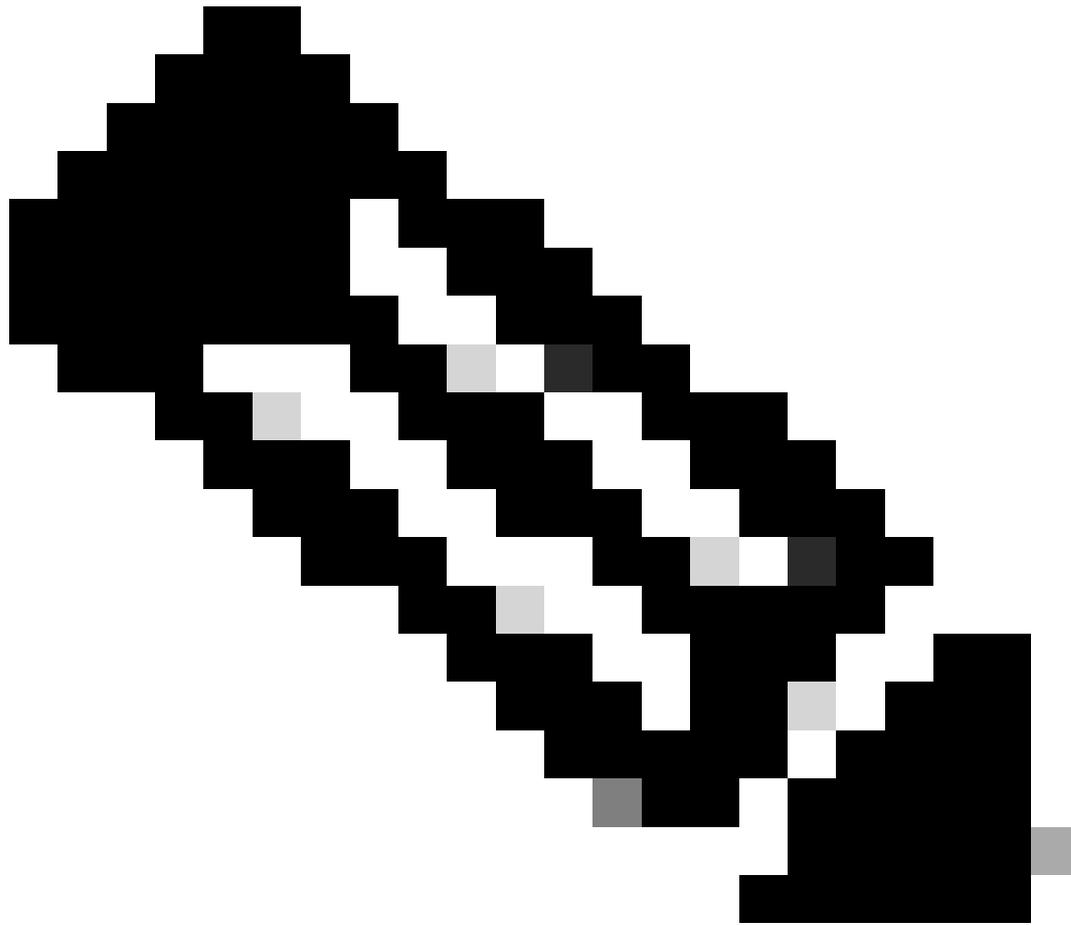
Description:

< Back

Next >

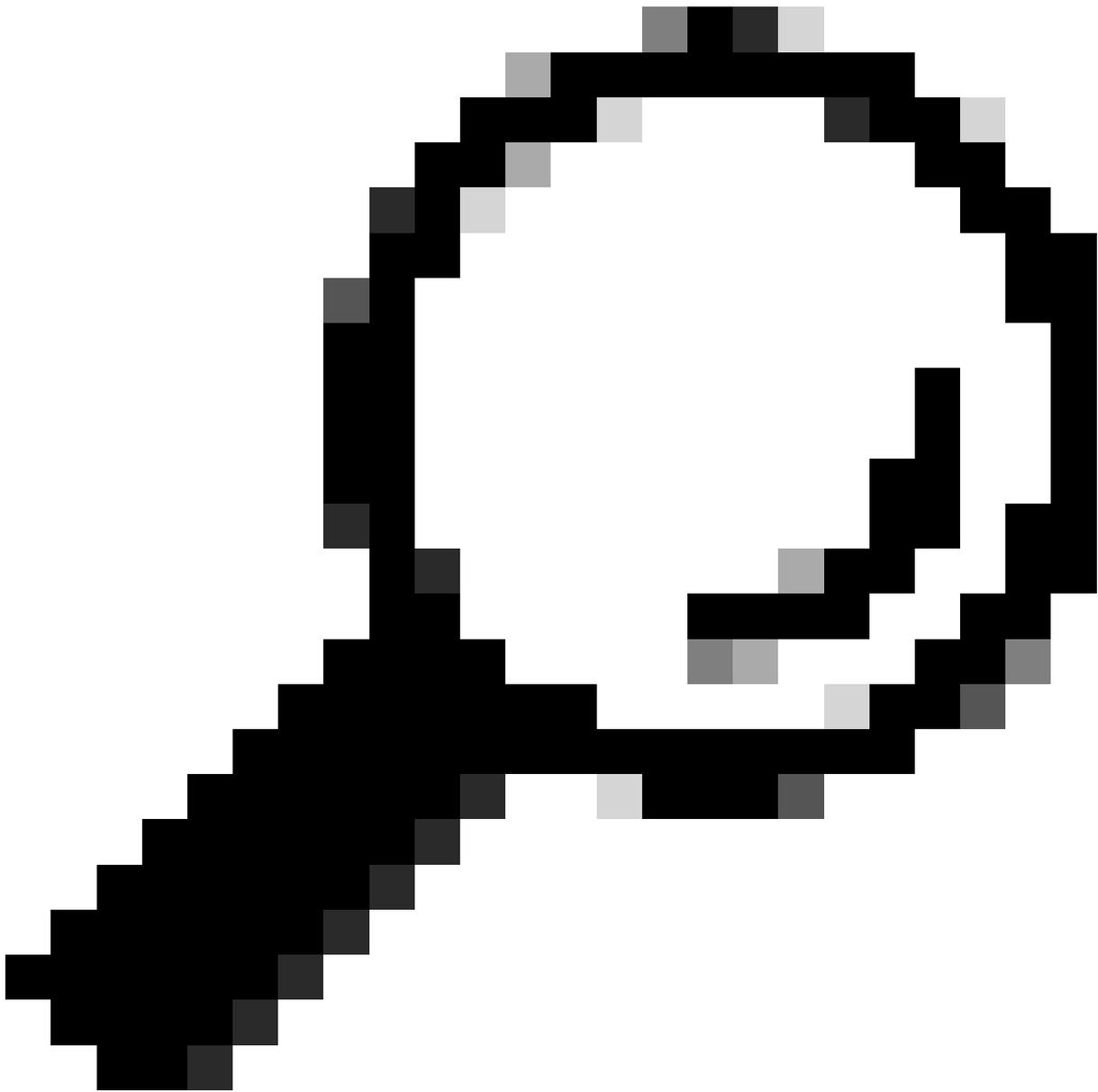
Cancel

ステップ 3 : [Add] をクリックします。Criteriaで、Relay Agent Informationを選択します。「演算子」で、「等しい」を選択します。次に、Agent Remote IDを選択して、値を入力します。OKをクリックし、次にNextをクリックします。



注：リモートIDは、SVIが関連付けられているSVIのMACアドレスから取得されます。

---



ヒント：条件を追加し、ANDの代わりにORを選択することで、1つのポリシーを複数のリモートID（またはVTEP）に適用できます。

---

```
LEAF-1# show interface vlan 10
Vlan10 is up, line protocol is up, autostate enabled
  Hardware is EtherSVI, address is 707d.b9b8.4daf <<<<
  Internet Address is 10.10.10.1/24
<snip>
```

## DHCP Policy Configuration Wizard

### Add/Edit Condition

Specify a condition for the policy being configured. Select a criteria, operator and values for the condition.

Criteria: Relay Agent Information

Operator: Equals

Value (in hex)

Relay Agent Information:

Agent Circuit ID:

Agent Remote ID: 707db9b84daf

Subscriber ID:

Prefix wildcard(\*)

Append wildcard(\*)

Ok

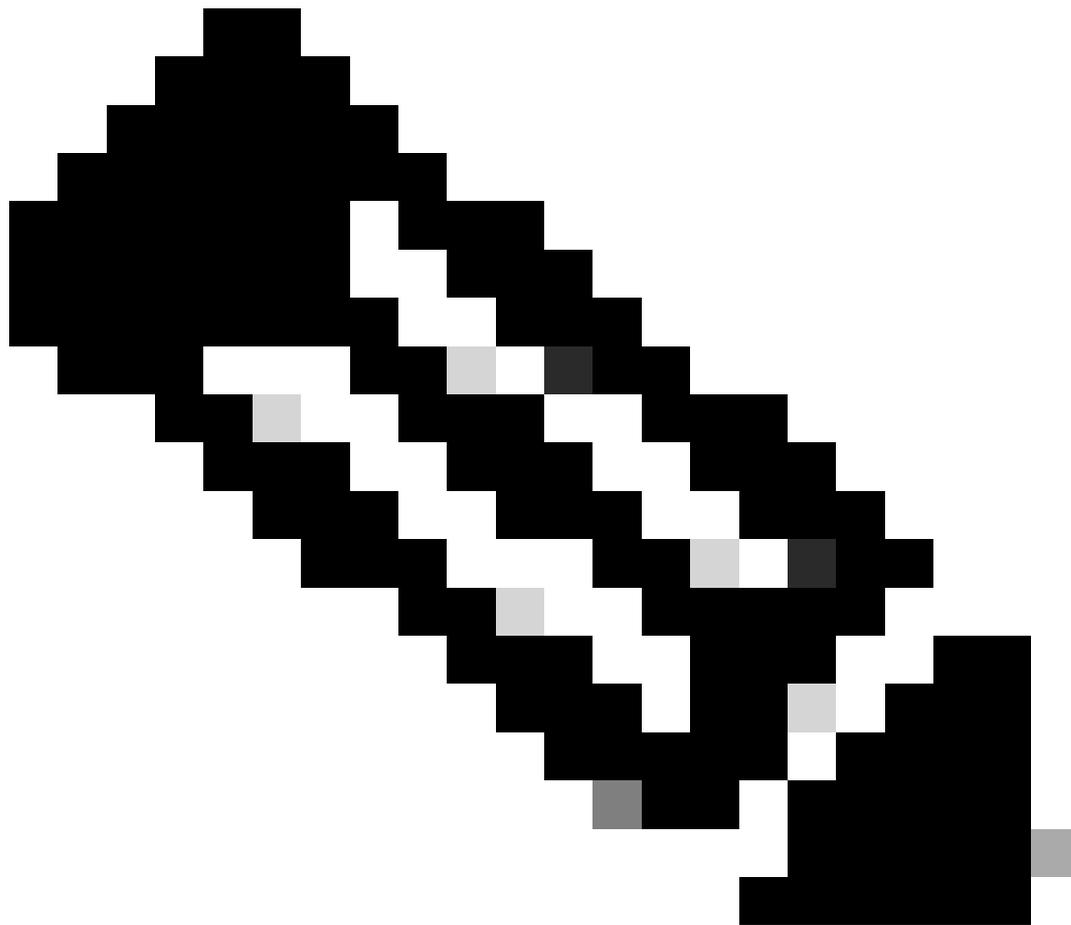
Cancel

< Back

Next >

Cancel

ステップ 4 : IDで選択したVTEPで既存のIPが使用できるIPアドレスを設定し、Nextをクリックします。



注：この例では、リーフ1に接続されている仮想マシンは1つだけなので、IPdが必要な仮想マシンは1つだけです。ここでは、別のホストが接続する場合に2番目のIPアドレスが追加されます。

---

## DHCP Policy Configuration Wizard

### Configure settings for the policy

If the conditions specified in the policy match a client request, the settings will be applied.



A scope can be subdivided into multiple IP address ranges. Clients that match the conditions defined in a policy will be issued an IP Address from the specified range.

Configure the start and end IP address for the range. The start and end IP addresses for the range must be within the start and end IP addresses of the scope.

The current scope IP address range is 10.10.10.1 - 10.10.10.254

If an IP address range is not configured for the policy, policy clients will be issued an IP address from the scope range.

Do you want to configure an IP address range for the policy:  Yes  No

Start IP address:

End IP address:

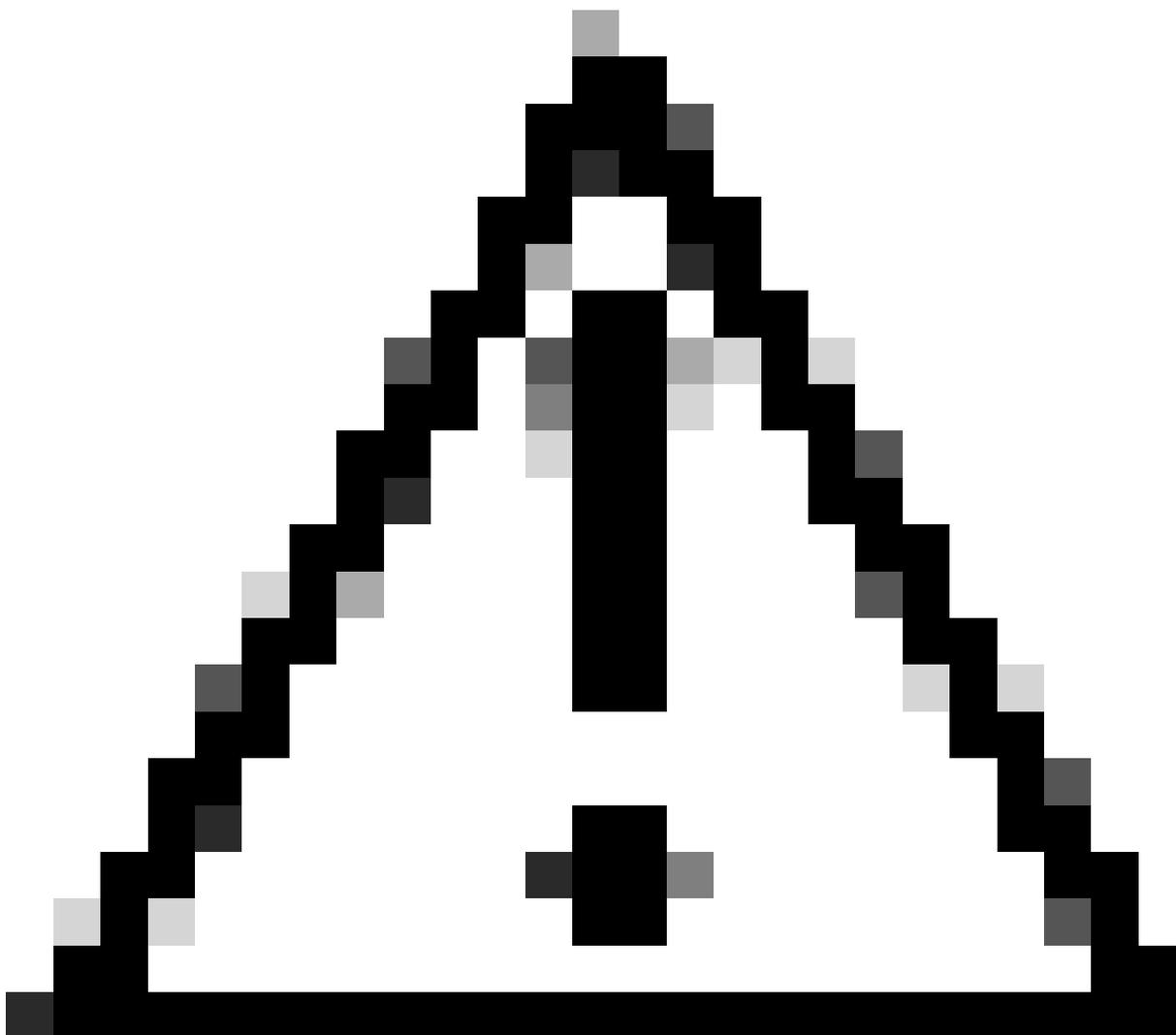
Percentage of IP address range: 0.8

< Back

Next >

Cancel

ステップ 5 : DHCP Standard Optionの下の003 Routerの左側にあるボックスを選択します。次に、このポリシーに属するホストのデフォルトゲートウェイのIPアドレスを書き込み、Addを押します。[Next] をクリックします。



注意：複数のオプションを選択できますが、入力する値がわからない場合は、選択しないでください。設定に一貫性がないか、誤りがあると、予期しない動作が発生する可能性があります。

---

## DHCP Policy Configuration Wizard

### Configure settings for the policy

If the conditions specified in the policy match a client request, the settings will be applied.



Vendor class: DHCP Standard Options

Available Options	Description
<input type="checkbox"/> 002 Time Offset	UTC offset in seconds
<input checked="" type="checkbox"/> 003 Router	Array of router addresses order
<input type="checkbox"/> 004 Time Server	Array of time server addresses.

#### Data entry

Server name:

Resolve

IP address:

Add

- 10.10.10.1

Remove

Up

Down

< Back

Next >

Cancel

手順 6 : ポリシー条件を確認し、Finishをクリックします。

Policy Name	Description	Processin...	Level	Address Range	State	Actions
VNI 101010	Policy to select scope for Leaf-1 using Remote-ID	1	Scope	10.10.10.2 - 10.10.10.3	Enabled	More Actions

# VxLANファブリックでのDCHPパケットの最初から最後まで移動

HOST-1によって送信されるディスカバリ

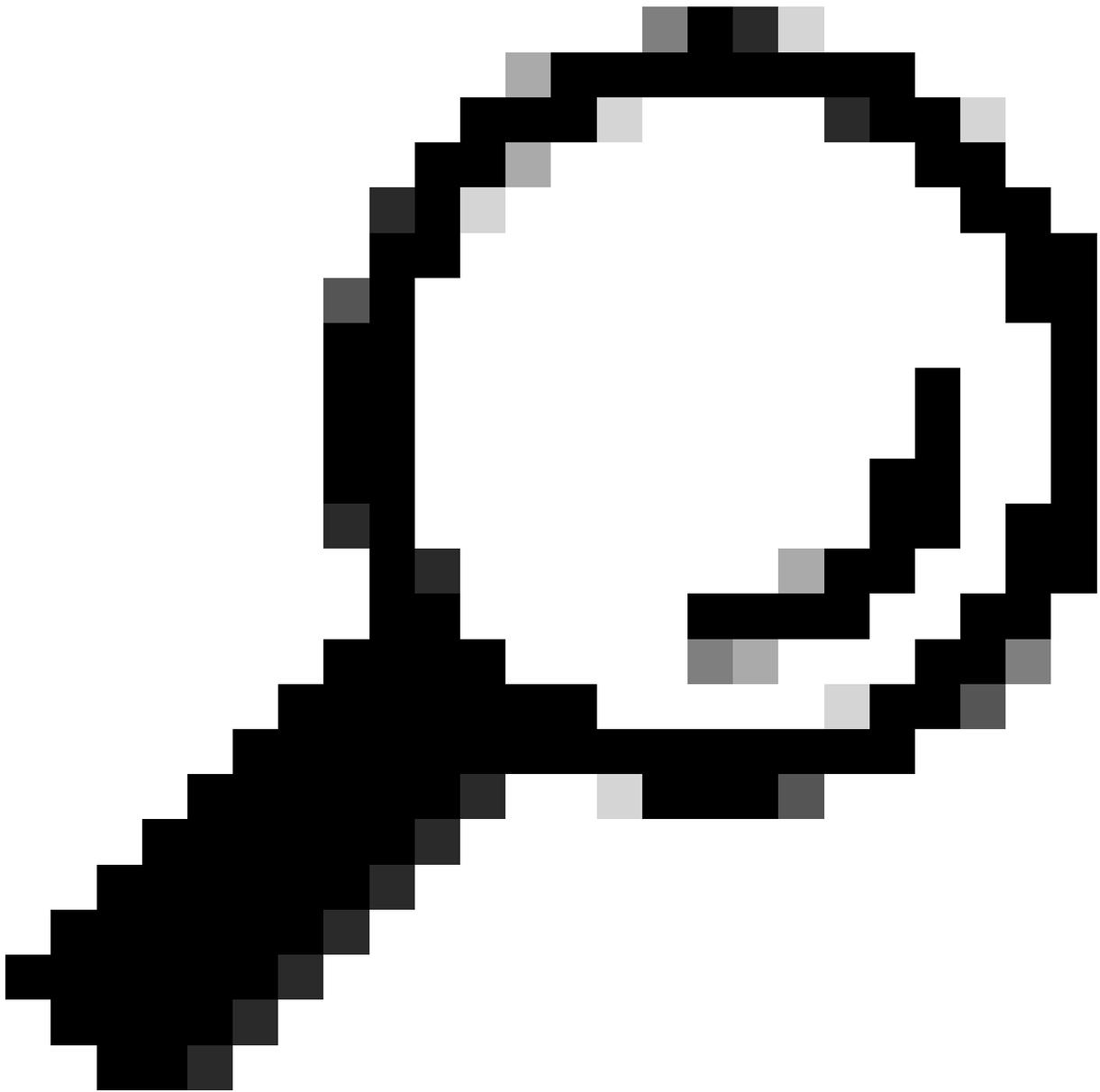
```

> Ethernet II, Src: 00:50:56:a5:fd:dd, Dst: ff:ff:ff:ff:ff:ff
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
v Dynamic Host Configuration Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
v Bootp flags: 0x8000, Broadcast flag (Broadcast)
  1... .... .... .... = Broadcast flag: Broadcast
  .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 0.0.0.0
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
v Option: (53) DHCP Message Type (Discover)
  Length: 1
  <Value: 01>
  DHCP: Discover (1)
v Option: (61) Client identifier
  Length: 7
  <Value: 01005056a5fddd>
  Hardware type: Ethernet (0x01)
  Client MAC address: 00:50:56:a5:fd:dd
v Option: (12) Host Name
  Length: 10
  <Value: 43584c6162732d573130>
  Host Name: CXLabs-W10
v Option: (60) Vendor class identifier
  Length: 8
  <Value: 4d53465420352e30>
  Vendor class identifier: MSFT 5.0
v Option: (55) Parameter Request List
  Length: 14
  <Value: 0103060f1f212b2c2e2f7779f9fc>
  Parameter Request List Item: (1) Subnet Mask
  Parameter Request List Item: (3) Router
  Parameter Request List Item: (6) Domain Name Server
  Parameter Request List Item: (15) Domain Name
  Parameter Request List Item: (31) Perform Router Discover
  Parameter Request List Item: (33) Static Route
  Parameter Request List Item: (43) Vendor-Specific Information
  Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
  Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
  Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
  Parameter Request List Item: (119) Domain Search
  Parameter Request List Item: (121) Classless Static Route
  Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
  Parameter Request List Item: (252) Private/Proxy autodiscovery
v Option: (255) End
  Option End: 255
  Padding: 00000000000000000000

```

# LEAF-1での検出

LEAF-1で検出を受信	LEAF-1によって送信されるディスカバリ
<pre> &gt; Ethernet II, Src: 00:50:56:a5:fd:dd, Dst: ff:ff:ff:ff:ff:ff &gt; Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255 &gt; User Datagram Protocol, Src Port: 68, Dst Port: 67 &gt; Dynamic Host Configuration Protocol (Discover)   Message type: Boot Request (1)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   &gt; Bootp flags: 0x8000, Broadcast flag (Broadcast)     1... .... .... .... = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 0.0.0.0   Next server IP address: 0.0.0.0   Relay agent IP address: 0.0.0.0   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   &gt; Option: (53) DHCP Message Type (Discover)     Length: 1     &lt;Value: 01&gt;     DHCP: Discover (1)   &gt; Option: (61) Client identifier     Length: 7     &lt;Value: 01005056a5fddd&gt;     Hardware type: Ethernet (0x01)     Client MAC address: 00:50:56:a5:fd:dd   &gt; Option: (12) Host Name     Length: 10     &lt;Value: 43584c6162732d573130&gt;     Host Name: CXLabs-W10   &gt; Option: (60) Vendor class identifier     Length: 8     &lt;Value: 4d53465420352e30&gt;     Vendor class identifier: MSFT 5.0   &gt; Option: (55) Parameter Request List     Length: 14     &lt;Value: 0103060f1f212b2c2e2f779f9fc&gt;     Parameter Request List Item: (1) Subnet Mask     Parameter Request List Item: (3) Router     Parameter Request List Item: (6) Domain Name Server     Parameter Request List Item: (15) Domain Name     Parameter Request List Item: (31) Perform Router Discover     Parameter Request List Item: (33) Static Route     Parameter Request List Item: (43) Vendor-Specific Information     Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server     Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type     Parameter Request List Item: (47) NetBIOS over TCP/IP Scope     Parameter Request List Item: (119) Domain Search     Parameter Request List Item: (121) Classless Static Route     Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)     Parameter Request List Item: (252) Private/Proxy autodiscovery   &gt; Option: (255) End   Padding: 00000000000000000000 </pre>	<pre> &gt; Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 10:b3:d6:a4:85:97 &gt; Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.154 &gt; User Datagram Protocol, Src Port: 65233, Dst Port: 4789 &gt; Virtual Extensible Local Area Network   &gt; Flags: 0x8000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 303030     Reserved: 0   &gt; Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe   &gt; Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150   &gt; User Datagram Protocol, Src Port: 67, Dst Port: 67   &gt; Dynamic Host Configuration Protocol (Discover)     Message type: Boot Request (1)     Hardware type: Ethernet (0x01)     Hardware address length: 6     Hops: 1     Transaction ID: 0xe9e35087     Seconds elapsed: 0   &gt; Bootp flags: 0x8000, Broadcast flag (Broadcast)     Client IP address: 0.0.0.0     Your (client) IP address: 0.0.0.0     Next server IP address: 0.0.0.0     Relay agent IP address: 172.16.10.8     Client MAC address: 00:50:56:a5:fd:dd     Client hardware address padding: 00000000000000000000     Server host name not given     Boot file name not given     Magic cookie: DHCP   &gt; Option: (53) DHCP Message Type (Discover)     Length: 1     &lt;Value: 01&gt;     DHCP: Discover (1)   &gt; Option: (61) Client identifier     Length: 7     &lt;Value: 01005056a5fddd&gt;     Hardware type: Ethernet (0x01)     Client MAC address: 00:50:56:a5:fd:dd   &gt; Option: (12) Host Name     Length: 10     &lt;Value: 43584c6162732d573130&gt;     Host Name: CXLabs-W10   &gt; Option: (60) Vendor class identifier     Length: 8     &lt;Value: 4d53465420352e30&gt;     Vendor class identifier: MSFT 5.0   &gt; Option: (55) Parameter Request List     Length: 14     &lt;Value: 0103060f1f212b2c2e2f779f9fc&gt;     Parameter Request List Item: (1) Subnet Mask     Parameter Request List Item: (3) Router     Parameter Request List Item: (6) Domain Name Server     Parameter Request List Item: (15) Domain Name     Parameter Request List Item: (31) Perform Router Discover     Parameter Request List Item: (33) Static Route     Parameter Request List Item: (43) Vendor-Specific Information     Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server     Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type     Parameter Request List Item: (47) NetBIOS over TCP/IP Scope     Parameter Request List Item: (119) Domain Search     Parameter Request List Item: (121) Classless Static Route     Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)     Parameter Request List Item: (252) Private/Proxy autodiscovery   &gt; Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a0&gt;   &gt; Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0180000600018a9200a000000000&gt;     Agent Circuit ID: 0180000600018a9200a000000000   &gt; Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   &gt; Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     &gt; VRF name:       [Expert Info (Warning/Undecoded): Trailing stray characters]   &gt; Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   &gt; Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   &gt; Option: (255) End   Padding: 00000000000000000000 </pre>



ヒント：ダブルクリックすると画像が拡大します。

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## スパインでの検出

スパインで検出を受信	SPINEによって送信される検出
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<pre> Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 65233, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)   Group Policy ID: 0   VXLAN Network Identifier (VNI): 303030   Reserved: 0 Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Discover)   Message type: Boot Request (1)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 1   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)   Client IP address: 0.0.0.0   Your (client) IP address: 0.0.0.0   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP Option: (53) DHCP Message Type (Discover)   Length: 1   &lt;Value: 01&gt;   DHCP: Discover (1) Option: (61) Client identifier   Length: 7   &lt;Value: 01005056a5fd&gt;   Hardware type: Ethernet (0x01)   Client MAC address: 00:50:56:a5:fd:dd Option: (12) Host Name   Length: 10   &lt;Value: 43584c6162732d573130&gt;   Host Name: CXLabs-W10 Option: (60) Vendor class identifier   Length: 8   &lt;Value: 4d53465420352e30&gt;   Vendor class identifier: MSFT 5.0 Option: (55) Parameter Request List   Length: 14   &lt;Value: 0103060f1f212b2c2e2f7779f9fc&gt;   Parameter Request List Item: (1) Subnet Mask   Parameter Request List Item: (3) Router   Parameter Request List Item: (6) Domain Name Server   Parameter Request List Item: (15) Domain Name   Parameter Request List Item: (31) Perform Router Discover   Parameter Request List Item: (33) Static Route   Parameter Request List Item: (43) Vendor-Specific Information   Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server   Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type   Parameter Request List Item: (47) NetBIOS over TCP/IP Scope   Parameter Request List Item: (119) Domain Search   Parameter Request List Item: (121) Classless Static Route   Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)   Parameter Request List Item: (252) Private/Proxy autodiscovery Option: (82) Agent Information Option   Length: 47   &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt; Option 82 Suboption: (1) Agent Circuit ID   Length: 14   &lt;Value: 0108000600018a9200a000000000&gt;   Agent Circuit ID: 0108000600018a9200a000000000 Option 82 Suboption: (2) Agent Remote ID   Length: 6   &lt;Value: 707db9b84daf&gt;   Agent Remote ID: 707db9b84daf Option 82 Suboption: (151) VRF name/VPN ID   Length: 9   &lt;Value: 0074656e616e742d61&gt;   VRF name:   [Expert Info (Warning/Undecoded): Trailing stray characters] Option 82 Suboption: (11) Server ID Override (10.10.10.1)   Length: 4   &lt;Value: 0a0a0a01&gt;   Server ID Override: 10.10.10.1 Option 82 Suboption: (5) Link selection (10.10.10.0)   Length: 4   &lt;Value: 0a0a0a00&gt;   Link selection: 10.10.10.0 Option: (255) End   Option End: 255   Padding: 00000000000000000000 </pre>	<pre> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 00:26:aa:85:98:87 Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 65233, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)   Group Policy ID: 0   VXLAN Network Identifier (VNI): 303030   Reserved: 0 Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Discover)   Message type: Boot Request (1)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 1   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)   Client IP address: 0.0.0.0   Your (client) IP address: 0.0.0.0   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP Option: (53) DHCP Message Type (Discover)   Length: 1   &lt;Value: 01&gt;   DHCP: Discover (1) Option: (61) Client identifier   Length: 7   &lt;Value: 01005056a5fd&gt;   Hardware type: Ethernet (0x01)   Client MAC address: 00:50:56:a5:fd:dd Option: (12) Host Name   Length: 10   &lt;Value: 43584c6162732d573130&gt;   Host Name: CXLabs-W10 Option: (60) Vendor class identifier   Length: 8   &lt;Value: 4d53465420352e30&gt;   Vendor class identifier: MSFT 5.0 Option: (55) Parameter Request List   Length: 14   &lt;Value: 0103060f1f212b2c2e2f7779f9fc&gt;   Parameter Request List Item: (1) Subnet Mask   Parameter Request List Item: (3) Router   Parameter Request List Item: (6) Domain Name Server   Parameter Request List Item: (15) Domain Name   Parameter Request List Item: (31) Perform Router Discover   Parameter Request List Item: (33) Static Route   Parameter Request List Item: (43) Vendor-Specific Information   Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server   Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type   Parameter Request List Item: (47) NetBIOS over TCP/IP Scope   Parameter Request List Item: (119) Domain Search   Parameter Request List Item: (121) Classless Static Route   Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)   Parameter Request List Item: (252) Private/Proxy autodiscovery Option: (82) Agent Information Option   Length: 47   &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt; Option 82 Suboption: (1) Agent Circuit ID   Length: 14   &lt;Value: 0108000600018a9200a000000000&gt;   Agent Circuit ID: 0108000600018a9200a000000000 Option 82 Suboption: (2) Agent Remote ID   Length: 6   &lt;Value: 707db9b84daf&gt;   Agent Remote ID: 707db9b84daf Option 82 Suboption: (151) VRF name/VPN ID   Length: 9   &lt;Value: 0074656e616e742d61&gt;   VRF name:   [Expert Info (Warning/Undecoded): Trailing stray characters] Option 82 Suboption: (11) Server ID Override (10.10.10.1)   Length: 4   &lt;Value: 0a0a0a01&gt;   Server ID Override: 10.10.10.1 Option 82 Suboption: (5) Link selection (10.10.10.0)   Length: 4   &lt;Value: 0a0a0a00&gt;   Link selection: 10.10.10.0 Option: (255) End   Option End: 255   Padding: 00000000000000000000 </pre>
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## LEAF-1-vPCでの検出

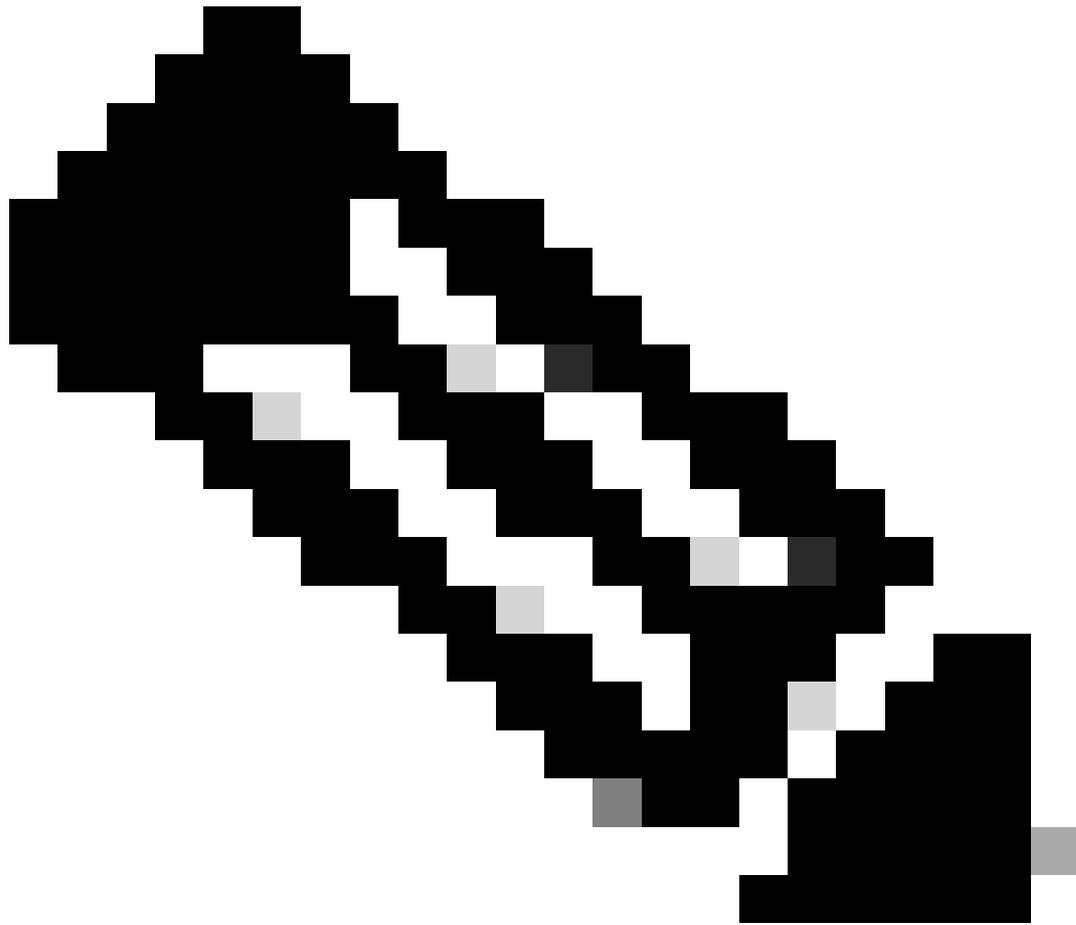
LEAF-1-vPCで受信したディスカバリ	LEAF-1-vPCによって送信されるディスカバリ
-----------------------	---------------------------

```

Ethernet II, Src: 10:b3:06:a4:85:97, Dst: 60:26:aa:85:98:87
Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
User Datagram Protocol, Src Port: 65233, Dst Port: 4789
Virtual Extensible Local Area Network
Flags: 0x0000, VXLAN Network ID (VNI)
Group Policy ID: 0
VXLAN Network Identifier (VNI): 303030
Reserved: 0
Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 1
Transaction ID: 0xe9e35087
Seconds elapsed: 0
Bootp flags: 0x0000, Broadcast flag (Broadcast)
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Discover)
Length: 1
<Value: 01>
DHCP: Discover (1)
Option: (61) Client identifier
Length: 7
<Value: 01005056a5fd>
Hardware type: Ethernet (0x01)
Client MAC address: 00:50:56:a5:fd:dd
Option: (12) Host Name
Length: 10
<Value: 43584c6162732d573130>
Host Name: CXLabs-W10
Option: (60) Vendor class identifier
Length: 8
<Value: 4d53465420352e30>
Vendor class identifier: MSFT 5.0
Option: (55) Parameter Request List
Length: 14
<Value: 0103060f1f212b2c2e2f779f9f>
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (3) Router
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (31) Perform Router Discover
Parameter Request List Item: (33) Static Route
Parameter Request List Item: (43) Vendor-Specific Information
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
Parameter Request List Item: (119) Domain Search
Parameter Request List Item: (121) Classless Static Route
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (252) Private/Proxy autodiscovery
Option: (82) Agent Information Option
Length: 47
<Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e16e742d610b040a0a0a0105040a0a00>
Option 82 Suboption: (1) Agent Circuit ID
Length: 14
<Value: 0108000600018a9200a000000000>
Agent Circuit ID: 0108000600018a9200a000000000
Option 82 Suboption: (2) Agent Remote ID
Length: 6
<Value: 707db9b84daf>
Agent Remote ID: 707db9b84daf
Option 82 Suboption: (151) VRF name/VPN ID
Length: 9
<Value: 0074656e16e742d61>
VRF name:
[Expert Info (Warning/Undecoded): Trailing stray characters]
[Trailing stray characters]
<Message: Trailing stray characters>
[Severity level: Warning]
[Group: Undecoded]
Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Length: 4
<Value: 0a0a0a01>
Server ID Override: 10.10.10.1
Option 82 Suboption: (5) Link selection (10.10.10.0)
Length: 4
<Value: 0a0a0a00>
Link selection: 10.10.10.0
Option: (255) End
Padding: 00000000000000000000

Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 1
Transaction ID: 0xe9e35087
Seconds elapsed: 0
Bootp flags: 0x0000, Broadcast flag (Broadcast)
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Discover)
Length: 1
<Value: 01>
DHCP: Discover (1)
Option: (61) Client identifier
Length: 7
<Value: 01005056a5fd>
Hardware type: Ethernet (0x01)
Client MAC address: 00:50:56:a5:fd:dd
Option: (12) Host Name
Length: 10
<Value: 43584c6162732d573130>
Host Name: CXLabs-W10
Option: (60) Vendor class identifier
Length: 8
<Value: 4d53465420352e30>
Vendor class identifier: MSFT 5.0
Option: (55) Parameter Request List
Length: 14
<Value: 0103060f1f212b2c2e2f779f9f>
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (3) Router
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (31) Perform Router Discover
Parameter Request List Item: (33) Static Route
Parameter Request List Item: (43) Vendor-Specific Information
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
Parameter Request List Item: (119) Domain Search
Parameter Request List Item: (121) Classless Static Route
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (252) Private/Proxy autodiscovery
Option: (82) Agent Information Option
Length: 47
<Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e16e742d610b040a0a0a0105040a0a00>
Option 82 Suboption: (1) Agent Circuit ID
Length: 14
<Value: 0108000600018a9200a000000000>
Agent Circuit ID: 0108000600018a9200a000000000
Option 82 Suboption: (2) Agent Remote ID
Length: 6
<Value: 707db9b84daf>
Agent Remote ID: 707db9b84daf
Option 82 Suboption: (151) VRF name/VPN ID
Length: 9
<Value: 0074656e16e742d61>
VRF name:
[Expert Info (Warning/Undecoded): Trailing stray characters]
[Trailing stray characters]
<Message: Trailing stray characters>
[Severity level: Warning]
[Group: Undecoded]
Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Length: 4
<Value: 0a0a0a01>
Server ID Override: 10.10.10.1
Option 82 Suboption: (5) Link selection (10.10.10.0)
Length: 4
<Value: 0a0a0a00>
Link selection: 10.10.10.0
Option: (255) End
Padding: 00000000000000000000

```



注:LEAF-2-vPCはDiscoverパケットを受信しますが、これは単にスイッチングされるだけです。宛先MACアドレスがDHCPサーバに属している。

---

DCHPサーバで受信されたディスカバリ

```
Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
> Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
> User Datagram Protocol, Src Port: 67, Dst Port: 67
- Dynamic Host Configuration Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  - Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  - Option: (53) DHCP Message Type (Discover)
    Length: 1
    <Value: 01>
    DHCP: Discover (1)
  - Option: (61) Client identifier
    Length: 7
    <Value: 01005056a5fddd>
    Hardware type: Ethernet (0x01)
    Client MAC address: 00:50:56:a5:fd:dd
  - Option: (12) Host Name
    Length: 10
    <Value: 43584c6162732d573130>
    Host Name: CXLabs-W10
  - Option: (60) Vendor class identifier
    Length: 8
    <Value: 4d53465420352e30>
    Vendor class identifier: MSFT 5.0
  - Option: (55) Parameter Request List
    Length: 14
    <Value: 0103060f1f212b2c2e2f7779f9fc>
    Parameter Request List Item: (1) Subnet Mask
    Parameter Request List Item: (3) Router
    Parameter Request List Item: (6) Domain Name Server
    Parameter Request List Item: (15) Domain Name
    Parameter Request List Item: (31) Perform Router Discover
    Parameter Request List Item: (33) Static Route
    Parameter Request List Item: (43) Vendor-Specific Information
    Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
    Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
    Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
    Parameter Request List Item: (119) Domain Search
    Parameter Request List Item: (121) Classless Static Route
    Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
    Parameter Request List Item: (252) Private/Proxy autodiscovery
  - Option: (82) Agent Information Option
    Length: 47
    <Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
  - Option 82 Suboption: (1) Agent Circuit ID
    Length: 14
    <Value: 0108000600018a9200a000000000>
    Agent Circuit ID: 0108000600018a9200a000000000
  - Option 82 Suboption: (2) Agent Remote ID
    Length: 6
    <Value: 707db9b84daf>
    Agent Remote ID: 707db9b84daf
  - Option 82 Suboption: (151) VRF name/VPN ID
    Length: 9
    <Value: 0074656e616e742d61>
  - VRF name:
    - [Expert Info (Warning/Undecoded): Trailing stray characters]
      [Trailing stray characters]
      <Message: Trailing stray characters>
      [Severity level: Warning]
      [Group: Undecoded]
  - Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    Server ID Override: 10.10.10.1
  - Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a0a00>
    Link selection: 10.10.10.0
  - Option: (255) End
    Option End: 255
    Padding: 00000000000000000000
```

DCHPサーバによって送信されるDCHPオファー

```

Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... .... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (Discover)
    Length: 1
    <Value: 01>
    DHCP: Discover (1)
  Option: (61) Client identifier
    Length: 7
    <Value: 01005056a5fd<dd>
    Hardware type: Ethernet (0x01)
    Client MAC address: 00:50:56:a5:fd:dd
  Option: (12) Host Name
    Length: 10
    <Value: 43584c6162732d573130>
    Host Name: CXLabs-W10
  Option: (60) Vendor class identifier
    Length: 8
    <Value: 4d53465420352e30>
    Vendor class identifier: MSFT 5.0
  Option: (55) Parameter Request List
    Length: 14
    <Value: 0103060f1f212b2c2e2f7779f9fc>
    Parameter Request List Item: (1) Subnet Mask
    Parameter Request List Item: (3) Router
    Parameter Request List Item: (6) Domain Name Server
    Parameter Request List Item: (15) Domain Name
    Parameter Request List Item: (31) Perform Router Discover
    Parameter Request List Item: (33) Static Route
    Parameter Request List Item: (43) Vendor-Specific Information
    Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
    Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
    Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
    Parameter Request List Item: (119) Domain Search
    Parameter Request List Item: (121) Classless Static Route
    Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
    Parameter Request List Item: (252) Private/Proxy autodiscovery
  Option: (82) Agent Information Option
    Length: 47
    <Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
  Option 82 Suboption: (1) Agent Circuit ID
    Length: 14
    <Value: 0108000600018a9200a000000000>
    Agent Circuit ID: 0108000600018a9200a000000000
  Option 82 Suboption: (2) Agent Remote ID
    Length: 6
    <Value: 707db9b84daf>
    Agent Remote ID: 707db9b84daf
  Option 82 Suboption: (151) VRF name/VPN ID
    Length: 9
    <Value: 0074656e616e742d61>
  VRF name:
  [Expert Info (Warning/Undecoded): Trailing stray characters]
  [Trailing stray characters]
  <Message: Trailing stray characters>
  [Severity level: Warning]
  [Group: Undecoded]
  Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    Server ID Override: 10.10.10.1
  Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a0a00>
    Link selection: 10.10.10.0
  Option: (255) End
    Option End: 255
    Padding: 00000000000000000000

```

# LEAF-2-vPCでのDCHPオフアー

LEAF-2-vPCで受信したオフアー	LEAF-2-vPCで送信されるオフアー
<pre> Ethernet II, Src: 00:50:56:a5:d5:c4, Dst: 00:00:0a:0a:0a:0a Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Offer)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .. = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 10.10.10.150   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (Offer)     Length: 1     &lt;Value: 02&gt;     DHCP: Offer (2)   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff&gt;     Subnet Mask: 255.255.255.0   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a920a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a920a0000000000&gt;     Agent Circuit ID: 0108000600018a920a0000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     VRF name:     [Expert Info (Warning/Undecoded): Trailing stray characters]     [Trailing stray characters]     &lt;Message: Trailing stray characters&gt;     [Severity level: Warning]     [Group: Undecoded]   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End   Option End: 255           </pre>	<pre> Ethernet II, Src: 00:26:aa:85:95:87, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual extensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)   Group Policy ID: 0   VXLAN Network Identifier (VNI): 303030   Reserved: 0 Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Offer)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .. = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 10.10.10.150   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (Offer)     Length: 1     &lt;Value: 02&gt;     DHCP: Offer (2)   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff&gt;     Subnet Mask: 255.255.255.0   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a920a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a920a0000000000&gt;     Agent Circuit ID: 0108000600018a920a0000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     VRF name:     [Expert Info (Warning/Undecoded): Trailing stray characters]     [Trailing stray characters]     &lt;Message: Trailing stray characters&gt;     [Severity level: Warning]     [Group: Undecoded]   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End   Option End: 255           </pre>

# DHCPオフアー-vPCスパイン

SPINEで受信したオフアー	オフアーはSPINEで送信
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<pre> Ethernet II, Src: 60:26:aa:85:95:87, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 303030     Reserved: 0 Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Offer)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .... = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 10.10.10.150   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (Offer)     Length: 1     &lt;Value: 02&gt;     DHCP: Offer (2)   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff&gt;     Subnet Mask: 255.255.255.0   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a000000000&gt;     Agent Circuit ID: 0108000600018a9200a000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     VRF name:     [Expert Info (Warning/Undecoded): Trailing stray characters]     [Trailing stray characters]     &lt;Message: Trailing stray characters&gt;     [Severity level: Warning]     [Group: Undecoded]   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End     Option End: 255 </pre>	<pre> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 303030     Reserved: 0 Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Offer)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 10.10.10.150   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (Offer)     Length: 1     &lt;Value: 02&gt;     DHCP: Offer (2)   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff&gt;     Subnet Mask: 255.255.255.0   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a000000000&gt;     Agent Circuit ID: 0108000600018a9200a000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     VRF name:   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End     Option End: 255 </pre>
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## LEAF-1のDHCPオフアー

LEAF-1で受信したオフアー	LEAF-1でのオフアー送信
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<pre> &gt; Ethernet II, Src: 18:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af &gt; Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 &gt; User Datagram Protocol, Src Port: 65518, Dst Port: 4789 &gt; Virtual eXtensible Local Area Network   &gt; Flags: 0x8000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 383030     Reserved: 0 &gt; Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af &gt; Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 &gt; User Datagram Protocol, Src Port: 67, Dst Port: 67 &gt; Dynamic Host Configuration Protocol (Offer)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   &gt; Bootp flags: 0x8000, Broadcast flag (Broadcast)   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 10.10.10.150   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   &gt; Option: (53) DHCP Message Type (Offer)     Length: 1     &lt;Value: 02&gt;     DHCP: Offer (2)   &gt; Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffff00&gt;     Subnet Mask: 255.255.255.0   &gt; Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   &gt; Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   &gt; Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   &gt; Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   &gt; Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   &gt; Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt;   &gt; Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a000000000&gt;     Agent Circuit ID: 0108000600018a9200a000000000   &gt; Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   &gt; Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     VRF name:   &gt; Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   &gt; Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   &gt; Option: (255) End     Option End: 255 </pre>	<pre> &gt; Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: ff:ff:ff:ff:ff:ff &gt; Internet Protocol Version 4, Src: 10.10.10.1, Dst: 255.255.255.255 &gt; User Datagram Protocol, Src Port: 67, Dst Port: 68 &gt; Dynamic Host Configuration Protocol (Offer)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   &gt; Bootp flags: 0x8000, Broadcast flag (Broadcast)   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 10.10.10.150   Relay agent IP address: 10.10.10.1   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   &gt; Option: (53) DHCP Message Type (Offer)     Length: 1     &lt;Value: 02&gt;     DHCP: Offer (2)   &gt; Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffff00&gt;     Subnet Mask: 255.255.255.0   &gt; Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   &gt; Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   &gt; Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   &gt; Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   &gt; Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   &gt; Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   &gt; Option: (255) End     Option End: 255 </pre>
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## DHCPオファーをHOST-1で受信

```
> Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: ff:ff:ff:ff:ff:ff
> Internet Protocol Version 4, Src: 10.10.10.1, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 67, Dst Port: 68
> Dynamic Host Configuration Protocol (Offer)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  > Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 10.10.10.3
  Next server IP address: 10.10.10.150
  Relay agent IP address: 10.10.10.1
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 0000000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  > Option: (53) DHCP Message Type (Offer)
    Length: 1
    <Value: 02>
    DHCP: Offer (2)
  > Option: (1) Subnet Mask (255.255.255.0)
    Length: 4
    <Value: ffffffff00>
    Subnet Mask: 255.255.255.0
  > Option: (58) Renewal Time Value
    Length: 4
    <Value: 0000a8c0>
    Renewal Time Value: 12 hours (43200)
  > Option: (59) Rebinding Time Value
    Length: 4
    <Value: 00012750>
    Rebinding Time Value: 21 hours (75600)
  > Option: (51) IP Address Lease Time
    Length: 4
    <Value: 00015180>
    IP Address Lease Time: 1 day (86400)
  > Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  > Option: (3) Router
    Length: 4
    <Value: 0a0a0a01>
    Router: 10.10.10.1
  > Option: (15) Domain Name
    Length: 10
    <Value: 636973636f2e636f6d00>
    Domain Name: cisco.com
  > Option: (255) End
    Option End: 255
```

HOST-1で送信された要求

```

> Ethernet II, Src: 00:50:56:a5:fd:dd, Dst: ff:ff:ff:ff:ff:ff
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
> Dynamic Host Configuration Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... .... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 0.0.0.0
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (Request)
    Length: 1
    <Value: 03>
    DHCP: Request (3)
  Option: (61) Client identifier
    Length: 7
    <Value: 01005056a5fddd>
    Hardware type: Ethernet (0x01)
    Client MAC address: 00:50:56:a5:fd:dd
  Option: (50) Requested IP Address (10.10.10.3)
    Length: 4
    <Value: 0a0a0a03>
    Requested IP Address: 10.10.10.3
  Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  Option: (12) Host Name
    Length: 10
    <Value: 43584c6162732d573130>
    Host Name: CXLabs-W10
  Option: (81) Client Fully Qualified Domain Name
    Length: 13
    <Value: 00000043584c6162732d573130>
  Flags: 0x00
    0000 .... = Reserved flags: 0x0
    .... 0... = Server DDNS: Some server updates
    .... .0.. = Encoding: ASCII encoding
    .... ..0. = Server overrides: No override
    .... ...0 = Server: Client
  A-RR result: 0
  PTR-RR result: 0
  Client name: CXLabs-W10
  Option: (60) Vendor class identifier
    Length: 8
    <Value: 4d53465420352e30>
    Vendor class identifier: MSFT 5.0
  Option: (55) Parameter Request List
    Length: 14
    <Value: 0103060f1f212b2c2e2f7779f9fc>
    Parameter Request List Item: (1) Subnet Mask
    Parameter Request List Item: (3) Router
    Parameter Request List Item: (6) Domain Name Server
    Parameter Request List Item: (15) Domain Name
    Parameter Request List Item: (31) Perform Router Discover
    Parameter Request List Item: (33) Static Route
    Parameter Request List Item: (43) Vendor-Specific Information
    Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
    Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
    Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
    Parameter Request List Item: (119) Domain Search
    Parameter Request List Item: (121) Classless Static Route
    Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
    Parameter Request List Item: (252) Private/Proxy autodiscovery
  Option: (255) End
  Option End: 255

```

# LEAF-1での要求

LEAF-1で受信した要求	LEAF-1で送信される要求
<pre> &gt; Ethernet II, Src: 00:50:56:a5:fd:dd, Dst: ff:ff:ff:ff:ff:ff &gt; Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255 &gt; User Datagram Protocol, Src Port: 68, Dst Port: 67 &gt; Dynamic Host Configuration Protocol (Request)   Message type: Boot Request (1)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   &gt; Bootp flags: 0x8000, Broadcast flag (Broadcast)     1... .... = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 0.0.0.0   Next server IP address: 0.0.0.0   Relay agent IP address: 0.0.0.0   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   &gt; Option: (53) DHCP Message Type (Request)     Length: 1     &lt;Value: 03&gt;     DHCP: Request (3)   &gt; Option: (61) Client identifier     Length: 7     &lt;Value: 01005056a5fddd&gt;     Hardware type: Ethernet (0x01)     Client MAC address: 00:50:56:a5:fd:dd   &gt; Option: (50) Requested IP Address (10.10.10.3)     Length: 4     &lt;Value: 0a0a0a03&gt;     Requested IP Address: 10.10.10.3   &gt; Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   &gt; Option: (12) Host Name     Length: 10     &lt;Value: 43584c6162732d573130&gt;     Host Name: CXLabs-W10   &gt; Option: (81) Client Fully Qualified Domain Name     Length: 13     &lt;Value: 00000043584c6162732d573130&gt;     &gt; Flags: 0x00       0000 .... = Reserved flags: 0x0       .... 0... = Server DDNS: Some server updates       .... .0.. = Encoding: ASCII encoding       .... ..0. = Server overrides: No override       .... ...0 = Server: Client     A-RR result: 0     PTR-RR result: 0     Client name: CXLabs-W10   &gt; Option: (60) Vendor class identifier     Length: 8     &lt;Value: 4d53465420352e30&gt;     Vendor class identifier: MSFT 5.0   &gt; Option: (55) Parameter Request List     Length: 14     &lt;Value: 0103060f1f212b2c2e2f779f9fc&gt;     Parameter Request List Item: (1) Subnet Mask     Parameter Request List Item: (3) Router     Parameter Request List Item: (6) Domain Name Server     Parameter Request List Item: (15) Domain Name     Parameter Request List Item: (31) Perform Router Discover     Parameter Request List Item: (33) Static Route     Parameter Request List Item: (43) Vendor-Specific Information     Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server     Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type     Parameter Request List Item: (47) NetBIOS over TCP/IP Scope     Parameter Request List Item: (119) Domain Search     Parameter Request List Item: (121) Classless Static Route     Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)     Parameter Request List Item: (252) Private/Proxy autodiscovery   &gt; Option: (255) End     Option End: 255 </pre>	<pre> &gt; Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 10:b3:d6:a4:85:97 &gt; Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254 &gt; User Datagram Protocol, Src Port: 51730, Dst Port: 4789 &gt; Virtual Extensible Local Area Network   &gt; Flags: 0x8000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 303030     Reserved: 0   &gt; Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe   &gt; Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150   &gt; User Datagram Protocol, Src Port: 67, Dst Port: 67   &gt; Dynamic Host Configuration Protocol (Request)     Message type: Boot Request (1)     Hardware type: Ethernet (0x01)     Hardware address length: 6     Hops: 1     Transaction ID: 0xe9e35087     Seconds elapsed: 0     &gt; Bootp flags: 0x8000, Broadcast flag (Broadcast)       Client IP address: 0.0.0.0       Your (client) IP address: 0.0.0.0       Next server IP address: 0.0.0.0       Relay agent IP address: 172.16.10.8       Client MAC address: 00:50:56:a5:fd:dd       Client hardware address padding: 00000000000000000000       Server host name not given       Boot file name not given       Magic cookie: DHCP     &gt; Option: (53) DHCP Message Type (Request)       Length: 1       &lt;Value: 03&gt;       DHCP: Request (3)     &gt; Option: (61) Client Identifier       Length: 7       &lt;Value: 01005056a5fddd&gt;       Hardware type: Ethernet (0x01)       Client MAC address: 00:50:56:a5:fd:dd     &gt; Option: (50) Requested IP Address (10.10.10.3)       Length: 4       &lt;Value: 0a0a0a03&gt;       Requested IP Address: 10.10.10.3     &gt; Option: (54) DHCP Server Identifier (10.10.10.150)       Length: 4       &lt;Value: 0a0a0a96&gt;       DHCP Server Identifier: 10.10.10.150     &gt; Option: (12) Host Name       Length: 10       &lt;Value: 43584c6162732d573130&gt;       Host Name: CXLabs-W10     &gt; Option: (81) Client Fully Qualified Domain Name       Length: 13       &lt;Value: 00000043584c6162732d573130&gt;       &gt; Flags: 0x00       A-RR result: 0       PTR-RR result: 0       Client name: CXLabs-W10     &gt; Option: (60) Vendor class identifier       Length: 8       &lt;Value: 4d53465420352e30&gt;       Vendor class identifier: MSFT 5.0     &gt; Option: (55) Parameter Request List       Length: 14       &lt;Value: 0103060f1f212b2c2e2f779f9fc&gt;       Parameter Request List Item: (1) Subnet Mask       Parameter Request List Item: (3) Router       Parameter Request List Item: (6) Domain Name Server       Parameter Request List Item: (15) Domain Name       Parameter Request List Item: (31) Perform Router Discover       Parameter Request List Item: (33) Static Route       Parameter Request List Item: (43) Vendor-Specific Information       Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server       Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type       Parameter Request List Item: (47) NetBIOS over TCP/IP Scope       Parameter Request List Item: (119) Domain Search       Parameter Request List Item: (121) Classless Static Route       Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)       Parameter Request List Item: (252) Private/Proxy autodiscovery     &gt; Option: (82) Agent Information Option       Length: 47       &lt;Value: 010e010800060018a9200a000000000206707db9b84daf97090074656e16e742d610b40a0a0105040a0a00&gt;     &gt; Option 82 Suboption: (1) Agent Circuit ID       Length: 14       &lt;Value: 0108000600018a9200a000000000&gt;       Agent Circuit ID: 0108000600018a9200a000000000     &gt; Option 82 Suboption: (2) Agent Remote ID       Length: 6       &lt;Value: 707db9b84daf&gt;       Agent Remote ID: 707db9b84daf     &gt; Option 82 Suboption: (151) VRF name/VPN ID       Length: 9       &lt;Value: 0074656e16e742d61&gt;       &gt; VRF name:       [Expert Info (Warning/Undecoded): Trailing stray characters]     &gt; Option 82 Suboption: (11) Server ID Override (10.10.10.1)       Length: 4       &lt;Value: 0a0a0a01&gt;       Server ID Override: 10.10.10.1     &gt; Option 82 Suboption: (5) Link selection (10.10.10.0)       Length: 4       &lt;Value: 0a0a0a00&gt;       Link selection: 10.10.10.0     &gt; Option: (255) End       Option End: 255 </pre>

# SPINEに対する要求

要求をスパインで受信	SPINEによるリクエスト送信
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```
Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 10:b3:d6:a4:85:97
Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
User Datagram Protocol, Src Port: 51730, Dst Port: 4789
Virtual Extensible Local Area Network
  Flags: 0x8000, VLAN Network ID (VNI)
  Group Policy ID: 0
  VLAN Network Identifier (VNI): 303030
  Reserved: 0
Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (Request)
  Length: 1
  <Value: 03>
  DHCP: Request (3)
  Option: (61) Client Identifier
  Length: 7
  <Value: 01005056a5fd00>
  Hardware type: Ethernet (0x01)
  Client MAC address: 00:50:56:a5:fd:dd
  Option: (50) Requested IP Address (10.10.10.3)
  Length: 4
  <Value: 0a0a0a03>
  Requested IP Address: 10.10.10.3
  Option: (54) DHCP Server Identifier (10.10.10.150)
  Length: 4
  <Value: 0a0a0a96>
  DHCP Server Identifier: 10.10.10.150
  Option: (12) Host Name
  Length: 10
  <Value: 43584c6162732d573130>
  Host Name: CXLabs-W10
  Option: (81) Client Fully Qualified Domain Name
  Length: 13
  <Value: 00000043584c6162732d573130>
  Flags: 0x00
  A-RR result: 0
  PTR-RR result: 0
  Client name: CXLabs-W10
  Option: (60) Vendor class identifier
  Length: 8
  <Value: 4d53465420352e30>
  Vendor class identifier: MSFT 5.0
  Option: (55) Parameter Request List
  Length: 14
  <Value: 0103060f1f212b2c2e2f7779f9fc>
  Parameter Request List Item: (1) Subnet Mask
  Parameter Request List Item: (3) Router
  Parameter Request List Item: (6) Domain Name Server
  Parameter Request List Item: (15) Domain Name
  Parameter Request List Item: (31) Perform Router Discover
  Parameter Request List Item: (33) Static Route
  Parameter Request List Item: (43) Vendor-Specific Information
  Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
  Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
  Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
  Parameter Request List Item: (119) Domain Search
  Parameter Request List Item: (121) Classless Static Route
  Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
  Parameter Request List Item: (252) Private/Proxy autodiscovery
  Option: (82) Agent Information Option
  Length: 47
  <Value: 010e018000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00>
  Option 82 Suboption: (1) Agent Circuit ID
  Length: 14
  <Value: 0108000600018a9200a000000000>
  Agent Circuit ID: 0108000600018a9200a000000000
  Option 82 Suboption: (2) Agent Remote ID
  Length: 6
  <Value: 707db9b84daf>
  Agent Remote ID: 707db9b84daf
  Option 82 Suboption: (151) VRF name/VPN ID
  Length: 9
  <Value: 0074656e616e742d61>
  VRF name:
  [Expert Info (Warning/Undecoded): Trailing stray characters]
  Option 82 Suboption: (11) Server ID Override (10.10.10.1)
  Length: 4
  <Value: 0a0a0a01>
  Server ID Override: 10.10.10.1
  Option 82 Suboption: (5) Link selection (10.10.10.0)
  Length: 4
  <Value: 0a0a0a00>
  Link selection: 10.10.10.0
  Option: (255) End
  Option End: 255
```

```
Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 00:26:aa:85:95:87
Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
User Datagram Protocol, Src Port: 51730, Dst Port: 4789
Virtual Extensible Local Area Network
  Flags: 0x8000, VLAN Network ID (VNI)
  Group Policy ID: 0
  VLAN Network Identifier (VNI): 303030
  Reserved: 0
Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (Request)
  Length: 1
  <Value: 03>
  DHCP: Request (3)
  Option: (61) Client identifier
  Length: 7
  <Value: 01005056a5fd00>
  Hardware type: Ethernet (0x01)
  Client MAC address: 00:50:56:a5:fd:dd
  Option: (50) Requested IP Address (10.10.10.3)
  Length: 4
  <Value: 0a0a0a03>
  Requested IP Address: 10.10.10.3
  Option: (54) DHCP Server Identifier (10.10.10.150)
  Length: 4
  <Value: 0a0a0a96>
  DHCP Server Identifier: 10.10.10.150
  Option: (12) Host Name
  Length: 10
  <Value: 43584c6162732d573130>
  Host Name: CXLabs-W10
  Option: (81) Client Fully Qualified Domain Name
  Length: 13
  <Value: 00000043584c6162732d573130>
  Flags: 0x00
  A-RR result: 0
  PTR-RR result: 0
  Client name: CXLabs-W10
  Option: (60) Vendor class identifier
  Length: 8
  <Value: 4d53465420352e30>
  Vendor class identifier: MSFT 5.0
  Option: (55) Parameter Request List
  Length: 14
  <Value: 0103060f1f212b2c2e2f7779f9fc>
  Parameter Request List Item: (1) Subnet Mask
  Parameter Request List Item: (3) Router
  Parameter Request List Item: (6) Domain Name Server
  Parameter Request List Item: (15) Domain Name
  Parameter Request List Item: (31) Perform Router Discover
  Parameter Request List Item: (33) Static Route
  Parameter Request List Item: (43) Vendor-Specific Information
  Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
  Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
  Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
  Parameter Request List Item: (119) Domain Search
  Parameter Request List Item: (121) Classless Static Route
  Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
  Parameter Request List Item: (252) Private/Proxy autodiscovery
  Option: (82) Agent Information Option
  Length: 47
  <Value: 010e018000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00>
  Option 82 Suboption: (1) Agent Circuit ID
  Length: 14
  <Value: 0108000600018a9200a000000000>
  Agent Circuit ID: 0108000600018a9200a000000000
  Option 82 Suboption: (2) Agent Remote ID
  Length: 6
  <Value: 707db9b84daf>
  Agent Remote ID: 707db9b84daf
  Option 82 Suboption: (151) VRF name/VPN ID
  Length: 9
  <Value: 0074656e616e742d61>
  VRF name:
  Option 82 Suboption: (11) Server ID Override (10.10.10.1)
  Length: 4
  <Value: 0a0a0a01>
  Server ID Override: 10.10.10.1
  Option 82 Suboption: (5) Link selection (10.10.10.0)
  Length: 4
  <Value: 0a0a0a00>
  Link selection: 10.10.10.0
  Option: (255) End
  Option End: 255
```

# LEAF-2-vPCでの要求

リーフ2-vPCでのrecvPCdの要求	要求はvPCAF-2-vPCで送信
<pre> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 00:26:aa:85:95:87 Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 51730, Dst Port: 4789 Virtual extensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 303030     Reserved: 0 Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Request)   Message type: Boot Request (1)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 1   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)   Client IP address: 0.0.0.0   Your (client) IP address: 0.0.0.0   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP Option (53) DHCP Message Type (Request)   Length: 1   &lt;Value: 03&gt;   DHCP: Request (3) Option (61) Client identifier   Length: 7   &lt;Value: 01005056a5fddd&gt;   Hardware type: Ethernet (0x01)   Client MAC address: 00:50:56:a5:fd:dd Option (50) Requested IP Address (10.10.10.3)   Length: 4   &lt;Value: 0a0a0a03&gt;   Requested IP Address: 10.10.10.3 Option (54) DHCP Server Identifier (10.10.10.150)   Length: 4   &lt;Value: 0a0a0a96&gt;   DHCP Server Identifier: 10.10.10.150 Option (12) Host Name   Length: 10   &lt;Value: 43584c6162732d573130&gt;   Host Name: CXLabs-W10 Option (81) Client Fully Qualified Domain Name   Length: 13   &lt;Value: 00000043584c6162732d573130&gt;   Flags: 0x00   A-RR result: 0   PTR-RR result: 0   Client name: CXLabs-W10 Option (60) Vendor class identifier   Length: 8   &lt;Value: 4d53465428352e30&gt;   Vendor class identifier: MSFT 5.0 Option (55) Parameter Request List   Length: 14   &lt;Value: 0103060f1f212b2c2e2f779f9fc&gt;   Parameter Request List Item: (1) Subnet Mask   Parameter Request List Item: (3) Router   Parameter Request List Item: (6) Domain Name Server   Parameter Request List Item: (15) Domain Name   Parameter Request List Item: (31) Perform Router Discover   Parameter Request List Item: (33) Static Route   Parameter Request List Item: (43) Vendor-Specific Information   Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server   Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type   Parameter Request List Item: (47) NetBIOS over TCP/IP Scope   Parameter Request List Item: (119) Domain Search   Parameter Request List Item: (121) Classless Static Route   Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)   Parameter Request List Item: (252) Private/Proxy autodiscovery Option (82) Agent Information Option   Length: 47   &lt;Value: 010e0108000600018a920a000000000206707db9b84daf97090074656e16e742d610b040a0a0a0105040a0a0a00&gt; Option 82 Suboption: (1) Agent Circuit ID   Length: 14   &lt;Value: 0108000600018a920a0000000000&gt;   Agent Circuit ID: 0108000600018a920a0000000000 Option 82 Suboption: (2) Agent Remote ID   Length: 6   &lt;Value: 707db9b84daf&gt;   Agent Remote ID: 707db9b84daf Option 82 Suboption: (151) VRF name/VPN ID   Length: 9   &lt;Value: 0074656e16e742d61&gt;   VRF name: Option 82 Suboption: (11) Server ID Override (10.10.10.1)   Length: 4   &lt;Value: 0a0a0a01&gt;   Server ID Override: 10.10.10.1 Option 82 Suboption: (5) Link selection (10.10.10.0)   Length: 4   &lt;Value: 0a0a0a00&gt;   Link selection: 10.10.10.0 Option (255) End   Option End: 255 </pre>	<pre> Ethernet II, Src: 00:26:aa:85:95:87, Dst: 00:50:56:a5:dc:ca Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Request)   Message type: Boot Request (1)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 1   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)   Client IP address: 0.0.0.0   Your (client) IP address: 0.0.0.0   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP Option (53) DHCP Message Type (Request)   Length: 1   &lt;Value: 03&gt;   DHCP: Request (3) Option (61) Client identifier   Length: 7   &lt;Value: 01005056a5fddd&gt;   Hardware type: Ethernet (0x01)   Client MAC address: 00:50:56:a5:fd:dd Option (50) Requested IP Address (10.10.10.3)   Length: 4   &lt;Value: 0a0a0a03&gt;   Requested IP Address: 10.10.10.3 Option (54) DHCP Server Identifier (10.10.10.150)   Length: 4   &lt;Value: 0a0a0a96&gt;   DHCP Server Identifier: 10.10.10.150 Option (12) Host Name   Length: 10   &lt;Value: 43584c6162732d573130&gt;   Host Name: CXLabs-W10 Option (81) Client Fully Qualified Domain Name   Length: 13   &lt;Value: 00000043584c6162732d573130&gt;   Flags: 0x00   A-RR result: 0   PTR-RR result: 0   Client name: CXLabs-W10 Option (60) Vendor class identifier   Length: 8   &lt;Value: 4d53465428352e30&gt;   Vendor class identifier: MSFT 5.0 Option (55) Parameter Request List   Length: 14   &lt;Value: 0103060f1f212b2c2e2f779f9fc&gt;   Parameter Request List Item: (1) Subnet Mask   Parameter Request List Item: (3) Router   Parameter Request List Item: (6) Domain Name Server   Parameter Request List Item: (15) Domain Name   Parameter Request List Item: (31) Perform Router Discover   Parameter Request List Item: (33) Static Route   Parameter Request List Item: (43) Vendor-Specific Information   Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server   Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type   Parameter Request List Item: (47) NetBIOS over TCP/IP Scope   Parameter Request List Item: (119) Domain Search   Parameter Request List Item: (121) Classless Static Route   Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)   Parameter Request List Item: (252) Private/Proxy autodiscovery Option (82) Agent Information Option   Length: 47   &lt;Value: 010e0108000600018a920a000000000206707db9b84daf97090074656e16e742d610b040a0a0a0105040a0a0a00&gt; Option 82 Suboption: (1) Agent Circuit ID   Length: 14   &lt;Value: 0108000600018a920a0000000000&gt;   Agent Circuit ID: 0108000600018a920a0000000000 Option 82 Suboption: (2) Agent Remote ID   Length: 6   &lt;Value: 707db9b84daf&gt;   Agent Remote ID: 707db9b84daf Option 82 Suboption: (151) VRF name/VPN ID   Length: 9   &lt;Value: 0074656e16e742d61&gt;   VRF name: Option 82 Suboption: (11) Server ID Override (10.10.10.1)   Length: 4   &lt;Value: 0a0a0a01&gt;   Server ID Override: 10.10.10.1 Option 82 Suboption: (5) Link selection (10.10.10.0)   Length: 4   &lt;Value: 0a0a0a00&gt;   Link selection: 10.10.10.0 Option (255) End   Option End: 255 </pre>

# DCHPサーバで要求を受信

```

Ethernet II, Src: 60:26:aa:85:95:87, Dst: 00:50:56:a5:dc:ca
> Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
> User Datagram Protocol, Src Port: 67, Dst Port: 67
- Dynamic Host Configuration Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  > Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  - Option: (53) DHCP Message Type (Request)
    Length: 1
    <Value: 03>
    DHCP: Request (3)
  - Option: (61) Client identifier
    Length: 7
    <Value: 01005056a5fd00>
    Hardware type: Ethernet (0x01)
    Client MAC address: 00:50:56:a5:fd:dd
  - Option: (50) Requested IP Address (10.10.10.3)
    Length: 4
    <Value: 0a0a0a03>
    Requested IP Address: 10.10.10.3
  - Option: (54) DHCP Server Identifier (10.10.10.150)
    Length: 4
    <Value: 0a0a0a96>
    DHCP Server Identifier: 10.10.10.150
  - Option: (12) Host Name
    Length: 10
    <Value: 43584c6162732d573130>
    Host Name: CXLabs-W10
  - Option: (81) Client Fully Qualified Domain Name
    Length: 13
    <Value: 00000043584c6162732d573130>
    > Flags: 0x00
    A-RR result: 0
    PTR-RR result: 0
    Client name: CXLabs-W10
  - Option: (60) Vendor class identifier
    Length: 8
    <Value: 4d53465420352e30>
    Vendor class identifier: MSFT 5.0
  - Option: (55) Parameter Request List
    Length: 14
    <Value: 0103060f1f212b2c2e2f7779f9fc>
    Parameter Request List Item: (1) Subnet Mask
    Parameter Request List Item: (3) Router
    Parameter Request List Item: (6) Domain Name Server
    Parameter Request List Item: (15) Domain Name
    Parameter Request List Item: (31) Perform Router Discover
    Parameter Request List Item: (33) Static Route
    Parameter Request List Item: (43) Vendor-Specific Information
    Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
    Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
    Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
    Parameter Request List Item: (119) Domain Search
    Parameter Request List Item: (121) Classless Static Route
    Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
    Parameter Request List Item: (252) Private/Proxy autodiscovery
  - Option: (82) Agent Information Option
    Length: 47
    <Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
  - Option 82 Suboption: (1) Agent Circuit ID
    Length: 14
    <Value: 0108000600018a9200a000000000>
    Agent Circuit ID: 0108000600018a9200a000000000
  - Option 82 Suboption: (2) Agent Remote ID
    Length: 6
    <Value: 707db9b84daf>
    Agent Remote ID: 707db9b84daf
  - Option 82 Suboption: (151) VRF name/VPN ID
    Length: 9
    <Value: 0074656e616e742d61>
    > VRF name:
  - Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    Server ID Override: 10.10.10.1
  - Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a0a00>
    Link selection: 10.10.10.0
  - Option: (255) End
    Option End: 255

```

DCHPサーバから送信されたACK

```

> Ethernet II, Src: 00:50:56:a5:dc:ca, Dst: 00:00:0a:0a:0a:0a
> Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8
> User Datagram Protocol, Src Port: 67, Dst Port: 67
< Dynamic Host Configuration Protocol (ACK)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  < Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... .... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 10.10.10.3
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  < Option: (53) DHCP Message Type (ACK)
    Length: 1
    <Value: 05>
    DHCP: ACK (5)
  < Option: (58) Renewal Time Value
    Length: 4
    <Value: 0000a8c0>
    Renewal Time Value: 12 hours (43200)
  < Option: (59) Rebinding Time Value
    Length: 4
    <Value: 00012750>
    Rebinding Time Value: 21 hours (75600)
  < Option: (51) IP Address Lease Time
    Length: 4
    <Value: 00015180>
    IP Address Lease Time: 1 day (86400)
  < Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  < Option: (1) Subnet Mask (255.255.255.0)
    Length: 4
    <Value: ffffffff00>
    Subnet Mask: 255.255.255.0
  < Option: (81) Client Fully Qualified Domain Name
    Length: 3
    <Value: 00ffff>
    > Flags: 0x00
    A-RR result: 255
    PTR-RR result: 255
  < Option: (3) Router
    Length: 4
    <Value: 0a0a0a01>
    Router: 10.10.10.1
  < Option: (15) Domain Name
    Length: 10
    <Value: 636973636f2e636f6d00>
    Domain Name: cisco.com
  < Option: (82) Agent Information Option
    Length: 47
    <Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
  < Option 82 Suboption: (1) Agent Circuit ID
    Length: 14
    <Value: 0108000600018a9200a000000000>
    Agent Circuit ID: 0108000600018a9200a000000000
  < Option 82 Suboption: (2) Agent Remote ID
    Length: 6
    <Value: 707db9b84daf>
    Agent Remote ID: 707db9b84daf
  < Option 82 Suboption: (151) VRF name/VPN ID
    Length: 9
    <Value: 0074656e616e742d61>
  < VRF name:
    < [Expert Info (Warning/Undecoded): Trailing stray characters]
      [Trailing stray characters]
      <Message: Trailing stray characters>
      [Severity level: Warning]
      [Group: Undecoded]
  < Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    Server ID Override: 10.10.10.1
  < Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a0a00>
    Link selection: 10.10.10.0
  < Option: (255) End
    Option End: 255

```

# LEAF-2-vPCでのACK

LEAF-2-vPCでACKを受信	LEAF-2-vPCによって送信されたACK
<pre> Ethernet II, Src: 00:50:56:a5:dc:ca, Dst: 00:00:0a:0a:0a:0a Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .... .... .... = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (ACK)     Length: 1     &lt;Value: 05&gt;     DHCP: ACK (5)   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff00&gt;     Subnet Mask: 255.255.255.0   Option: (81) Client Fully Qualified Domain Name     Length: 3     &lt;Value: 00ffff&gt;     Flags: 0x00     A-RR result: 255     PTR-RR result: 255   Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a000000000&gt;     Agent Circuit ID: 0108000600018a9200a000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d061&gt;     VRF name:     [Expert Info (Warning/Undecoded): Trailing stray characters]     [Trailing stray characters]     &lt;Message: Trailing stray characters&gt;     [Severity level: Warning]     [Group: Undecoded]   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End   Option End: 255 </pre>	<pre> Ethernet II, Src: 00:26:aa:85:95:07, Dst: 10:b3:d6:04:85:97 Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)   Group Policy ID: 0   VXLAN Network Identifier (VNI): 303030   Reserved: 0   Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af   Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8   User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .... .... .... = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (ACK)     Length: 1     &lt;Value: 05&gt;     DHCP: ACK (5)   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff00&gt;     Subnet Mask: 255.255.255.0   Option: (81) Client Fully Qualified Domain Name     Length: 3     &lt;Value: 00ffff&gt;     Flags: 0x00     .000 .... = Reserved flags: 0x0     ... 0... = Server DNS: Some server updates     .... 0.. = Encoding: ASCII encoding     .... 0. = Server overrides: No override     .... ..0 = Server: Client     A-RR result: 255     PTR-RR result: 255   Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a000000000&gt;     Agent Circuit ID: 0108000600018a9200a000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d061&gt;     VRF name:     [Expert Info (Warning/Undecoded): Trailing stray characters]     [Trailing stray characters]     &lt;Message: Trailing stray characters&gt;     [Severity level: Warning]     [Group: Undecoded]   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End   Option End: 255 </pre>

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## 脊椎のACK

スパインでACKを受信	スパインによるACK送信
<pre> Ethernet II, Src: 00:12:aa:18:51:95:87, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 303030   Reserved: 0 Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .. = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (ACK)     Length: 1     &lt;Value: 05&gt;     DHCP: ACK (5)   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff00&gt;     Subnet Mask: 255.255.255.0   Option: (81) Client Fully Qualified Domain Name     Length: 3     &lt;Value: 00ffff&gt;     Flags: 0x00     0000 .... = Reserved flags: 0x0     ... 0... = Server DNS: Some server updates     .... .0. = Encoding: ASCII encoding     .... .0. = Server overrides: No override     .... ...0 = Server: Client   A-RR result: 255   PTR-RR result: 255   Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6000&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a000000000&gt;     Agent Circuit ID: 0108000600018a9200a000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     VRF name:       [Expert Info (Warning/Undecoded): Trailing stray characters]       [Trailing stray characters]       &lt;Message: Trailing stray characters&gt;       [Severity level: Warning]       [Group: Undecoded]   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End   Option End: 255 </pre>	<pre> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)     Group Policy ID: 0     VXLAN Network Identifier (VNI): 303030   Reserved: 0 Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .. = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 0.0.0.0   Relay agent IP address: 172.16.10.8   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   Option: (53) DHCP Message Type (ACK)     Length: 1     &lt;Value: 05&gt;     DHCP: ACK (5)   Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;   Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff00&gt;     Subnet Mask: 255.255.255.0   Option: (81) Client Fully Qualified Domain Name     Length: 3     &lt;Value: 00ffff&gt;     Flags: 0x00     0000 .... = Reserved flags: 0x0     ... 0... = Server DNS: Some server updates     .... .0. = Encoding: ASCII encoding     .... .0. = Server overrides: No override     .... ...0 = Server: Client   A-RR result: 255   PTR-RR result: 255   Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6000&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00&gt;   Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a000000000&gt;     Agent Circuit ID: 0108000600018a9200a000000000   Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;     VRF name:       [Expert Info (Warning/Undecoded): Trailing stray characters]       [Trailing stray characters]       &lt;Message: Trailing stray characters&gt;       [Severity level: Warning]       [Group: Undecoded]   Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   Option: (255) End   Option End: 255 </pre>

## LEAF-1でのACK

LEAF-1でACKを受信	LEAF-1によって送信されたACK
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<pre> &gt; Ethernet II, Src: 10:b3:06:a4:85:97, Dst: 70:7d:b9:b8:4d:af &gt; Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 &gt; User Datagram Protocol, Src Port: 65518, Dst Port: 4789 &gt; Virtual eXtensible Local Area Network   &gt; Flags: 0x0000, VLAN Network ID (VNI)     Group Policy ID: 0     VLAN Network Identifier (VNI): 303030     Reserved: 0   &gt; Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af   &gt; Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8   &gt; User Datagram Protocol, Src Port: 67, Dst Port: 67   &gt; Dynamic Host Configuration Protocol (ACK)     Message type: Boot Reply (2)     Hardware type: Ethernet (0x01)     Hardware address length: 6     Hops: 0     Transaction ID: 0xe9e35087     Seconds elapsed: 0   &gt; Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .. = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000     Client IP address: 0.0.0.0     Your (client) IP address: 10.10.10.3     Next server IP address: 0.0.0.0     Relay agent IP address: 172.16.10.8     Client MAC address: 00:50:56:a5:fd:dd     Client hardware address padding: 00000000000000000000     Server host name not given     Boot file name not given     Magic cookie: DHCP   &gt; Option: (53) DHCP Message Type (ACK)     Length: 1     &lt;Value: 05&gt;     DHCP: ACK (5)   &gt; Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   &gt; Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   &gt; Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   &gt; Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   &gt; Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff00&gt;     Subnet Mask: 255.255.255.0   &gt; Option: (81) Client Fully Qualified Domain Name     Length: 3     &lt;Value: 00ffff&gt;     &gt; Flags: 0x00       0000 ... = Reserved flags: 0x0       ... 0... = Server DNS: Some server updates       ... .0.. = Encoding: ASCII encoding       ... ..0. = Server overrides: No override       ... ...0 = Server: Client     A-RR result: 255     PTR-RR result: 255   &gt; Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   &gt; Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   &gt; Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d6100040a0a0105040a0a000&gt;   &gt; Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0180000600018a9200a00000000000&gt;     Agent Circuit ID: 0180000600018a9200a000000000   &gt; Option 82 Suboption: (2) Agent Remote ID     Length: 6     &lt;Value: 707db9b84daf&gt;     Agent Remote ID: 707db9b84daf   &gt; Option 82 Suboption: (151) VRF name/VPN ID     Length: 9     &lt;Value: 0074656e616e742d61&gt;   &gt; VRF name:     &gt; [Expert Info (Warning/Undecoded): Trailing stray characters]       [Trailing stray characters]       &lt;Message: Trailing stray characters&gt;       [Severity level: Warning]       [Group: Undecoded]   &gt; Option 82 Suboption: (11) Server ID Override (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     Server ID Override: 10.10.10.1   &gt; Option 82 Suboption: (5) Link selection (10.10.10.0)     Length: 4     &lt;Value: 0a0a0a00&gt;     Link selection: 10.10.10.0   &gt; Option: (255) End     Option End: 255 </pre>	<pre> &gt; Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: ff:ff:ff:ff:ff:ff &gt; Internet Protocol Version 4, Src: 10.10.10.1, Dst: 255.255.255.255 &gt; User Datagram Protocol, Src Port: 67, Dst Port: 68 &gt; Dynamic Host Configuration Protocol (ACK)   Message type: Boot Reply (2)   Hardware type: Ethernet (0x01)   Hardware address length: 6   Hops: 0   Transaction ID: 0xe9e35087   Seconds elapsed: 0   &gt; Bootp flags: 0x0000, Broadcast flag (Broadcast)     1... .. = Broadcast flag: Broadcast     .000 0000 0000 0000 = Reserved flags: 0x0000   Client IP address: 0.0.0.0   Your (client) IP address: 10.10.10.3   Next server IP address: 0.0.0.0   Relay agent IP address: 10.10.10.1   Client MAC address: 00:50:56:a5:fd:dd   Client hardware address padding: 00000000000000000000   Server host name not given   Boot file name not given   Magic cookie: DHCP   &gt; Option: (53) DHCP Message Type (ACK)     Length: 1     &lt;Value: 05&gt;     DHCP: ACK (5)   &gt; Option: (58) Renewal Time Value     Length: 4     &lt;Value: 0000a8c0&gt;     Renewal Time Value: 12 hours (43200)   &gt; Option: (59) Rebinding Time Value     Length: 4     &lt;Value: 00012750&gt;     Rebinding Time Value: 21 hours (75600)   &gt; Option: (51) IP Address Lease Time     Length: 4     &lt;Value: 00015180&gt;     IP Address Lease Time: 1 day (86400)   &gt; Option: (54) DHCP Server Identifier (10.10.10.1)     Length: 4     &lt;Value: 0a0a0a01&gt;     DHCP Server Identifier: 10.10.10.1   &gt; Option: (1) Subnet Mask (255.255.255.0)     Length: 4     &lt;Value: ffffffff00&gt;     Subnet Mask: 255.255.255.0   &gt; Option: (81) Client Fully Qualified Domain Name     Length: 3     &lt;Value: 00ffff&gt;   &gt; Flags: 0x00     0000 ... = Reserved flags: 0x0     ... 0... = Server DNS: Some server updates     ... .0.. = Encoding: ASCII encoding     ... ..0. = Server overrides: No override     ... ...0 = Server: Client   A-RR result: 255   PTR-RR result: 255   &gt; Option: (3) Router     Length: 4     &lt;Value: 0a0a0a01&gt;     Router: 10.10.10.1   &gt; Option: (15) Domain Name     Length: 10     &lt;Value: 636973636f2e636f6d00&gt;     Domain Name: cisco.com   &gt; Option: (255) End     Option End: 255 </pre>
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## ホスト1に対するACK

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> Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: ff:ff:ff:ff:ff:ff
> Internet Protocol Version 4, Src: 10.10.10.1, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 67, Dst Port: 68
> Dynamic Host Configuration Protocol (ACK)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... .... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 10.10.10.3
  Next server IP address: 0.0.0.0
  Relay agent IP address: 10.10.10.1
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 000000000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (ACK)
    Length: 1
    <Value: 05>
    DHCP: ACK (5)
  Option: (58) Renewal Time Value
    Length: 4
    <Value: 0000a8c0>
    Renewal Time Value: 12 hours (43200)
  Option: (59) Rebinding Time Value
    Length: 4
    <Value: 00012750>
    Rebinding Time Value: 21 hours (75600)
  Option: (51) IP Address Lease Time
    Length: 4
    <Value: 00015180>
    IP Address Lease Time: 1 day (86400)
  Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  Option: (1) Subnet Mask (255.255.255.0)
    Length: 4
    <Value: ffffff00>
    Subnet Mask: 255.255.255.0
  Option: (81) Client Fully Qualified Domain Name
    Length: 3
    <Value: 00ffff>
    Flags: 0x00
      0000 .... = Reserved flags: 0x0
      .... 0... = Server DDNS: Some server updates
      .... .0.. = Encoding: ASCII encoding
      .... ..0. = Server overrides: No override
      .... ...0 = Server: Client
    A-RR result: 255
    PTR-RR result: 255
  Option: (3) Router
    Length: 4
    <Value: 0a0a0a01>
    Router: 10.10.10.1
  Option: (15) Domain Name
    Length: 10
    <Value: 636973636f2e636f6d00>
    Domain Name: cisco.com
  Option: (255) End
    Option End: 255

```

## 関連情報

[VXLAN BGP EVPNの設定](#)

[VXLANの設定](#)

[Nexus 9000でのDHCP関連の問題のトラブルシューティング](#)

[Cisco Nexus 9000シリーズNX-OS VXLANコンフィギュレーションガイド、リリース10.4\(x\)](#)

## 翻訳について

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