

# Configure and Verify DHCP in a VxLAN Fabric for Nexus 9000 with NX-OS and Windows Server 2022

## Contents

---

### [Introduction](#)

### [Prerequisites](#)

[Requirements](#)

[Components Used](#)

### [Background Information](#)

### [Underlay and Overlay Configuration for VxLAN in Laboratory](#)

[SPINE](#)

[LEAF-1](#)

[LEAF-1-vPC](#)

[LEAF-2-vPC](#)

[N9K-ACCESS](#)

### [DHCP Configuration on Nexus switches](#)

[LEAF-1](#)

[LEAF-1-vPC DHCP](#)

[LEAF-2-vPC DHCP](#)

### [DHCP server configuration on Windows Server 2022](#)

[IP addressing scope configuration for hosts.](#)

[Configuring scope for unique IP addresses from loopbacks in SVI as DHCP relay agent.](#)

[Configuring superscope for VxLAN fabric.](#)

[Configure Option 82 in host scopes.](#)

### [DHCP packet-walk from beginning to end in VxLAN Fabric.](#)

[Discovery send by HOST-1](#)

[Discovery on LEAF-1](#)

[Discovery on SPINE](#)

[Discovery on LEAF-1-vPC](#)

[Discovery received on DHCP Server](#)

[DCHP Offer send by DCHP Server](#)

[DCHP Offer on LEAF-2-vPC](#)

[DHCP Offer vPC SPINE](#)

[DHCP Offer on LEAF-1](#)

[DHCP Offer received on HOST-1](#)

[Request send by HOST-1](#)

[Request on LEAF-1](#)

[Request on SPINE](#)

[Request on LEAF-2-vPC](#)

---

[Request received on DCHP Server](#)

[ACK send by DCHP Server](#)

[ACK on LEAF-2-vPC](#)

[ACK on SPINE](#)

[ACK on LEAF-1](#)

[ACK on HOST-1](#)

[Related information](#)

---

## Introduction

This document describes how to configure and troubleshoot DHCP in a VxLAN Fabric with Nexus 9000 switches.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- Nexus NX-OS Software.
- Virtual Port Channel (vPC).
- VxLAN BGP L2VPN EVPN
- BGP address-family IPv4
- OSPF
- Multicast PIM (sparse-mode)
- DHCP

### Components Used

The information in this document is based on these software and hardware versions:

- Cisco Nexus 9000 with Cisco NX-OS.
  - N9K-C93180YC-EX
  - N9K-C93180YC-FX
  - NX-OS 10.3(4a)
- Windows Server 2022 Data Center

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

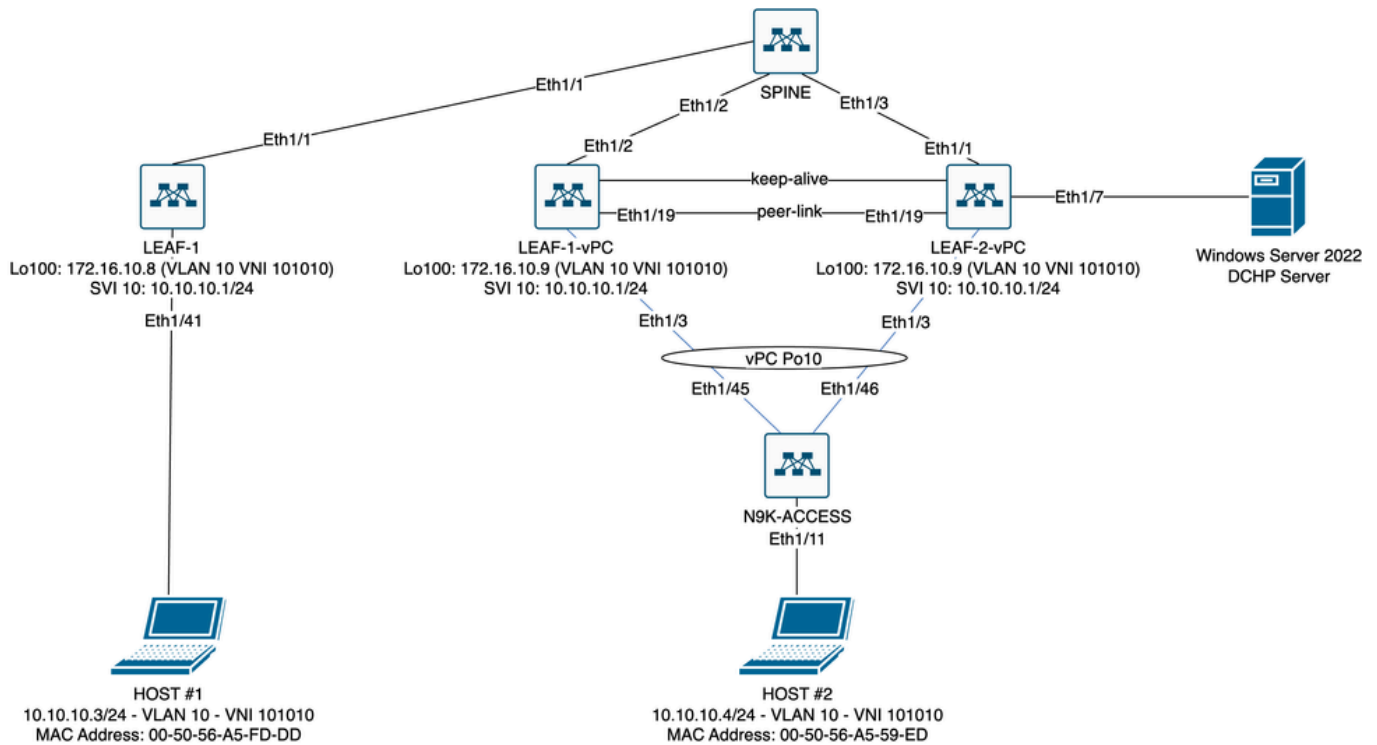


**Note:** Any questions about the configuration and integrability of third-party software or hardware are outside of Cisco support. The use of third-party tools is a best effort to demonstrate your configuration and operation with Cisco equipment to customer.

---

## **Background Information**

### **Underlay and Overlay Configuration for VxLAN in Laboratory**



VxLAN Fabric Diagram in Laboratory

- SPINE:
  - This Nexus switch sends DHCP (Discover, Offer, Request, Ack) packets without being decapsulated in this scenario. Only the outer header is used.
  - Acts as the central routing points in the network fabric.
  - Responsible for interconnecting all the LEAF switches and facilitating the flow of data between them.
  - Participates in BGP to distribute EVPN routes to the LEAF switches.
  - Performs IP routing and can route traffic between different subnets or VxLAN segments by looking at the outer IP headers.
  - Separates the overlay network (VxLAN) from the underlay physical network.
  - Manages the underlay with traditional IP routing protocols, while the overlay is managed by VxLAN with BGP EVPN, providing a scalable and flexible network architecture.
- LEAF-1:
  - LEAF switches provide physical connectivity for endpoints like servers, storage devices, and other network appliances.
  - LEAF switches act as VTEPs, which means they encapsulate and de-encapsulate the VxLAN packets.
  - In this scenario HOST#1 makes the IP address request.
  - LEAF-1 is responsible for encapsulating the DHCP packets within VxLAN header.
  - HOST#1 receives DHCP packets transparently as classic Ethernet.
- LEAF-1-vPC and LEAF-2-vPC:
  - LEAF switches participate in the EVPN control plane by running BGP and exchanging route information. This allows for the distribution of MAC and IP address information, ensuring that traffic can be efficiently routed across the VxLAN fabric.
  - In this scenario, the DHCP server is associated with VLAN 10 with VNI 101010 as is HOST#1. This means it is only VxLAN bridging.
  - If the DHCP Server was associated with a VNI other than HOST#1, then an L3VNI would be strictly necessary for routing. The source and destination VNI must be created.
  - DHCP server receives DHCP packets transparently as classic Ethernet.

- The BUM traffic is received by both Nexus switches in vPC, but only the operationally primary Nexus switch in vPC sends the traffic. The secondary Nexus switch drop the traffic. In this scenario LEAF-1-vPC is operationally primary.
  - The use of infra-vlans is mandatory because if the interface on LEAF-2-vPC to SPINE goes down, DCHP packets could not be sent. To send VxLAN-encapsulated traffic to LEAF-1-vPC, this backup VLAN is required. In this way LEAF-1-vPC could send DCHP packets to SPINE.
- N9K-ACCESS:
    - This Nexus switch only provides connectivity to both Leafs using a vPC port-channel for redundancy purposes towards HOST#2

## SPINE

```

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
```

## **LEAF-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

```

## LEAF-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
```

## LEAF-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 12
  rd auto
  route-target import auto
  route-target export auto
vni 202020 12
  rd auto
  route-target import auto
  route-target export auto
```

## **N9K-ACCESS**

```
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
```

## **DHCP Configuration on Nexus switches**

### **LEAF-1**

Step 1. Enable the feature DHCP.

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

---

**Note:** The DHCP server and the relay agent command **service dhcp**, **ip dhcp relay**, and **ipv6 dhcp relay** are enabled by default since NX-OS 7.x.

---

Step 2. Apply the command **ip dhcp relay information option**.

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

---

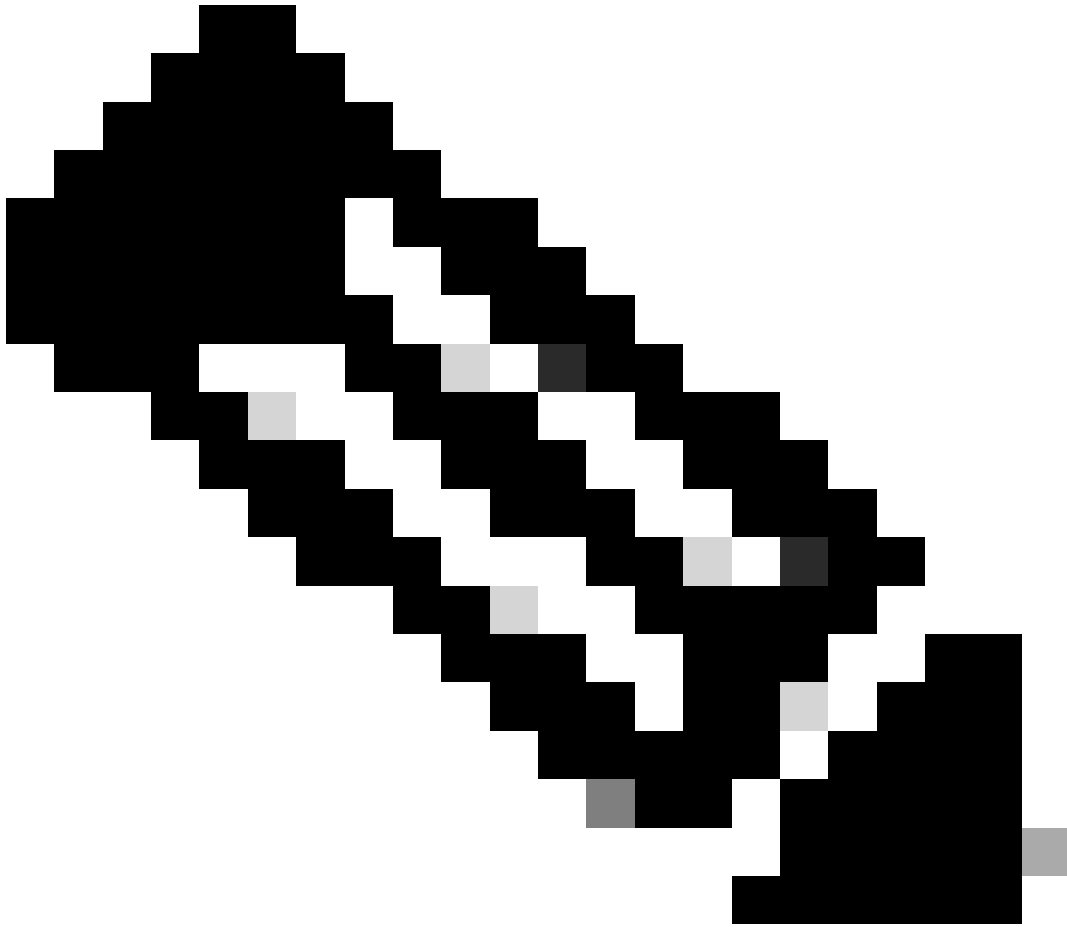
**Note:** This command enables the DHCP relay agent to insert and remove Option 82 information on the packets that are forwarded.

---

Step 3. Apply the command **ip dhcp relay information option vpn**.

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





**Note:** This command enables the DHCP relay requests that arrives on different VRF where the DHCP server belongs.

---

Step 4. Apply the command "ip dhcp relay address [*ip address of DHCP server*]".

---

**Note:** In this example the IP address for DHCP server is 10.10.10.150.

---

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

Step 5. Apply the command "ip dhcp relay source-interface *[unique loopback]*".



**Note:** This command configures the source IP address for DHCP relay agent to handle Discover, Offer, Request, and ACK, for unicast communication which the DHCP relay agent uses the IP address of SVI as source IP address for DHCP relay agent. This is not desired because this IP address is shared by multiples VTEPs and black-holing of DHCP packets can happen. To avoid this, a unique IP address (using a loopback interface) is necessary to differentiate each VTEP.

---

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

Step 6. In the VRF corresponding tenant within BGP, direct route redistribution with a prefix-list and route-map that includes the IP address of the loopback interface.

---

**Note:** This loopback interface belongs to the tenant of SVI.

---

```
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
```

Step 7. Verify that the IP address of the loopback interface is advertised in BGP L2VPN EVPN to the Spines with the command: **show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]**.

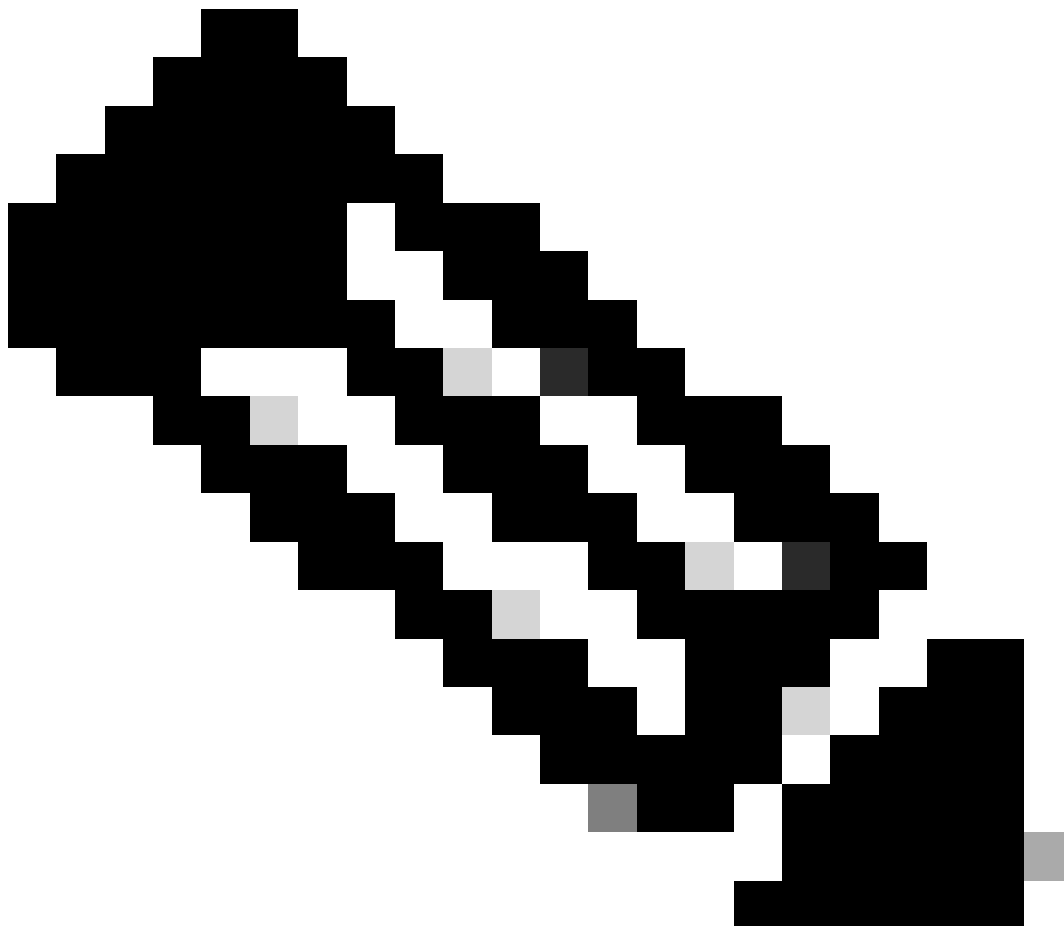
```
LEAF-1(config)# show bgp l2vpn evpn 172.16.10.8 vrf tenant-a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.5.5:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.8]/224, version 421
Paths: (1 available, best #1)
Flags: (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
```

Step 8. Verify that the IP address of the loopback interface is injected in BGP L2VPN EVPN where DHCP server is located.

---



---

**Note:** If there are Nexus switches in vPC, verify that they both learn the IP address of the loopback interface in BGP L2VPN EVPN.

---

```
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
```

Step 9. Verify that there is a route for the DHCP server on the source tenant with command **show ip route [DHCP server IP] vrf [tenant vrf]**.

---

**Note:** The route entry to use must be from VxLAN to default VRF. If there is no route available, check if the VTEP locally knows the DHCP server IP address.

---

```
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:
```

Step 10. Verify that the DHCP server IP is reachable using the loopback interface and the corresponding

VRF as a VRF source with command **ping [DHCP server IP] source-interface loopback [x] vrf [tenant vrf]**.

```
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
```

Step 11. Verify the status of the DHCP relay agent.

```
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
```

Step 12. Verify the option82, such as vpn option and the correct relay IP address under the relay agent.

```
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     <<<<<<<<<

```

Step 13. Verify the statistics of packets processed and forwarded.

```

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

```

Step 14. Verify the statistics of relay packets.

```

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

## **LEAF-1-vPC DHCP**

Step 1. Enable the feature DCHP.

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

---

**Note:** The DHCP server and the relay agent command **service dhcp**, **ip dhcp relay**, and **ipv6 dhcp relay** are enabled by default since NX-OS 7.x.

---

Step 2. Apply the command **ip dhcp relay information option**.

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

---

**Note:** This command enables the DHCP relay agent to insert and remove Option 82 information on the packets that are forwarded.

---

Step 3. Apply the command “ip dhcp relay information option vpn”.

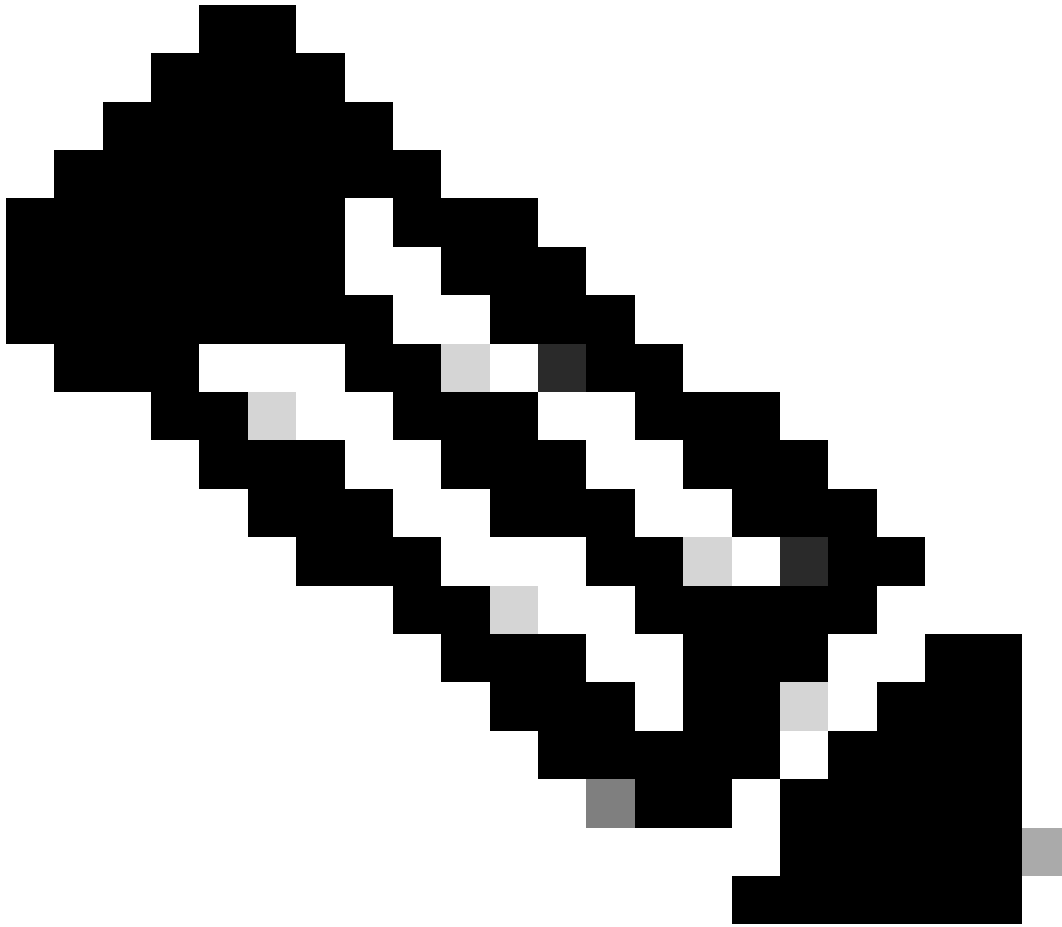
```
LEAF-1-VPC(config)# ip dhcp relay information option vpn
```

---

**Note:** This command enables the DHCP relay requests that arrives on different VRF where the DHCP server belongs.

---

Step 4. Apply the command **ip dhcp relay address** *[ip address of DHCP server]*.



**Note:** In this example the IP address for DHCP server is 10.10.10.150.

---

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

Step 5. Apply the command "ip dhcp relay source-interface *[unique loopback]*".



**Note:** This command configures the source IP address for DHCP relay agent to handle Discover, Offer, Request, and ACK, for unicast communication which the DHCP relay agent uses the IP address of SVI as source IP address for DHCP relay agent. This is not desired because this IP address is shared by multiples VTEPs and black-holing of DHCP packets can happen. To avoid this, a unique IP address (using a loopback interface) is necessary to differentiate each VTEP.

---

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

Step 6. In the VRF corresponding tenant within BGP, direct route redistribution with a prefix-list and route-map that includes the IP address of the loopback interface.

---

**Note:** This loopback interface belongs to the tenant of SVI.

---

```
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
```

Step 7. Verify that the IP address of the loopback interface is advertised in BGP L2VPN EVPN to the Spines with the command: **show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]**.



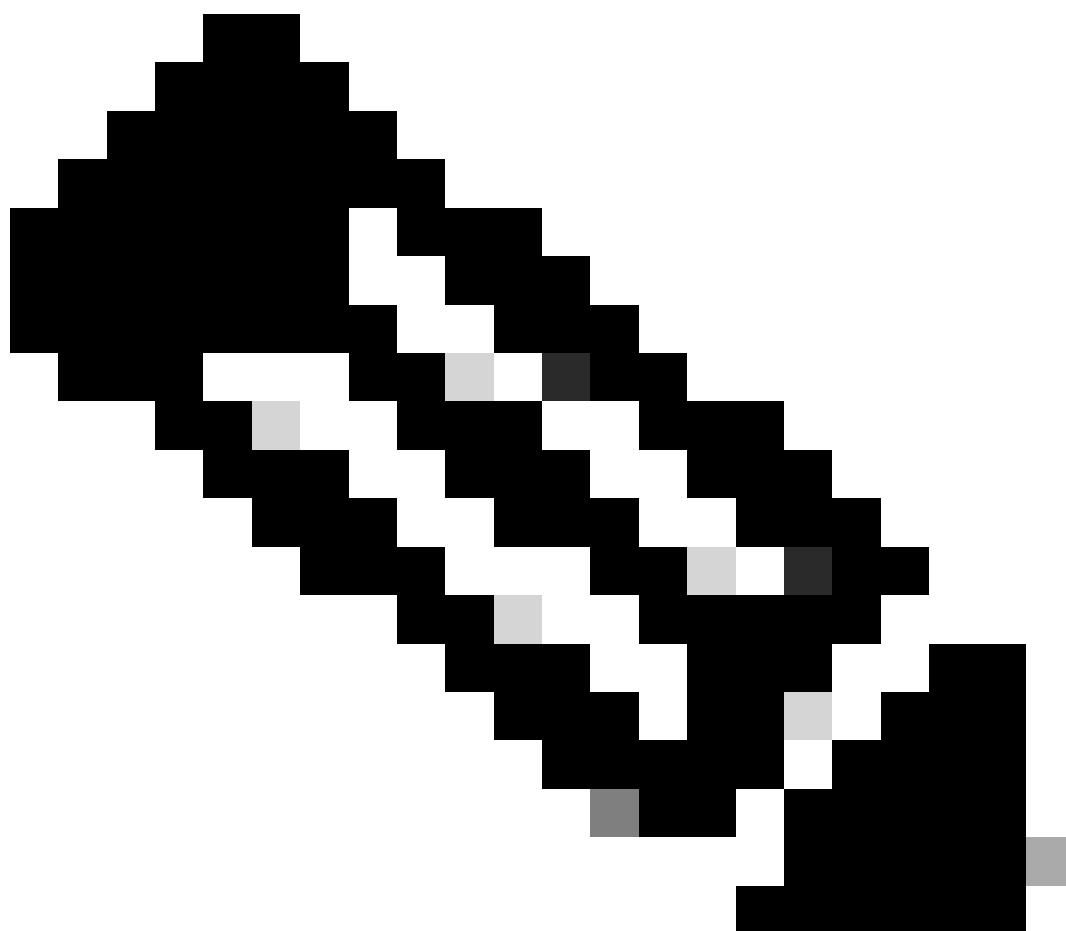
```
LEAF-1-VPC# show bgp l2vpn evpn 172.16.10.9 vrf tenant-a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.3.3:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.9]/224, version 637
Paths: (1 available, best #1)
Flags: (0x000002) (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
```

Step 8. Verify that the IP address of the loopback interface is injected in BGP L2VPN EVPN where DHCP server is located.

---



---

**Note:** If there are Nexus switches in vPC, verify that they both learn the IP address of the loopback interface in BGP L2VPN EVPN.

---

```
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
```

Step 9. Verify that there is a route for the DHCP server on the source tenant with command `show ip route [DHCP server IP] vrf[tenant vrf]`.



---

**Note:** The route entry to use must be from VxLAN to default VRF. If there is no route available, check if the VTEP locally knows the DHCP server IP address.

---

```
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
```

Step 10. Verify that the DHCP server IP is reachable using the loopback interface and the corresponding

VRF as a VRF source with command ping *[DHCP server IP]* source-interface loopback *[x]* vrf *[tenvrf]*.

```
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 ---
```

Step 11. Verify the status of the DHCP relay agent.

```
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
```

Step 12. Verify the option82, such as vpn option and the correct relay IP address under the relay agent.

```
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            <<<<<<<<<

Step 13. Verify the statistics of packets processed and forwarded.

```
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
```

Step 14. Verify the statistics of relay packets.

```
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
```

## LEAF-2-vPC DHCP

Step 1. Enable the feature DCHP.

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

---



---

---

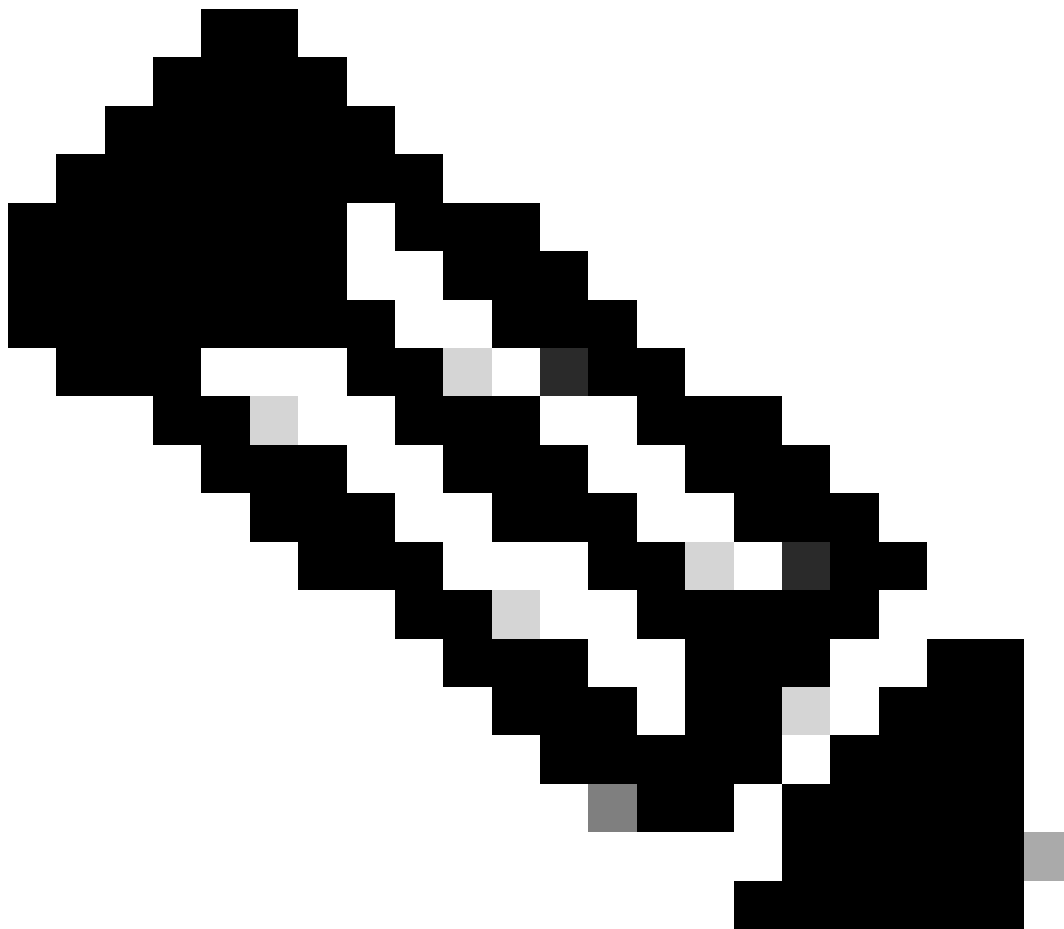
**Note:** The DHCP server and the relay agent command **service dhcp**, **ip dhcp relay** and **ipv6 dhcp relay** are enabled by default since NX-OS 7.x.

---

Step 2. Apply the command “ip dhcp relay information option”.

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

---

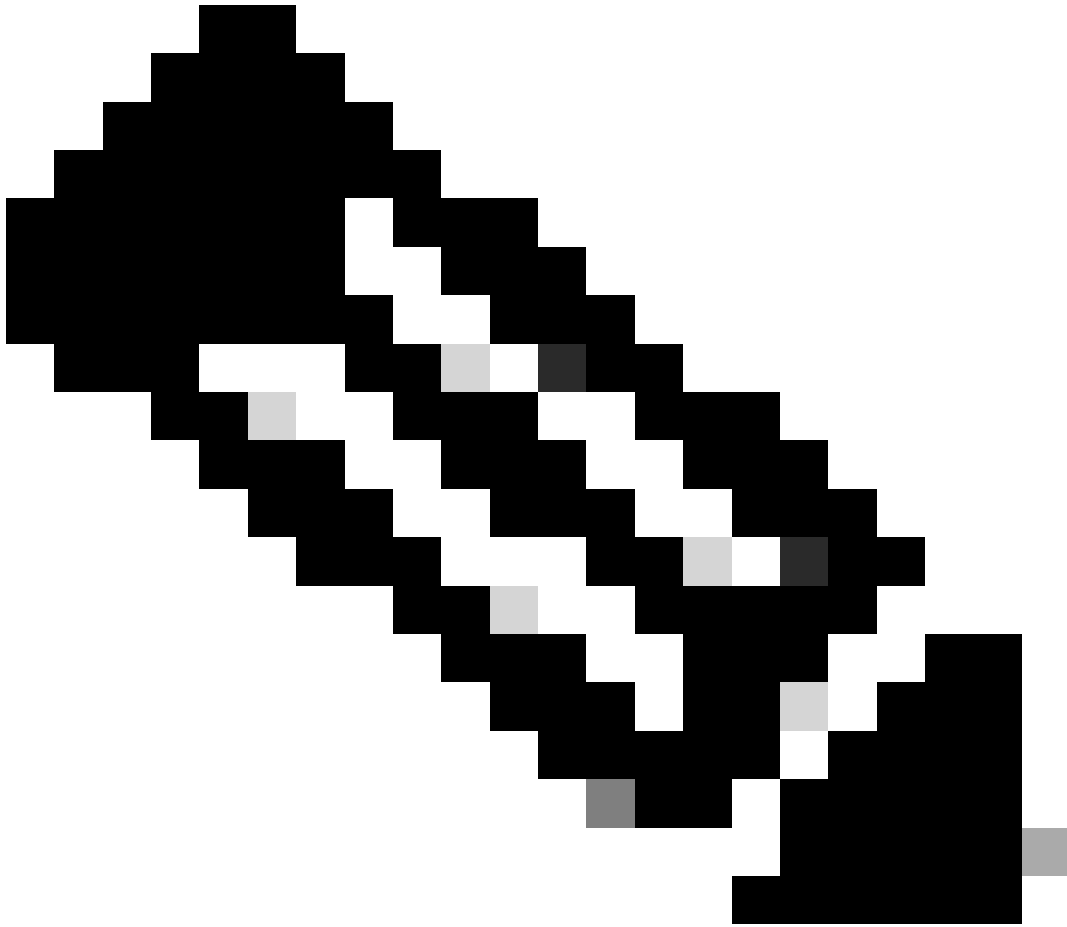


**Note:** This command enables the DHCP relay agent to insert and remove Option 82 information on the packets that are forwarded.

---

Step 3. Apply the command “ip dhcp relay information option vpn”.

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



**Note:** This command enables the DHCP relay requests that arrives on different VRF where the DHCP server belongs.

---

Step 4. Apply the command "ip dhcp relay address [*ip address of DHCP server*]".



---

**Note:** In this example the IP address for DHCP server is 10.10.10.150.

---

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

Step 5. Apply the command "ip dhcp relay source-interface *[unique loopback]*".



**Note:** This command configures the source IP address for DHCP relay agent to handle Discover, Offer, Request, and ACK, for unicast communication which the DHCP relay agent uses the IP address of SVI as source IP address for DHCP relay agent. This is not desired because this IP address is shared by multiples VTEPs and black-holing of DHCP packets can happen. To avoid this, a unique IP address (using a loopback interface) is necessary to differentiate each VTEP.

---

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

Step 6. In the VRF corresponding tenant within BGP, direct route redistribution with a prefix-list and route-map that includes the IP address of the loopback interface.

---

**Note:** This loopback interface belongs to the tenant of SVI.

---

```
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
```

Step 7. Verify that the IP address of the loopback interface is advertised in BGP L2VPN EVPN to the Spines with the command: **show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]**.

```
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
```

Step 8. Verify that the IP address of the loopback interface is injected in BGP L2VPN EVPN where DHCP server is located.

---

**Note:** If there are Nexus switches in vPC, verify that they both learn the IP address of the loopback interface in BGP L2VPN EVPN.

---

```
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

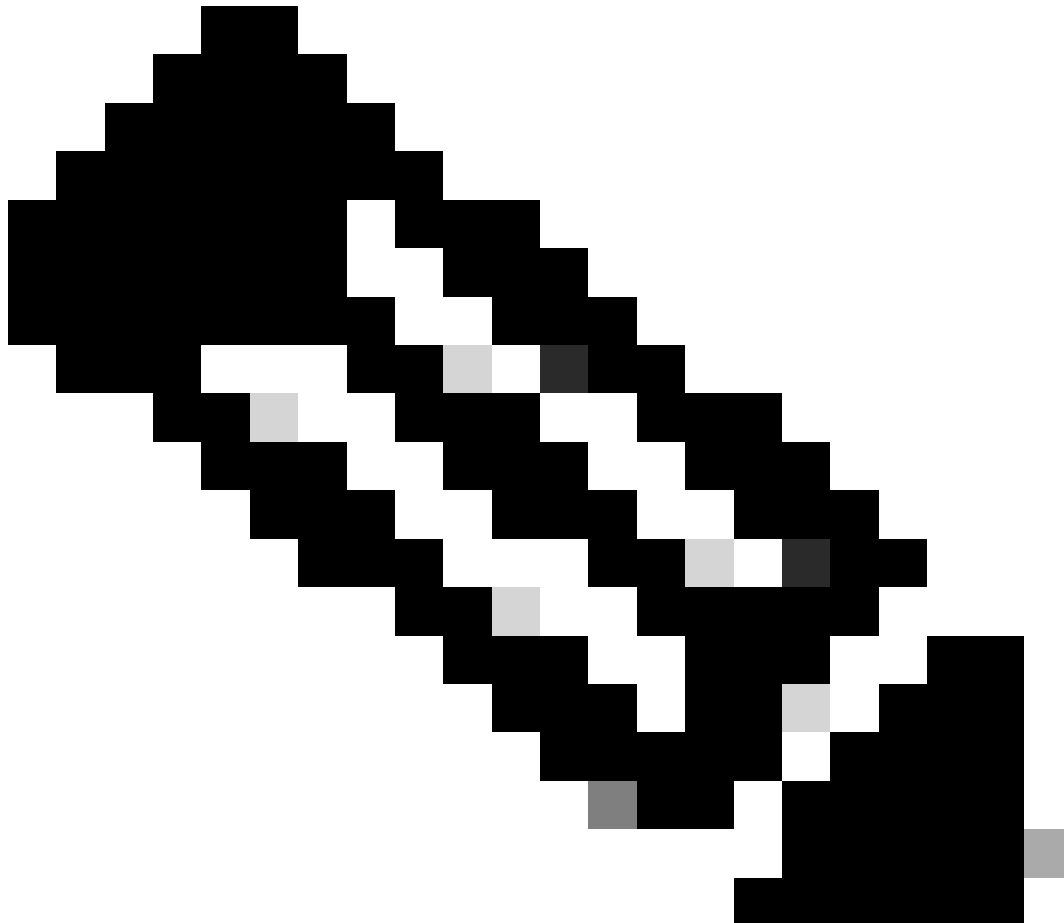
Advertised path-id 1
Path type: local, path is valid, is best path, no labeled nexthop
Gateway IP: 0.0.0.0
AS-Path: NONE, path locally originated
 192.168.13.2 (metric 0) from 0.0.0.0 (192.168.4.4)
  Origin incomplete, MED 0, localpref 100, weight 32768
  Received label 303030
  Extcommunity: RT:65000:303030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

Path-id 1 advertised to peers:
```

192.168.0.11

Step 9. Verify that there is a route for the DHCP server on the source tenant with command **show ip route [DHCP server IP] vrf[tenvrf]**.

---



**Note:** The route entry to use must be from VxLAN to default VRF. If there is no route available, check if the VTEP locally knows the DHCP server IP address.

---

```
LEAF-2-VPC(config-if)# show running-config interface v1an 10
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
```

```
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
```

Step 10. Verify that the DHCP server IP is reachable using the loopback interface and the corresponding VRF as a VRF source with command **ping [DHCP server IP] source-interface loopback [x] vrf [tenant vrf]**.

```
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 ---
```

Step 11. Verify the status of the DHCP relay agent.

```
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
```

Step 12. Verify the option82, such as vpn option and the correct relay IP address under the relay agent.

```
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 <<<<	

Step 13. Verify the statistics of packets processed and forwarded.

```
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
```

Step 14. Verify the statistics of relay packets.

```
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



```

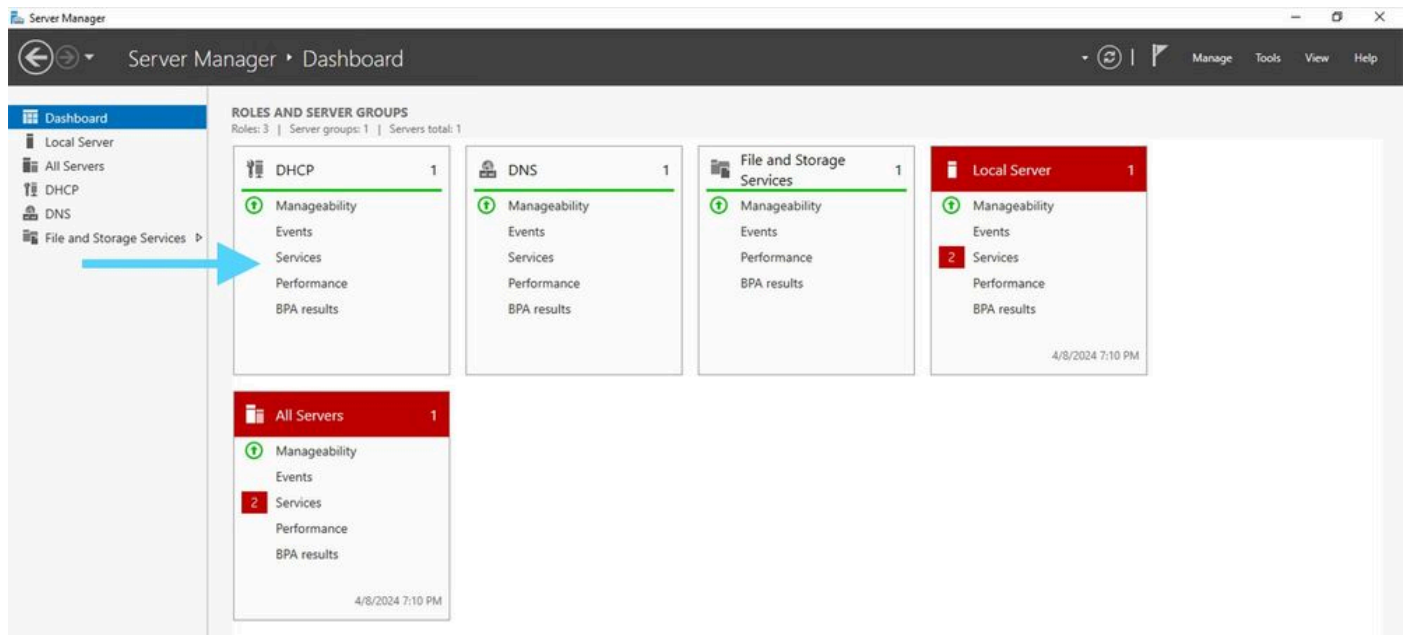
Total Packets Forwarded      :      0
Total Packets Dropped       :      0
DROP:
DHCP Relay not enabled      :      0
Invalid DHCP message type   :      0
Interface error              :      0
Tx failure towards server   :      0
Tx failure towards client   :      0
Unknown output interface    :      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

```

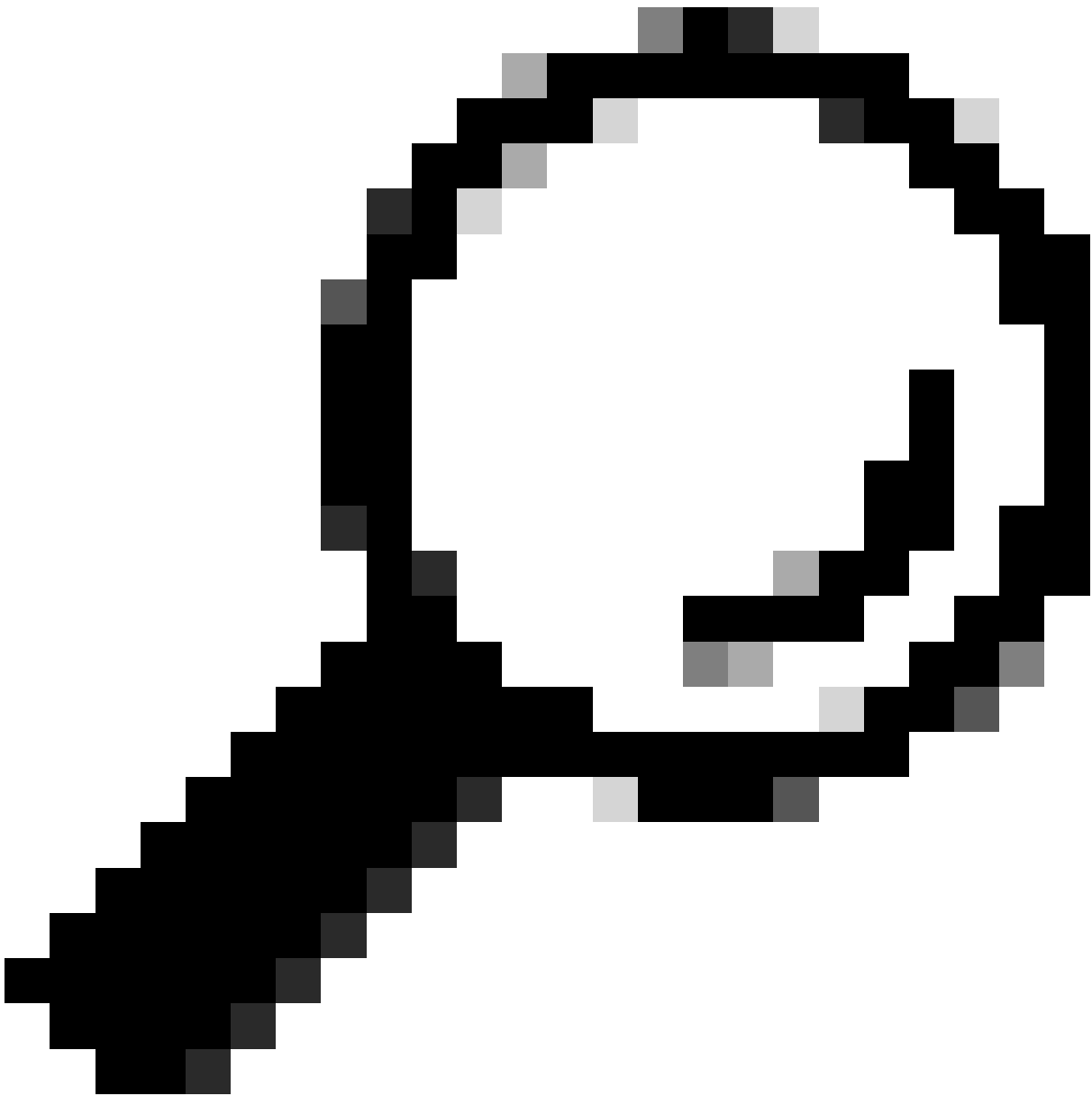
## DHCP server configuration on Windows Server 2022

### IP addressing scope configuration for hosts.

Step 1. Open Server Manager and validate that there are no alarms on DHCP Server in the Dashboard.



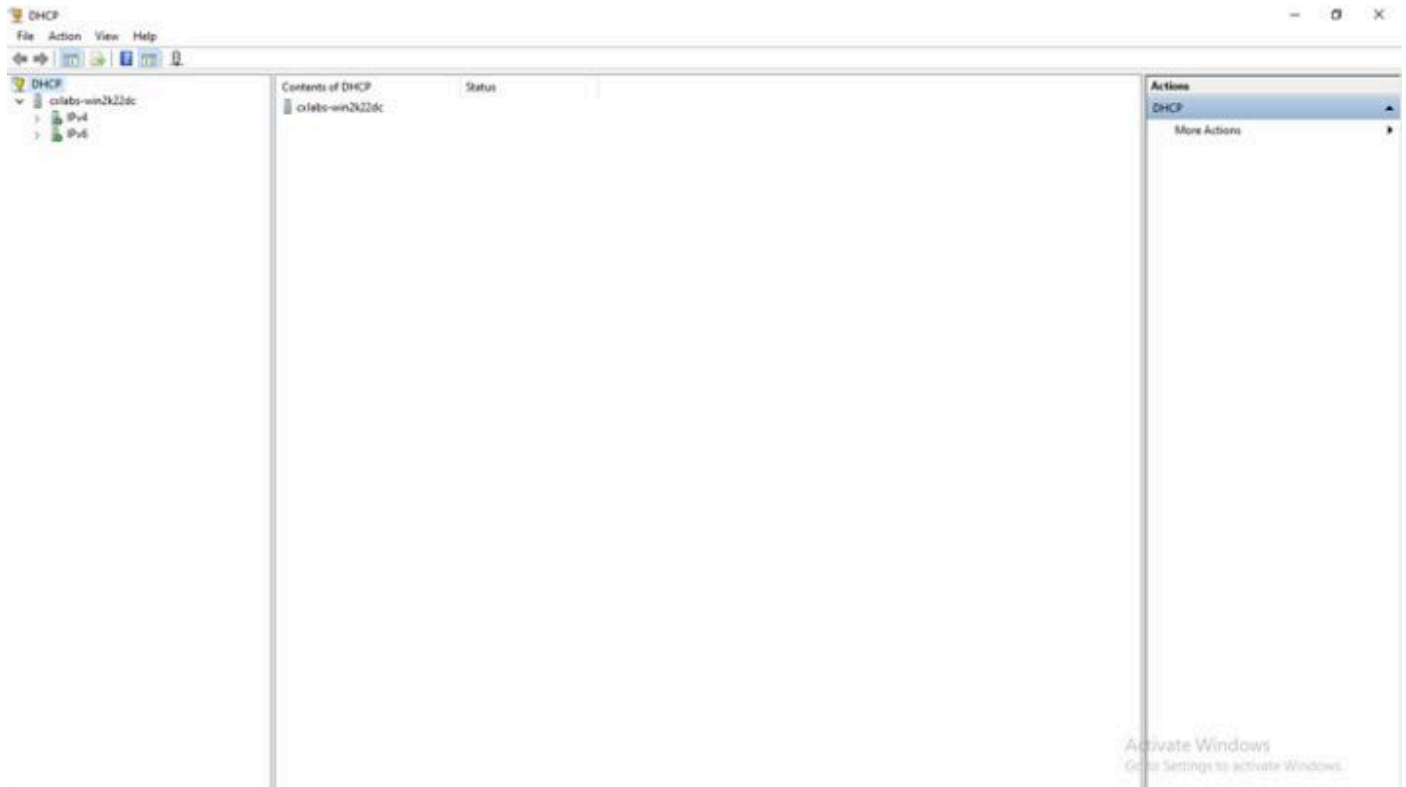
Dashboard from Server Manager on Windows Server 2022



**Tip:** The image enlarges when double-clicking.

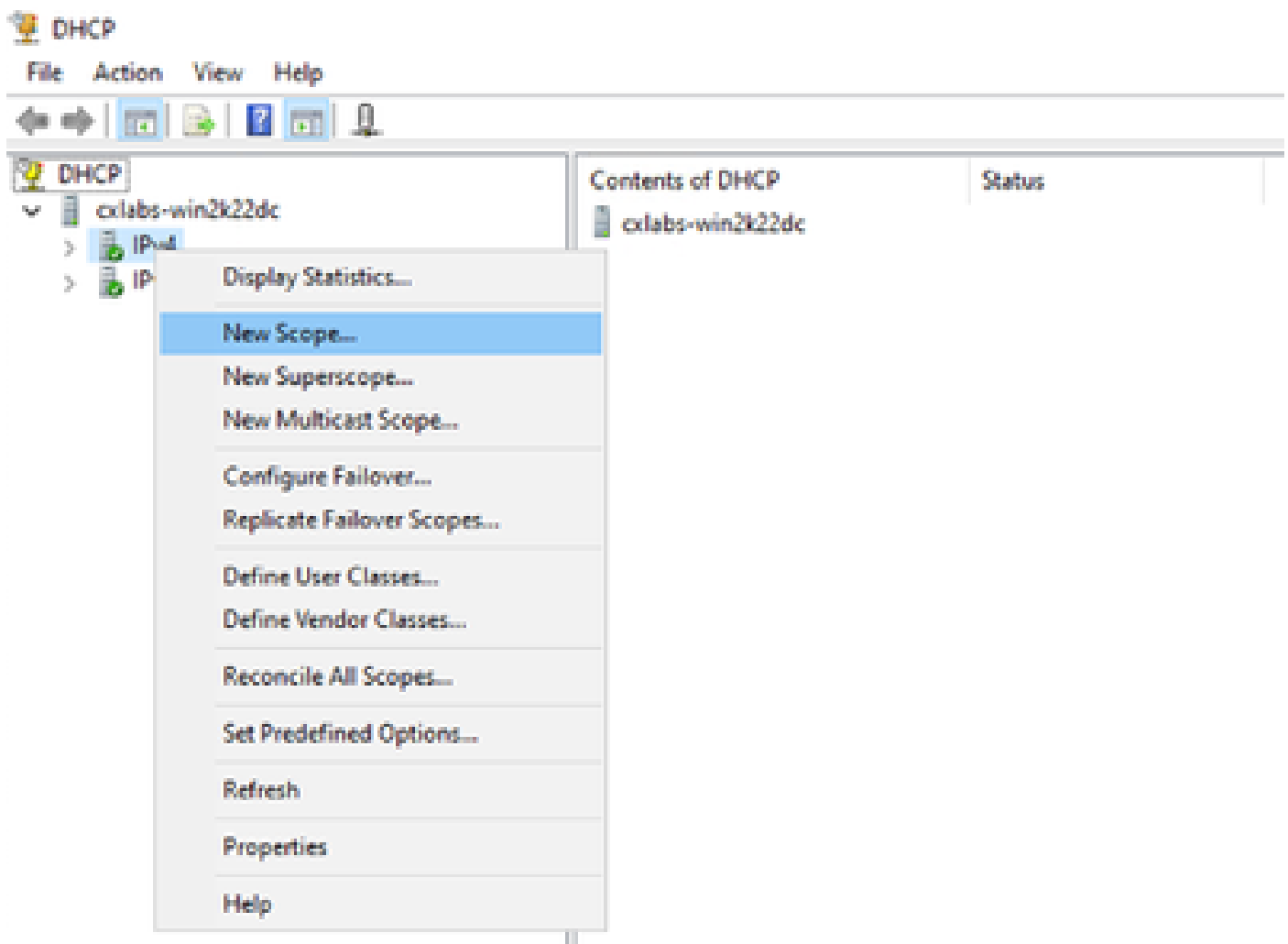
---

Step 2. Open **DHCP Server** application.

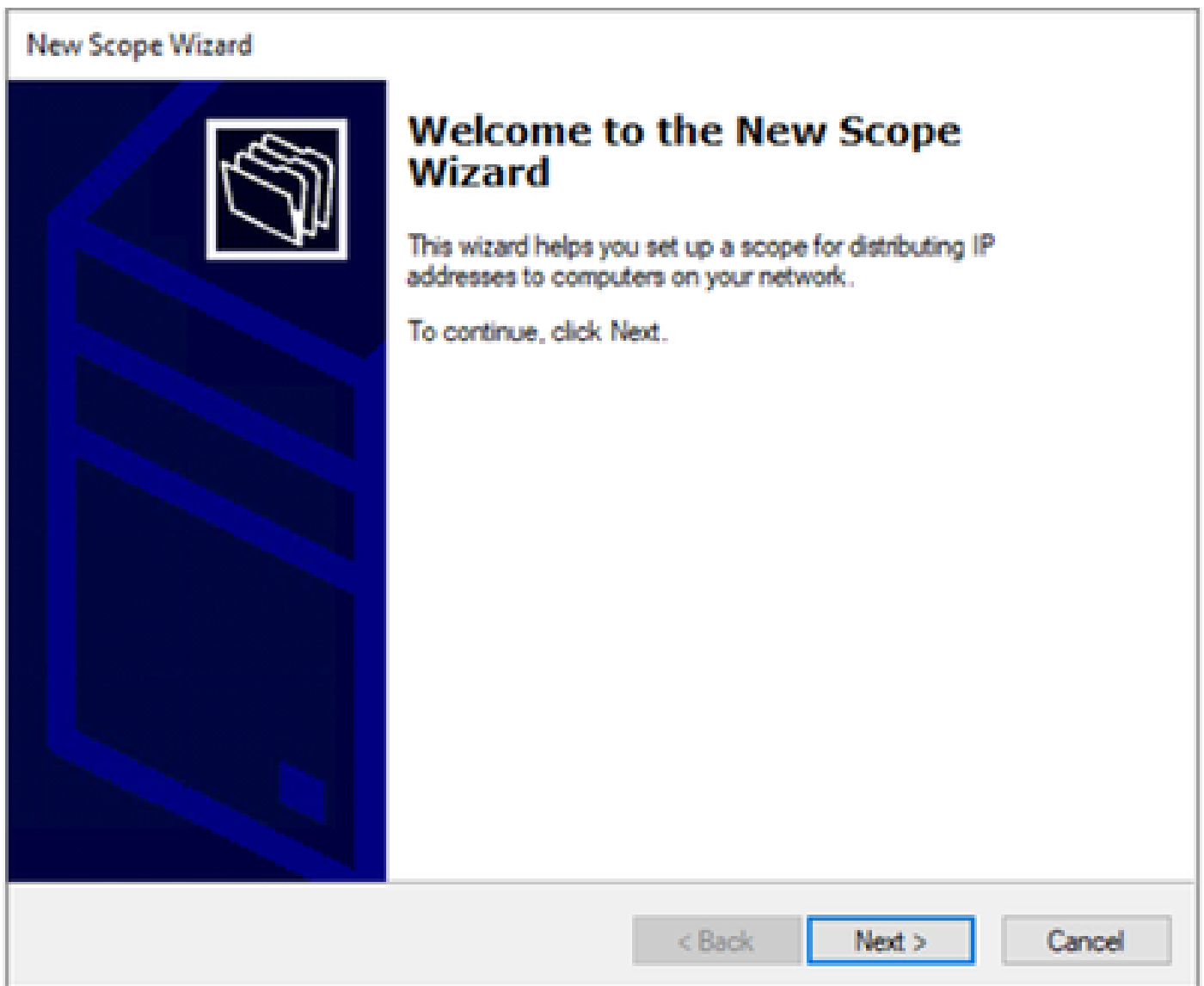


*DHCP Server on Windows Server 2022*

Step 3. Right-click on IPv4 and click **New Scope**.



Step 4. Click **Next**.



Step 5. Write a Name and Description. In this example, the name is the subnet which belongs to VLAN 10 and the description is the L2VNI as L2VNI listed to VLAN 10.

## 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:

Step 6. Configure the IP address range. This is the pool for hosts.

## 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

Step 6. Exclude the shared IP address from the SVI configuration in the VTEPs. In this example Interface VLAN 10 has address IP.10.10.1/24.



**Warning:** Failure to exclude the IP address from the SVI (or default-gateway) can cause duplication of IP addresses and impact traffic delivery.

---

```
LEAF-1# show running-config interface vlan 10
<snip>
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
```

## 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

Step 7. Configure lease duration of IP address. This refers to the amount of time a host can use the assigned IP address before renewing it.



## 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

Step 8. Select **Yes, I want to configure these options now.**

## 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

Step 9. Configure the default-gateway IP address.

## 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

Step 10. Configure domain name and DNS server.

## 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:

Step 11. Configure WINS server if applicable. This can be skipped if the information is not known.

## 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

Step 12. Select **Yes, I want to activate this scope now.**

New Scope Wizard

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



Do you want to activate this scope now?

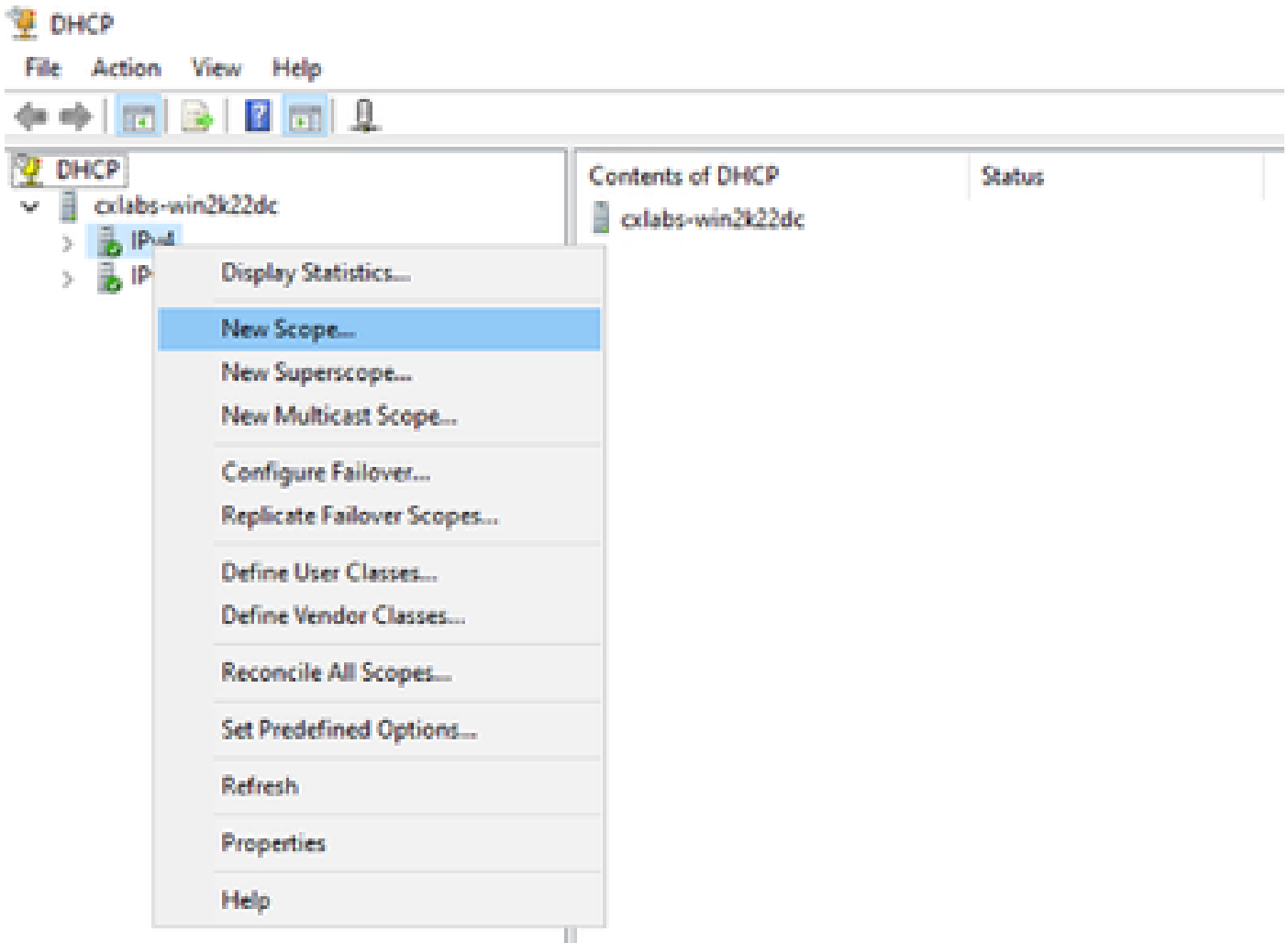
Yes, I want to activate this scope now

No, I will activate this scope later

< Back   Next >   Cancel

**Configuring scope for unique IP addresses from loopbacks in SVI as DHCP relay agent.**

Step 1. Right-click on IPv4 and select IPv4Scope.



*New Scope in DHCP*

Step 2. Write a Name and Description. In this example, name is the subnet used for subnet with loopbacks address.



**IPte:** A loopback is used loopbackunique IP address throughout the VxLAN fabric for VxLAN tenant. This must be advertised in BGP L2VPN EVPN route redistribution in BGP within the VRF of the corresponding tenant in the IPv4 address-famIPv4

---

```
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:

< Back

Next >

Cancel

Step 3. Configure the IP address range. This is the pool for loopbacks.

## 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

Step 4. Configure exclusions (optional because the DHCP server does lease IP addresses that belong to this subnet).

## 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 millisecond:

< Back

Next >

Cancel

Step 5. Skip the lease duration and click **Next**.

## 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

Step 6. Select **No, I will configure these options later.**

## 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

Step 7. Click **Finish**.

## New Scope Wizard



### 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*.

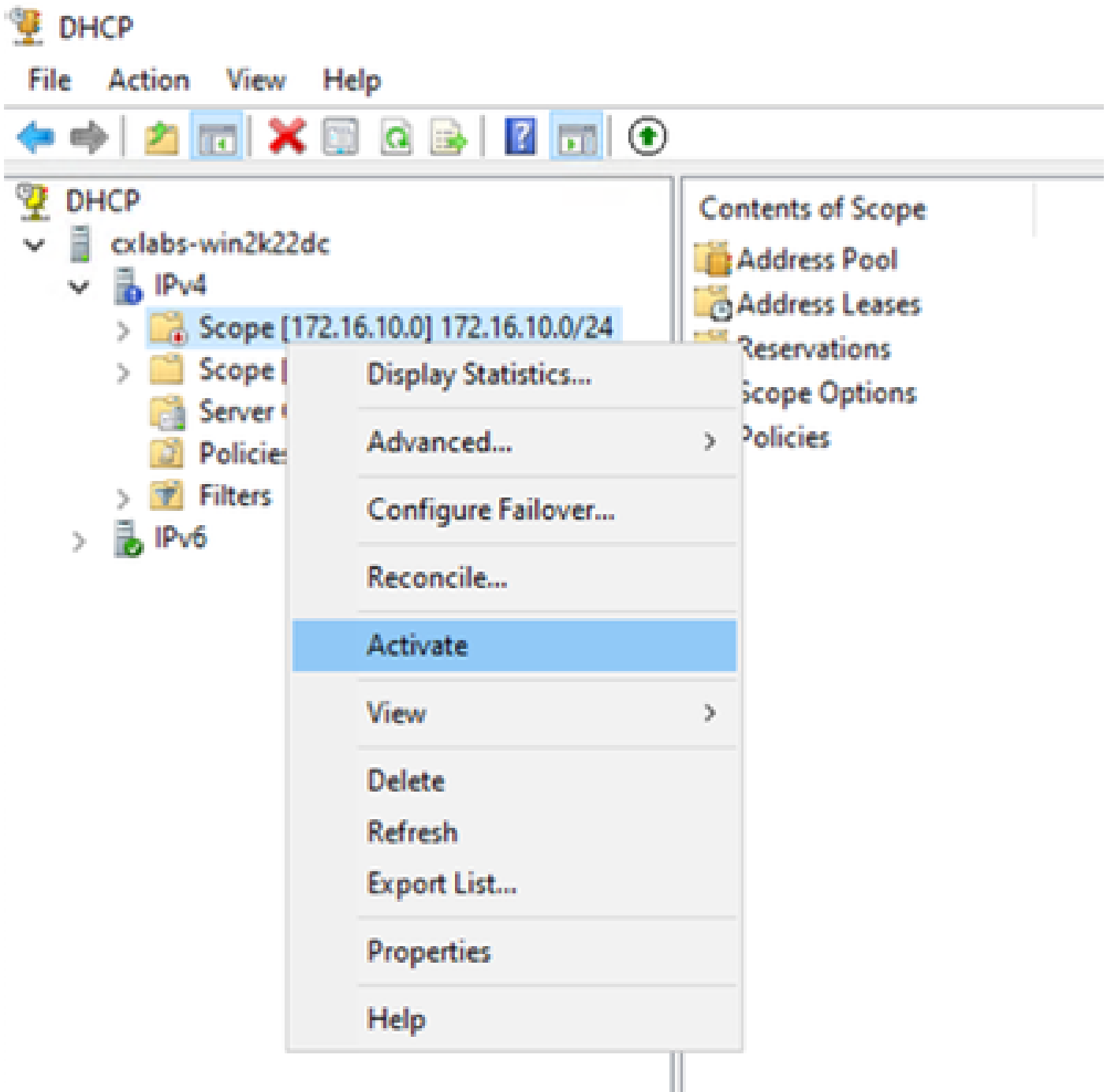
To close this wizard, click *Finish*.

< Back

Finish

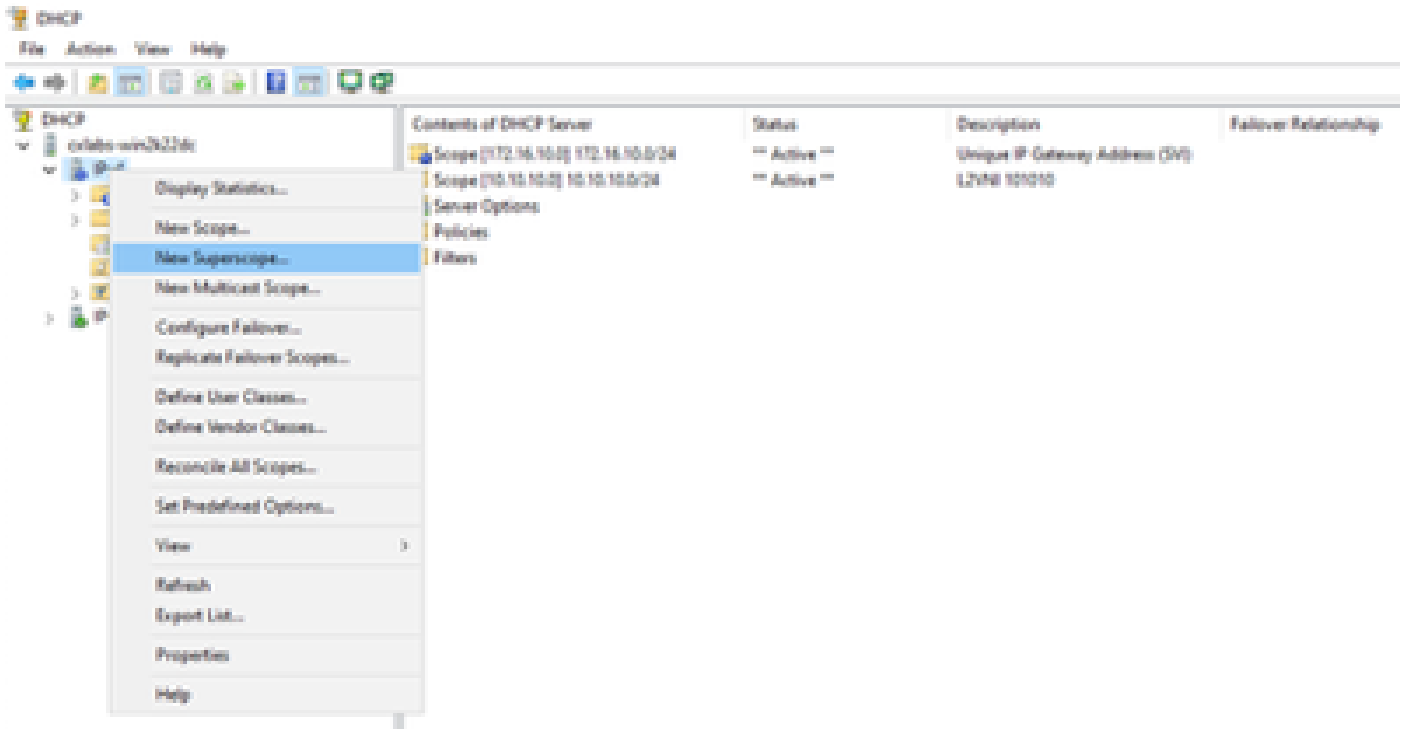
Cancel

Step 8. Right-click on the created scope and select activate.

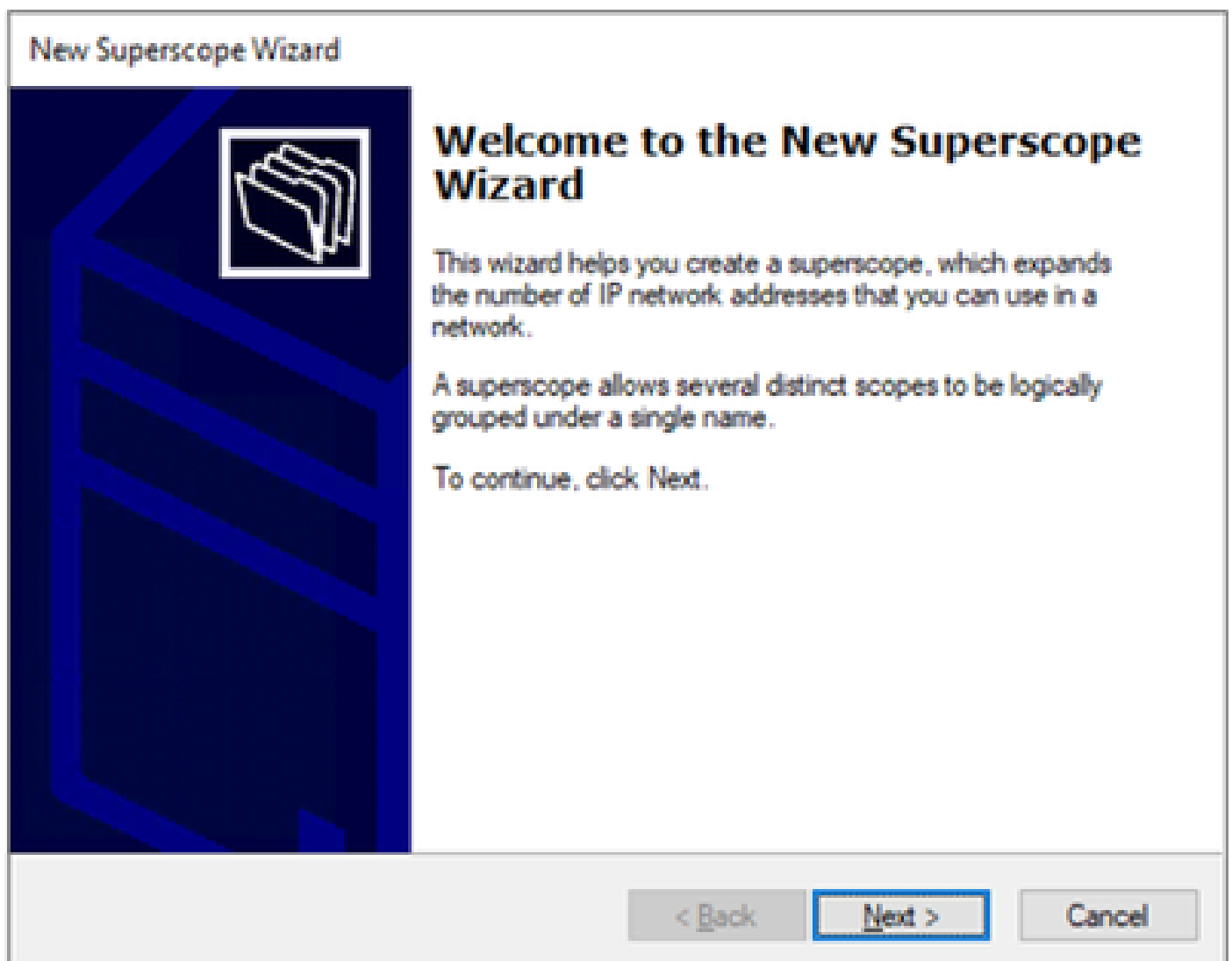


## Configuring superscope for VxLAN fabric.

Step 1. Right-click in IPv4 and select **New Superscope**.



Step 2. Click **Next**.






Step 3. Write the superscope name.

**New Superscope Wizard**

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



Name:

< Back   **Next >**   Cancel

Step 4. Select all the scopes that belongs to VxLAN Fabric.

## 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

Step 5. Select all the scopes that belongs to VxLAN Fabric.

## 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:

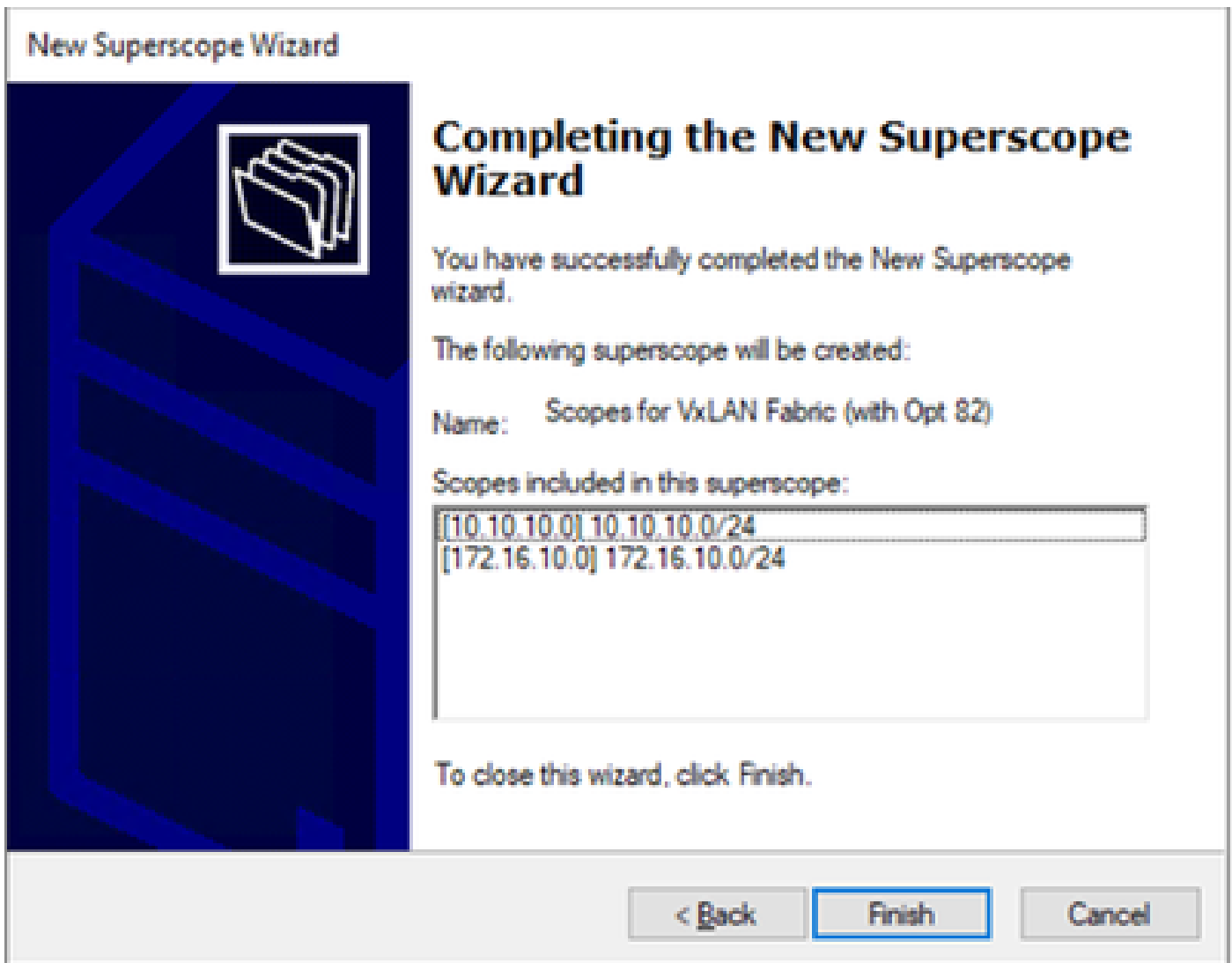
[10.10.10.0] 10.10.10.0/24  
[172.16.10.0] 172.16.10.0/24

< Back

Next >

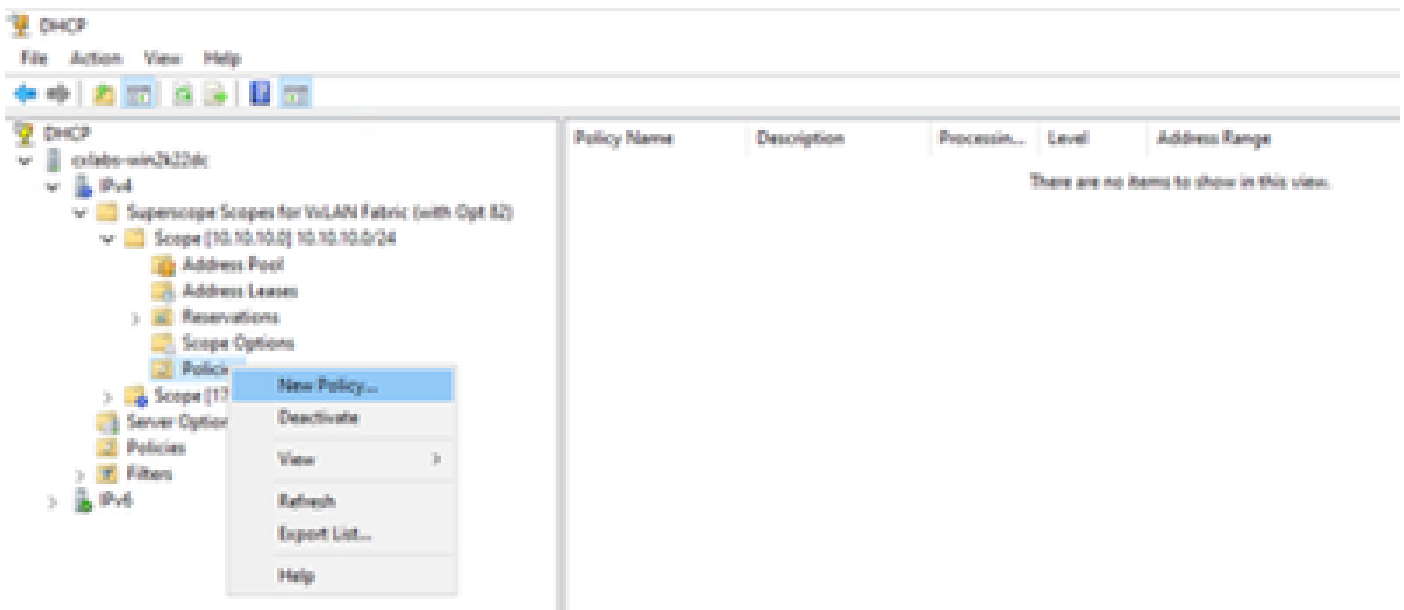
Cancel

Step 6. Verify that all VxLAN fabric superscope in place and click **Finish**.



### Configure Option 82 in host scopes.

Step 1. Right-click on Policies (last option) within the scope for host and click **New Policy**.



Step 2. Write a name and description and click **Next**.



**Note:** In this example, the policy is created to select IP addressing particularly for hosts in Leaf-1 for VNI 101010 based VNI Remote-ID (parameter of Option 82).

---

## 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:

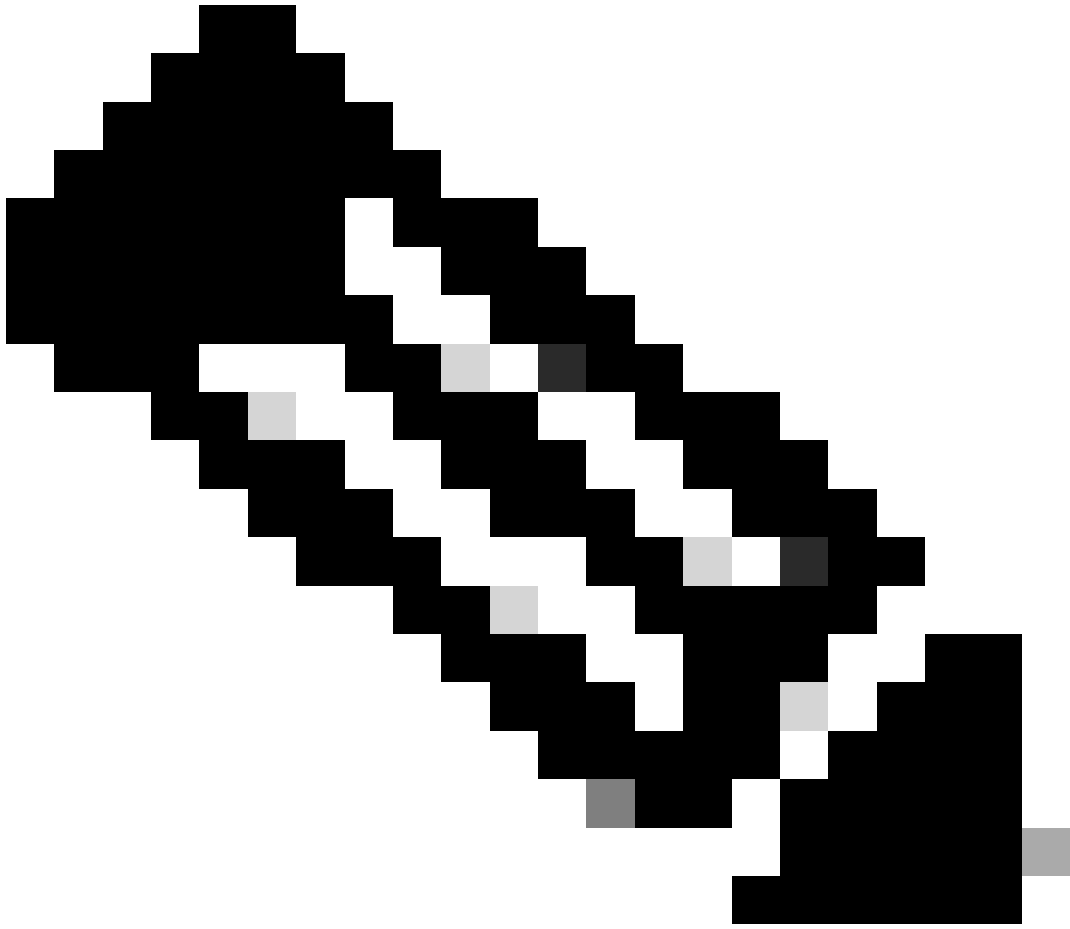
Description:

< Back

Next >

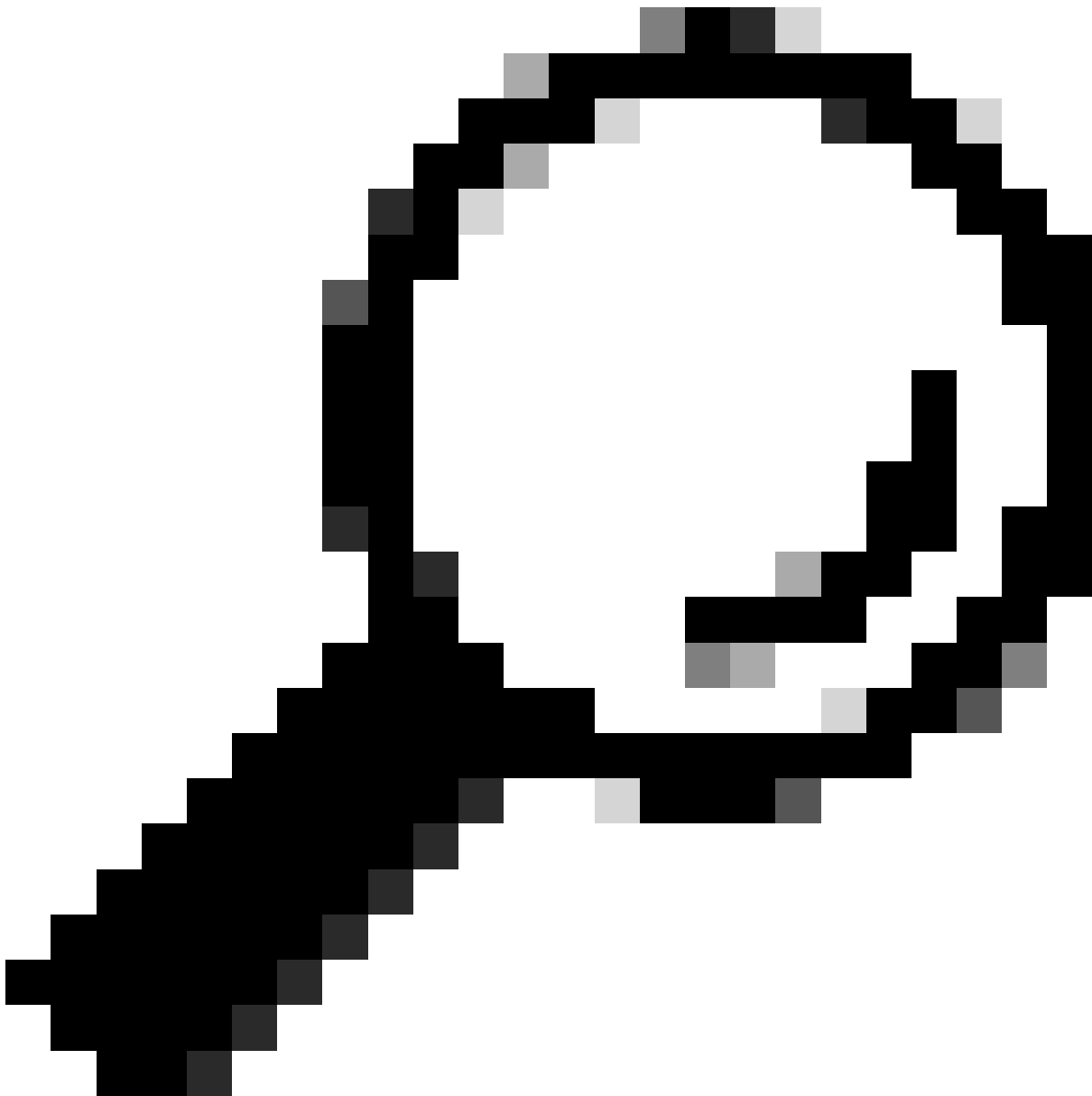
Cancel

Step 3. Click **Add**. In **Criteria**, select **Relay Agent Information**. In **Operator**, select **Equals**. Then select **Agent Remote ID** and type the value. Click **OK** and then **Next**.



**Note:** The Remote ID is obtained from the MAC address of the SVI to which the SVII is associated.

---



**Tip:** A policy can be applied to multiple Remote-IDs (or VTEPs) by adding more conditions and selecting OR instead of AND.

---

```
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

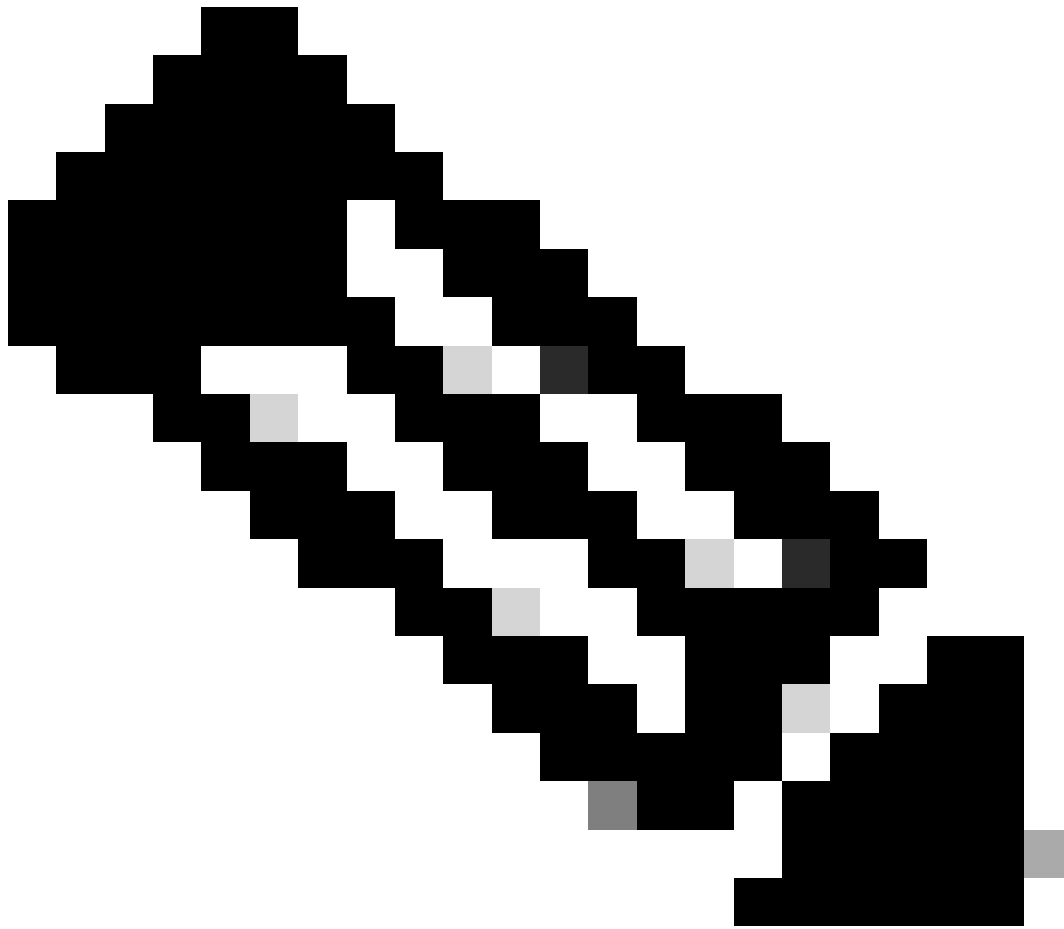
Cancel

< Back

Next >

Cancel

Step 4. Configure the IP addressing that existing IP can use on the VTEP(s) selected by the ID and then click **Next**.



**Note:** In this example there is only one virtual machine connected to Leaf-1, so only one IP address is required. Here a second IP address is added in case another host connects.

---

## 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

Step 5. Select the box to the left of 003 Router under **DCHP Standard Option**. Then write the IP address of the default-gateway for the hosts that belong to this policy and press Add. Click **Next**.



## 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:

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:

IP address:

Step 6. Check the policy conditions and click **Finish**.

The screenshot shows the DHCP console interface. On the left is a tree view showing the network configuration hierarchy. The main area displays a table of policy configurations:

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

The tree view on the left shows the following structure:

- DHCP
  - CX Labs-WIN2K22DC
    - IPv4
      - Superscope Scopes for VxLAN Fabric (with Opt 82)
        - Scope [10.10.10.0] L2VNI 101010
          - Address Pool
          - Address Leases
          - Reservations
          - Scope Options
          - Policies
        - Scope [172.16.10.0] 172.16.10.0/24
          - Address Pool
          - Address Leases
          - Reservations
          - Scope Options
          - Policies
      - Server Options
      - Policies
      - Filters
    - IPv6

# **DCHP packet-walk from beginning to end in VxLAN Fabric.**

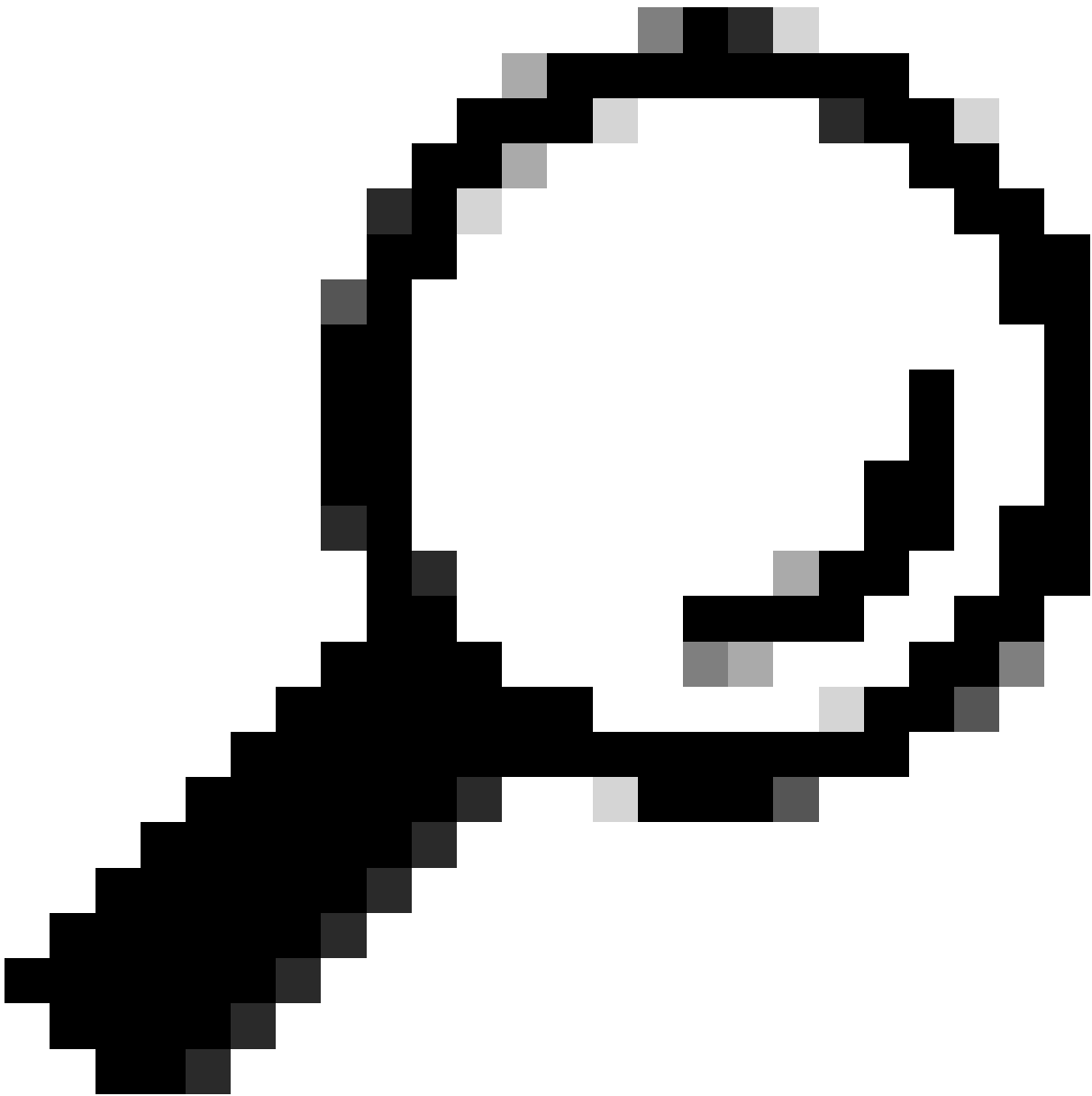
**Discovery send by HOST-1**

```
> 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
```

# Discovery on LEAF-1

Discovery received on LEAF-1	Discovery send by LEAF-1
<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;   &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: 5.5.5.5, Dst: 13.13.13.254 &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: 010e0108000600018a9200a00000000206707db9b84daf97090074656e16e742d610b0400a0a01050400a0a0&gt;   &gt; Option 82 Suboption: (1) Agent Circuit ID     Length: 14     &lt;Value: 0108000600018a9200a0000000000000&gt;     Agent Circuit ID: 0108000600018a9200a0000000000000   &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>





**Tip:** The image enlarges when double-clicking.

---

## Discovery on SPINE

Discovery received on SPINE	Discovery send by SPINE
-----------------------------	-------------------------

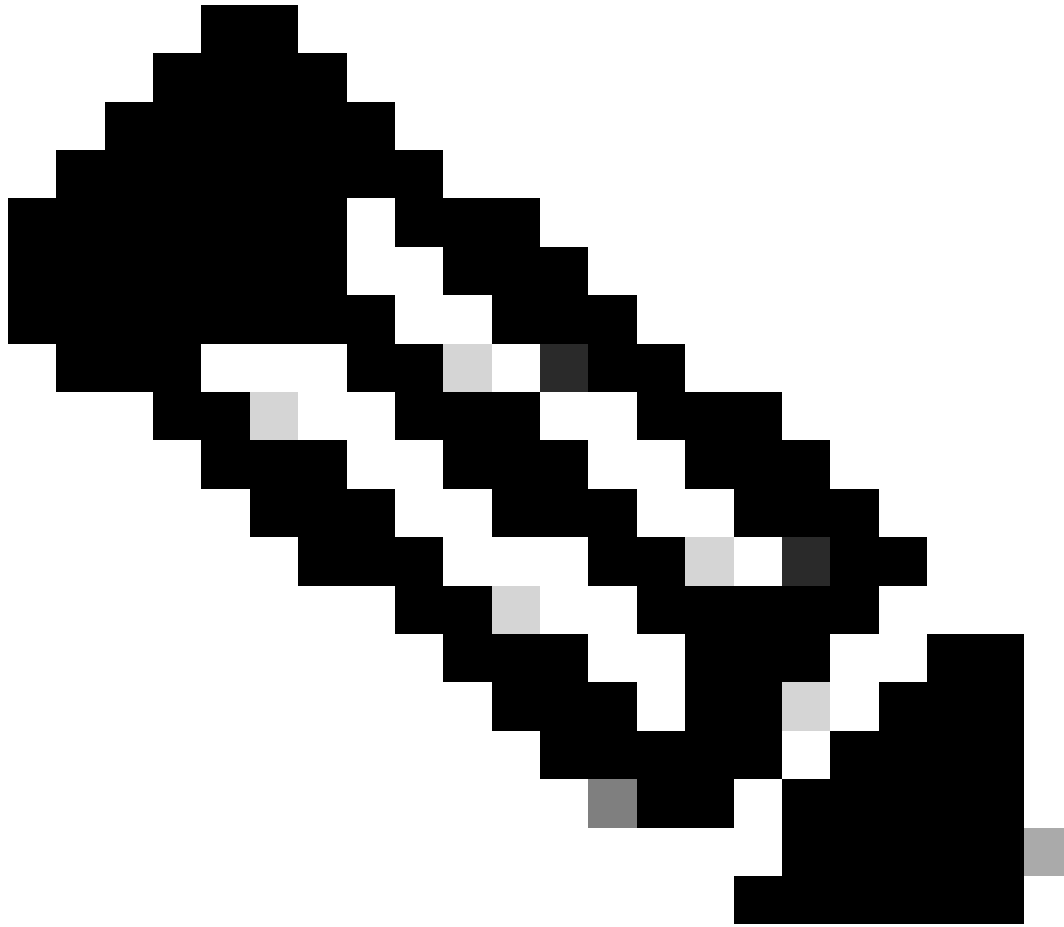
<pre> Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 65233, Dst Port: 4789 Virtual eXtensible Local Area Network   Flags: 0x0000, VXLAN Network ID (VNI)   Group Policy ID: 0   VXLAN Network Identifier (VNI): 303030   Reserved: 0 Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:00:0d: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: 01005056a5fddd&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: 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: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt; Option 82 Suboption: (1) Agent Circuit ID   Length: 14   &lt;Value: 0108000600018a9200a0000000000000&gt;   Agent Circuit ID: 0108000600018a9200a0000000000000 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: 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:00:0d: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: 01005056a5fddd&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: 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: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&gt; Option 82 Suboption: (1) Agent Circuit ID   Length: 14   &lt;Value: 0108000600018a9200a0000000000000&gt;   Agent Circuit ID: 0108000600018a9200a0000000000000 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>
--	--

## Discovery on LEAF-1-vPC

Discovery received on LEAF-1-vPC	Discovery send by LEAF-1-vPC
----------------------------------	------------------------------

```
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: 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 (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: (111) 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: 0x8000, Broadcast flag (Broadcast)
  .000 0000 0000 0000 = 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: (111) 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
```



**Note:** LEAF-2-vPC receives the Discover packet but this is only switched. Destination MAC address belongs to DHCP server.

---

### **Discovery received on DHCP Server**

```

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 Offer send by DCHP Server**

```

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

```



# DCHP Offer on LEAF-2-vPC

Offer received on LEAF-2-vPC	Offer send by LEAF-2-vPC
<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 (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: ffffffff00&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: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a000&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: 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: ffffffff00&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: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a000&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>

# DHCP Offer vPC SPINE

Offer received on SPINE	Offer send by SPINE
-------------------------	---------------------



<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>
---	---

## DHCP Offer on LEAF-1

Offer received on LEAF-1	Offer send on LEAF-1
--------------------------	----------------------

<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): 383038     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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a00&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>
--	---

## DHCP Offer received on HOST-1

```
> 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
```

**Request send by HOST-1**

```

> 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

```





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: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00>

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: 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:  
[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

# Request on LEAF-2-vPC

Request recevPCd on LEAF-2-vPC	Request send byvPCAF-2-vPC
<pre> Ethernet II, Src: 10:b3:06:a4:85:97, Dst: 00:26:aa:85:95:07 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: 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   &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: 4d53465420352e30&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: 010e0108000600018a9200a00000000206707db9b84daf97090074656e16e742d610b040a0a0a0105040a0a0a00&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: 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: 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   &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: 4d53465420352e30&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: (121) Classless Static Route (Microsoft)   Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)   Option: (82) Agent Information Option   Length: 47   &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e16e742d610b040a0a0a0105040a0a0a00&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: 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>

# Request received on DHCP Server



```
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
```

**ACK send by DHCP Server**

```

> 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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00>
  < 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

```

# ACK on LEAF-2-vPC

ACK received on LEAF-2-vPC	ACK send by LEAF-2-vPC
<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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&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:85:95:87, 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;     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     0000 .... = Reserved flags: 0x0     .... .. = 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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00&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>

--	--

## ACK on SPINE

ACK received on SPINE	ACK send by SPINE
<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 (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;   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     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: 63697363672e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a00&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 (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;   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     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: 63697363672e636f6d00&gt;     Domain Name: cisco.com   Option: (82) Agent Information Option     Length: 47     &lt;Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a00&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>

## ACK on LEAF-1

ACK received on LEAF-1	ACK send by LEAF-1
------------------------	--------------------



<pre> &gt; Ethernet II, Src: 10:b3:06:04:85:97, 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: 0180000600018a9200a0000000000000   &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>
---	--

## ACK on HOST-1

```

> 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

```

## **Related information**

[Configuring VXLAN BGP EVPN](#)

[Configuring VXLAN](#)

[Troubleshoot DHCP Related Issues on Nexus 9000](#)

[Cisco Nexus 9000 Series NX-OS VXLAN Configuration Guide, Release 10.4\(x\)](#)