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 DCHP relay agent. Configuring superscope for VxLAN fabric. Configure Option 82 in host scopes. DCHP 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 DCHP 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				
<u>Re</u>	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 DCHP packets within VxLAN header.
 - HOST#1 receives DCHP 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.
 - DCHP server receives DCHP 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 bop
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 232.0.0/8
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 232.0.0/8 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 12vpn 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

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 12vpn evpn
    advertise-pip
 neighbor 192.168.0.11
    remote-as 65000
    update-source loopback0
    address-family 12vpn evpn
      send-community
      send-community extended
 neighbor 192.168.88.2
    remote-as 65000
    description OVERLAY_BACKUP
```

```
update-source Vlan888
    address-family 12vpn 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
```

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 232.0.0/8
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 12vpn evpn
    advertise-pip
 neighbor 192.168.0.11
    remote-as 65000
    update-source loopback0
    address-family 12vpn evpn
      send-community
      send-community extended
 neighbor 192.168.88.1
    remote-as 65000
    description OVERLAY_BACKUP
    update-source Vlan888
```

```
address-family l2vpn evpn
send-community
send-community extended
vrf tenant-a
address-family ipv4 unicast
redistribute direct route-map direct_routes_tenant-a
evpn
vni 101010 l2
rd auto
route-target import auto
route-target export auto
vni 202020 l2
rd auto
route-target import auto
route-target import 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 DCHP.

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 DCHP server]".



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

LEAF-1(config)# interface vlan 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 routemap 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]:[32]:[172.16.10.8]/224, version 421 Paths: (1 available, best #1) Flags: (0x000002) (high32 00000000) on xmit-list, is not in 12rib/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 12vpn 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]:[32]:[172.16.10.8]/224, version 754
Paths: (1 available, best #1)
Flags: (0x000002) (high32 0000000) 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]:[32]:[172.16.10.8]/224, version 761
Paths: (1 available, best #1)
Flags: (0x000002) (high32 0000000) 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 DCHP 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
10.10.150/32, ubest/mbest: 1/0
    *via 192.168.13.254%default, [200/0], 2w0d, bgp-65000, internal, tag 65000, segid: 303030 tunnelid:</pre>
```

Step 10. Verify that the DCHP 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	Тх		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	0				
Invalid DHCP n	nessage type	:	0		
Interface erro	or	:	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 :		
Relay Trusted port not configured	:	0
* - These counters will show correct value w	hen swit	ch
receives DHCP request packet with destination	ip as br	oadcast
address. If request is unicast it will be HW s	witched	

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 DCHP server].



Note: In this example the IP address for DCHP 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 routemap 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 12vpn 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]:[32]:[172.16.10.9]/224, version 637 Paths: (1 available, best #1) Flags: (0x000002) (high32 00000000) on xmit-list, is not in 12rib/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 12vpn 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]:[32]:[172.16.10.9]/224, version 637 Paths: (1 available, best #1) Flags: (0x000002) (high32 0000000) on xmit-list, is not in 12rib/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 DCHP 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</pre>
```

Step 10. Verify that the DCHP 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:InterfaceRelay AddressVRF Name------
Step 13. Verify the statistics of packets processed and forwaded.

```
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:	Description I			0	
Total Packets Received			:	0	
Total Packets	Forwarded			0	
Non DHCP:		:	0		
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	n switch	ı
receives DHCP request packet with destination ip	as broa	adcast
address. If request is unicast it will be HW swit	tched	

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 DCHP server]".



Note: In this example the IP address for DCHP 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 routemap 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 12vpn 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]:[32]:[172.16.10.10]/224, version 49 5 Paths: (1 available, best #1) Flags: (0x000002) (high32 0000000) on xmit-list, is not in 12rib/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]:[32]:[172.16.10.10]/224, version 49 5 Paths: (1 available, best #1) Flags: (0x000002) (high32 00000000) on xmit-list, is not in 12rib/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:

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 DCHP server IP address.

LEAF-2-VPC(config-if)# show running-config interface vlan 10 interface Vlan10 no shutdown vrf member tenant-a no ip redirects ip address 10.10.10.1/24 no ipv6 redirects fabric forwarding mode anycast-gateway ip dhcp relay address 10.10.10.150 ip dhcp relay source-interface loopback100 Step 10. Verify that the DCHP 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:InterfaceRelay AddressVRF Name------------------Vlan1010.10.150 <<<<</td>

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

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.

LEAT 2 VICH Show IP unep relay statistics					
Message Type	Rx	Тх		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	
<pre>Inform(*)</pre>	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	

LEAF-2-VPC# show ip dhcp relay statistics

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	ı switch	
receives DHCP request packet with destination ip	as broadd	ast
address. If request is unicast it will be HW swit	ched:	

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 DCHP 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.

-	1	× .
		1.00

UHCP Help File Action View ** 8 8 8 8 8 8 DHCP Glabs-win2k22dc J B-y-4 J B-y-6 Contents of DHCP Status Actions alets-win2k22dc DHOP More Action

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 pro a description.	ovide an identifying scope name	e. You also have t	the option of prov	idng
Type a name an how the scope i	nd description for this scope. This is to be used on your network.	his information hel	ps you quickly ide	entify
Name:	10.10.10.0/24			
Description:	L2VNI 101010			
		< Back	Next 5	Cancel
		< DOUX	TYCAL >	Cancer

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: 10 . 10 . 1
End IP address: 10 . 10 . 254
Configuration settings that propagate to DHCP Client
Length: 24
Subnet mask: 255 . 255 . 0
< 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 DHCPOFFER 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: Image: I
Excluded address range: Address 10.10.10.1 Remove
Subnet delay in mili 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.	Ð
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 router	s, or default gateways, to be distributed by this scope.	Ĵ
To add an IP address for a	router used by clients, enter the address below.	
IP address:		
	Add	
10.10.10.1	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 DNS name resolution. Parent domain: cisco.com To configure scope clients to use DNS servers	on your network, enter the IP add	k to use for			
servers.	10 - daharan				
Server name:	IP address:				
google.com	142 . 250 . 114 . 102	Add			
Resolve		Remove			
		Up			
		Down			
	< Back Next >	Cancel			

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 s names to IP addresses.	ervers to convert NetBIOS computer
Entering server IP addresses here enables Wir broadcasts to register and resolve NetBIOS na	ndows clients to query WINS before they use imes.
Server name:	IP address:
	Add
Resolve	Remove
	Up
	Down
To change this behavior for Windows DHCP o Type, in Scope Options.	lients modify option 046, WINS/NBT Node
	< 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 a	ctivated.				
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 DCHP relay agent.

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



New Scope in DCHP

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 pro a description.	ovide an identifying scope name. You also have the option of providing	Ţ
Type a name an how the scope i	nd description for this scope. This information helps you quickly identify is to be used on your network.	
Name:	172.16.10.0/24	
Description:	Unique IP Gateway Address (SVI)	
	< Back Next > Can	cel

Step 3. Configure the IP address rangeIP. 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: 172 . 16 . 10 . 1						
End IP address: 172 . 16 . 10 . 254						
Configuration settings that propagate to DHCP Client						
Length: 24						
Subnet mask: 255 . 255 . 255 . 0						
< 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 DHCPOFFER 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: I I I I I I
Excluded address range: Remove
Subnet delay in milli second:
< 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.	Ţ
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 > Can	cel

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?						
C Yes, I want to configure these options now						
No, I will configure these options later						
< Back Next > Cancel						

Step 7. Click Finish.



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

9	DH	СР						
Fil	e	Action	n Viev	v He	lp			
(=) 🖄		× 🗉	0 🗟 🛛			
?	DH iii ×	ICP exiab: IP > 2 2 2 1P	s-win2k v4 Scope Server Policie Filters v6	22dc [172.1	6.10.0] 172.16.10.0 Display Statistics Advanced Configure Failow Reconcile Activate View Delete Refresh Export List Properties Help	er	Con	Address Pool Address Leases Reservations Cope Options Policies

Configuring superscope for VxLAN fabric.

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

📜 DHCP					
File Action	View Help				
++ 2	n 🛛 🖉 🔒 🖬 📩 🗖 🗖	2			
	In the first of th	Contents of DHCP Server Score (112:16:10.0) 10:10:10.00/24 Score (10:10:10.00.0) 10:10:10.00/24 Score Options Policies Fitters Fitters	Status Active Active	Description Unique IP Galenny Address (DV) L2VN8 100010	Falover Relationship
		T			

Step 2. Click Next.

New Superscope Wizard					
	Welcome to the New Superscope which expands the number of IP network addresses that you can use in a network. A superscope allows several distinct scopes to be logically grouped under a single name. To continue, click Next.				
	< <u>Back</u> <u>N</u> ext > Cancel				
Step 3. Write the superscope name.

New Supersco Superscop You hav	e Name re to provide an identifying superscope name.
N <u>a</u> me:	Scopes for VxLAN Fabric (with Opt 82)
	< <u>B</u> ack <u>N</u> ext > 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. Agailable scopes:					
[10.10.10.0] 10.10.10.0/24 [172.16.10.0] 172.16.10.0/24					
< <u>B</u> ack <u>N</u> ext > 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.

DHCP File Action View Help							
🕶 🔿 🙍 📷 🔤 🛙							
2 0HCP			Policy Name	Description	Processies	Level	Address Range
contation-wind/N22dc w Po4 v Superscope Scopes for VoLAN Fabric (with Opt 82) v Scope (10.10.10.0) 10.10.0/24 Modews Post						There are no	items to show in this view.
Address Leases Reservations Scope Options Polick							
Scope [17 New Pueses Server Option Policies Yew Fibers							
> 🔓 P/6	Refrech Export List						
	Help						

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



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

DHCP Policy Configu	uration Wizard
Policy based IP /	Address and Option Assignment
This feature allow clients based on o This wizard will gu Configuration Polic policy.	s you to distribute configurable settings (IP address, DHCP options) to certain conditions (e.g. vendor class, user class, MAC address, etc.). ide you setting up a new policy. Provide a name (e.g. VoIP Phone cy) and description (e.g. NTP Server option for VoIP Phones) for your
Policy Name:	VNI 101010
Description:	Policy to select scope for Leaf-1 using Remote-ID
	< 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>

Co Add/Edit Condition ? × Specify a condition for the policy being configured. Select a criteria, operator and values for the condition. Criteria: Criteria: Relay Agent Information • Operator: Equals • Value (in hex) • • C Relay Agent Information: • • Agent Crouit ID: • • Agent Remote ID: ?07db9b84daf • C Subsoriber ID: • Prefix wildcard(*) Append wildcard(*) • Append wildcard(*)	DHCP Policy Configuration Wizard			
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 Circuit ID: Subscriber ID: Prefix wildcard(*) Accend wildcard(*)	Cor Add/Edit Condition	?	\times	5
Ok Cancel	Specify a condition for the policy being configured. Select a criteria and values for the condition. Criteria: Relay Agent Information Operator: Equals Value (in hex) C Relay Agent Information: Agent Circuit ID: Agent Circuit ID: Subscriber ID: Prefix wildcard(*) Append wildcard(*)	ncel		

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 require IPd. Here a second IP address is addedIPn 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: 10.10.10.3 End IP address: 10.10.10.3 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**.



Caution: You can select more than one option but if you are not sure which value to enter, do not do so. Inconsistent or erroneous configuration can cause unexpected behavior.

DHCP Policy Configuration Wizard					
Configure settings for If the conditions spe applied.	or the policy cified in the policy mate	ch a client request, the settings	will be		
Vendor class:	DHCP Standard Op	tions	•		
Available Options		Description	^		
002 Time Offset		UTC offset in seco	onds		
003 Router		Array of router add	resses order		
 004 Time Server 		Array of time serve	r addresses, ¥		
Data entry					
Server name:					
		Resolve			
IP address:					
	Add				
10.10.10.1	Remove				
	Up				
	Down				
		< Back Next >	Cancel		

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

9 DHCP								- 0	×
File Action View Help									
💠 🔶 🙍 📷 🙆 🔒 🖬 🛅									
DHCP CXLabs-WIN2K22DC	Policy Name	Description	Processin	Level	Address Range	State	Actions		
✓ ■ IPv4	UNI 101010	Policy to select scope for Leaf-1 using Remote-ID	1	Scope	10.10.10.2 - 10.10.10.3	Enabled	Policies		•
 IPv4 I							More Actions		,
Server Options Server Options Policies Mices									
> 🚡 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

    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

    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: 0000000000000000000
    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
  v 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
    Padding: 000000000000000000
```

Discovery on LEAF-1

Discovery received on LEAF-1	Discovery send by LEAF-1
	Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 5.5.5, Dst: 13.13.13.254
	> User Datagram Protocol, Src Port: 65233, Dst Port: 4789 > Virtual eXtensible Local Area Network
	> Flags: 0x0800, VXLAN Network ID (VNI)
Ethernet II. Src: 00:50:56:a5:fd:dd. Dst: ff:ff:ff:ff:ff:ff	Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255	Reserved: 0
> User Datagram Protocol, Src Port: 68, Dst Port: 67	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
 Dynamic Host Configuration Protocol (Discover) 	User Datagram Protocol, Src Port: 67, Dst Port: 67
Message type: Boot Request (1)	V Dynamic Host Configuration Protocol (Discover) Message type: Boot Request (1)
Hardware type: Elnernet (0x01)	Hardware type: Ethernet (0x01)
Hops: 0	Hops: 1
Transaction ID: 0xe9e35087	Transaction ID: 0xe9e35087
Seconds elapsed: 0	> Bootp flags: 0x8000, Broadcast flag (Broadcast)
 Bootp flags: 0x8000, Broadcast flag (Broadcast) 	Client IP address: 0.0.0.0 Your (client) IP address: 0.0.0.0
1 = Broadcast flag: Broadcast	Next server IP address: 0.0.0.0
Client IP address: 0.0.0	Relay agent IP address: 172.16.10.8 Client MAC address: 00:50:56:a5:fd:dd
Your (client) IP address: 0.0.0.0	Client hardware address padding: 000000000000000000000000000000000000
Next server IP address: 0.0.0.0	Server host name not given Boot file name not given
Relay agent IP address: 0.0.0.0	Magic cookie: DHCP
Client MAC address: 00:50:56:a5:fd:dd	<pre>> Option: (53) DHCP Message Type (Discover) Length: 1</pre>
Client hardware address padding: 0000000000000000000	<value: 01=""></value:>
Boot file name not given	<pre>> Option: (61) Client identifier</pre>
Magic cookie: DHCP	Length: 7
 Option: (53) DHCP Message Type (Discover) 	Hardware type: Ethernet (0x01)
Length: 1	Client MAC address: 00:50:56:a5:fd:dd
<value: 01=""></value:>	Length: 10
DHLP: Discover (1)	<value: 43584c6162732d573130=""> Host Name: CXLabs-W10</value:>
Length: 7	 Option: (60) Vendor class identifier
<value: 01005056a5fddd=""></value:>	Length: 8 <value: 4d53465420352e30=""></value:>
Hardware type: Ethernet (0x01)	Vendor class identifier: MSFT 5.0
Client MAC address: 00:50:56:a5:fd:dd	Length: 14
V Uption: (12) Host Name	<value: 0103060f1f212b2c2e2f7779f9fc=""> Parameter Request List Item: (1) Submet Mask</value:>
<value: 43584c6162732d573130=""></value:>	Parameter Request List Item: (3) Router
Host Name: CXLabs-W10	Parameter Request List Item: (6) Domain Name Server Parameter Request List Item: (15) Domain Name
v Option: (60) Vendor class identifier	Parameter Request List Item: (31) Perform Router Discover
Length: 8	Parameter Request List Item: (33) Static Route Parameter Request List Item: (43) Vendor-Specific Information
<value: 4053403420352e30=""> Vendor class identifier: MSET 5 0</value:>	Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
 Option: (55) Parameter Request List 	Parameter Request List Item: (40) NetBIOS over TCP/IP Hode Type
Length: 14	Parameter Request List Item: (119) Domain Search Parameter Request List Item: (121) Classless Static Route
<value: 0103060f1f212b2c2e2f7779f9fc=""></value:>	Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (1) Subnet Mask	Parameter Request List Item: (252) Private/Proxy autodiscovery Option: (82) Agent Information Option
Parameter Request List Item: (5) Router Parameter Request List Item: (6) Domain Name Server	Length: 47
Parameter Request List Item: (15) Domain Name	<value: 0="" 0090840at9="" 01000103000000018322000000000205="" 0900="" 420510004000000504000000000<br="" 45566556="">~ Option 82 Suboption: (1) Agent Circuit ID</value:>
Parameter Request List Item: (31) Perform Router Discover	Length: 14
Parameter Request List Item: (33) Static Route	Agent Circuit ID: 010800060018a9200a00000000
Parameter Request List Item: (43) Vendor-Specific Information	Option 82 Suboption: (2) Agent Remote ID Length: 6
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server	<value: 707db9b84daf=""></value:>
Parameter Request List Item: (40) NetBIOS over ICP/IP Node Type Parameter Request List Item: (47) NetBIOS over TCP/IP Scope	Agent Remote ID: 707db9b84daf
Parameter Request List Item: (119) Domain Search	Length: 9
Parameter Request List Item: (121) Classless Static Route	<value: 0074656e616e742d61=""></value:>
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)	Expert Info (Warning/Undecoded): Trailing stray characters]
Parameter Request List Item: (252) Private/Proxy autodiscovery	<pre>> Uption 82 Suboption: (11) Server 10 OverFide (10.10.10.1) Length: 4</pre>
Padding: 0000000000000000	<value: 0a0a0a01=""> Server ID Override: 10 10 10 1</value:>
	<pre>> Option 82 Suboption: (5) Link selection (10.10.10.0)</pre>
	Length: 4
	Link selection: 10.10.10.0
	Padding: 00000000000000



Tip: The image enlarges when double-clicking.

Discovery on SPINE

<pre>lbteret TL, Src1 P2:2010014:dist, Dit: 10101014:dist, Dit: 1010014:dist, Dit: 1010014:dist, Dit: 0 Direct Protocol, Sr Varie, 0323, Dit: Part. 4799 Direct Protocol, Direct Part. 0323, Dit: Part. 4799 Direct Part. 101001 Group Palay: Direct Part. 10100 Direct Part. 101000 Direct Part. 101000 Direct Part. 10100 Direct Part. 101000 Direct Part</pre>	<pre>Likernet II, Src: 3883368.4485597, DSI: 8024388558887 User Likrest II, Src: 3883368.4485597, DSI: 8024388558887 User Likrest Section Comparison Compa</pre>

Discovery on LEAF-1-vPC

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

Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 60:26:aa:85:98:87	> Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
> Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254	> Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 65233, Dst Port: 4789	liser Datagram Protocol Src Port: 67 Dat Port: 67
Vietnal avtancibla Local Area Naturak	oser batagram motococ, src Port: 07, bst Port: 07
VILLUAL CALCHSIDIC LUGAL AFCA WOLWOFK	Upnamic Most configuration Protocol (Discover)
> Flags: 0x0800, VXLAN Network ID (VNI)	Message type: Boot Request (1)
Group Policy ID: 0	Hardware type: Ethernet (8x81)
VXLAN Network Identifier (VNI): 303030	Hardware address length: 6
View network Identifier (Wil). 303030	Hardware address length: 6
Reserved: 0	Hops: 1
> Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe	Transaction ID: 0xe9e35087
Internet Protocol Version 4, Src: 172, 16, 10, 8, Dst: 10, 10, 10, 150	Forende allocation a
- Internet (Fordet (Fisien 4) Ster All Die Die 1 (11) (11) (11)	Seconds etapsed: 0
User Datagram Protocol, Src Port: 67, Dst Port: 67	 Bootp flags: 0x8000, Broadcast flag (Broadcast)
 Dynamic Host Configuration Protocol (Discover) 	1 = Broadcast flag: Broadcast
Message type: Boot Request (1)	
Handware type: Ethernet (201)	. dee deed dood dood = Reserved Trags: 0x0000
hardware type: Ethernet (0x01)	Client IP address: 0.0.0.0
Hardware address length: 6	Your (client) IP address: 0.0.0.0
Hops: 1	Next conver TP address: A A A A
Transaction TD: 0v00025097	Next Server 1r duress. 0.0.0.0
Traisaction 10. 0.65655067	Relay agent IP address: 172.16.10.8
Seconds elapsed: 0	Client MAC address: 00:50:56:a5:fd:dd
Bootp flags: 0x8000, Broadcast flag (Broadcast)	Client bardware address padding: 000000000000000000
Client TP address: 0.0.0.0	Crient hardware address padring. 00000000000000000
Vertex (a) address, 0,000	Server host hame not given
Your (client) IP address: 0.0.0.0	Boot file name not given
Next server IP address: 0.0.0.0	Manic cookie: DHCP
Relay agent IP address: 172.16.10.8	Options (52) DVCD Message Type (Discover)
Client MAC address: 00:50:56:35:fd:dd	· option, (33) once nessage type (Discover)
Clear has average of 30130130130110100	Length: 1
tilent nardware address padding: 00000000000000000000	<value: 01=""></value:>
Server host name not given	DHCP: Discover (1)
Boot file name not given	
Maris cookiat DPCD	v option: (61) client identifier
nagic cookie: oner	Length: 7
 Option: (53) DHCP Message Type (Discover) 	<value: 01005056a5fddd=""></value:>
Length: 1	Hardware tune: Ethernet (AvA1)
Value: 015	naruware type, Etherhet (0X01)
	Client MAC address: 00:50:56:a5:fd:dd
UHLP: DISCOVER (1)	 Option: (12) Host Name
 Option: (61) Client identifier 	Length: 10
Length: 7	AND A DECKER PRODUCTION AND A DECK
	<value: 320573130="" 43584c0102=""></value:>
<vatue: 0100202031000=""></vatue:>	Host Name: CXLabs-W10
Hardware type: Ethernet (0x01)	 Option: (60) Vendor class identifier
Client MAC address: 00:50:56:a5:fd:dd	
Option: (12) Hest Name	Length: 8
option. (12) host waite	<value: 4d53465420352e30=""></value:>
Length: 10	Vendor class identifier: MSFT 5.0
<value: 43584c6162732d573130=""></value:>	Ontion: (55) Parameter Request List
Host Name: CXLabs-W10	option. (35) Parameter Request cist
Option: (60) Vendor class identifier	Length: 14
· option. (do) vehici class identifier	<value: 0103060f1f212b2c2e2f7779f9fc=""></value:>
Length: 8	Parameter Request List Item: (1) Subnet Mask
<value: 4d53465420352e30=""></value:>	Parameter Request List Item: (3) Router
Vendor class identifier: MSFT 5.0	Percent provide the second sec
Option: (SS) promotor Request List	Parameter Request List Item: (6) Domain Name Server
option: (55) Parameter Request List	Parameter Request List Item: (15) Domain Name
Length: 14	Parameter Request List Item: (31) Perform Router Discover
<value: 0103060f1f212b2c2e2f7779f9fc=""></value:>	Parameter Request List item. (31) Perform Router Discover
Desenvoir Province List Thomas (1) Subnot Mack	Parameter Request List Item: (33) Static Route
Parameter Request List Item. (1) Subnet Hask	Parameter Request List Item: (43) Vendor-Specific Information
Parameter Request List Item: (3) Router	Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (6) Domain Name Server	Despector Despect List Team (TT) Network over 151/11 Nume Server
Parameter Request List Item: (15) Domain Name	Parameter Request List Item: (46) NetBIOS over ICP/IP Node Type
Descente Description (21) Desfers Deutes Discover	Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
Parameter Request List item: (SI) Perform Router Discover	Parameter Request List Item: (119) Domain Search
Parameter Request List Item: (33) Static Route	Parameter Request List Items (121) Classing Static Route
Parameter Request List Item: (43) Vendor-Specific Information	Parameter Request List Item. (121) (tassiess static Route
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server	Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter negative Light Ltem: (44) Netblog Ver Ltr/ir Home Scive	Parameter Request List Item: (252) Private/Proxy autodiscovery
Parameter Request List Item: (46) NetBIDS over ILP/IP Node Type	Antion: (82) Agent Information Antion
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope	Service 17
Parameter Reguest List Item: (119) Domain Search	Length: 4/
Parameter Request List Item: (121) Classless Static Poute	<value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00=""></value:>
Promoter negoust List Atem, (144) bidstess statte Nuite	 Option 82 Suboption: (1) Agent Circuit ID
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)	Length: 14
Parameter Request List Item: (252) Private/Proxy autodiscovery	
Option: (82) Agent Information Option	<a9 01020000001293700900000000="" nc:=""></a9>
Length: 47	Agent Circuit ID: 0108000600018a9200a00000000
	 Option 82 Suboption: (2) Agent Remote ID
<pre><vatue: pipebib800000000000000000000000000000000000<="" td=""><td>Length: 6</td></vatue:></pre>	Length: 6
 Option 82 Suboption: (1) Agent Circuit ID 	utrature v
Length: 14	<value: 707db9b84daf=""></value:>
Value 010800050001830700300000000	Agent Remote ID: 707db9b84daf
	 Option 82 Subortion: (151) VRF name/VPN ID
Agent Circuit ID: 010800050001839200000000000	Length: 0
Option 82 Suboption: (2) Agent Remote ID	Length: 2
Length: 6	<value: 0074656e616e742d61=""></value:>
Value: 787db9b8ddaf>	✓ VRF name:
statute, rorozootadie	Expert Info (Warning/Undecoded): Trailing stray characters]
Agent Kendte ID: /0/0090840at	[Trailing stray characters]
 Option 82 Suboption: (151) VRF name/VPN ID 	trivacting stray thatatters;
Length: 9	<pre><message: characters="" iral(ing="" stray=""></message:></pre>
<value: 0074656e616e742d61=""></value:>	[Severity level: Warning]
UDE name	[Group: Undecoded]
V YAL HOME.	v Ontion 82 Subortion: (11) Server TD Override (18,18,18,1)
[Expert Into (Warning/Undecoded): Trailing stray characters]	Internet a subsystem (11) server ab overlade (10:10:10:1)
 Option 82 Suboption: (11) Server ID Override (10.10.10.1) 	Length: 4
Length: 4	<value: 0a0a0a01=""></value:>
Value: 020202015	Server ID Override: 10.10.10.1
	 Ontion 82 Subortion: (5) Link selection (10.10.10.0)
Server 10 Override: 10.10.10.1	I south a suppression (3) Lank Scheelann (Astastasta)
 Option 82 Suboption: (5) Link selection (10.10.10.0) 	Length: 4
Length: 4	<value: 0a0a0a00=""></value:>
431.0. 0.0.0.0.00	Link selection: 10.10.10.0
Link selection: 10.10.10.0	Untion: (255) End
	 Option: (255) End
> Option: (255) End	<pre>> Option: (255) End Option End: 255</pre>
> Option: (255) End Padding: 000000000000000	 Option: (255) End Option End: 255 Padding: 00000000000000
> Option: (255) End Padding: 000000000000000	○ Option: (255) End Option End: 255 Padding: 00000000000000



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

Discovery received on 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: 0000000000000000000
  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: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>

    Option 82 Suboption: (1) Agent Circuit ID

      Length: 14
      <Value: 0108000600018a9200a00000000>
      Agent Circuit ID: 0108000600018a9200a00000000

    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: 000000000000000000
```

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: 0000000000000000000
  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: 010e0108000600018a9200a0000000000206707db9b84da197090074656e616e742d610b040a0a0a0105040a0a0a00>

    Option 82 Suboption: (1) Agent Circuit ID

      Length: 14
       <Value: 0108000600018a9200a00000000>
      Agent Circuit ID: 0108000600018a9200a00000000
  · 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: 00000000000000000
```

DCHP Offer on LEAF-2-vPC

Offer received on LEAF-2-vPC	Offer send by LEAF-2-vPC
<pre>: Ethernet II, Src: 0015051835161204 (a, DST: 0010000000000000000000000000000000000</pre>	Chinese Chines
	Link selection: 10.10.10.0 © Option: (255) End Option End: 255

DHCP Offer vPC SPINE

Offer received on SPINE	Offer send by SPINE

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	
Elane Avalage Ville Nation To (AT)	
Frags: 6x6666, VALAN NEWORK ID (VNI)	
Group Policy ID: 0	Ethernet TT Cons 10,63,46,64,05,07 Det. 70,74,60,60,44,64
VXLAN Network Identifier (VNI): 303030	2 Ethernet 11, Sic: 10:05:00:044:05:97, DSt: 70:70:09:00:44:01
Reserved: 0	> Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5
Ethernet II. Src: 02:00:0d:0d:0d:fe. Dst: 70:7d:b9:b8:4d:af	> User Datagram Protocol, Src Port: 65518, Dst Port: 4789
Teternet Destacel Version 4, Crost 10 10 10 Det. 172 16 10 9	Virtual eXtensible Local Area Network
7 Internet Protocol Version 4, 511 10.10.10.056, 051: 172.10.10.0	Elags: 0x0800, VXLAN Network TD (VNT)
> User Datagram Protocol, Src Port: 67, Dst Port: 67	Group Boliev Tot A
 Dynamic Host Configuration Protocol (Offer) 	Group Policy ID: 0
Message type: Boot Reply (2)	VXLAN Network Identifier (VNI): 303030
Hardware type: Ethernet (0x01)	Reserved: 0
Hardware address length: 6	Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af
Hardware address tengen, o	Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8
hops: e	User Datagram Protocol Src Port: 67 Det Port: 67
Transaction ID: 0xe9e35087	Diser Datagram Frederick of District of
Seconds elapsed: 0	bynamic host configuration Protocol (offer)
 Bootp flags: 0x8000, Broadcast flag (Broadcast) 	Message type: Boot Reply (2)
1 Broadcast flag: Broadcast	Hardware type: Ethernet (0x01)
	Hardware address length: 6
.000 0000 0000 = Reserved Trags: 0x0000	Hone: 0
Client IP address: 0.0.0.0	Transaction TD: Avenue25007
Your (client) IP address: 10.10.10.3	Transaction ID: 0xe9e35087
Next server IP address: 10.10.10.150	Seconds elapsed: 0
Relay agent TP address: 172 16 10 8	> Bootp flags: 0x8000, Broadcast flag (Broadcast)
Client MAC address 40:50:51:51:51:61:dd	Client IP address: 0.0.0.0
CLIENT PAC dudress: 00:50:35:00:00	Your (client) TP address: 10.10.10.3
Litent naroware address padding: 000000000000000000000000000000000000	Next cerver TP address 10 10 10 150
Server host name not given	Delay areast TD address, 10:10:10:10
Boot file name not given	Recay agent 14' address: 1/2.10.10.8
Magic cookie: DHCP	Client MAC address: 00:50:56:a5:fd:dd
Option: (53) DHCP Message Type (Offer)	Client hardware address padding: 00000000000000000000
opcium, car once nessage type (utter)	Server host name not given
Length: 1	Root file name not ejven
<value: 02=""></value:>	Boot rite name not given
DHCP: Offer (2)	Magic cookie: DHCP
 Ontion: (1) Subnet Mask (255, 255, 26, 0) 	 Option: (53) DHCP Message Type (Offer)
Langth A	Length: 1
Length: 4	<value: 02=""></value:>
<value: ffffff00=""></value:>	DMCP: Offer (2)
Subnet Mask: 255.255.255.0	DRUP: Offer (2)
 Option: (58) Renewal Time Value 	Option: (1) Subnet Mask (255.255.26)
length: 4	Length: 4
	<value: ffffff00=""></value:>
value: bobaco>	Subnet Mask: 255,255,0
Renewal Time Value: 12 hours (43200)	- Options (FP) Population (a)up
 Option: (59) Rebinding Time Value 	option: (58) kenewat Time value
Length: 4	Length: 4
<value: 00012750=""></value:>	<value: 0000a8c0=""></value:>
Pohlading Time Values 21 hours (7560)	Renewal Time Value: 12 hours (43200)
Replinging time value: 21 hours (75000)	 Option: (59) Rebinding Time Value
Option: (51) IP Address Lease Time	- option: (55) Rebinding Time value
Length: 4	Length: 4
<value: 00015180=""></value:>	<value: 00012750=""></value:>
IP Address Lease Time: 1 day (86400)	Rebinding Time Value: 21 hours (75600)
IF Address Lease Line. I day (00400/	 Option: (51) IP Address Lease Time
Option: (54) DHCP Server Identifier (10.10.10.1)	Leasth: A
Length: 4	
<value: 0a0a0a01=""></value:>	<value: 00015180=""></value:>
DHCP Server Identifier: 10.10.10.1	IP Address Lease Time: 1 day (86400)
(0) Option: (3) Bouter	 Option: (54) DHCP Server Identifier (10.10.10.1)
option (b) worder	Length: 4
Length 4	<value: 0a0a0a01=""></value:>
<value: 0a0a0a01=""></value:>	DHCP Server Identifier: 10 10 10 1
Router: 10.10.10.1	DIGF Server Auchtrace. 10.10.10.1
 Option: (15) Domain Name 	Option: (15) Domain Name
Length: 10	Length: 10
xVa)ue: 636073636f2e636f6d88x	<value: 636973636f2e636f6d00=""></value:>
Pontin Used Job Content of the conte	Domain Name: cisco.com
DOURTH MAILE: CT2CO-COU	Option: (82) Agent Information Option
 Option: (82) Agent Information Option 	operation (02) Agent information option
Length: 47	Lengtn: 4/
2/12/11/2 10/00/10/2000/00/01/2:07/00/00/00/00/00/00/00/00/00/00/00/00/0	
	 Option 82 Suboption: (1) Agent Circuit ID
v uption o2 Supoption: (1) Agent Circuit ID	Length: 14
Length: 14	<value: 0108000600018a9200a00000000=""></value:>
<value: 0108000600018a9200a00000000=""></value:>	Agent Circuit ID: 0108000500018-02000000000
Agent Circuit ID: 0108000600018a9200a00000000	Agent circuit is diodecoucoulda220000000000
 Option 82 Suboption: (2) Agent Remote ID 	v uption az suboption: (Z) Agent Remote ID
Leasth &	Length: 6
Length, U	<value: 707db9b84daf=""></value:>
	Agent Remote TD: 707db9b84daf
<value: 0="" 009084081=""></value:>	
<value: 707db9b84daf=""> Agent Remote ID: 707db9b84daf</value:>	Agent Remote 12 Subsections (JES1) VISE same (JEN) TO
<value: db9m840af="" v=""> Agent Remote ID: 707db9b84daf < Option 82 Subpotion: (151) VRF name/VPN ID</value:>	Option 82 Suboption: (151) VRF name/VPN ID
<pre><value: abgos4ar="" v=""> Agent Renote ID: 70/abgos4daf / Option 82 Suboption: (151) VRF name/VPN ID ///// Lenote is an additional additionadditionadditionadditionadditionadditionad additionad additionad addi</value:></pre>	Option R& Suboption: (151) VRF name/VPN ID Length: 9
<pre><value: ordoso40ar=""> Agent Remote ID: 20/db9b84daf </value:></pre> Option 82 Suboption: (151) VRF name/VPN ID Length: 9	Coption 82 Suboption: (151) VFF name/VFN ID Length: 9
<vulue: o<="" ou="" td="" u=""><td>• Option & Suboption: (151) VRF name/VPN ID Length: 9 - >VRF name:</td></vulue:>	• Option & Suboption: (151) VRF name/VPN ID Length: 9 - >VRF name:
<vulue: oud9004047="" w=""> Agent: Remote ID: Y070b9084daf Dption 82 Suboption: (151) VKF name/VFN ID Length: 9 <vulue: 0074656e616e742d61=""> (VKF name:</vulue:></vulue:>	<pre>> Option & Suboption: (151) VMF name/VPN ID Length: 9</pre>
<pre><value: adyos4ar="" v=""> Agent Renote ID: 70/db/b84daf Option 82 Suboption: (151) VRF name/VPN ID Length: 9 <value: 0074656e6i8e742d61=""> VRF name:</value:></value:></pre>	 Option 82 Suboption: (151) VRF name/VPN ID Long 11: 9 - -<!--</td-->
<pre><value: opd0wdat="" w=""> Agent Renote ID: Y0/dbgb8ddaf • Dption 82 Suboption: (151) VMF name/VPN ID Length: 9 <value: 0074650e616e742d61=""> • VMF name: • [Expert Info (Warning/Undecoded): Trailing stray characters]</value:></value:></pre>	<pre>> Option 82 Suboption: (151) VFR name/VFN ID Length: 9</pre>
<pre><value: a="" j090040a7=""> Agent Remote ID: 707db9b84daf 'Doption 82 Suboption: (151) VRF name/VPN ID Length: 9 <value: 0074656e6i8e742d61=""> 'VRF name: [Expert Info (Warning/Undecoded): Trailing stray characters] [Trailing stray characters] </value:></value:></pre>	<pre>> (Dpion 82 Suboption: (151) VRF name/VPN ID Length: 9</pre>
<pre><value: opdowdat="" w=""> Agent Renote ID: 70/dbgb84daf • Dption 82 Suboption: (151) VWF name/VPN ID Length: 9 <value: 8074650e6166742d61=""> • WEF name: • [Expert Info (Warning/Undecoded): Trailing stray characters] [Trailing stray characters] • dessage: Trailing stray characters> • de</value:></value:></pre>	<pre>> lopion 82 Suboption: (151) VMF name/VPN ID Length: 9</pre>
<pre><value: a="" abd9040at=""> Agent Remote ID: 72/db9084daf [Dplion 82 Suboption: (151) VWF name/VPN ID Lenght: 9 <value: 0074656e616e742d61=""> (VWF name:</value:></value:></pre>	<pre>> (ppion 82 Suboption: (151) VRF name/VPN ID Length: 9</pre>
<pre><value: 04043="" a="" job=""></value:> Agent Renote ID: 70/db/0846af Dption 82 Suboption: (151) VKF name/VPN ID Length: 9 <value: 42061="" 4650e6166="" 80=""> VWF name: VIF name: VIF name: Severity constraining stray characters [Trailing stray characters> [Severity level: Warning] [Group: Undecoded]</value:></pre>	<pre>> loption 82 Suboption: (151) VMF name/VPN ID Length: 9</pre>
<pre><value: u00900401="" w=""> Agent: Remote ID: 709/09/0401> Dength: 9 <value: 0074650e616e742d61=""> (Frailing stray characters) [Expert Info (Warning/Undecoded): Trailing stray characters] [Trailing stray characters] dessage: Trailing stray characters> [Severity level: Warning] [Group: Undecoded] (0 option 82 Suboption: (11) Server ID Override (10.10.10)</value:></value:></pre>	<pre>> lopion 82 Suboption: (15) VFF name/VFN ID Length: 9</pre>
<pre><value: ordposeduar="" w=""> Agent: Remote ID: 70/dp0seduar> Agent: Remote ID: 70/dp0seduar> UE (0) (VFF name/VFN ID Length: 9 <value: 00="" 42d61="" d455e6i6c=""> (Frailing stray characters) [Trailing stray characters] [Trailing stray characters> [Severity Level: Warning] [Group: Undecoded] [Group: Undecoded] [Group: Undecoded] [Severity Level: Warning] [Group: Undecoded] [Severity Level: Warning] [Group: Undecoded] [Severity Level: Warning] [Severity Level: Warning Level: Warning] [Severity Level: Warning Level: Warning] [Severity Level: Warning Level:</value:></value:></pre>	<pre>> Uption 82 Suboption: (151) VRF name/VPN ID</pre>
<pre><value: opdowdar="" w=""> Agent: Remote ID: 70/dbgb84daf Dption 82 Suboption: (151) VKF name/VMN ID Length: 9 <value: 007465="" e66166742d61=""> VKF name: V[Expert Info (Warning/Undecoded): Trailing stray characters] (Trailing stray characters] -#essage: Trailing stray characters> [Severity level: Warning] [Group: Undecoded] Option 82 Suboption: (11) Server ID Override (10.10.10.1) Length: 4 <value: 80ab8ab1=""></value:></value:></value:></pre>	<pre>> lopion 82 Suboption: (15) VFF name/VFN ID Length: 9</pre>
<pre><value: opdosdat="" u=""> Agent: Remote ID: 70/db/b846af • Option 82 Suboption: (151) VRF name/VFN ID Length: 9 <value: 0074650e616e742d61=""> • VRF name: • [Expert Info (Warning/Undecoded): Trailing stray characters] [Trailing stray characters] [Trailing stray characters> [Severity level: Warning] [Group: Undecoded] • Option 82 Suboption: (11) Server ID Override (10.10.10.1) Length: 4 <value: 80a80a81=""> Server ID Override: 10 10 10 10 Server ID Override: 10 10 10 Server ID Override: 10 10 10 Server ID Override: 10 10 10 </value:></value:></value:></pre>	<pre>> (ppion 82 Suboption: (151) VRF name/VPN ID Length: 9</pre>
<pre><value: opdowdar="" w=""> Agent: Remote ID: 70/dbgb84daf Dption 82 Suboption: (151) VMF name/VMN ID Length: 9 <value: 0074650e616e742d61=""> VWF name: V[Expert Info (Warning/Undecoded): Trailing stray characters] (Trailing stray characters] -#essage: Trailing stray characters? (Severity level: Warning) (Group: Undecoded) Option 82 Suboption: (1) Server ID Override (10.10.10.1) Length: 4 -value: 20a0801> Server ID Override: 10.10.10. Option 20 Set (10.10.10.1) Det (10.10.10.10.10.10.10.10.10.10.10.10.10.1</value:></value:></pre>	<pre>> loption 82 Suboption: (151) VMF name/VPN ID Length: 9</pre>
<pre><value: a="" staff<br="" ub="">Agent: Remote ID: 70/bb/B84daf Dption 82 Subpytion: (151) VWF name/VWN ID Length: 9 <value: 00="" 4556e616e742d61=""> (Trailing stray characters] (Trailing stray characters] (Trailing stray characters] (Severity level: Warning] (Group: Undecoded] (Droin 82 Subpytion: (11) Server ID Override (10.10.10.1) Length: 4 <value: 0808001=""> Server ID Override: 10.10.10.1 (Dption 82 Subption: (5) Link selection (10.10.10.0) (Dotion 82 Subption: (5) Link selection (10.10.0) (Dotion 82 Subption: (5) Link selection (10.10.0) (Doti</value:></value:></value:></pre>	<pre>> (ppion 82 Subption: (151) VRF name/VPN ID Length: 9</pre>
<pre><value: opdowdar="" w=""> Agent: Remote ID: 70/db084daf Dption 82 Suboption: (151) VMF name/VMN ID Length: 9 <value: 0074650e616e742d61=""> VWF name: [Expert Info (Warning/Undecoded): Trailing stray characters] [Trailing stray characters] </value:></value:></pre>	<pre>> Uption 82 Suboption: (151) VRF name/VPN ID Length 9</pre>
<pre><value: 00000401="" a=""> Agent: Remote ID: 720/0000401> Uength: 9 <value: 00="" 14050e6016e742d61=""> (Itrailing stray characters) (Itrailing stray characters) (Itrailing stray characters) (Severity level: Warning] (Group: Undecoded) (Itrailing stray characters) (Severity level: Warning] (Group: Undecoded) (Uength: 4 <value: (10.10.10.0)="" (10.10.10.1)="" 0000000(5)="" 000000000000000000000000000000000000<="" 00000001(11)="" 00000001(5)="" 4="" <value:="" id="" length:="" link="" override="" selection="" server="" td=""><td><pre>> (ppion 82 Subption: (151) VRF name/VPN ID Length: 9</pre></td></value:></value:></value:></pre>	<pre>> (ppion 82 Subption: (151) VRF name/VPN ID Length: 9</pre>
<pre><value: j09004047="" w=""> Agent Renote ID: 70709004047> Uength: 9 <value: 0074650e616e742d61=""> VWF name: [Expert Info (Warning/Undecoded): Trailing stray characters] [Trailing stray characters]</value:></value:></pre>	<pre> (Option 82 Suboption: (151) VRF name/VPN ID</pre>
<pre><value: a="" ddddddddat=""> Agent: Remote ID: YZDDDDdddaT> Diption 82 Subportion: (151) VWF name/VWN ID Length: 9 <value: 0074656e616e742d61=""> (Trailing stray characters) (Expert Info (Warning/Undecoded): Trailing stray characters] (Trailing stray characters] <value: 0074656e610e742d61=""> (Trailing stray characters] <value: 0074656e610e742d61=""> (Intervent) (Intervent)</value:></value:></value:></value:></pre>	<pre>> (ppion 82 Suboption: (151) VRF name/VPN ID Length: 9</pre>
<pre><value: a="" adddewdat=""> Agent: Rendet Di: 72/ddbB84daf (Dplion 82 Suboption: (151) VWF name/VPN ID Lenght: 9</value:></pre>	<pre>> (ppion 82 Suboption: (151) VRF name/VPN ID Length: 9</pre>
<pre><value: upd904047="" w=""> Agent: Renote ID: 70/db9084047 Dption 82 Suboption: (151) VKF name/VMN ID Length: 9 <value: 0074650e616e742d61=""></value:></value:></pre>	<pre>> (ppion 82 Subption: (151) VMF name/VPN ID Length: 9</pre>

DHCP Offer on LEAF-1

Offer received on LEAF-1	Offer send on LEAF-1
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	Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: ff:ff:ff:ff:ff:ff
	> Internet Protocol Version 4, Src: 10.10.10.1, Dst: 255.255.255.255
Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af	> User Datagram Protocol, Src Port: 67, Dst Port: 68
User Datagram Protocol, Src Port: 65518, Dst Port: 4789	
Virtual extensible Local Area Network	Message type: Boot Benly (2)
Group Policy D: 0	Hardware type: Ethernet (0x01)
VXLAN Network Identifier (VNI): 303030	Hardware cype. Etternet (0.01)
Reserved: 0 Ethernet II. Src: 02:00:0d:0d:0d:0d:fe. Dst: 70:7d:b9:b8:4d:af	Hardware address length: 6
Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8	Hops: 0
Diser Datagram Protocol, Src Port: 67, Dst Port: 67	Transaction ID: 0xe9e35087
Message type: Boot Reply (2)	Seconds elapsed: 0
Hardware type: Ethernet (0x01)	> Bootp flags: 0x8000, Broadcast flag (Broadcast)
Hops: 0	Client IP address: 0.0.0.0
Transaction ID: 0xe9e35087	Your (client) IP address: 10.10.10.3
Seconds elapsed: 0 > Bootp flags: 0x8000. Broadcast flag (Broadcast)	Next server TP address: 10 10 10 150
Client IP address: 0.0.0.0	Delay agent ID address: 10.10.10.100
Your (client) IP address: 10.10.10.3 Next server IP address: 10.10.10.3	Retay agent IP address: 10.10.10.1
Relay agent IP address: 172.16.10.8	Client MAC address: 00:50:56:a5:Td:dd
Client MAC address: 00:50:56:a5:fd:dd	Client hardware address padding: 0000000000000000000
Server host name not given	Server host name not given
Boot file name not given	Boot file name not given
 Option: (53) DHCP Message Type (Offer) 	Magic cookie: DHCP
Length: 1	 Option: (53) DHCP Message Type (Offer)
<value: 02=""> DHCP: Offer (2)</value:>	Length: 1
<pre>> Option: (1) Subnet Mask (255.255.25.0)</pre>	
Length: 4 <value: ffffff00=""></value:>	DHCB: Offer (2)
Subnet Mask: 255.255.255.0	Diter (1) Subset Mask (255 255 255 0)
Option: (58) Renewal Time Value Length: 4	♥ Uption: (1) Subnet Mask (255.255.255.0)
<value: 0000a8c0=""></value:>	Length: 4
Renewal Time Value: 12 hours (43200)	<value: tttttt00=""></value:>
Length: 4	Subnet Mask: 255.255.255.0
<value: 00012750=""> Rebinding Time Value: 21 hours (75600)</value:>	v Option: (58) Renewal Time Value
• Option: (51) IP Address Lease Time	Length: 4
Length: 4	<value: 0000a8c0=""></value:>
IP Address Lease Time: 1 day (86400)	Renewal Time Value: 12 hours (43200)
<pre>> Option: (54) DHCP Server Identifier (10.10.10.1) length: 4</pre>	Option: (59) Rebinding Time Value
<value: 0a0a0a01=""></value:>	length: 4
DHCP Server Identifier: 10.10.10.1	
Uption: (15) Domain Name Length: 10	Pakinding Time Value: 21 hours (75600)
<value: 636973636f2e636f6d00=""></value:>	Rebinding Time Value: 21 hours (75600)
Domain Name: cisco.com	Option: (51) IP Address Lease Time
Length: 47	Length: 4
<pre><value: 01000108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00=""></value:></pre>	<value: 00015180=""></value:>
Length: 14	IP Address Lease Time: 1 day (86400)
<value: 0108000600018a9200a00000000=""></value:>	Option: (54) DHCP Server Identifier (10.10.10.1)
 Option 82 Suboption: (2) Agent Remote ID 	Length: 4
Length: 6	<value: 0a0a0a01=""></value:>
Agent Remote ID: 707db9b84daf	DHCP Server Identifier: 10.10.10.1
Option 82 Suboption: (151) VRF name/VPN ID Length: 0	v Ontion: (3) Router
<value: 0074656e616e742d61=""></value:>	length: 4
VRF name: Option 82 Suboption: (11) Server TD Override (10 10 10 1)	
Length: 4	Natur, 10 10 10 1
<value: 0a0a0a01=""> Server ID Override: 10 10 1</value:>	Noulef: 10.10.10.1
 Option 82 Suboption: (5) Link selection (10.10.10.0) 	v uption: (15) Domain Name
Length: 4	Length: 10
Link selection: 10.10.10.0	<value: 636973636f2e636f6d00=""></value:>
Option: (255) End	Domain Name: cisco.com
option end: 200	Option: (255) End
	Option End: 255

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: 0000000000000000000
    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: ffffff00>
      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)
 v Option: (51) IP Address Lease Time
      Length: 4
      <Value: 00015180>
      IP Address Lease Time: 1 day (86400)
 v 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: 0000000000000000000
  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
```

Request on LEAF-1

Request received on LEAF-1	Request send by LEAF-1
> Ethernet II, Src: 00:50:56:a5:fd:dd, Dst: ff:ff:ff:ff:ff	 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
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255	 > User Datagram Protocol, Src Port: 51730, Dst Port: 4789 > Virtual eXtensible Local Area Network
 ✓ Dynamic Host Configuration Protocol (Request) 	> Flags: 0x0800, VXLAN Network ID (VNI) Group Policy ID: 0
Message type: Boot Request (1)	VXLAN Network Identifier (VNI): 303030
Hardware type: Ethernet (0x01)	Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe
Hops: 0	 Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 User Datagram Protocol, Src Port: 67, Dst Port: 67
Transaction ID: 0xe9e35087	 Dynamic Host Configuration Protocol (Request) Message type: Boot Request (1)
Seconds elapsed: 0	Hardware type: Ethernet (0x01)
1 = Broadcast flag: Broadcast	Hops: 1
.000 0000 0000 = Reserved flags: 0x0000	Transaction ID: 0xe9e35087 Seconds elapsed: 0
Your (client) IP address: 0.0.0.0	> Bootp flags: 0x8000, Broadcast flag (Broadcast) Client IP address: 0.0.0.0
Next server IP address: 0.0.0.0	Your (client) IP address: 0.0.0.0
Relay agent 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	Client MAC address: 00:50:56:65:10:00 Client hardware address padding: 0000000000000000000
Server host name not given	Server host name not given Boot file name not given
Boot file name not given	Magic cookie: DHCP
<pre>Magic cookie: DHCP v Option: (53) DHCP Message Type (Request)</pre>	Length: 1
Length: 1	<value: 03=""> DHCP: Request (3)</value:>
<value: 03=""></value:>	Option: (61) Client identifier Length: 7
v Option: (61) Client identifier	<value: 01005056a5fddd=""></value:>
Length: 7	Client MAC address: 00:50:56:a5:fd:dd
<value: 01005056a5fddd=""></value:>	Length: 4
Client MAC address: 00:50:56:a5:fd:dd	<value: 0a0a0a03=""> Requested IP Address: 10.10.10.3</value:>
Option: (50) Requested IP Address (10.10.10.3)	<pre>> Option: (54) DHCP Server Identifier (10.10.10.150) Length: 4</pre>
Length: 4	
<value: 0d0d0d005=""> Requested IP Address: 10.10.10.3</value:>	<pre>> Option: (12) Host Name</pre>
Option: (54) DHCP Server Identifier (10.10.10.1)	Length: 10 <value: 43584c6162732d573130=""></value:>
Length: 4	Host Name: CXLabs-W10
DHCP Server Identifier: 10.10.10.1	Lengths 13
Option: (12) Host Name	> Flags: 0x00
Length: 10	A-RR result: 0 PTR-RR result: 0
Host Name: CXLabs-W10	Client name: CXLabs-W10
 Option: (81) Client Fully Qualified Domain Name 	Length: 8
Lengtn: 13 <value: 00000043584c6162732d573130=""></value:>	Vendor class identifier: MSFT 5.0
 Flags: 0x00 	 Option: (55) Parameter Request List Length: 14
0000 = Reserved flags: 0x0	<value: 0103060f1f212b2c2e2f7779f9fc=""> Parameter Request List Item: (1) Subnet Mask</value:>
0 = Server DDNS: Some server updates 0 = Encoding: ASCII encoding	Parameter Request List Item: (3) Router
	Parameter Request List Item: (b) Domain Name
0 = Server: Client	Parameter Request List Item: (31) Perform Router Discover Parameter Request List Item: (33) Static Route
A-KK FESUIT: 0 PTR-RR result: 0	Parameter Request List Item: (43) Vendor-Specific Information Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Client name: CXLabs-W10	Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type Parameter Request List Item: (47) NetBIOS over TCP/IP Score
 Option: (60) Vendor class identifier 	Parameter Request List Item: (119) Domain Search
<value: 4d53465420352e30=""></value:>	Parameter Request List Item: (121) Classiess Static Route Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Vendor class identifier: MSFT 5.0	Parameter Request List Item: (252) Private/Proxy autodiscovery • Option: (82) Agent Information Option
 Option: (55) Parameter Request List 	Length: 47
<value: 0103060f1f212b2c2e2f7779f9fc=""></value:>	 Option 82 Suboption: (1) Agent Circuit ID
Parameter Request List Item: (1) Subnet Mask	<value: 0108000500018a9200a00000000=""></value:>
Parameter Request List Item: (3) Router	Agent Circuit ID: 0108000600018a9200a00000000 v Option 82 Suboption: (2) Agent Remote ID
Parameter Request List Item: (15) Domain Name	Length: 6 <value: 787db9b84daf=""></value:>
Parameter Request List Item: (31) Perform Router Discover	Agent Remote ID: 787db9b84daf
Parameter Request List Item: (33) Static Route Parameter Request List Item: (43) Vendor-Specific Information	Length: 9
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server	<value: 007465666166742d61=""> VRF name:</value:>
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type	Expert Info (Warning/Undecoded): Trailing stray characters] v Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope Parameter Request List Item: (119) Domain Search	Length: 4
Parameter Request List Item: (121) Classless Static Route	Server ID Override: 10.10.10.1
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)	<pre>v uption az Suboption: (5) Link Selection (10.10.10.0) Length: 4</pre>
 Parameter Request List Item: (252) Private/Proxy autodiscovery Option: (255) End 	<value: 0a0a0a00≻<br="">Link selection: 10.10.10.0</value:>
Option End: 255	<pre>Option: (255) End Option End: 255</pre>
	-p

Request on SPINE

Request received on SPINE	Request send by SPINE
-	1 · · ·

Ethernet II, Src: 70:7d:D9:b8:4d:af, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 51730, Dst Port: 4789 Virtual eXtensible Local Area Network - Flags: 0x0000, VXLNN Network ID (WI) Group Policy ID: 0 VXLNN Network Identifier (WI): 303030 Reserved: 0 Hops: 1 Transaction ID: 0xe9e35087 Seconds elapsed: 0 Bootp flags: 0x8800, Broadcast flag (Broadcast) Client IP address: 0.0.0.0 Next server IP address: 0.0.0.0 Relay agent IP address: 0.0.0.0 Relay agent IP address: 172.16.10.8 Client MAC address: 00:30:36:35:16:1d Seconds elapsed: 0 Client MAC address: 00:50:56:a5:fd:dd Client hardware address pading: 0000000000000000000 Server host name not given Boot file name not given Magic cookie: DHKP Option: (53) DHCP Message Type (Request) Length: 1 <Value: 03-> DHCP: Remust (3) <value: 03> DMCP: Request (3) Option: (61) Client identifier Length: 7 <value: 01005056a5fddd> Hardware type: Ethernet (0x01) Client MAC address; 02:05:56:56:35:fd:dd Option: (50) Requested IP Address (10.10.10.3) Length-4 ption: (50) Requested IP Address (10.10.10.3) Length: 4 <Value: 0000003> Requested IP Address: 10.10.10.3 ption: (54) DHCP Server Identifier (10.10.10.150) Length: 4 <Value: 0000005> 0 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 Length: 6 <Value: 707db9b84daf> Agent Remote ID: 707db9b84daf Option 82 Suboption: (151) VRF name/VPN ID Length: 9 <Value: 007465666166742d61> VBF name vvvr name: >[Expert Info (Warning/Undecoded): Trailing stray characters] Option 82 Suboption: (11) Server ID Override (10.10.10.1) Option 82 Suboption: (11) Server ID Override (10.10. Length: 4 <Value: 00000000 Server ID Override: 10.10.10.1 Option 82 Suboption: (5) Link selection (10.10.10.0) Length: 4 <Value: 000000000 Length: 4 Option 82 Suboption: (5) Link Length: 4
 <Value: 0a00a000>
 Link selection: 10.10.10.0
 Option: (255) End Option End: 255 Link selection: 10.10.10.0 Option: (255) End Option End: 255

Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 60:26:aa:85:95:87 Internet Protocol Version 4, Src: 5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 31730, Dst Port: 4789 Virual eXtensible Local Area Network - Flags: 0x0800, VXLAN Network ID (VMI) Group Policy ID: 0 VXLAN Network Identifier (VMI): 303030 Reserved: 0 VXLAN Network Identifier (VMI): 303030 Reserved: 0 Ethernet II, Src: 70:7d:05):05:4d:af, Dst: 02:00:0d:0d:0d:dd:fd Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 User Datagram Protocol, Src: Port: 67, Dst. Port: 67 Dymaic Host: Configuration Protocol (Reguest) Message type: Boo Request (1) Hardware uddress length: 6 Hoss: 1 Transaction ID: 0x9953087 Seconds elapsed: 0 Bootp flags: 0x8080, Broadcast flag (Broadcast) Client IP address: 0.0.0 Next server IP address: 0.0.0 Next server IP address: 0.0.0 Relay agent IP address: 00:0056:a5:fd:dd Client MAC address: 00:0056:a5:fd:dd Client MAC address: 00:30:35:10:00 Client hardware address padding: 00000000 Server host name not given Boot file name not given Magic cookie: DHCP Option: (53) DHCP Message Type (Request) Length: 1 <Value: 03> DHCP Remuest (3) <Value: 03>
DHCP: Request (3)
Option: (61) Client identifier
Length: 7
<Value: 01005056a5fddd>
Hardware type: Ethernet (0x01)
Client MAC address: 0018:556:35:fd:dd
Option: (50) Requested IP Address (10.10.10.3)
Length: 4 Option: (50) Requested IP Address (10.10.10.3) Length: 4 <Value: 08008080> Requested IP Address: 10.10.10.3 Option: (54) DHCP Server Identifier (10.10.10.150) Length: 4 <Value: 08008096> DHCP Server Identifier: 10.10.10.150 Option: (12) Host Name Length: 0 Length: 10 <Value: 43584c6162732d573130> Host Name: CXLabs=W10 Option: (81) Client Fully Qualified Domain Name Agen ver /0/009054087> Agen Remote ID: 707db9b84daf Option 82 Suboption: (151) VRF name/VPN ID Length: 9 <Value: 007465666166742d61> Option 82 Suboption: (11) Server ID Override (10.10.10.1) Lengtn: ≒ ≺Value: 000080801> Server ID Override: 10.10.10.1 tion 82 Suboption: (5) Link selection (10.10.10.0) Length: 4

Request on LEAF-2-vPC

Request recevPCd on LEAF-2-vPC	Request send byvPCAF-2-vPC
Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 60:26:aa:85:95:87 Internet Protocol Version 4, Src: 5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 51730, Dst Port: 4789	
 Virtual eXtensible Local Area Network Flags: 0x0800, VXLAW Network ID (VNI) 	Ethernet II, Src: 60:26:aa:85:95:87, Dst: 00:50:56:a5:dc:ca
Group Policy ID: 0	Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
Reserved: 0	 Dynamic Host Configuration Protocol (Request)
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	Message type: Boot Request (1) Hardware type: Ethernet (0x01)
> User Datagram Protocol, Src Port: 67, Dst Port: 67	Hardware address length: 6
Message type: Boot Request (1)	Transaction ID: 0xe9e35087
Hardware type: Ethernet (0x01) Hardware address length: 6	Seconds elapsed: 0 Booto flags: 0x8000, Broadcast flag (Broadcast)
Hops: 1	Client IP address: 0.0.0.0
Seconds elapsed: 0	Your (client) IP address: 0.0.0.0 Next server IP address: 0.0.0.0
> Bootp flags: 0x8000, Broadcast flag (Broadcast) Client TP address: 0.0.0.0	Relay agent IP address: 172.16.10.8
Your (client) IP address: 0.0.0.0	Client hardware address padding: 000000000000000000000000000000000000
Relay agent IP address: 0.0.0.0 Relay agent IP address: 172.16.10.8	Server nost name not given Boot file name not given
Client MAC address: 00:50:56:a5:fd:dd Client bardware address padding: 0000000000000000000	Magic cookie: DHCP
Server host name not given	Length: 1
Boot file name not given Magic cookie: DHCP	<value: 03=""> DHCP: Request (3)</value:>
 Option: (53) DHCP Message Type (Request) 	<pre>v Option: (61) Client identifier leagth: 7</pre>
<value: 03=""></value:>	<value: 01005056a5fddd=""></value:>
 Option: (61) Client identifier 	naroware type: Ethernet (0x01) Client MAC address: 00:50:56:a5:fd:dd
Length: 7	 Option: (50) Requested IP Address (10.10.10.3)
Hardware type: Ethernet (0x01)	<value: 0a0a0a03=""></value:>
<pre>Client MAC address: 00:50:56:a5:1d:dd > Option: (50) Requested IP Address (10.10.10.3)</pre>	Requested IP Address: 10.10.10.3 • Option: (54) DHCP Server Identifier (10.10.10.150)
Length: 4 <value: 0a0a0a03=""></value:>	Length: 4 <value: rababa96=""></value:>
Requested IP Address: 10.10.10.3	DHCP Server Identifier: 10.10.10.150
Coption: (54) UHCP Server identifier (10.10.10.150) Length: 4	Cuption: (12) Host Name Length: 10
<value: 0a0a0a96=""> DHCP Server Identifier: 10.10.10.150</value:>	<value: 43584c6162732d573130=""> Host Name: CXLabs=W10</value:>
<pre>v Option: (12) Host Name</pre>	 Option: (81) Client Fully Qualified Domain Name
<value: 43584c6162732d573138=""></value:>	Lengtn: 13 <value: 00000043584c6162732d573130=""></value:>
Host Name: CXLabs-W10 Option: (81) Client Fully Qualified Domain Name	> Flags: 0x00 A-RR result: 0
Length: 13	PTR-RR result: 0
Flags: 0x00	 Option: (60) Vendor class identifier
A-RR result: 0 PTR-RR result: 0	Length: 8 <value: 4d53465420352e30=""></value:>
Client name: CXLabs-W10	Vendor class identifier: MSFT 5.0
Length: 8	Length: 14
<value: 4053465420352e30=""> Vendor class identifier: MSFT 5.0</value:>	<value: 0103060f1f212b2c2e2f7779f9fc=""> Parameter Request List Item: (1) Subnet Mask</value:>
 Option: (55) Parameter Request List Leonth: 14 	Parameter Request List Item: (3) Router Parameter Request List Item: (6) Domain Name Server
<value: 0103060f1f212b2c2e2f7779f9fc=""></value:>	Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (1) Subnet Mask Parameter Request List Item: (3) Router	Parameter Request List Item: (31) Perform Router Discover Parameter Request List Item: (33) Static Route
Parameter Request List Item: (6) Domain Name Parameter Request List Item: (15) Domain Name	Parameter Request List Item: (43) Vendor-Specific Information Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (31) Perform Router Discover	Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
Parameter Request List Item: (33) Static Route Parameter Request List Item: (43) Vendor-Specific Information	Parameter Request List Item: (47) NetBIDS over TCP/IP Scope Parameter Request List Item: (119) Domain Search
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: (121) Classless Static Route Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope	Parameter Request List Item: (252) Private/Proxy autodiscovery
Parameter Request List Item: (12) Jumpin Search Parameter Request List Item: (12) Classless Static Route	Length: 47
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft) Parameter Request List Item: (252) Private/Proxy autodiscovery	<value: 010e0108000600018a9200a00000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00=""></value:>
Option: (82) Agent Information Option	Length: 14
<pre></pre> <pre><</pre>	Agent Circuit ID: 010800060018a9200a00000000
 Option 82 Suboption: (1) Agent Circuit ID Length: 14 	Option 82 Suboption: (2) Agent Remote ID Length: 6
<value: 0108000600018a9200a0000000000<br="">Apent Circuit ID: 01080006600018a9200a00000000</value:>	<value: 707db9b84daf=""></value:>
 Option 82 Suboption: (2) Agent Remote ID 	Option 82 Suboption: (151) VRF name/VPN ID
Length: 6 <value: 707db9b84daf=""></value:>	Length: 9 <value: 0074656e616e742d61=""></value:>
Agent Remote ID: 707db9b84daf	VRF name: v Option 82 Subortion: (11) Server TD Override (10.10.10.1)
Length: 9	Length: 4
<pre><vatue: 4650e010e74zd01="" d0=""> > VRF name:</vatue:></pre>	<value: 08888881=""> Server ID Override: 10.10.10.1</value:>
Option 82 Suboption: (11) Server ID Override (10.10.10.1) Length: 4	Option 82 Suboption: (5) Link selection (10.10.10.0) Length: 4
<value: 0a0a0a01=""></value:>	<value: 0a0a0a00=""></value:>
 Option 82 Suboption: (5) Link selection (10.10.10.0) 	<pre>> Option: (255) End</pre>
Length: 4 <value: 0a0a0a00=""></value:>	Option End: 255
Link selection: 10.10.10.0	
Option End: 255	
	1

Request received on DCHP 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 Hons: 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: 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 (10.10.10.150) 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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00> Option 82 Suboption: (1) Agent Circuit ID Length: 14 <Value: 0108000600018a9200a00000000> Agent Circuit ID: 0108000600018a9200a00000000 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 DCHP 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: ffffff00>
    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: 010e0108000600018a9200a00000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>

    Option 82 Suboption: (1) Agent Circuit ID

      Length: 14
       <Value: 0108000600018a9200a00000000>
      Agent Circuit ID: 0108000600018a9200a00000000

    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
ACK received on LEAF-2-vPCC	<pre>ACK send by LEAK-2-VPC</pre>
 Ethernet II, Src: 00:50:56:a5:dc:ca, Dst: 00:00:0a:0a:0a:0a Internet Protocol Version 4, Src: 10.10.10.250, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dwnamic Hast Configuration Protocol (ACK) 	Internet Protocol Version 4, Src: 13.13.13.234, DSt: 5.5.5.5 User Datagram Protocol, Src: Port: 85518, Dst Port: 4789 Virtual eXtensible Local Area Network Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserve: 0 Ethernet II, Src: 02:00:00:00:160:160, Dst: 70:7d:05:08:4d:af Internet Protocol Version 4, Src: 10.10.10.50, Dst: 172.16.10.8
Opmanic Host Configuration Protocol (ACK) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 0	User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynmaic Host Configuration Protocol (ACK) Message type: Boot Reply (2) Hardware type: Ethernet (8x81)
Transaction ID: 0xe9c35807 Seconds elapsed: 0 % Bootp flags: 0x8000, Broadcast flag (Broadcast) 1	Maps: 0 Mops: 0 Transaction ID: 0xe9e3087 Seconds Lapsed: 0 Bootp flags: 0x8000, Broadcast flag (Broadcast) 1
Relay agent IP address: 172.16.10.8 Client Mac address: 00950556.35/fd:dd Client hardwre address padding: 00000000000000000 Server host name not given Boot file name not given Magic Cookis: DHCP - Option: (53) DHCP Message Type (ACK)	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: 005:95:56:35:7fadd Client hardware address padding: 000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP
Length: 1 <value: 05=""> DHCP: ACK (5) <pre>Option: (58) Renewal Time Value Length: 4 <value: 0000a8c0=""></value:></pre></value:>	<pre>> Option: (53) DHCP Message Type (ACK) Length: 1 <value: 05=""> DHCP: ACK (5) > Option: (58) Renewal Time Value</value:></pre>
Renewal Time Value: 12 hours (43200) • Option: (59) Rebinding Time Value Length: 4 • «Value: 00012750» Rebinding Time Value: 21 hours (75600) • Option: (51) IP Adverss Lease Time	Length: 4 <value 0000a8c8≻<br="">Renewal Time Value: 12 hours (43200) Option: (59) Rebinding Time Value Length: 4 <value: 00012756≻<="" td=""></value:></value>
Length: 4 - value: 00015180 TP Address Lease Time: 1 day (86400) Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4 - d'alue: dadabats	Rebinding Time Value: 21 hours (75600) Option: (51) IP Address Lease Time Length: 4 <value: 000151007<br="">IP Address Lease Time: 1 day (86400) Option: (54) DHCF Server Identifier (10.10.10.1)</value:>
<pre>\value: badadadu DHCP Server Identifier: 10.10.10.1 0ption: (1) Subnet Mask (255.255.255.0) Length: 4 -\value: fffff00- Subnet Mask: 255.255.255.0</pre>	Length: 4 <value: 0000001=""> DHCP Server Identifer: 10.10.10.1 Option: (1) Subnet Mask (255.255.255.0) Length: 4 <value: fffffdom<="" td=""></value:></value:>
 > Option: (81) Client Fully Qualified Domain Name Length: 3 <value: 00ffff=""></value:> > Flags: 0x00 A-RR result: 255 	Subnet Mask: 255.255.255.0 • Option: (81) Client Fully Qualified Domain Name Length: 3 «Value: 00ffff>
PTR-RR result: 255 <pre>> Option: (3) Router Length: 4 <value: 0a0a001=""> Router: 10.10.1</value:></pre>	<pre>Flags: 0x00 0000 = Reserved flags: 0x0 0 = Server DDNS: Some server updates 0 = Server overrides: No override 0 = Server overrides: No override</pre>
<pre>> Option: (15) Domain Name Length: 10 <value: 630973636f2e636f6d00=""> Domain Name: clsco.com > Option: (82) Agent Linformation Option</value:></pre>	A-R result: 255 PTR-RR result: 255 Option: (3) Router Length: 4
Length: 47 Option 82 Suboption: (1) Agent Circuit ID Length: 14 	<pre><value: @dadadal=""> Router: 10.10.10.1 () Option: (15) Domain Name Length: 10</value:></pre>
Agent Circuit ID: 0108000600018a3200a00000000 V Option 82 Suboption: (2) Agent Remote ID Length: 6 <value: 707db9b84daf=""> Agent Remote ID: 707db9b84daf</value:>	Dobasin Family - 15550-Com (Dption: 627 Agent Thromation Option Length: 47 <value: 01ee01800060001839200a00000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a000<br="">- Option 82 Suboption: (1) Agent Circuit ID Length: 1 400000000000000000000000000000000000</value:>
 ○ Option 82 Suboption: (151) VRF name/VPN ID Length: 9 <value: 0074656e616e742d61=""></value:> ∨VRF name: VRF name: 	<pre>Conjoin: 108000600018392003000000000 Agent Circuit ID: 0108000600018392003000000000 Option 82 Suboption (2) Agent Remote ID Length: 6 <value: 70700984daf=""></value:></pre>
<pre>(Trailing stray characters)</pre>	Agent Remote ID: 707db9b84daf • Option 82 Suboption: (151) VRF name/VFN ID Length: 9 <value: 007465566166742d61=""></value:>
Length: 4 <value: 0a00a01=""> Server ID Override: 10.10.10.1 Option 82 Suboption: (5) Link selection (10.10.10.0) Length: 4</value:>	<pre>vwr name: > [Expert Info (Warning/Undecoded): Trailing stray characters] [Trailing stray characters] - dessage: Trailing stray characters> [Severity level: Warning]</pre>
-value: 04000000 Link selection: 10.10.10.0 · Option: (255) End Option End: 255	(group: undecoded) • Option & 2 suboption: (11) Server ID Override (10.10.10.1) Length: 4 - <value: 80808001=""> Server ID Override: 10.10.10.1 • Option & 2 suboptione: (5) Link colorition (10.10.10.0)</value:>
	Length: 4 - <value: 0000000<br="">- Unix Selection: 10.10.10.0 - Option: (255) End Option End: 255</value:>
ACK on SPINE

ACK received on SPINE	ACK send by SPINE
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: 65:318, Dst Port: 4789	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: S.5.5.5 User Datagram Protocol, Src Port: 65:518, Dst Port: 4789
 Virtual eXtensible Local Area Network Flags: 8x8888, VXLAN Network ID (VNI) 	Virtual extensible Local Area Network Elance 0x0000 VII AN Network TO (ANT)
Group Policy ID: 0	Group Policy ID: 0
Reserved: 0	Reserved: 0
 Internet 11, Src1 02100100100100, DSt1 70170109108140101 Internet Protocol Version 4, Src1 10.10.150, Dst1 172.16.10.8 	 Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.150, Dst: 172.16.10.8
 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK) 	 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Most Configuration Protocol (4CK)
Message type: Boot Reply (2)	Message type: Boot Reply (2)
Hardware address length: 6	Hardware address length: 6
Hops: 0 Transaction ID: 0xe9e35087	Hops: 0 Transaction ID: 0xe9e35087
Seconds elapsed: 0 > Booto flaos: 0x8000. Broadcast flao (Broadcast)	Seconds elapsed: 0
1 = Broadcast flag: Broadcast	1 = Broadcast flag: Broadcast
Client IP address: 0.0.0	.000 0000 0000 0000 = Reserved Tlags: 0x0000 Client IP address: 0.0.0.0
Your (client) IP address: 10.10.10.3 Next server 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	Relay agent IP address: 172.16.10.8
Client hardware address padding: 0000000000000000000	Client hardware address padding: 000000000000000000
Boot file name not given	Server host name not given Boot file name not given
Magic cookie: DHCP ~ Option: (53) DHCP Message Type (ACK)	Magic cookie: DHCP - Option: (53) DHCP Message Type (ACK)
Length: 1	Length: 1
DHCP: ACK (5)	DHCP: ACK (5)
Option: (58) Renewal Time Value Length: 4	 Option: (58) Renewal Time Value Length: 4
<value: 0000a8c0=""> Renewal Time Value: 12 hours (43200)</value:>	<value: 0000a8c0=""> Repeal Time Value: 12 hours (43200)</value:>
• Option: (59) Rebinding Time Value	• Option: (59) Rebinding Time Value
<value: 00012750=""></value:>	Length: 4 <value: 00012750=""></value:>
Rebinding Time Value: 21 hours (75600) Option: (51) IP Address Lease Time	Rebinding Time Value: 21 hours (75600) v Option: (51) IP Address Lease Time
Length: 4	Length: 4
IP Address Lease Time: 1 day (86400)	IP Address Lease Time: 1 day (86400)
<pre>> Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4</pre>	<pre>> Option: (54) OHCP Server Identifier (10.10.10.1) Length: 4</pre>
<value: 0a0a0a01=""> DHCP Server Identifier: 10.10.10.1</value:>	<value: 0a0a0a01=""> DHCP Server Identifier: 10.10.10.1</value:>
<pre>> Option: (1) Subnet Mask (255.255.25.0) length: 4</pre>	 Option: (1) Subnet Mask (255.255.25.0)
<value: ffffff00=""></value:>	<value: ffffff00=""></value:>
Subnet Mask: 255.255.25.0 • Option: (81) Client Fully Qualified Domain Name	Subnet Mask: 255.255.25.0 V Option: (81) Client Fully Qualified Domain Name
Length: 3 <value: 00ffff=""></value:>	Length: 3 <value: 00ffff=""></value:>
- Flags: 0x00	Flags: 0x00 and a percent flag: 0x0
0 = Served Trags: 0x0	0 = Server DDNS: Some server updates
<pre></pre>	0. = Encoding: ASCII encoding 0. = Server overrides: No override
A-RR result: 255	A-RR result: 255
PTR-RR result: 255	PTR-RR result: 255
Length: 4	Length: 4
<value: 0a0a0a01=""> Router: 10.10.10.1</value:>	<value: 0a0a0a01=""> Router: 10.10.10.1</value:>
 Option: (15) Domain Name Length: 10 	 Option: (15) Domain Name Length: 10
<value: 636973636f2e636f6d00=""></value:>	<value: 636973636f2e636f6d00=""></value:>
Option: (82) Agent Information Option	v Option: (82) Agent Information Option
Length: 47 <value: 010e0108000600018a9200a00000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00=""></value:>	<pre></pre>
 Option 82 Suboption: (1) Agent Circuit ID Length: 14 	v uption 82 suboption: (1) Agent Circuit ID Length: 14
<value: 0108000600018a9200a000000000<br="">Accept (irruit T): 01080006000088000000000</value:>	<value: 0108000500018a9200a000000000=""> Agent Circuit ID: 0108000500018a9200a000000000</value:>
• Option 82 Suboption: (2) Agent Remote ID	 Option 82 Suboption: (2) Agent Remote ID Length: 6
<palue: 707db9b84daf=""></palue:>	<value: 707db9b84daf=""></value:>
Agent Remote ID: 707db9b84daf • Option 82 Suboption: (151) VRF name/VPN ID	Agent Remote 10: 7070090840aT • Option 82 Suboption: (151) VRF name/VPN ID
Length: 9 «Value: 007465566166742061»	Length: 9 <value: 0074656e616e742d61=""></value:>
VRF name:	VRF name: [Expert Info (Warning/Undecoded): Trailion stray characters]
<pre>[Expert into (warning/Undecoded): Trailing stray characters] [Trailing stray characters]</pre>	(Trailing stray characters)
<pre><message: characters="" stray="" trailing=""> [Severity level: Warning]</message:></pre>	Severity level: Warning]
[Group: Undecoded]	[Group: Undecoded] ~ Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Length: 4	Length: 4
<value: 00000001=""> Server ID Override: 10.10.10.1</value:>	Server ID Override: 10.10.10.1
 Option 82 Suboption: (5) Link selection (10.10.10.0) Length: 4 	<pre>> uption of suboption: (5) Link selection (10.10.10.0) Length: 4</pre>
<value: 0a0a0a00=""></value:>	<value: 0a0a0a00=""> Link selection: 10.10.10.0</value:>
· Option: (255) End	<pre>v Option: (255) End Detion End: 255</pre>
uption Eng: 255	aptaon uno. Add

ACK on LEAF-1

ACK received on LEAF-1	ACK send by LEAF-1
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	<pre>> Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: ff:ff:ff:ff:ff:ff</pre>
Ethernet II. Src: 10:b3:d6:a4:85:97. Dst: 70:7d:b9:b8:4d:af	Internet Protocol Version 4, Src: 10.10.10.1, Dst: 255.255.255.255
Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5	> User Datagram Protocol, Src Port: 67, Dst Port: 68
> User Datagram Protocol, Src Port: 65518, Dst Port: 4789	 Dynamic Host Configuration Protocol (ACK)
> Flags: 0x8800 xXLAN Network ID (WI)	Message type: Boot Benly (2)
Group Policy ID: 0	Horders type, both apply (2)
VXLAN Network Identifier (VNI): 303030 Record: 0	hardware type: Ethernet (0x01)
Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af	Hardware address length: 6
Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8	Hops: 0
> User Datagram Protocol, Src Port: 67, Dst Port: 67	Transaction ID: 0xe9e35087
Message type: Boot Reply (2)	Seconds elansed: 0
Hardware type: Ethernet (0x01)	Roots flags (Av8000 Broadcast flag (Broadcast)
Hardware address length: 6 Hops: 0	· both rtags. exceed, broadcast rtag (broadcast)
Transaction ID: 0xe9e35087	1 = Broadcast flag: Broadcast
Seconds elapsed: 0	.000 0000 0000 0000 = Reserved flags: 0x0000
1 Broadcast flag Broadcast	Client IP address: 0.0.0.0
.000 0000 0000 0000 = Reserved flags: 0x0000	Your (client) IP address: 10.10.10.3
Client IP address: 0.0.0.0 Your (Client) IP address: 10.10.10.3	Next server IP address: 0.0.0.0
Next server IP address: 0.0.0.0	Polay agent TD address; 10 10 10 1
Relay agent IP address: 172.16.10.8	Relay agent if address: 10.10.10.1
Client MAL address: 00:50:50:513:10:00 Client hardware address padding: 000000000000000000000000000000000000	Client MAC address: 00:50:56:a5:td:dd
Server host name not given	Client hardware address padding: 0000000000000000000
Boot file name not given	Server host name not given
· Option: (53) DHCP Message Type (ACK)	Boot file name not given
Length: 1	Magic cookie: DHCP
<value: 0="">> DHCP: ACK (5)</value:>	Option: (53) DHCP Message Type (ACK)
Option: (58) Renewal Time Value	option, (55) once message type (ACK)
Length: 4	Length: 1
Renewal Time Value: 12 hours (43200)	<value: 05=""></value:>
 Option: (59) Rebinding Time Value 	DHCP: ACK (5)
Length: 4	Option: (58) Renewal Time Value
Rebinding Time Value: 21 hours (75600)	Length: 4
 Option: (51) IP Address Lease Time 	-Value: 000038/05
<pre>Length: 4 </pre>	Peneral Time Voluer 12 hours (42200)
IP Address Lease Time: 1 day (86400)	Reliewal Time Value: 12 Hours (43200)
Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4	Option: (59) Rebinding Time Value
<value: 0a0a0a01=""></value:>	Length: 4
DHCP Server Identifier: 10.10.10.1	<value: 00012750=""></value:>
Length: 4	Rebinding Time Value: 21 hours (75600)
<value: ffffff00=""></value:>	 Option: (51) IP Address Lease Time
 Subnet Mask: 255.255.255.0 Option: (81) Client Fully Qualified Domain Name 	length: 4
Length: 3	
<value: 00ffff=""></value:>	
0000 = Reserved flags: 0x0	IP Address Lease Time: 1 day (86400)
0 = Server DDNS: Some server updates	Option: (54) DHCP Server Identifier (10.10.10.1)
	Length: 4
0 = Server: Client	<value: 0a0a0a01=""></value:>
A-RR result: 255 PTE-RR result: 255	DHCP Server Identifier: 10.10.10.1
 Option: (3) Router 	<pre>Ontion: (1) Subnet Mask (255,255,255,0)</pre>
Length: 4	Length: A
Route: 10.10.10	
Option: (15) Domain Name	<value: tttttt00=""></value:>
Length: 10 <value: 636973636f2e636f6d00=""></value:>	Subnet Mask: 255.255.255.0
Domain Name: cisco.com	 Option: (81) Client Fully Qualified Domain Name
Option: (82) Agent Information Option Length: 47	Length: 3
<value: 010e0108000600018a9200a0000000000206707db9b84da197090074656e616e742d610b040a0a0a0105040a0a0a00=""></value:>	<value: 00ffff=""></value:>
 Option 82 Suboption: (1) Agent Circuit ID Lepath: 14 	Flags: 0x00
<value: 0108000600018a9200a00000000=""></value:>	0000 = Reserved flags: 0x0
Agent Circuit ID: 0108000600018a9200a0000000	A - Convert DDNG: Some convert undates
Option 82 Suboption: (2) Agent Remote ID Length: 6	o = Server DDNS: Some server updates
<value: 707db9b84daf=""></value:>	0 = Encoding: ASCII encoding
Agent Remote ID: 707db9b84daf	<pre>0. = Server overrides: No override</pre>
Length: 9	0 = Server: Client
<value: 0074656e616e742d61=""></value:>	A-RR result: 255
<pre>vkr name: v [Expert Info (Warning/Undecoded): Trailing stray characters]</pre>	PTR-RR result: 255
[Trailing stray characters]	Option: (3) Router
<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>	Length: A
[Group: Undecoded]	
 Option 82 Suboption: (11) Server ID Override (10.10.10.1) Length: 4 	Souter 10 10 10 1
<value: 0a0a0a01=""></value:>	Router: 10.10.10.1
Server ID Override: 10.10.10.1	Uption: (15) Domain Name
Length: 4	Length: 10
<value: 0a0a0a00=""></value:>	<value: 636973636f2e636f6d00=""></value:>
 Option: (255) End 	Domain Name: cisco.com
Option End: 255	Option: (255) End
	Option End: 255
	ab stage prime page

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: 0000000000000000000 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 updates0.. = Encoding: ASCII encoding0. = Server overrides: No override0 = 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

ConfiguringVXLAN

Troubleshoot DHCP Related Issues on Nexus 9000

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