

Konfigurieren und Überprüfen von DHCP in einer VxLAN-Struktur für Nexus 9000 mit NX-OS und Windows Server 2022

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Einleitung

In diesem Dokument wird die Konfiguration und Fehlerbehebung von DHCP in einer VxLAN-Struktur mit Nexus 9000-Switches beschrieben.

Voraussetzungen

Anforderungen

Cisco empfiehlt, dass Sie über Kenntnisse in folgenden Bereichen verfügen:

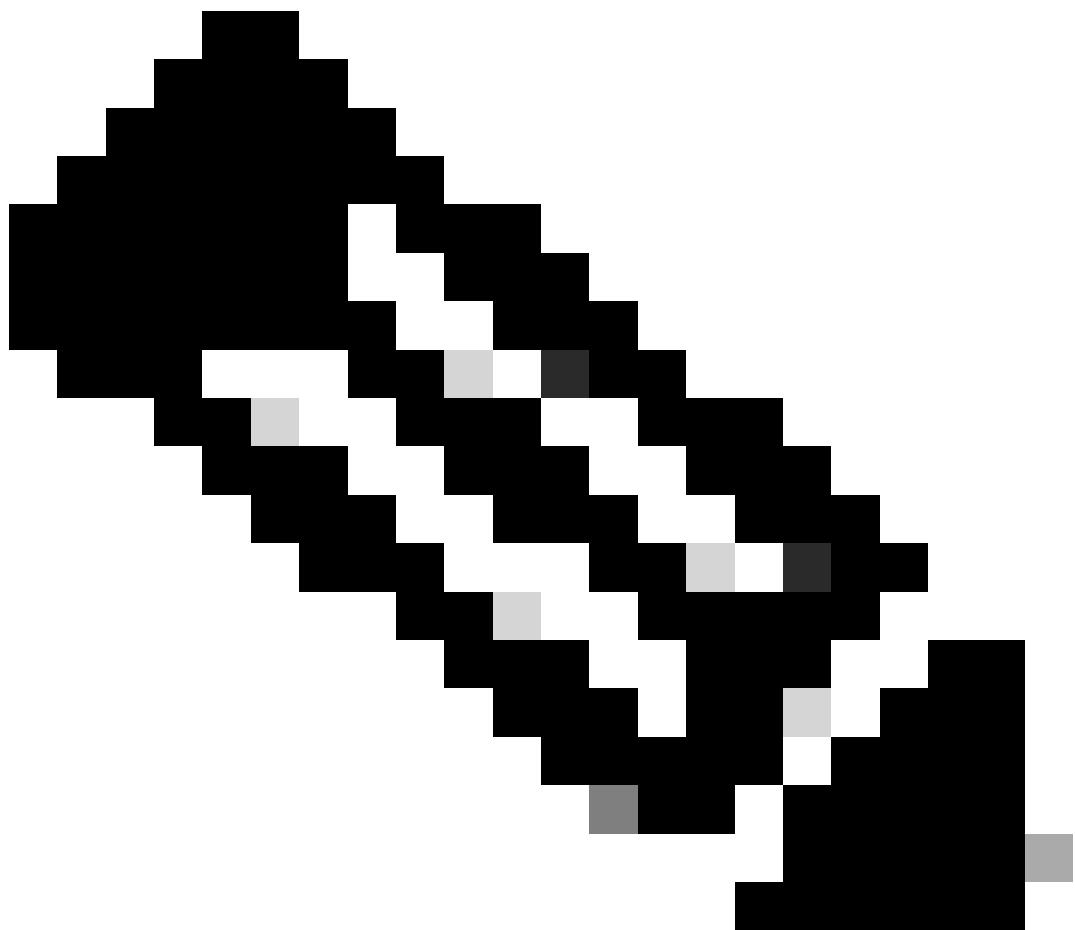
- Nexus NX-OS-Software
- Virtual Port Channel (vPC)
- VxLAN BGP L2VPN EVPN
- BGP-Adressfamilie: IPv4
- OSPF
- Multicast-PIM (Sparse-Mode)
- DHCP

Verwendete Komponenten

Die Informationen in diesem Dokument basierend auf folgenden Software- und Hardware-Versionen:

- Cisco Nexus 9000 mit Cisco NX-OS
 - N9K-C93180YC-EX
 - N9K-C93180YC-FX
 - NX-OS 10.3(4a)
- Windows Server 2022 Rechenzentrum

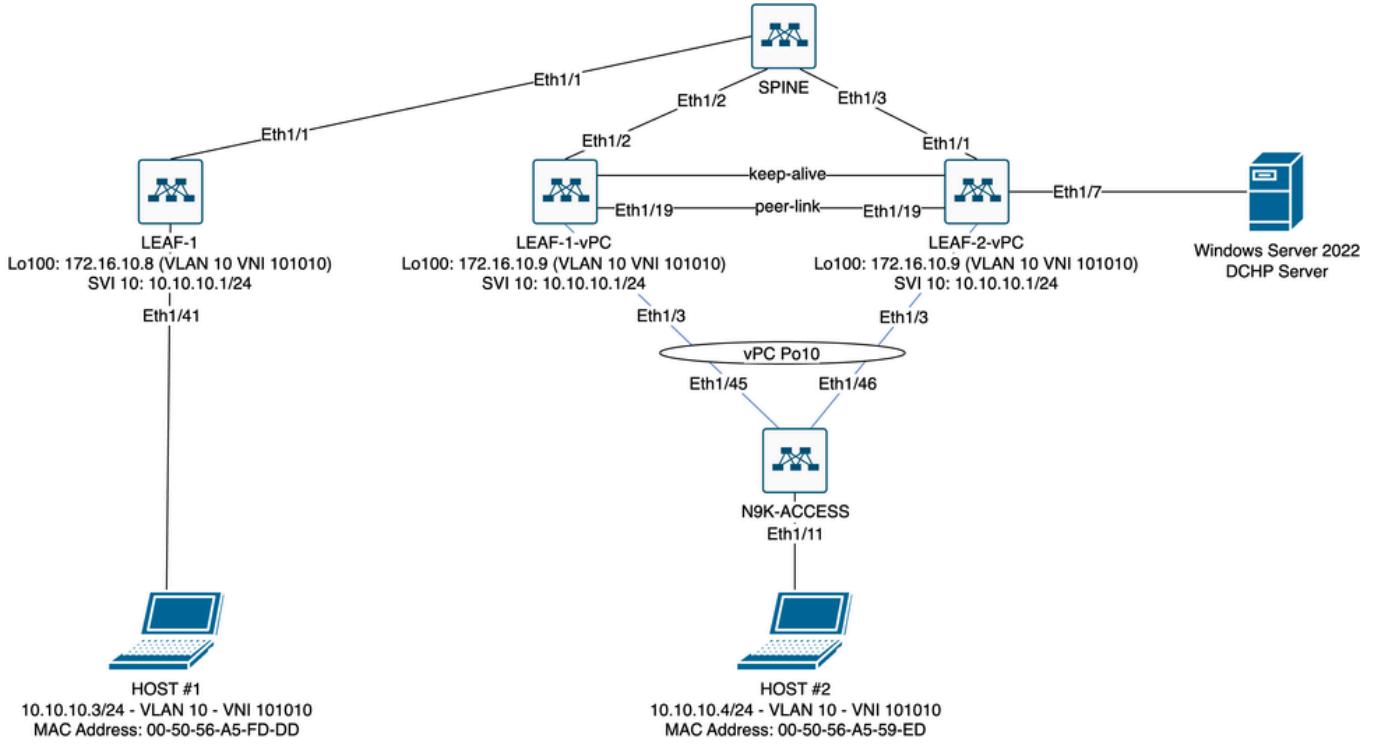
Die Informationen in diesem Dokument beziehen sich auf Geräte in einer speziell eingerichteten Testumgebung. Alle Geräte, die in diesem Dokument benutzt wurden, begannen mit einer gelöschten (Nichterfüllungs) Konfiguration. Wenn Ihr Netzwerk in Betrieb ist, stellen Sie sicher, dass Sie die möglichen Auswirkungen aller Befehle kennen.



Hinweis: Fragen zur Konfiguration und Integrationsfähigkeit von Software oder Hardware von Drittanbietern liegen außerhalb des Cisco Supports. Die Verwendung von Tools von Drittanbietern ist eine gute Möglichkeit, dem Kunden Ihre Konfiguration und Ihren Betrieb mit Cisco Produkten vorzuführen.

Hintergrundinformationen

Underlay- und Overlay-Konfiguration für VxLAN im Labor



VxLAN Fabric-Diagramm im Labor

- **Wirbelsäule:**
 - Dieser Nexus-Switch sendet DHCP-Pakete (Discover, Offer, Request, Ack), ohne dass diese in diesem Szenario entkapselt werden. Es wird nur der äußere Header verwendet.
 - Fungiert als zentraler Routing-Punkt in der Netzwerk-Fabric.
 - Verantwortlich für die Verbindung aller LEAF-Switches untereinander und die Vereinfachung des Datenflusses zwischen diesen Switches.
 - Ist am BGP zur Verteilung von EVPN-Routen an die LEAF-Switches beteiligt
 - Führt IP-Routing durch und kann Datenverkehr zwischen verschiedenen Subnetzen oder VxLAN-Segmenten routen, indem die äußeren IP-Header betrachtet werden.
 - Trennt das Overlay-Netzwerk (VxLAN) vom zugrunde liegenden physicalen Netzwerk.
 - Verwaltet das Underlay mit herkömmlichen IP-Routing-Protokollen, während das Overlay von VxLAN mit BGP EVPN verwaltet wird und eine skalierbare und flexible Netzwerkarchitektur bietet.
- **BLATT-1:**
 - LEAF-Switches bieten physische Konnektivität für Endgeräte wie Server, Speichergeräte und andere Netzwerkgeräte.
 - LEAF-Switches fungieren als VTEPs, d. h. sie kapseln und entkapseln die VxLAN-Pakete.
 - In diesem Szenario sendet **HOST#1** die IP-Adressanforderung.
 - LEAF-1 ist für die Kapselung der DHCP-Pakete im VxLAN-Header zuständig.
 - **HOST#1** empfängt DHCP-Pakete transparent als klassisches Ethernet.
- **LEAF-1-vPC und LEAF-2-vPC:**
 - Die LEAF-Switches nehmen an der EVPN-Kontrollebene teil, indem sie BGP ausführen und Routeninformationen austauschen. Auf diese Weise können MAC- und

IP-Adressinformationen verteilt werden, sodass der Datenverkehr effizient über die VxLAN-Struktur geleitet werden kann.

- In diesem Szenario ist der DHCP-Server mit VLAN 10 mit VNI 101010 verknüpft, wie dies bei HOST 1 der Fall ist. Dies bedeutet, dass es sich nur um VxLAN-Bridging handelt.
 - Wenn der DHCP-Server einem anderen VNI als HOST#1 zugeordnet wurde, ist für das Routing unbedingt ein L3VNI erforderlich. Der Quell- und Ziel-VNI muss erstellt werden.
 - Der DCHP-Server empfängt DCHP-Pakete transparent als klassisches Ethernet.
 - Der BUM-Datenverkehr wird von beiden Nexus Switches in vPC empfangen, der Datenverkehr wird jedoch nur vom betriebsbereiten primären Nexus Switch in vPC gesendet. Der Datenverkehr wird vom sekundären Nexus-Switch verworfen. In diesem Szenario ist LEAF-1-vPC betrieblich primär.
 - Die Verwendung von Infra-VLANs ist obligatorisch, da bei einem Ausfall der Schnittstelle von LEAF-2-vPC zu SPINE keine DHCP-Pakete gesendet werden konnten. Um VxLAN-gekapselten Datenverkehr an LEAF-1-vPC zu senden, ist dieses Backup-VLAN erforderlich. Auf diese Weise kann LEAF-1-vPC DCHP-Pakete an SPINE senden.
- N9K-ZUGRIFF:
 - Dieser Nexus-Switch bietet nur Konnektivität zu beiden Leafs über einen vPC-Port-Channel für Redundanzzwecke in Richtung HOST 2.

WIRBELSÄULE

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

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

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

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

interface Ethernet1/2
  ip address 10.102.11.1/30
  ip ospf network point-to-point
  ip router ospf 1 area 0.0.0.0
```

```

ip pim sparse-mode
no shutdown

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

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

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

router ospf 1

router bgp 65000
  neighbor 192.168.3.3
    remote-as 65000
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 192.168.4.4
    remote-as 65000
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 192.168.5.5
    remote-as 65000
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client

```

BLATT-1

```

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

```

```
feature nv overlay

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

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

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

spanning-tree vlan 10 priority 4096

ip prefix-list host_subnets seq 5 permit 10.10.10.0/24 1e 32
ip prefix-list host_subnets seq 10 permit 192.168.20.0/24 1e 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 l2vpn evpn
    advertise-pip
  neighbor 192.168.0.11
    remote-as 65000
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 192.168.88.2
    remote-as 65000
    description OVERLAY_BACKUP
    update-source Vlan888
    address-family l2vpn evpn
      send-community
      send-community extended
vrf tenant-a
  address-family ipv4 unicast
    redistribute direct route-map direct_routes_tenant-a
evpn
  vni 101010 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 232.0.0.0/8

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 1e 32
ip prefix-list host_subnets seq 10 permit 192.168.20.0/24 1e 32
ip prefix-list host_subnets seq 15 permit 172.16.10.10/32
route-map direct_routes_tenant-a permit 10
  match ip address prefix-list host_subnets

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

system nve infra-vlans 777

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

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

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

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

interface mgmt0
  vrf member management
  ip address 10.88.238.195/29

interface loopback0
  description UNDERLAY-VERIFICATION

```

```
ip address 192.168.4.4/32
ip router ospf 1 area 0.0.0.0
ip pim sparse-mode

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

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

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

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

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

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

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

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

```

member vni 202020
  suppress-arp
  mcast-group 224.10.10.10
member vni 303030 associate-vrf

router ospf 1

router bgp 65000
  address-family ipv4 unicast
  address-family l2vpn evpn
    advertise-pip
  neighbor 192.168.0.11
    remote-as 65000
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 192.168.88.1
    remote-as 65000
    description OVERLAY_BACKUP
    update-source Vlan888
    address-family l2vpn evpn
      send-community
      send-community extended
vrf tenant-a
  address-family ipv4 unicast
    redistribute direct route-map direct_routes_tenant-a
evpn
  vni 101010 12
    rd auto
    route-target import auto
    route-target export auto
  vni 202020 12
    rd auto
    route-target import auto
    route-target export auto

```

N9K-ZUGRIFF

```

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

```

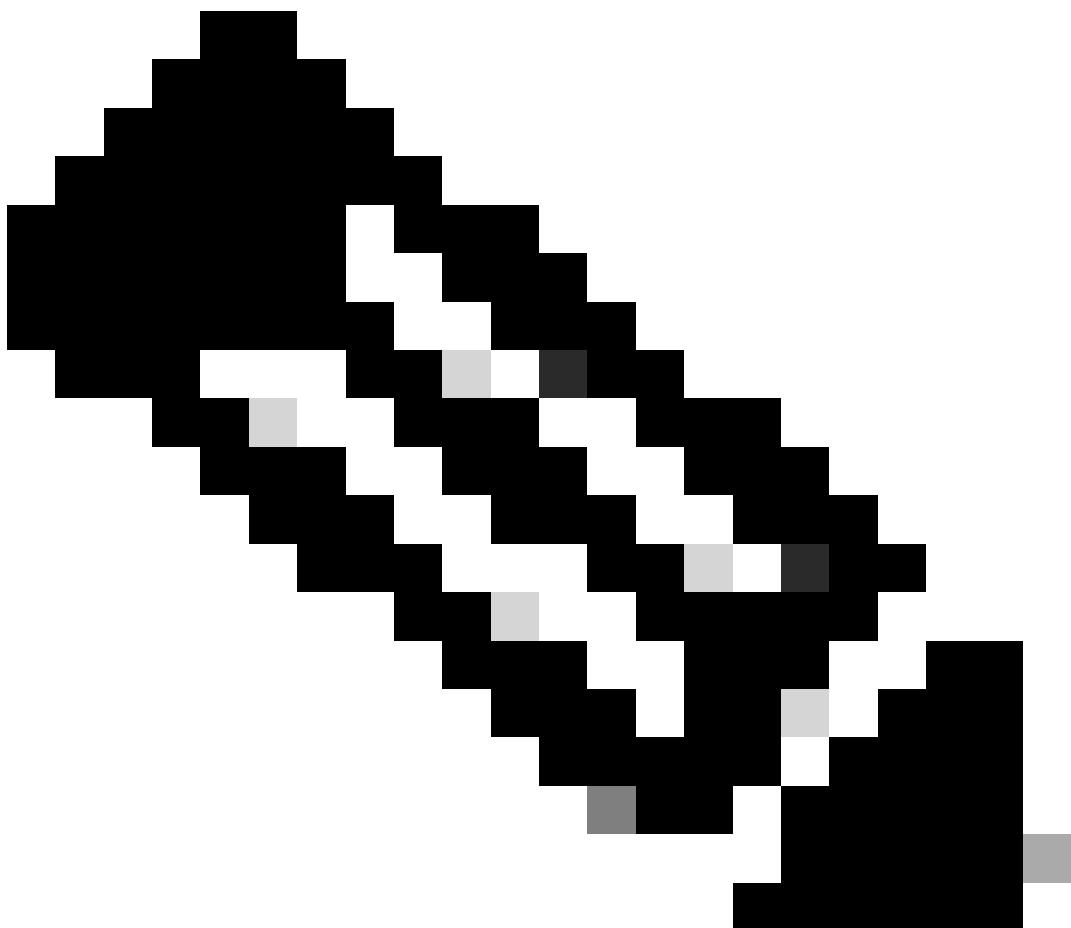
```
interface Ethernet1/46
  switchport
  switchport mode trunk
  channel-group 10 mode active
  no shutdown
```

DHCP-Konfiguration auf Nexus Switches

BLATT-1

Schritt 1: Aktivieren Sie die Funktion DHCP.

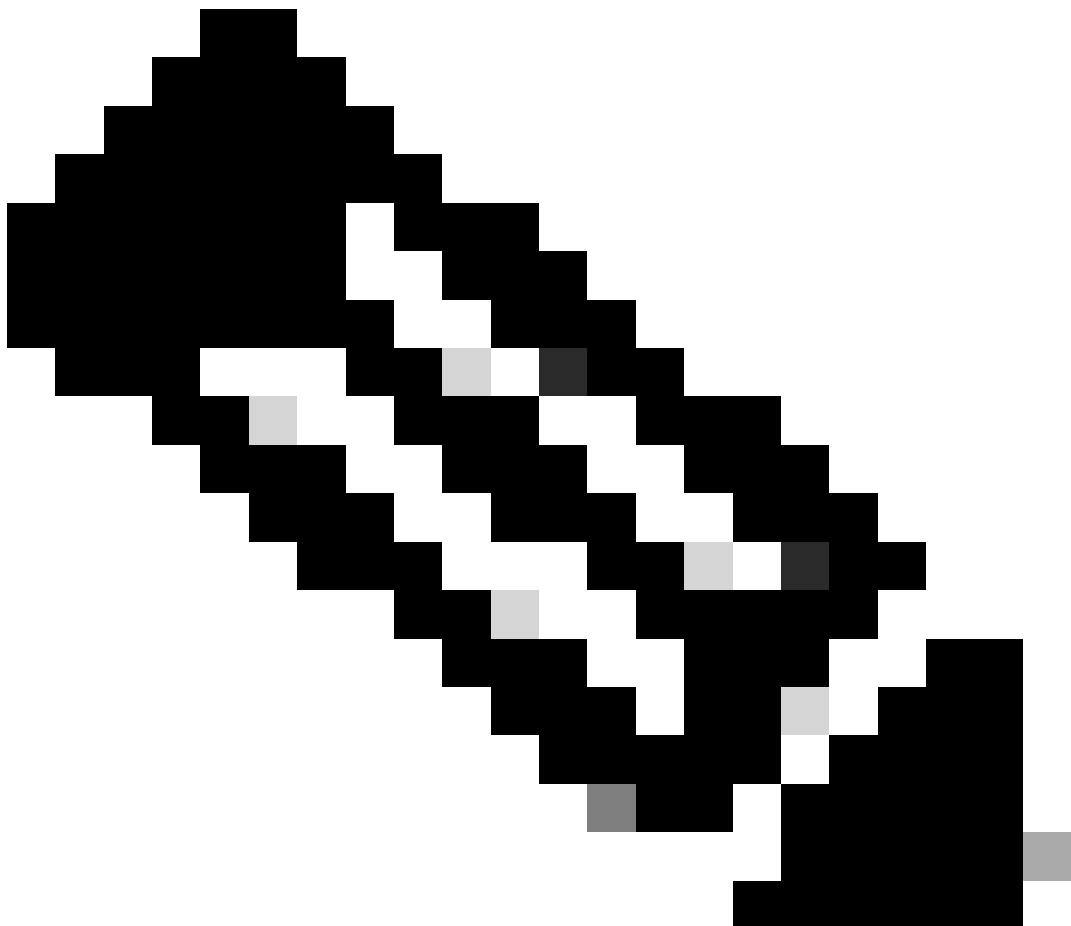
```
LEAF-1(config)# feature dhcp
```



Hinweis: Der DHCP-Server und der Relay Agent-Befehl services dhcp, ip dhcp relay und ipv6 dhcp relay sind seit NX-OS 7.x standardmäßig aktiviert.

Schritt 2: Wenden Sie den Befehl ip dhcp relay information an.

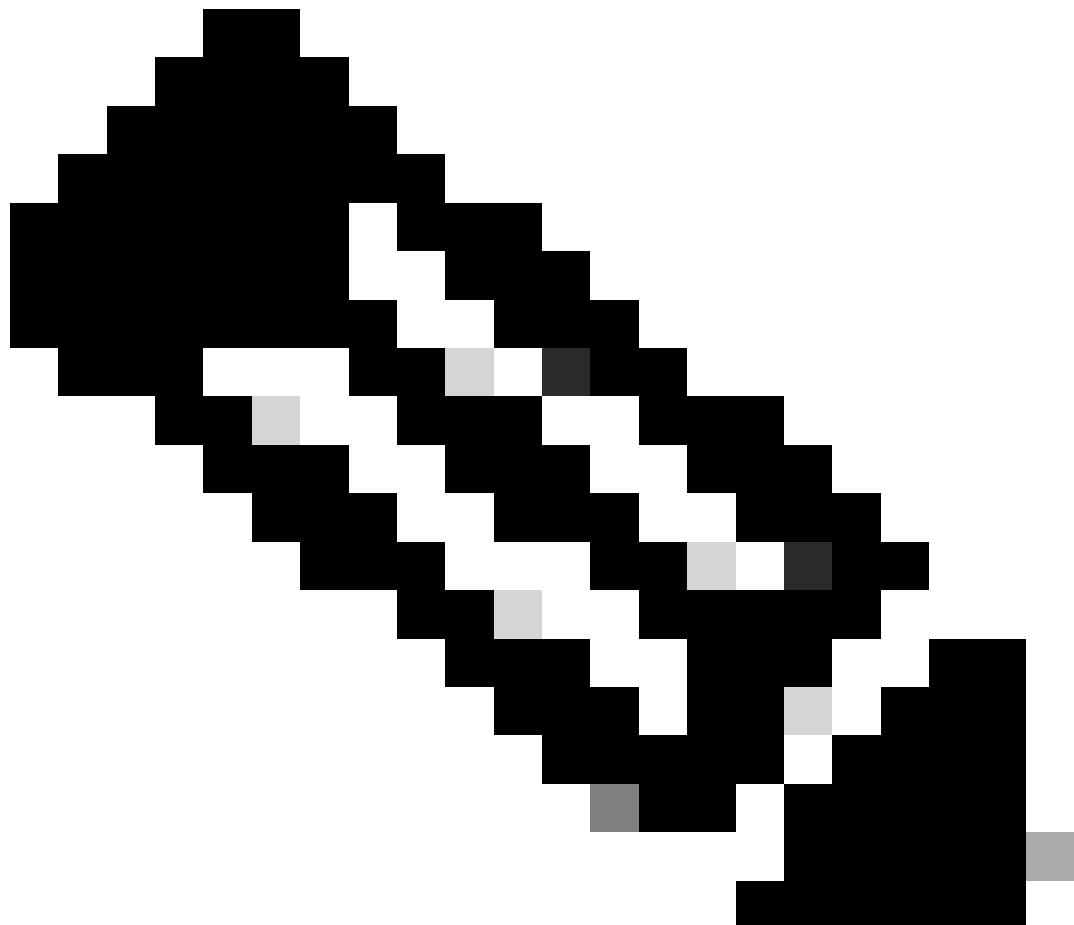
```
LEAF-1(config)# ip dhcp relay information option
```



Hinweis: Mit diesem Befehl kann der DHCP-Relay-Agent Option 82-Informationen zu den weitergeleiteten Paketen einfügen und entfernen.

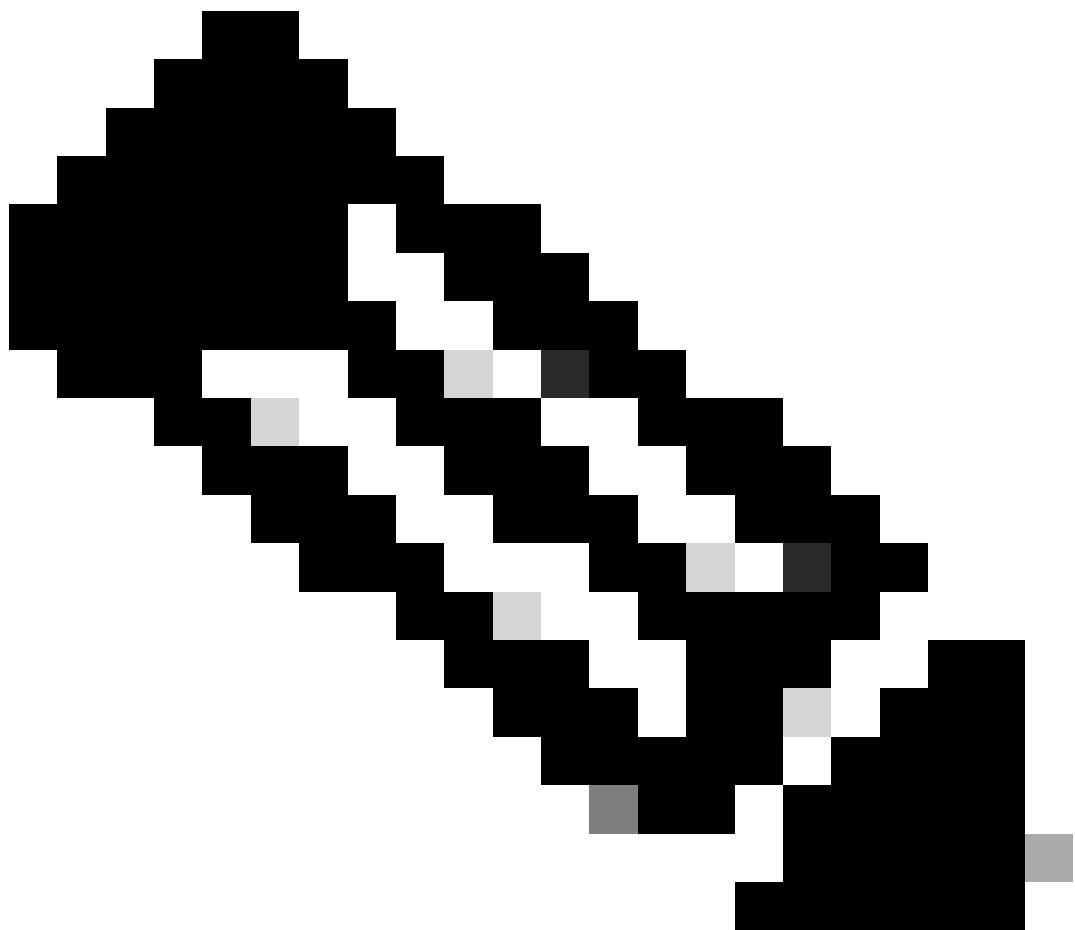
Schritt 3: Wenden Sie den Befehl ip dhcp relay information option vpn an.

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



Hinweis: Mit diesem Befehl werden DHCP-Relay-Anfragen aktiviert, die auf einer anderen VRF-Instanz eingehen, zu der der DHCP-Server gehört.

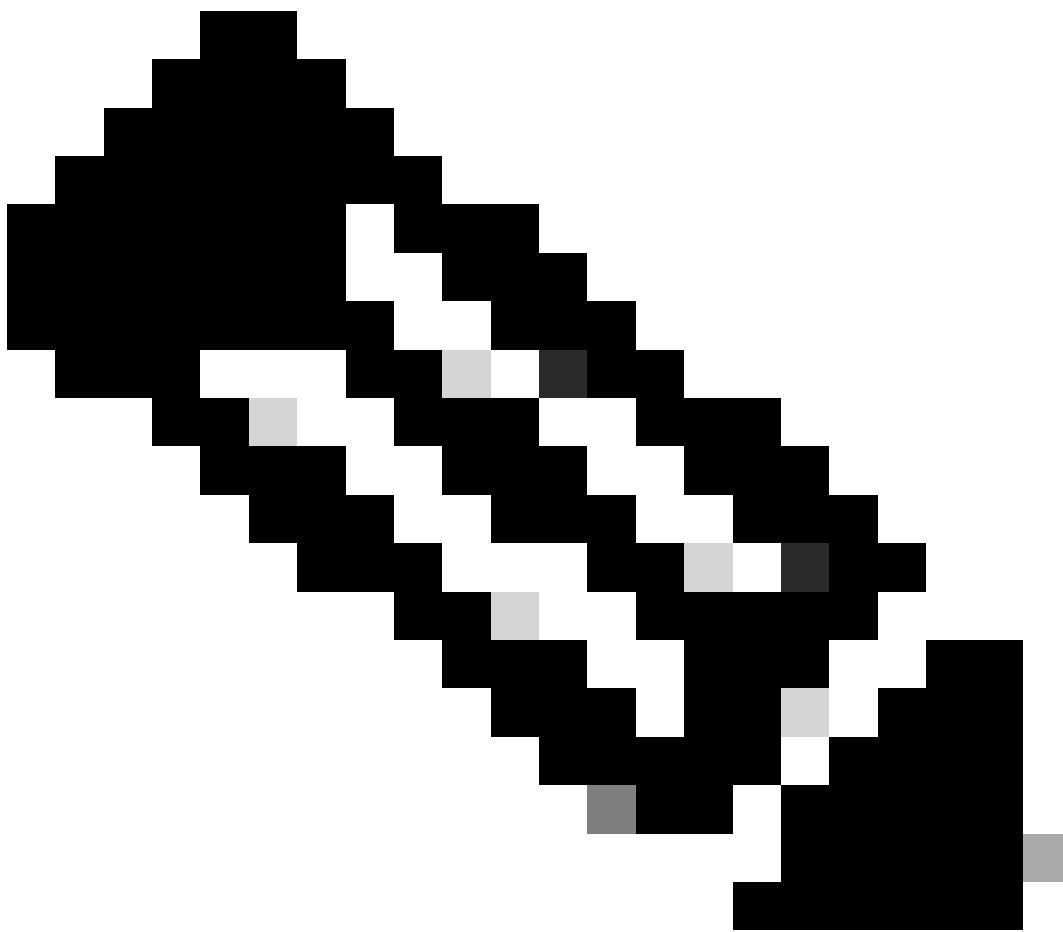
Schritt 4: Verwenden Sie den Befehl "ip dhcp relay address [ip address of DCHP server]".



Hinweis: In diesem Beispiel lautet die IP-Adresse für den DHCP-Server 10.10.10.150.

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

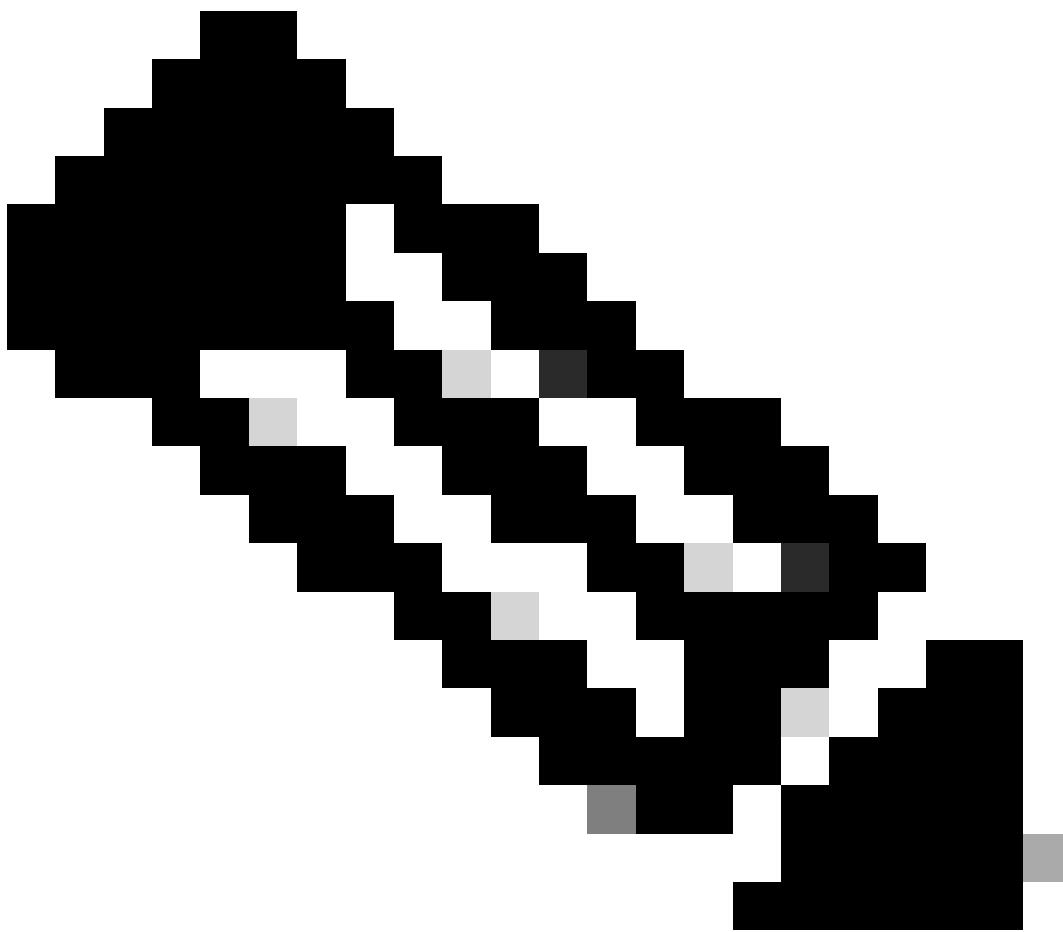
Schritt 5: Verwenden Sie den Befehl "ip dhcp relay source-interface [unique loopback]".



Hinweis: Mit diesem Befehl wird die Quell-IP-Adresse für den DHCP-Relay-Agent konfiguriert, um Discover, Offer, Request und ACK für die Unicast-Kommunikation zu verarbeiten, wobei der DHCP-Relay-Agent die IP-Adresse von SVI als Quell-IP-Adresse für den DHCP-Relay-Agent verwendet. Dies ist nicht erwünscht, da diese IP-Adresse von mehreren VTEPs gemeinsam genutzt wird und DHCP-Pakete schwarz bleiben können. Um dies zu vermeiden, ist eine eindeutige IP-Adresse (über eine Loopback-Schnittstelle) erforderlich, die jede VTEP differenziert.

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

Schritt 6: Direkte Routen-Neuverteilung im VRF des entsprechenden Tenants innerhalb des BGP mit einer Präfix-Liste und einer Route-Map, die die IP-Adresse der Loopback-Schnittstelle enthält.



Hinweis: Diese Loopback-Schnittstelle gehört zum Tenant von 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
```

Schritt 7. Vergewissern Sie sich, dass die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN an die Spines gemeldet wird. Verwenden Sie hierzu den Befehl `show bgp l2vpn evpn`

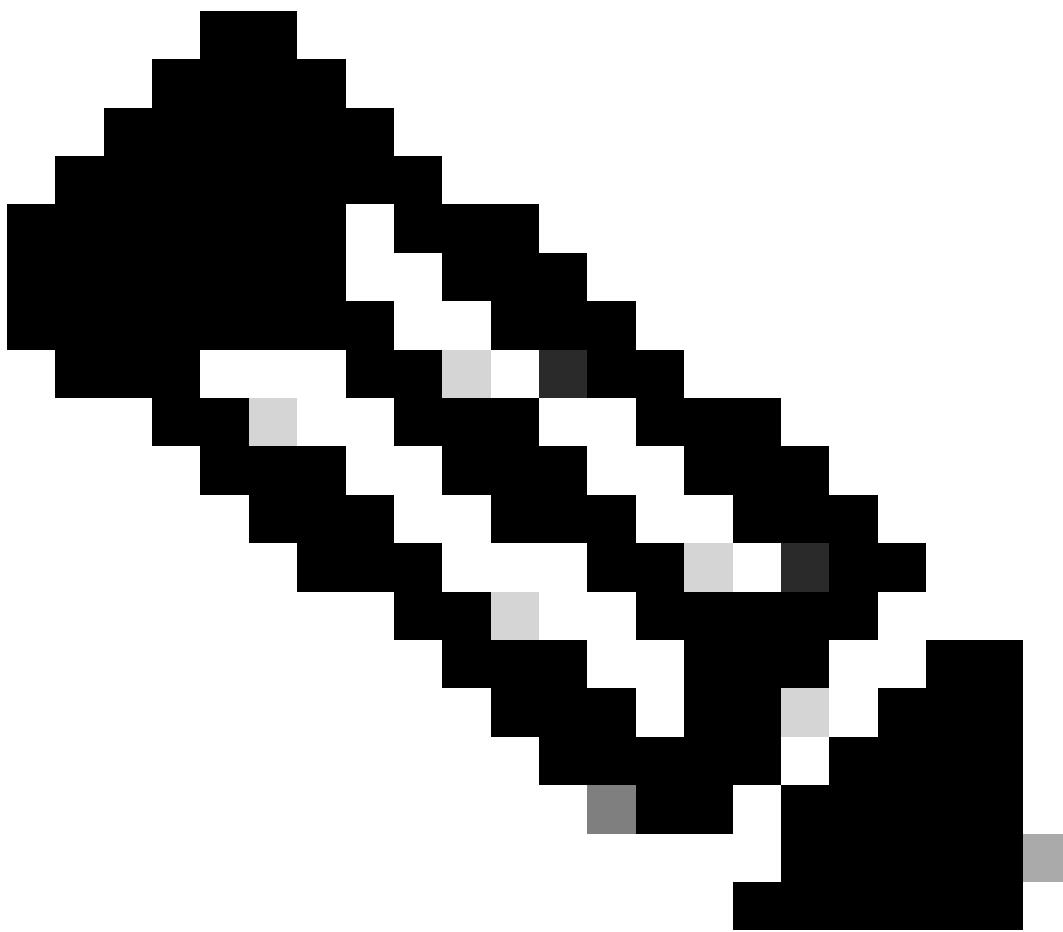
[loopback IP] vrf [tenant vrf].

```
LEAF-1(config)# show bgp l2vpn evpn 172.16.10.8 vrf tenant-a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.5.5:4      (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.8]/224, version 421
Paths: (1 available, best #1)
Flags: (0x0000002) (high32 00000000) on xmit-list, is not in l2rib/evpn
```

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

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

Schritt 8: Überprüfen Sie, ob die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN mit dem DHCP-Server eingespeist wird.



Hinweis: Wenn Nexus-Switches in vPC vorhanden sind, stellen Sie sicher, dass beide die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN ermitteln.

```
LEAF-1# show bgp l2vpn evpn 172.16.10.8
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.5.5:4
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.8]/224, version 754
Paths: (1 available, best #1)
Flags: (0x0000002) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in HW

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

Path-id 1 not advertised to any peer

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

Advertised path-id 1

Path type: internal, path is valid, is best path, no labeled nexthop
Imported from 192.168.5.5:4:[5]:[0]:[0]:[32]:[172.16.10.8]/224

Gateway IP: 0.0.0.0

AS-Path: NONE, path sourced internal to AS

192.168.5.5 (metric 45) from 192.168.0.11 (192.168.0.11)

Origin incomplete, MED 0, localpref 100, weight 0

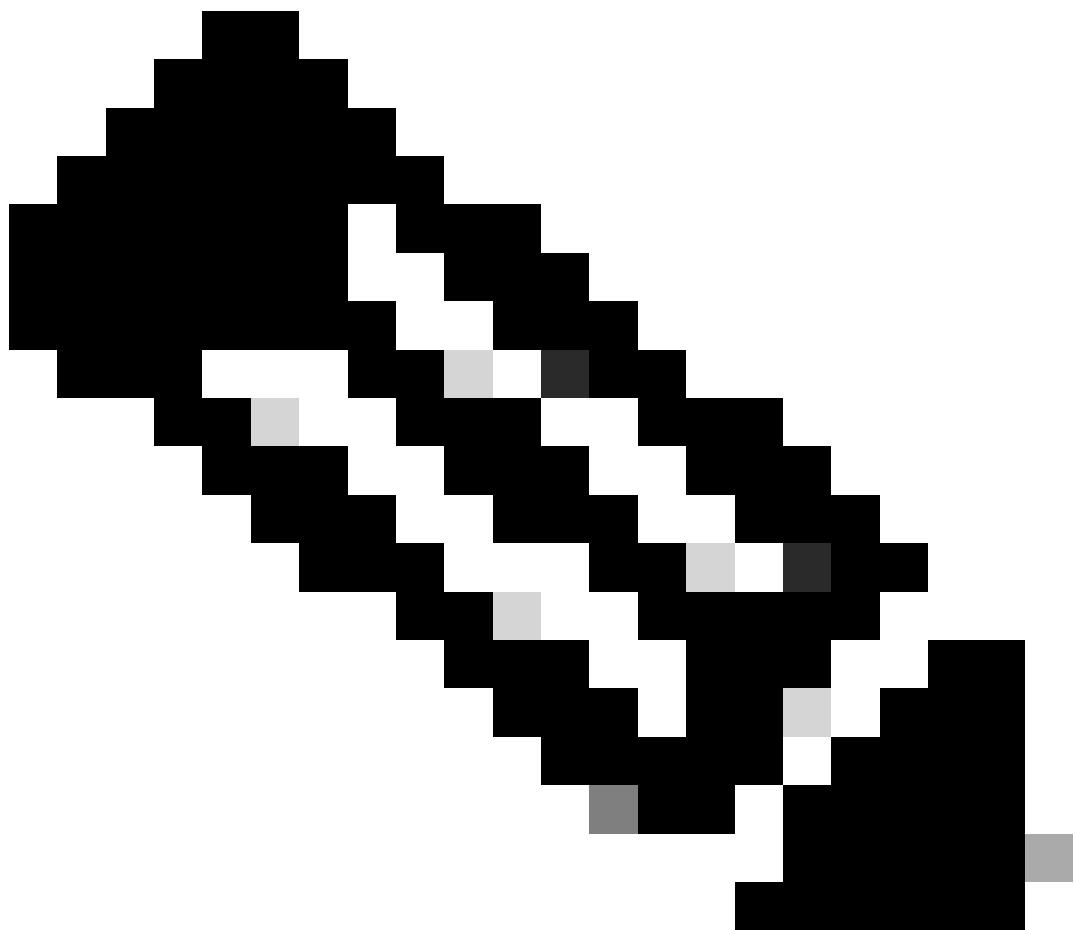
Received label 303030

Extcommunity: RT:65000:303030 ENCAP:8 Router MAC:707d.b9b8.4daf

Originator: 192.168.5.5 Cluster List: 192.168.0.11

Path-id 1 not advertised to any peer

Schritt 9. Stellen Sie sicher, dass auf dem Quell-Tenant eine Route für den DHCP-Server vorhanden ist. Verwenden Sie hierzu den Befehl show ip route [DHCP server IP] vrf [tenant vrf].



Hinweis: Der zu verwendende Routeneintrag muss vom VxLAN zum Standard-VRF reichen. Wenn keine Route verfügbar ist, überprüfen Sie, ob die VTEP lokal die IP-Adresse des DHCP-Servers kennt.

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

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

Schritt 10. Stellen Sie sicher, dass die IP-Adresse des DHCP-Servers über die Loopback-Schnittstelle und die entsprechende VRF-Instanz als VRF-Quelle erreichbar ist. Verwenden Sie hierzu den Befehl 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
```

Schritt 11. Überprüfen Sie den Status des DHCP-Relay-Agenten.

```
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
```

Schritt 12: Überprüfen Sie Option82, z. B. die VPN-Option und die richtige Relay-IP-Adresse unter dem Relay-Agenten.

```
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	<<<<<<

Schritt 13: Überprüfen Sie die Statistiken der verarbeiteten und weitergeleiteten Pakete.

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

Schritt 14: Überprüfen Sie die Statistiken der Relay-Pakete.

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

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

DHCP L3 FWD:

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

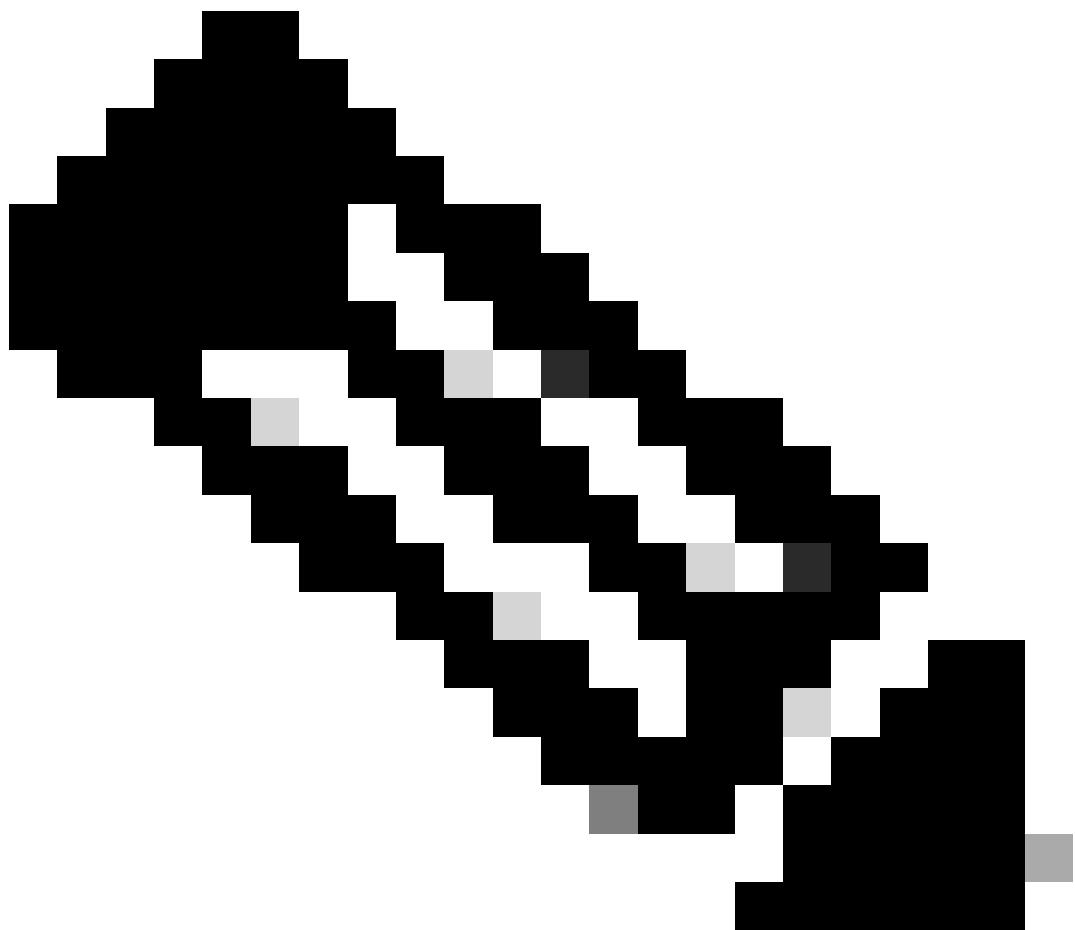
Total Packets Dropped	:	0
DROP:		
DHCP Relay not enabled	:	0
Invalid DHCP message type	:	0
Interface error	:	0
Tx failure towards server	:	0
Tx failure towards client	:	0
Unknown output interface	:	0
Unknown vrf or interface for server	:	0
Max hops exceeded	:	0
Option 82 validation failed	:	0
Packet Malformed	:	0
DHCP Request dropped on MCT	:	0
Relay Trusted port not configured	:	0

* - These counters will show correct value when switch receives DHCP request packet with destination ip as broadcast address. If request is unicast it will be HW switched

LEAF-1-vPC DHCP

Schritt 1: Aktivieren Sie die Funktion DHCP.

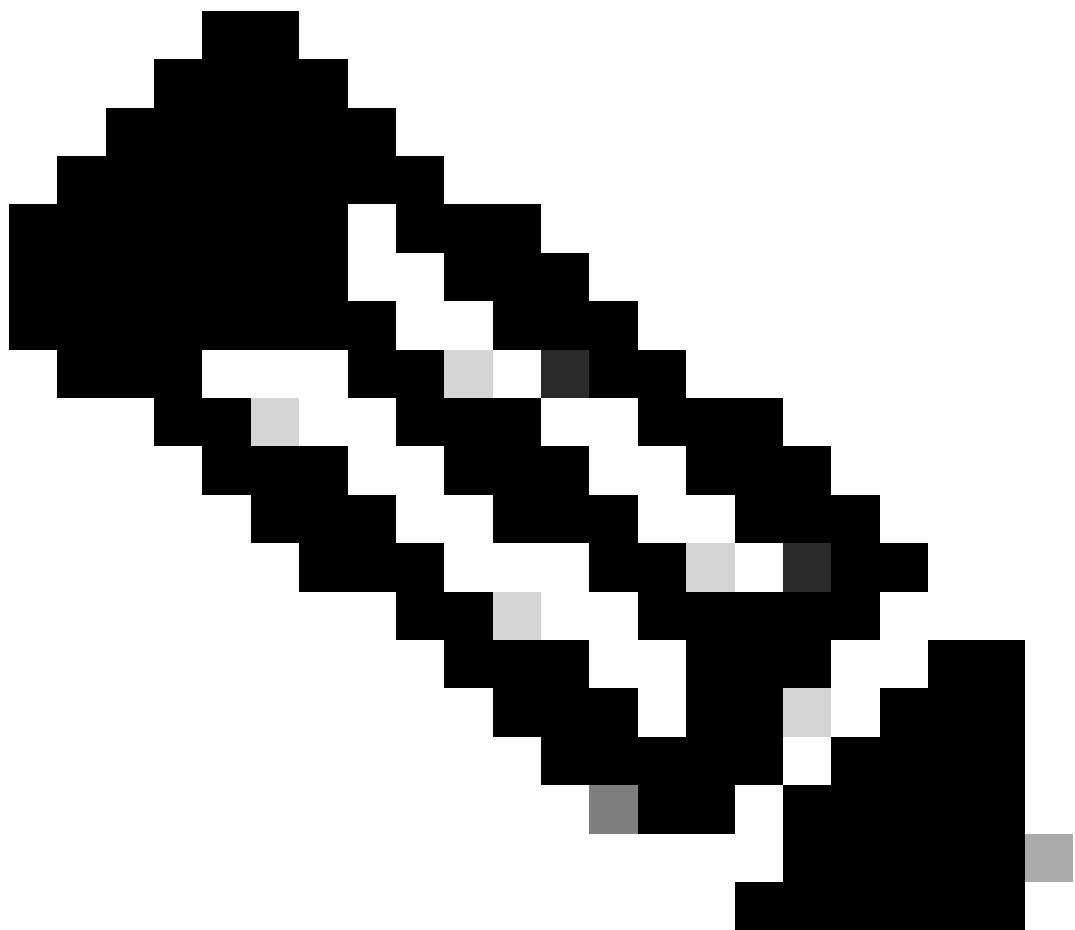
```
LEAF-1-VPC(config)#feature dhcp
```



Hinweis: Der DHCP-Server und der Relay Agent-Befehl services dhcp, ip dhcp relay und ipv6 dhcp relay sind seit NX-OS 7.x standardmäßig aktiviert.

Schritt 2: Wenden Sie den Befehl ip dhcp relay information an.

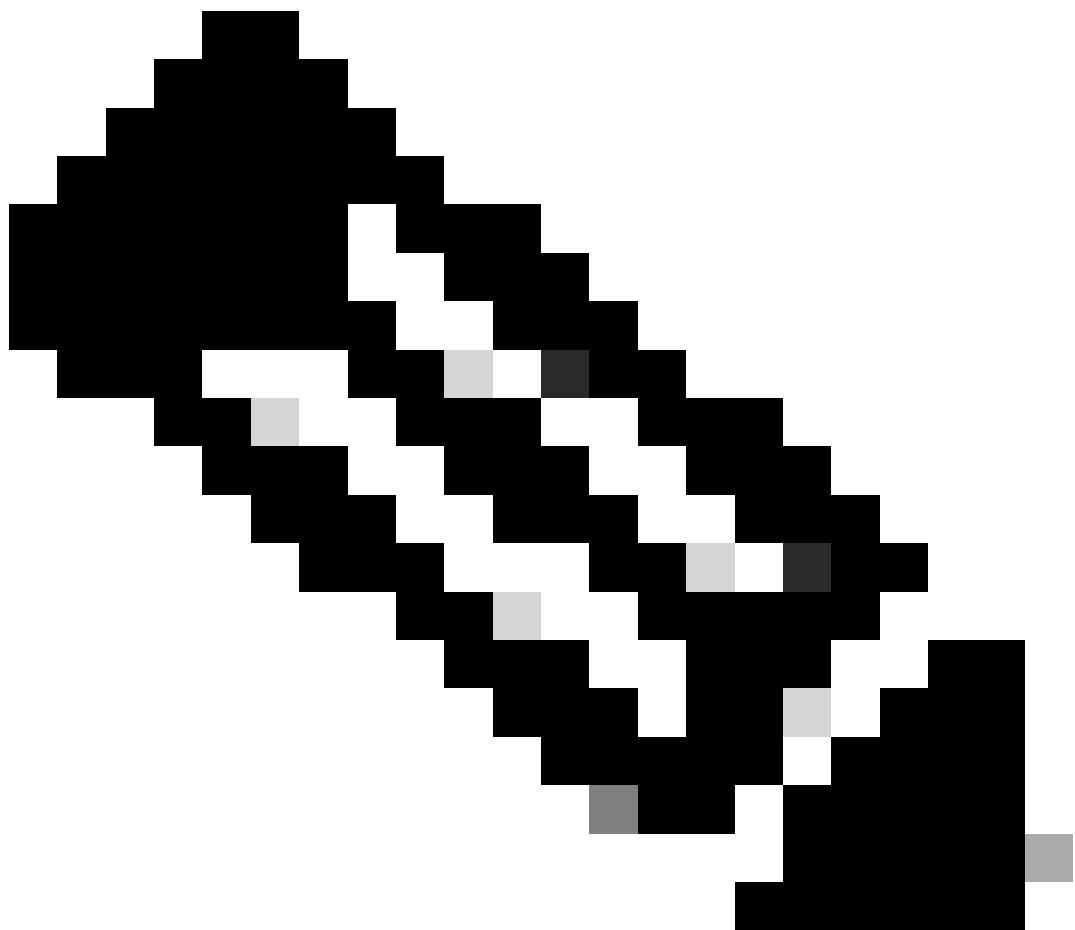
```
LEAF-1-VPC(config)#ip dhcp relay information option
```



Hinweis: Mit diesem Befehl kann der DHCP-Relay-Agent Option 82-Informationen zu den weitergeleiteten Paketen einfügen und entfernen.

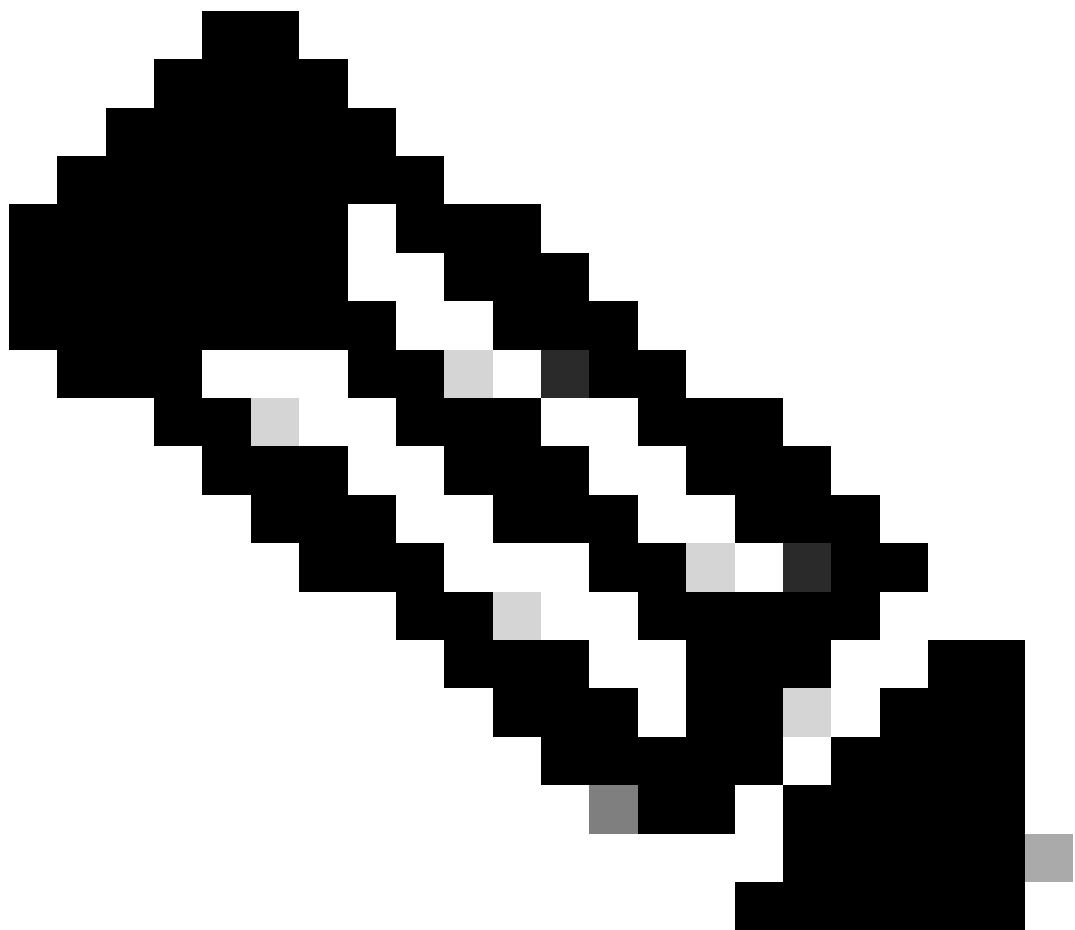
Schritt 3: Verwenden Sie den Befehl "ip dhcp relay information option vpn".

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



Hinweis: Mit diesem Befehl werden DHCP-Relay-Anfragen aktiviert, die auf einer anderen VRF-Instanz eingehen, zu der der DHCP-Server gehört.

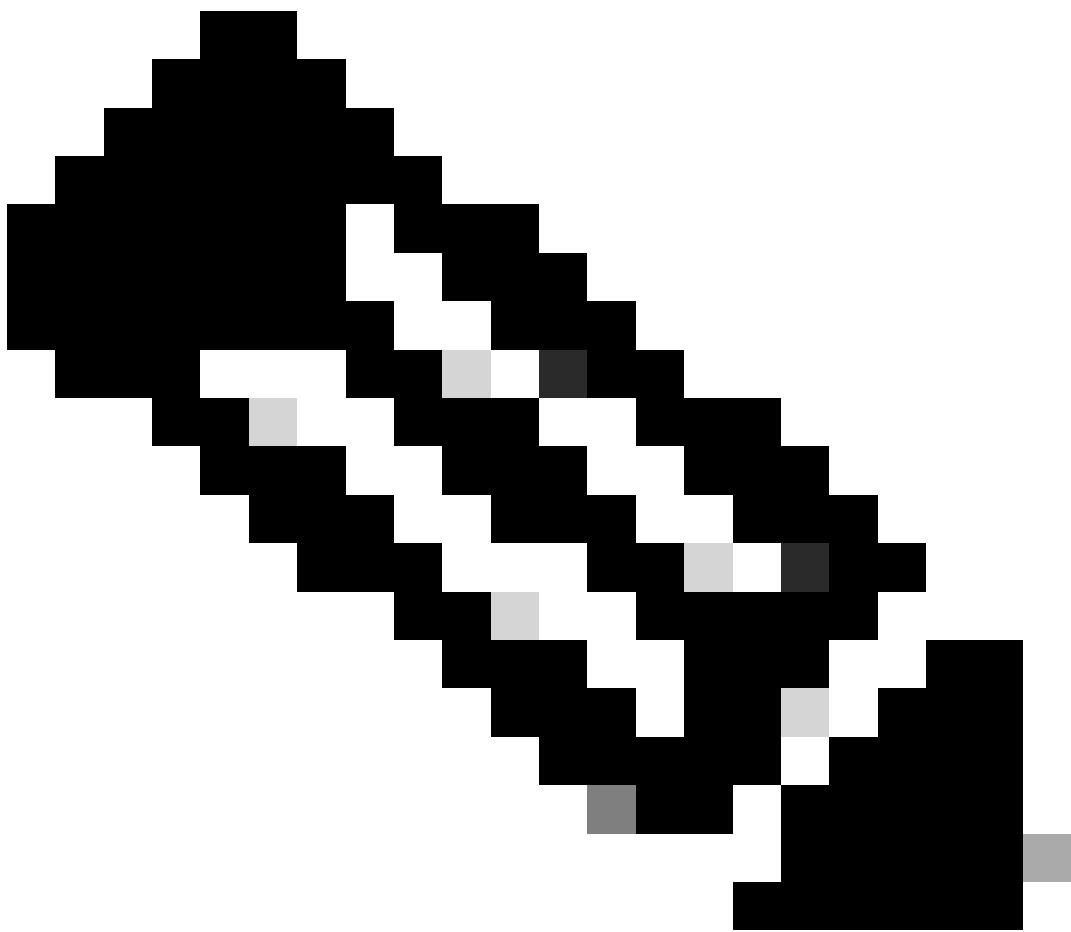
Schritt 4: Wenden Sie den Befehl `ip dhcp relay address [IP-Adresse des DHCP-Servers]` an.



Hinweis: In diesem Beispiel lautet die IP-Adresse für den DHCP-Server 10.10.10.150.

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

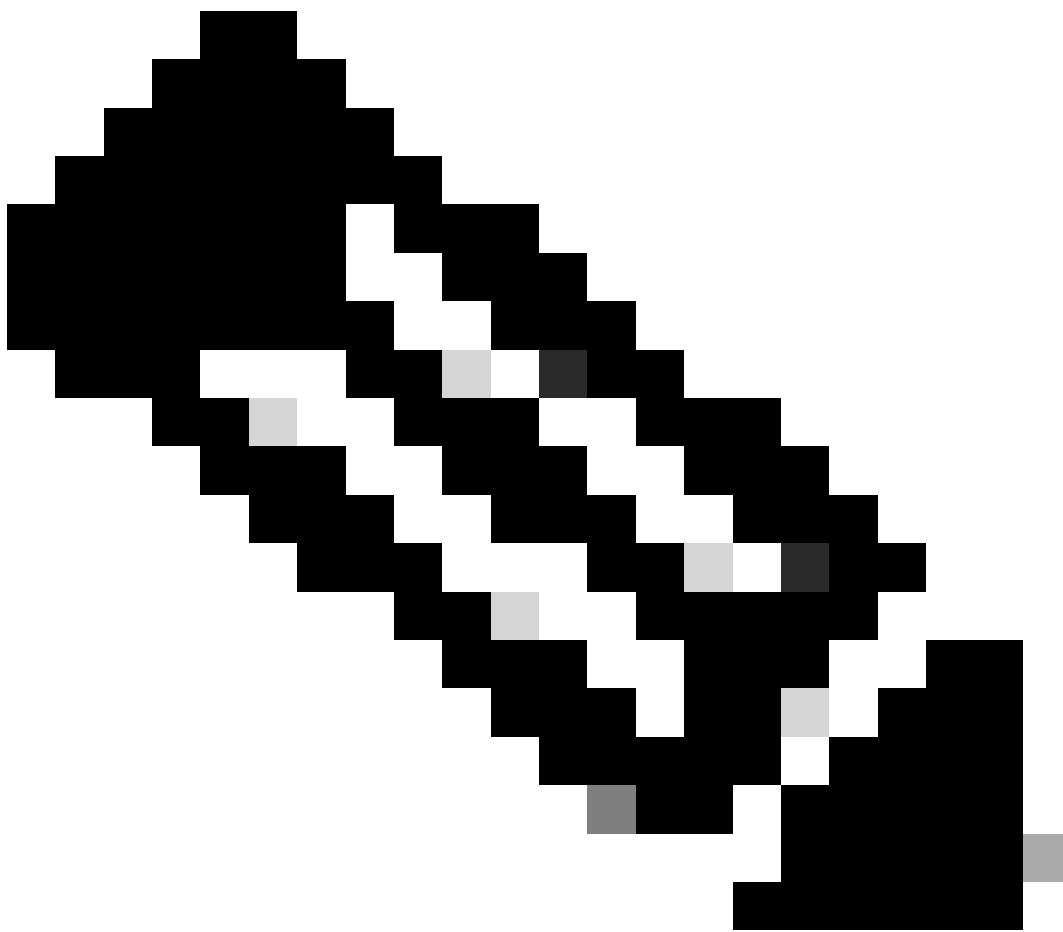
Schritt 5: Verwenden Sie den Befehl "ip dhcp relay source-interface [unique loopback]".



Hinweis: Mit diesem Befehl wird die Quell-IP-Adresse für den DHCP-Relay-Agent konfiguriert, um Discover, Offer, Request und ACK für die Unicast-Kommunikation zu verarbeiten, wobei der DHCP-Relay-Agent die IP-Adresse von SVI als Quell-IP-Adresse für den DHCP-Relay-Agent verwendet. Dies ist nicht erwünscht, da diese IP-Adresse von mehreren VTEPs gemeinsam genutzt wird und DHCP-Pakete schwarz bleiben können. Um dies zu vermeiden, ist eine eindeutige IP-Adresse (über eine Loopback-Schnittstelle) erforderlich, die jede VTEP differenziert.

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

Schritt 6: Direkte Routen-Neuverteilung im VRF des entsprechenden Tenants innerhalb des BGP mit einer Präfix-Liste und einer Route-Map, die die IP-Adresse der Loopback-Schnittstelle enthält.



Hinweis: Diese Loopback-Schnittstelle gehört zum Tenant von 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
```

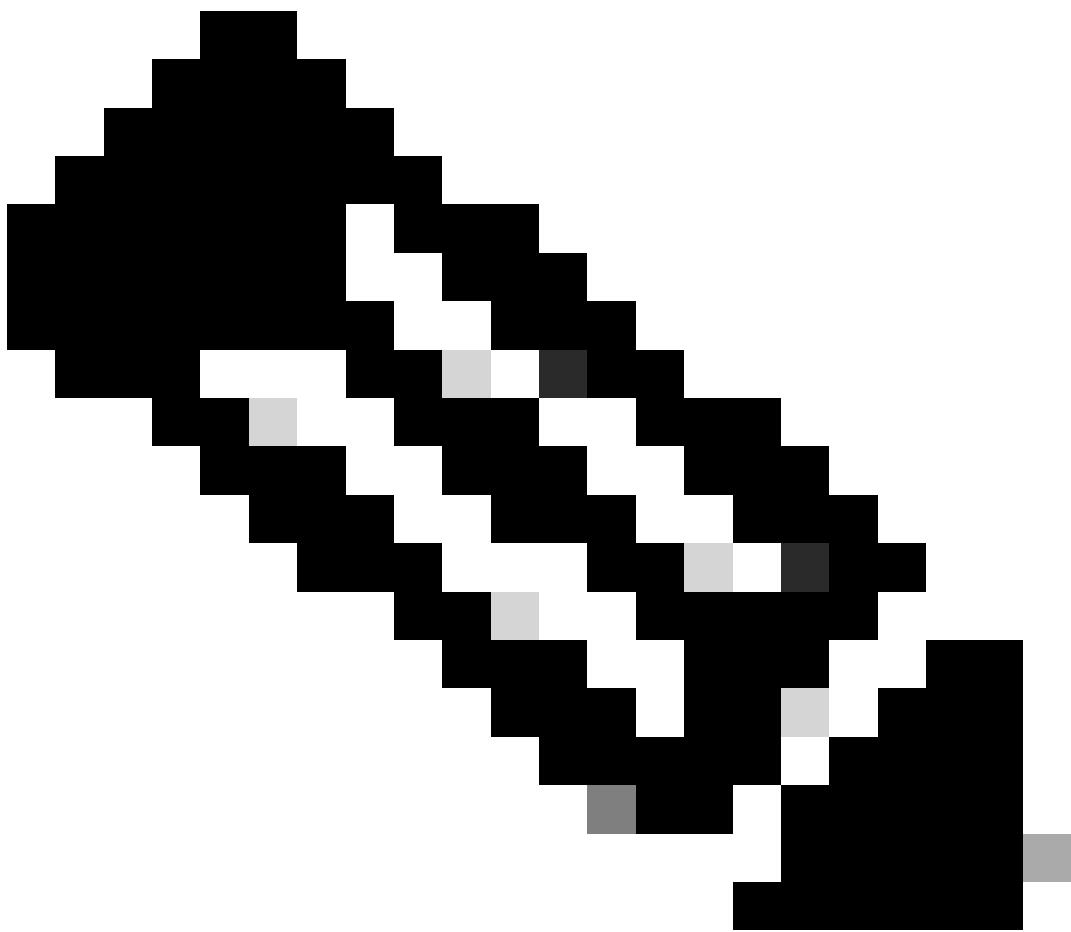
Schritt 7. Vergewissern Sie sich, dass die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN an die Spines gemeldet wird. Verwenden Sie hierzu den Befehl `show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]`.

```
LEAF-1-VPC# show bgp l2vpn evpn 172.16.10.9 vrf tenant-a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.3.3:4      (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.9]/224, version 637
Paths: (1 available, best #1)
Flags: (0x0000002) (high32 00000000) on xmit-list, is not in l2rib/evpn
```

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

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

Schritt 8: Überprüfen Sie, ob die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN mit dem DHCP-Server eingespeist wird.



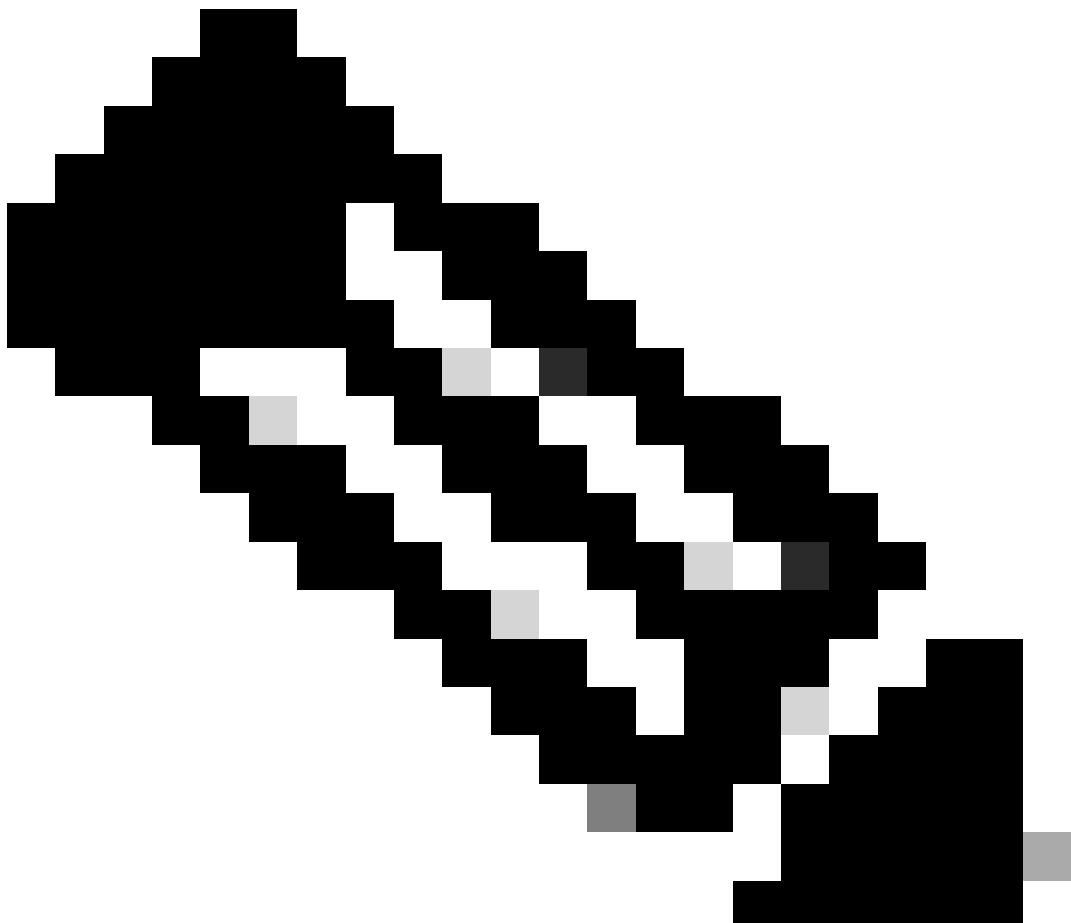
Hinweis: Wenn Nexus-Switches in vPC vorhanden sind, stellen Sie sicher, dass beide die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN ermitteln.

```
LEAF-1-VPC# show bgp l2vpn evpn 172.16.10.9
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.3.3:4      (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.9]/224, version 637
Paths: (1 available, best #1)
Flags: (0x0000002) (high32 00000000) on xmit-list, is not in l2rib/evpn

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

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

Schritt 9. Stellen Sie sicher, dass auf dem Quell-Tenant eine Route für den DHCP-Server vorhanden ist. Verwenden Sie hierzu den Befehl show ip route [DHCP server IP] vrf[tenant vrf].



Hinweis: Der zu verwendende Routeneintrag muss vom VxLAN zum Standard-VRF reichen. Wenn keine Route verfügbar ist, überprüfen Sie, ob die VTEP lokal die IP-Adresse des DHCP-Servers kennt.

```
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
```

Schritt 10. Überprüfen Sie, ob die IP-Adresse des DHCP-Servers über die Loopback-Schnittstelle und die entsprechende VRF-Instanz als VRF-Quelle erreichbar ist. Verwenden Sie hierzu den Befehl ping [DHCP-Server-IP]Loopback der Quellschnittstelle [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 ---
```

Schritt 11. Überprüfen Sie den Status des DHCP-Relay-Agenten.

```
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
```

Schritt 12: Überprüfen Sie Option82, z. B. die VPN-Option und die richtige Relay-IP-Adresse unter dem Relay-Agenten.

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

Subnet-broadcast is enabled on the following interfaces:

Relay Trusted Port is enabled on the following interfaces:

Relay Source Address HSRP is enabled on the following interfaces:

Helper addresses are configured on the following interfaces:

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

Schritt 13: Überprüfen Sie die Statistiken der verarbeiteten und weitergeleiteten Pakete.

```
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
```

Schritt 14: Überprüfen Sie die Statistiken der Relay-Pakete.

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

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

DHCP L3 FWD:

Total Packets Received : 0

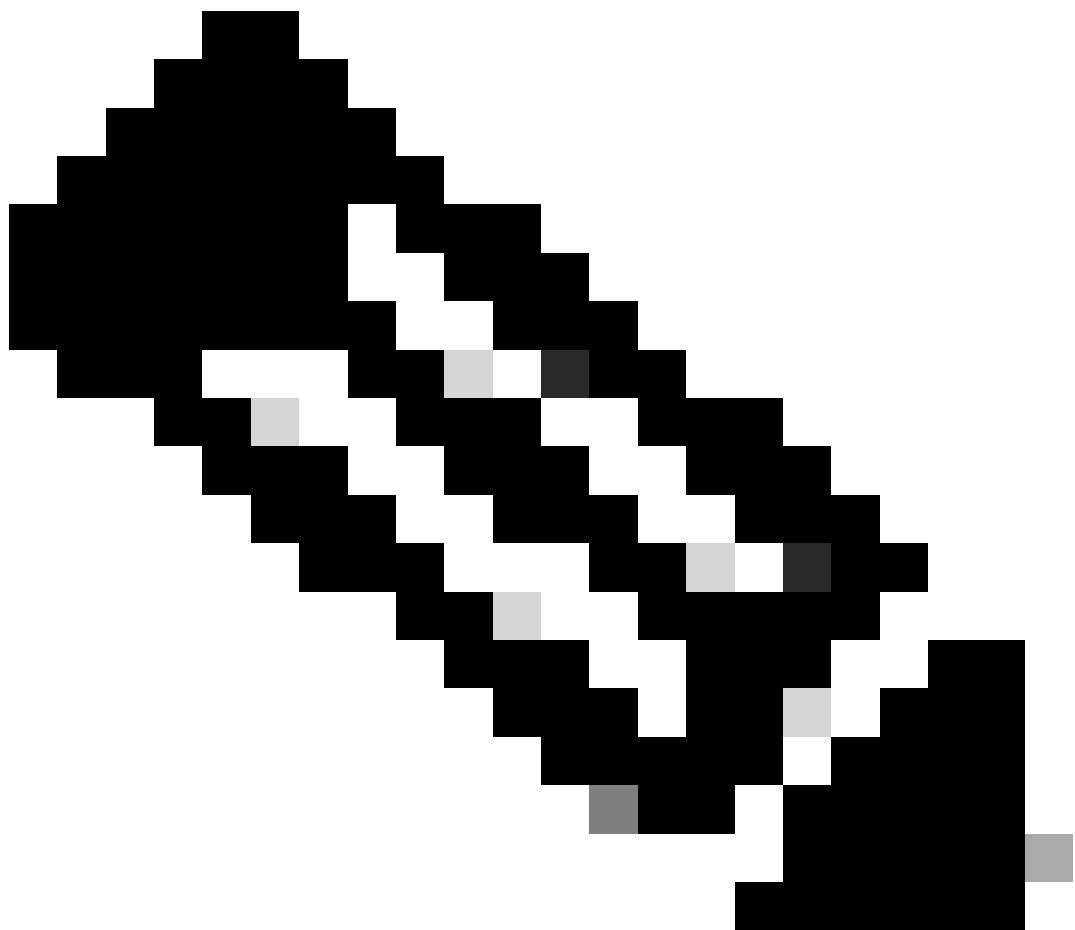
Total Packets Forwarded	:	0
Total Packets Dropped	:	0
Non DHCP:		
Total Packets Received	:	0
Total Packets Forwarded	:	0
Total Packets Dropped	:	0
DROP:		
DHCP Relay not enabled	:	0
Invalid DHCP message type	:	0
Interface error	:	0
Tx failure towards server	:	0
Tx failure towards client	:	0
Unknown output interface	:	0
Unknown vrf or interface for server	:	0
Max hops exceeded	:	0
Option 82 validation failed	:	0
Packet Malformed	:	0
DHCP Request dropped on MCT	:	0
Relay Trusted port not configured	:	0

* - These counters will show correct value when switch receives DHCP request packet with destination ip as broadcast address. If request is unicast it will be HW switched

LEAF-2-vPC DHCP

Schritt 1: Aktivieren Sie die Funktion DHCP.

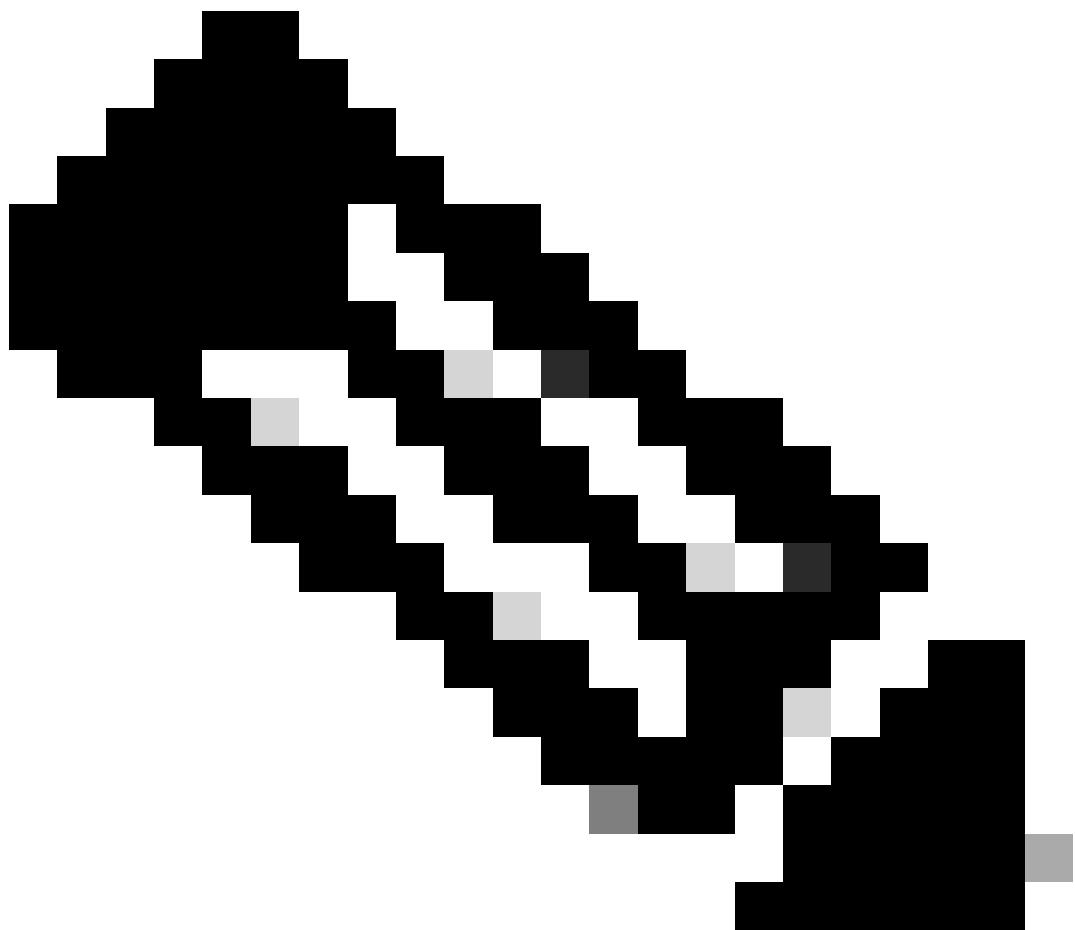
```
LEAF-2-VPC(config)# feature dhcp
```



Hinweis: Der DHCP-Server und der Relay Agent-Befehl services dhcp, ip dhcp relay und ipv6 dhcp relay sind seit NX-OS 7.x standardmäßig aktiviert.

Schritt 2: Verwenden Sie den Befehl "ip dhcp relay information option".

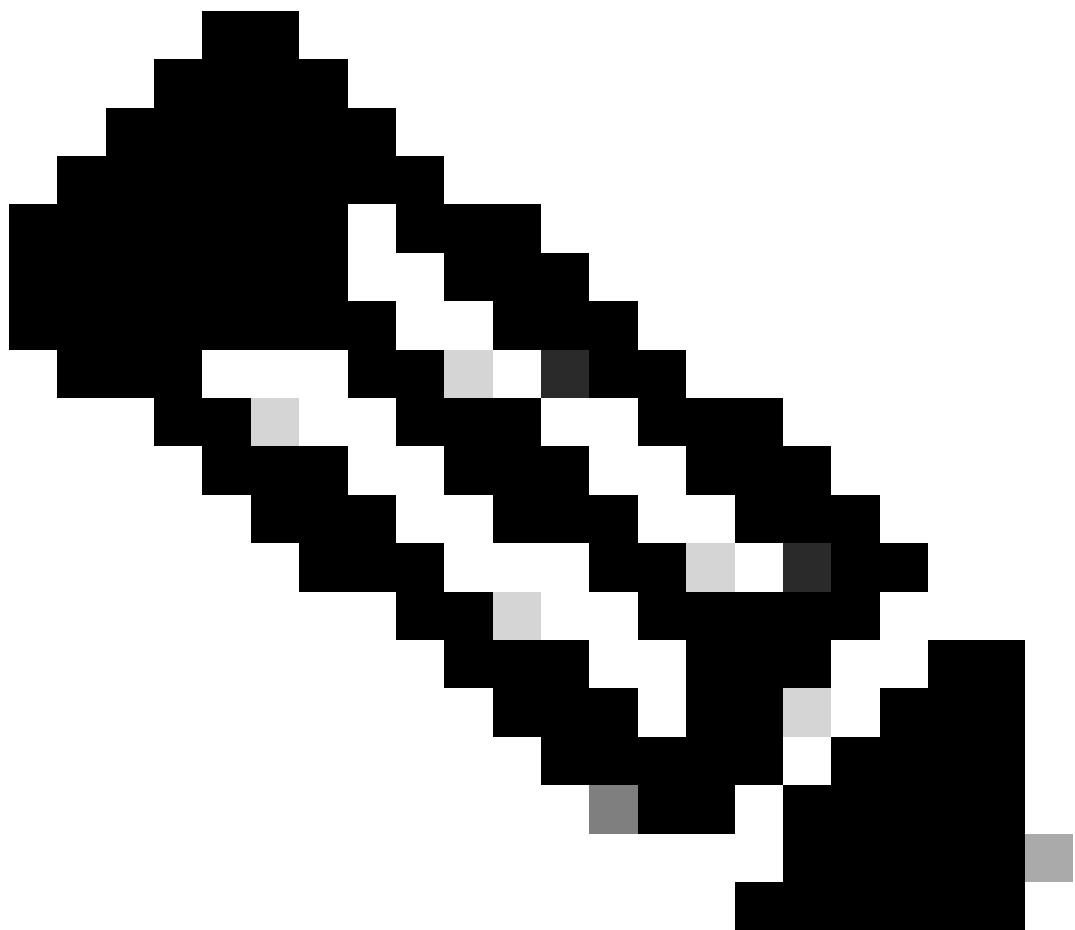
```
LEAF-2-VPC(config)# ip dhcp relay information option
```



Hinweis: Mit diesem Befehl kann der DHCP-Relay-Agent Option 82-Informationen zu den weitergeleiteten Paketen einfügen und entfernen.

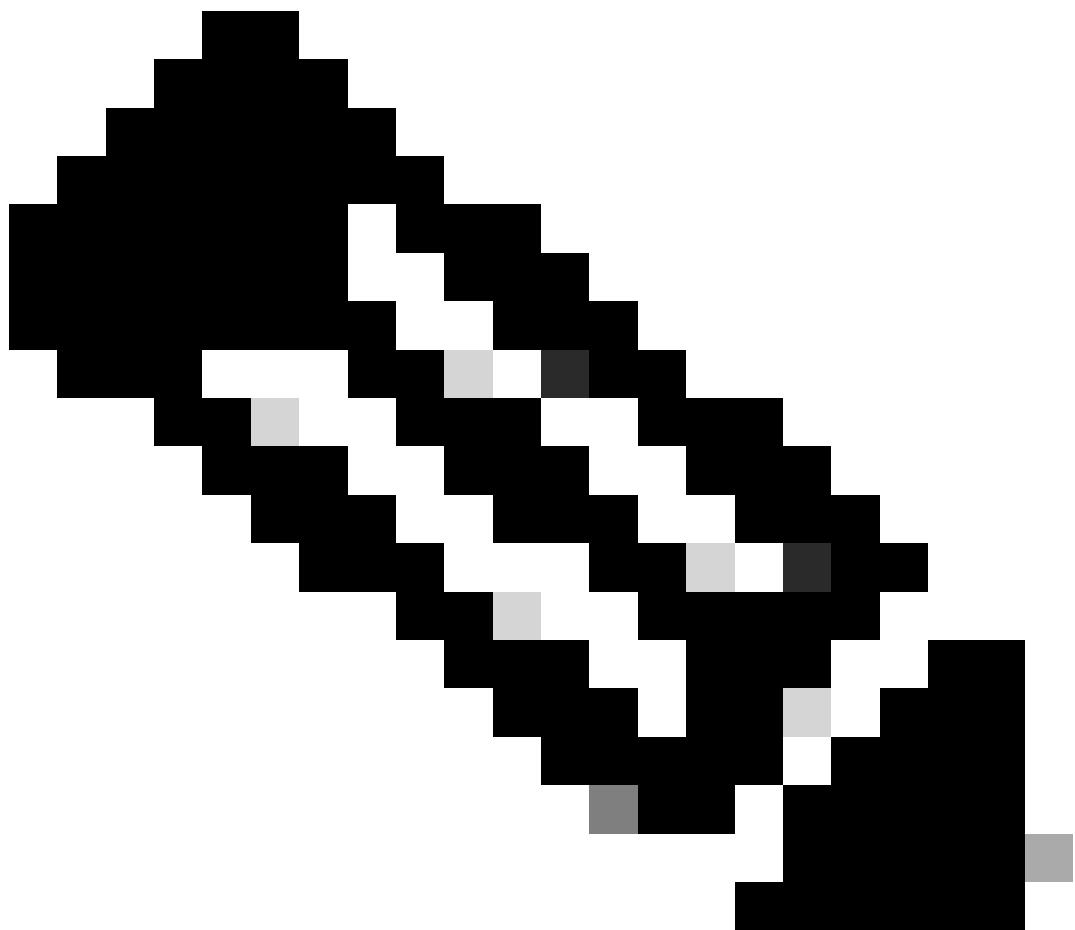
Schritt 3: Verwenden Sie den Befehl "ip dhcp relay information option vpn".

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



Hinweis: Mit diesem Befehl werden DHCP-Relay-Anfragen aktiviert, die auf einer anderen VRF-Instanz eingehen, zu der der DHCP-Server gehört.

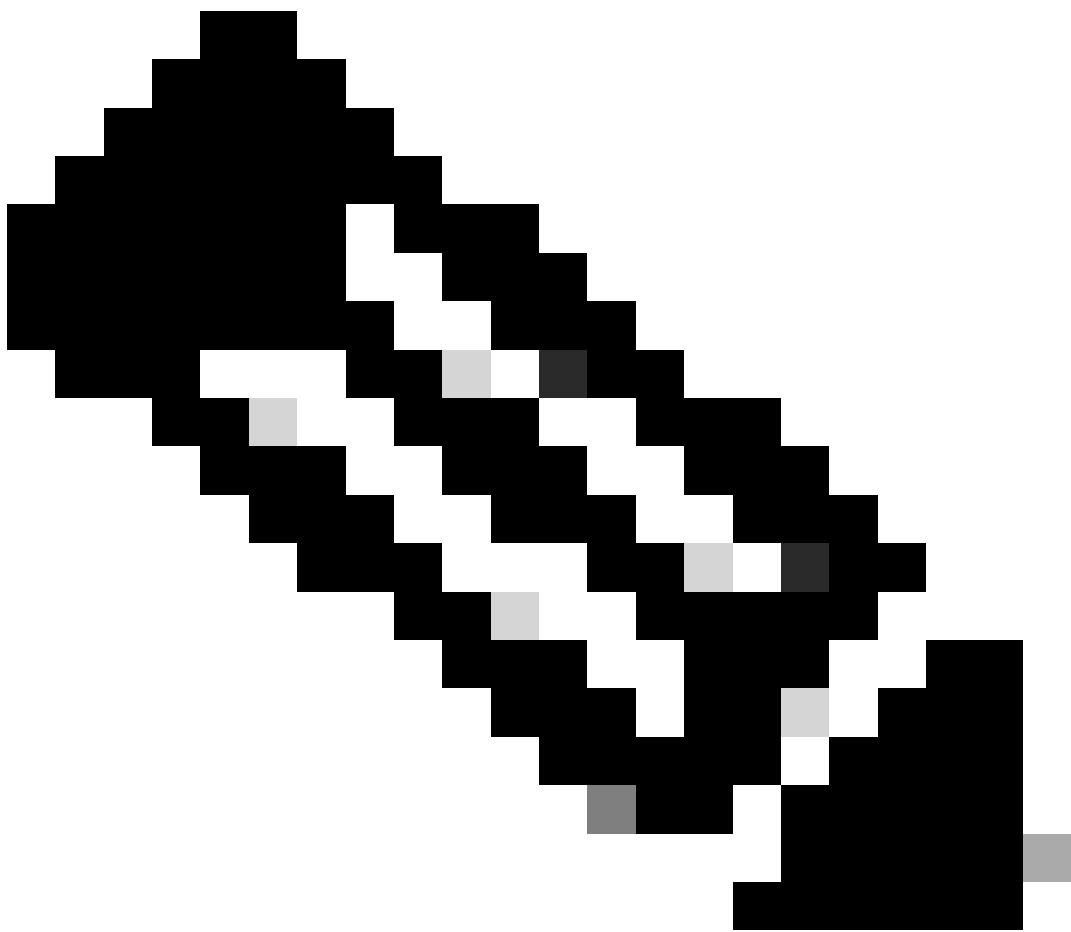
Schritt 4: Verwenden Sie den Befehl "ip dhcp relay address [ip address of DCHP server]".



Hinweis: In diesem Beispiel lautet die IP-Adresse für den DHCP-Server 10.10.10.150.

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

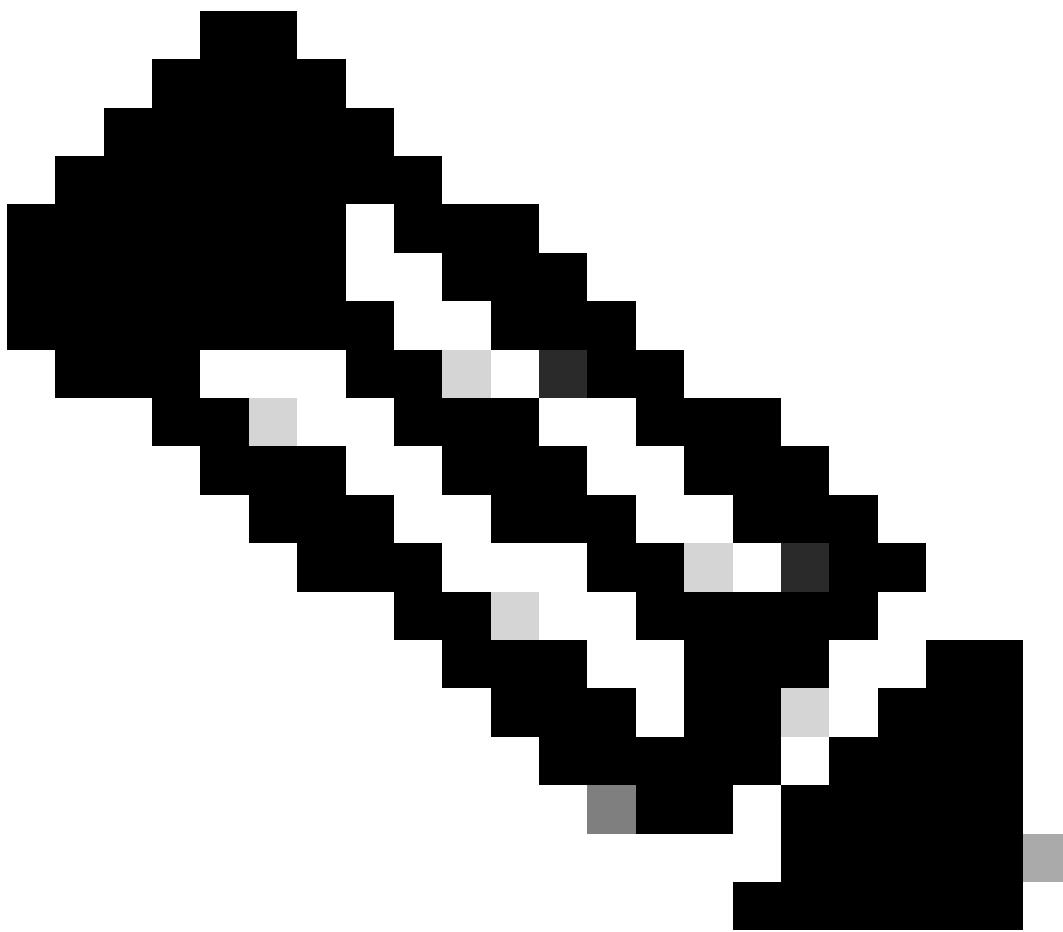
Schritt 5: Verwenden Sie den Befehl "ip dhcp relay source-interface [unique loopback]".



Hinweis: Mit diesem Befehl wird die Quell-IP-Adresse für den DHCP-Relay-Agent konfiguriert, um Discover, Offer, Request und ACK für die Unicast-Kommunikation zu verarbeiten, wobei der DHCP-Relay-Agent die IP-Adresse von SVI als Quell-IP-Adresse für den DHCP-Relay-Agent verwendet. Dies ist nicht erwünscht, da diese IP-Adresse von mehreren VTEPs gemeinsam genutzt wird und DHCP-Pakete schwarz bleiben können. Um dies zu vermeiden, ist eine eindeutige IP-Adresse (über eine Loopback-Schnittstelle) erforderlich, die jede VTEP differenziert.

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

Schritt 6: Direkte Routen-Neuverteilung im VRF des entsprechenden Tenants innerhalb des BGP mit einer Präfix-Liste und einer Route-Map, die die IP-Adresse der Loopback-Schnittstelle enthält.



Hinweis: Diese Loopback-Schnittstelle gehört zum Tenant von 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
```

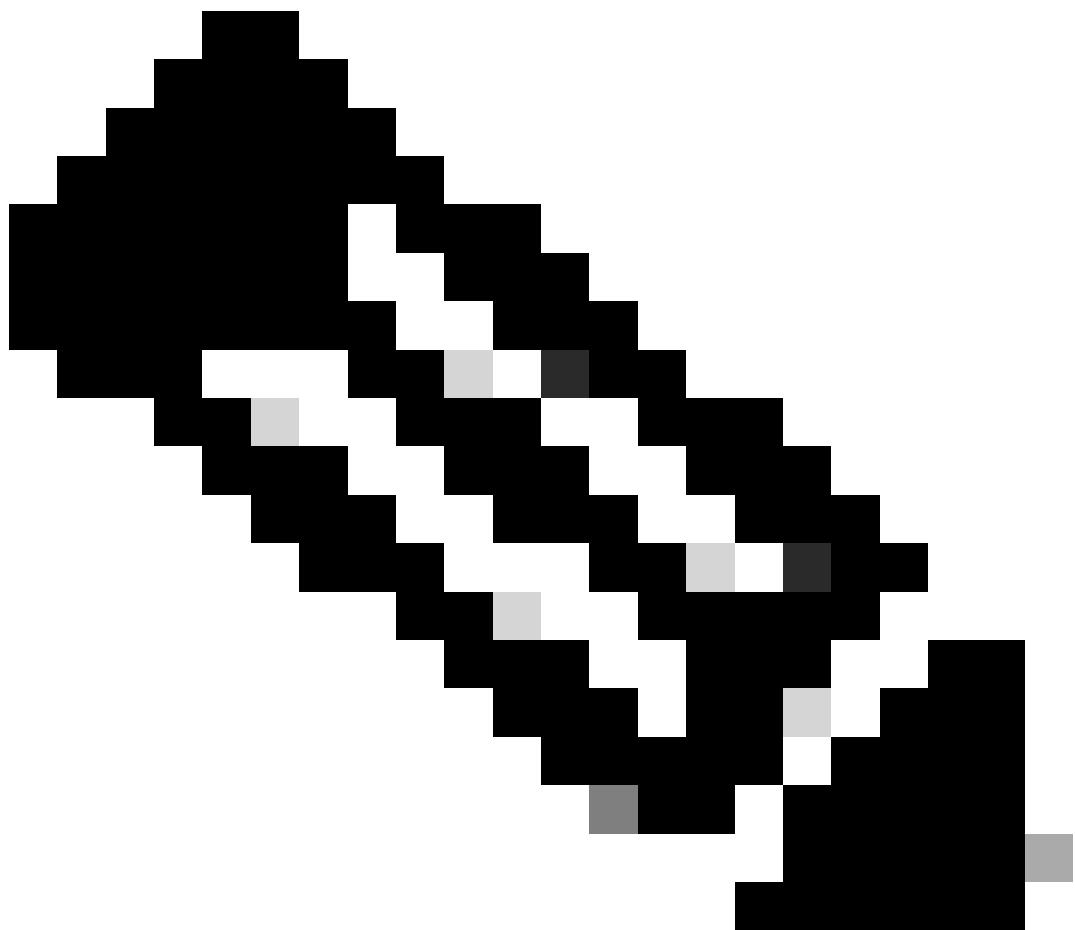
Schritt 7. Vergewissern Sie sich, dass die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN an die Spines gemeldet wird. Verwenden Sie hierzu den Befehl `show bgp l2vpn evpn [loopback IP] vrf [tenant vrf]`.

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

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

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

Schritt 8: Überprüfen Sie, ob die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN mit dem DHCP-Server eingespeist wird.



Hinweis: Wenn Nexus-Switches in vPC vorhanden sind, stellen Sie sicher, dass beide die IP-Adresse der Loopback-Schnittstelle in BGP L2VPN EVPN ermitteln.

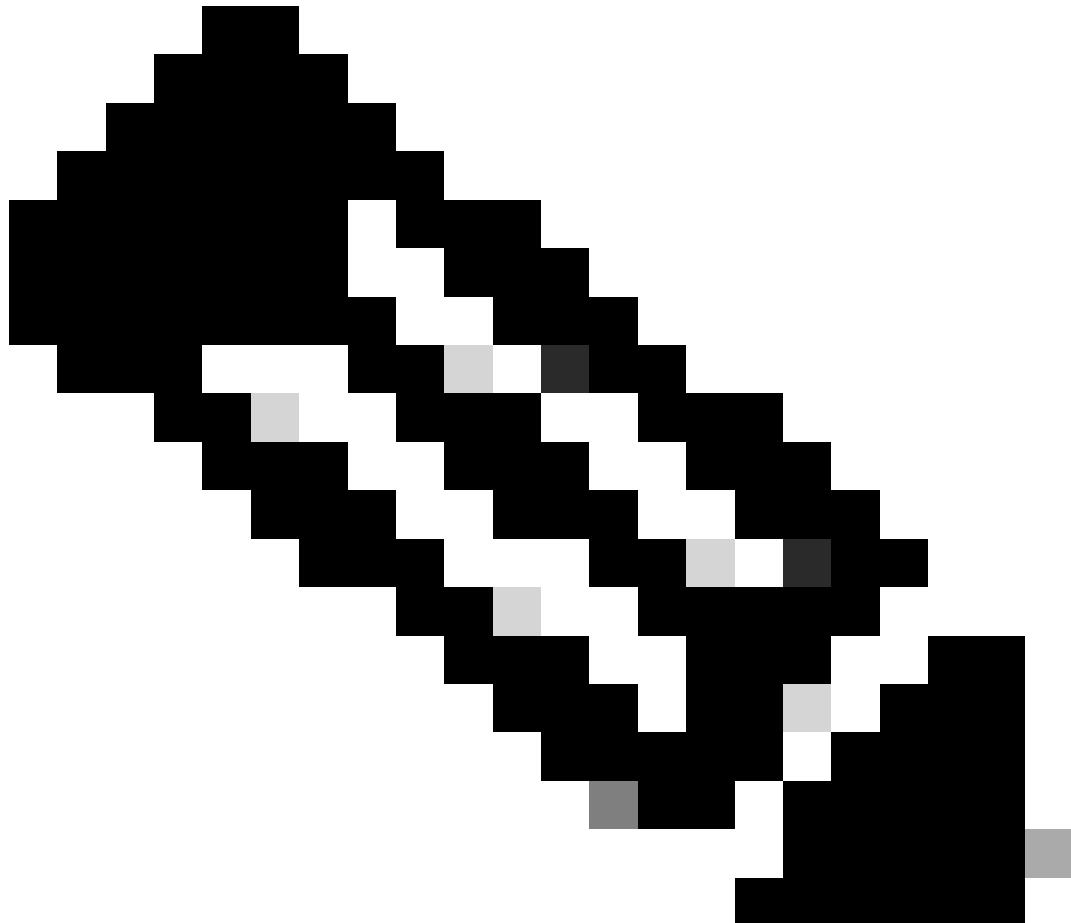
```
LEAF-2-VPC(config-if)# show bgp l2vpn evpn 172.16.10.10
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 192.168.4.4:4 (L3VNI 303030)
BGP routing table entry for [5]:[0]:[0]:[32]:[172.16.10.10]/224, version 49
5
Paths: (1 available, best #1)
Flags: (0x000002)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

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

Path-id 1 advertised to peers:
```

192.168.0.11

Schritt 9. Stellen Sie sicher, dass auf dem Quell-Tenant eine Route für den DHCP-Server vorhanden ist. Verwenden Sie hierzu den Befehl show ip route [DHCP server IP] vrf[tenvrf].



Hinweis: Der zu verwendende Routeneintrag muss vom VxLAN zum Standard-VRF reichen. Wenn keine Route verfügbar ist, überprüfen Sie, ob die VTEP lokal die IP-Adresse des DHCP-Servers kennt.

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

```
ip dhcp relay source-interface loopback100

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

Schritt 10. Stellen Sie sicher, dass die IP-Adresse des DHCP-Servers über die Loopback-Schnittstelle und die entsprechende VRF-Instanz als VRF-Quelle erreichbar ist. Verwenden Sie hierzu den Befehl 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 ---
```

Schritt 11. Überprüfen Sie den Status des DHCP-Relay-Agenten.

```
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
```

Schritt 12: Überprüfen Sie Option82, z. B. die VPN-Option und die richtige Relay-IP-Adresse unter dem Relay-Agenten.

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

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

Subnet-broadcast is enabled on the following interfaces:

Relay Trusted Port is enabled on the following interfaces:

Relay Source Address HSRP is enabled on the following interfaces:

Helper addresses are configured on the following interfaces:

Interface	Relay Address	VRF Name
Vlan10	10.10.10.150 <<<	

Schritt 13: Überprüfen Sie die Statistiken der verarbeiteten und weitergeleiteten Pakete.

```
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
```

Schritt 14: Überprüfen Sie die Statistiken der Relay-Pakete.

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

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

DHCP L3 FWD:

Total Packets Received	:	0
Total Packets Forwarded	:	0
Total Packets Dropped	:	0

Non DHCP:

Total Packets Received	:	0
Total Packets Forwarded	:	0
Total Packets Dropped	:	0

DROP:

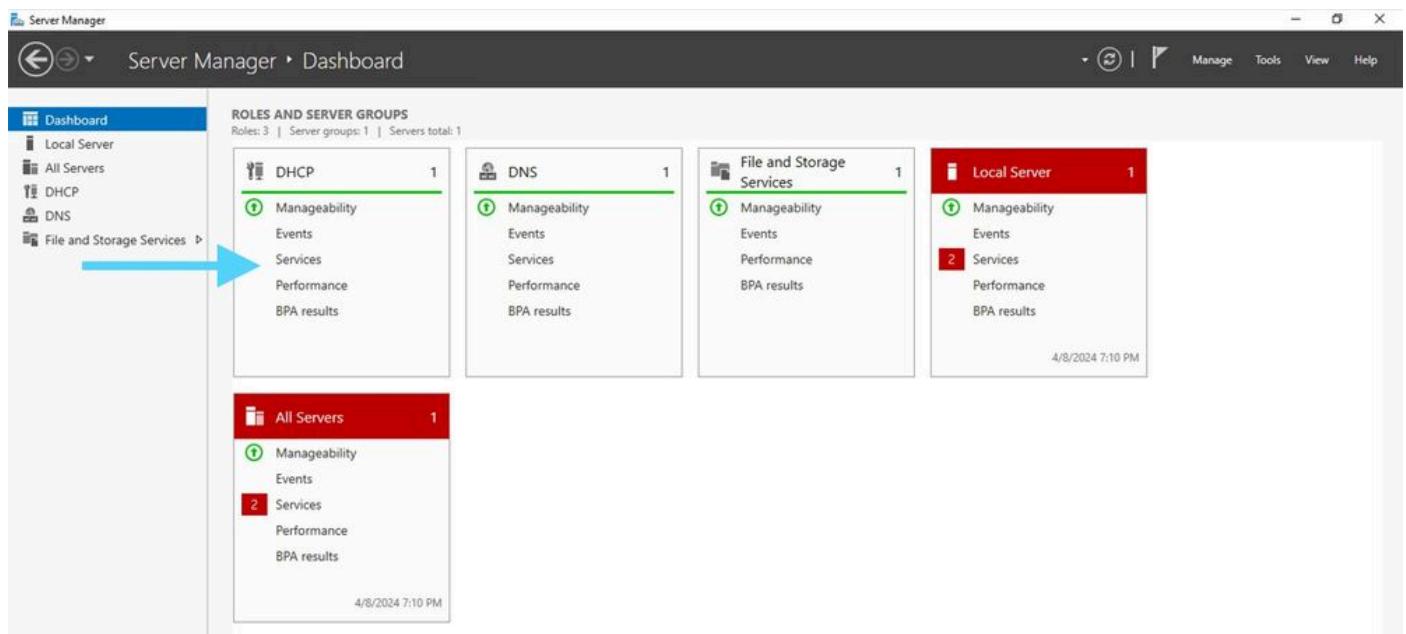
DHCP Relay not enabled	:	0
Invalid DHCP message type	:	0
Interface error	:	0
Tx failure towards server	:	0
Tx failure towards client	:	0
Unknown output interface	:	0
Unknown vrf or interface for server	:	0
Max hops exceeded	:	0
Option 82 validation failed	:	0
Packet Malformed	:	0
DHCP Request dropped on MCT	:	0
Relay Trusted port not configured	:	0

* - These counters will show correct value when switch receives DHCP request packet with destination ip as broadcast address. If request is unicast it will be HW switched

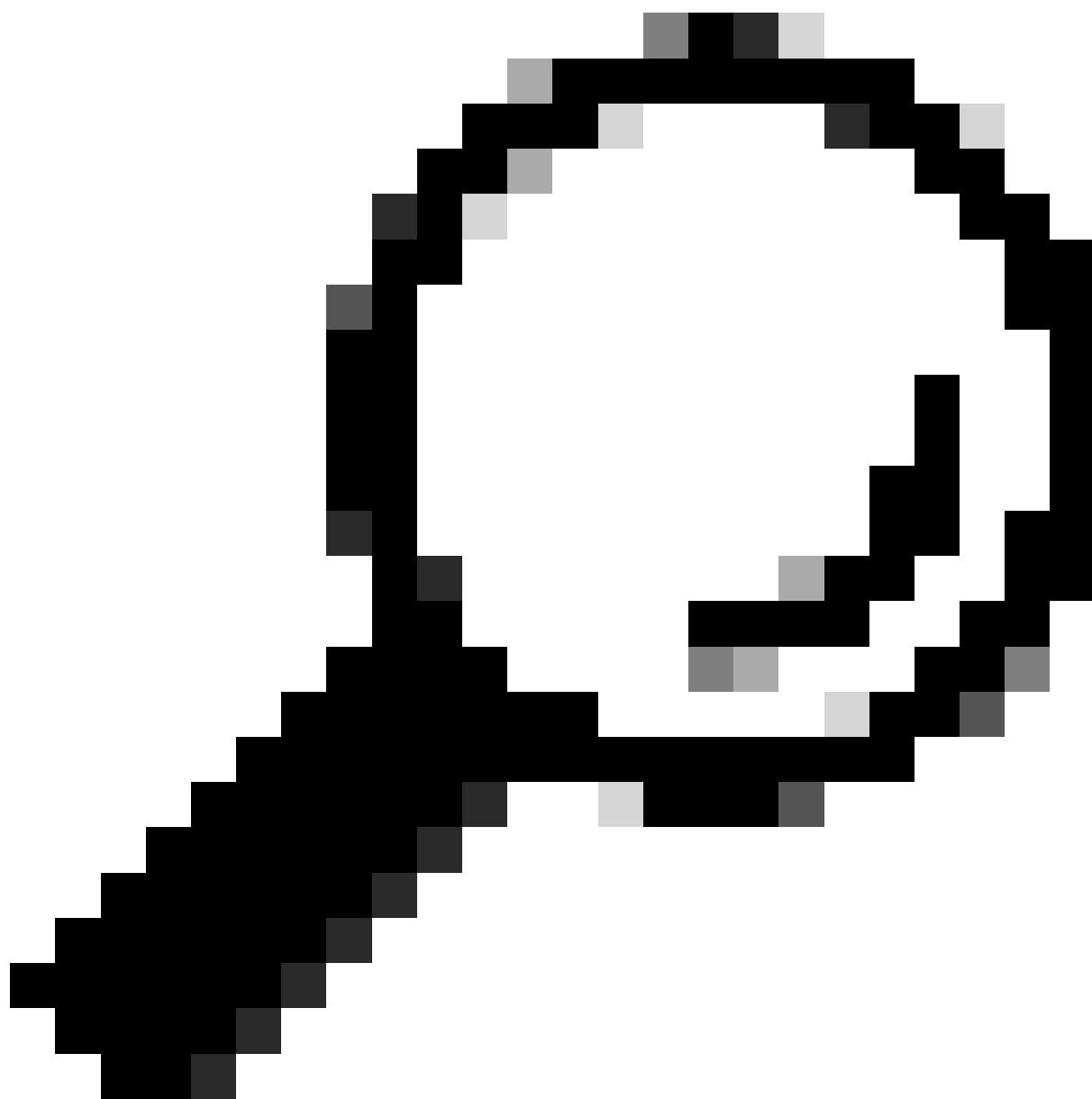
DHCP-Serverkonfiguration unter Windows Server 2022

Konfiguration des IP-Adressierungsbereichs für Hosts.

Schritt 1: Öffnen Sie den Server Manager, und stellen Sie sicher, dass im Dashboard auf dem DHCP-Server keine Alarne vorhanden sind.

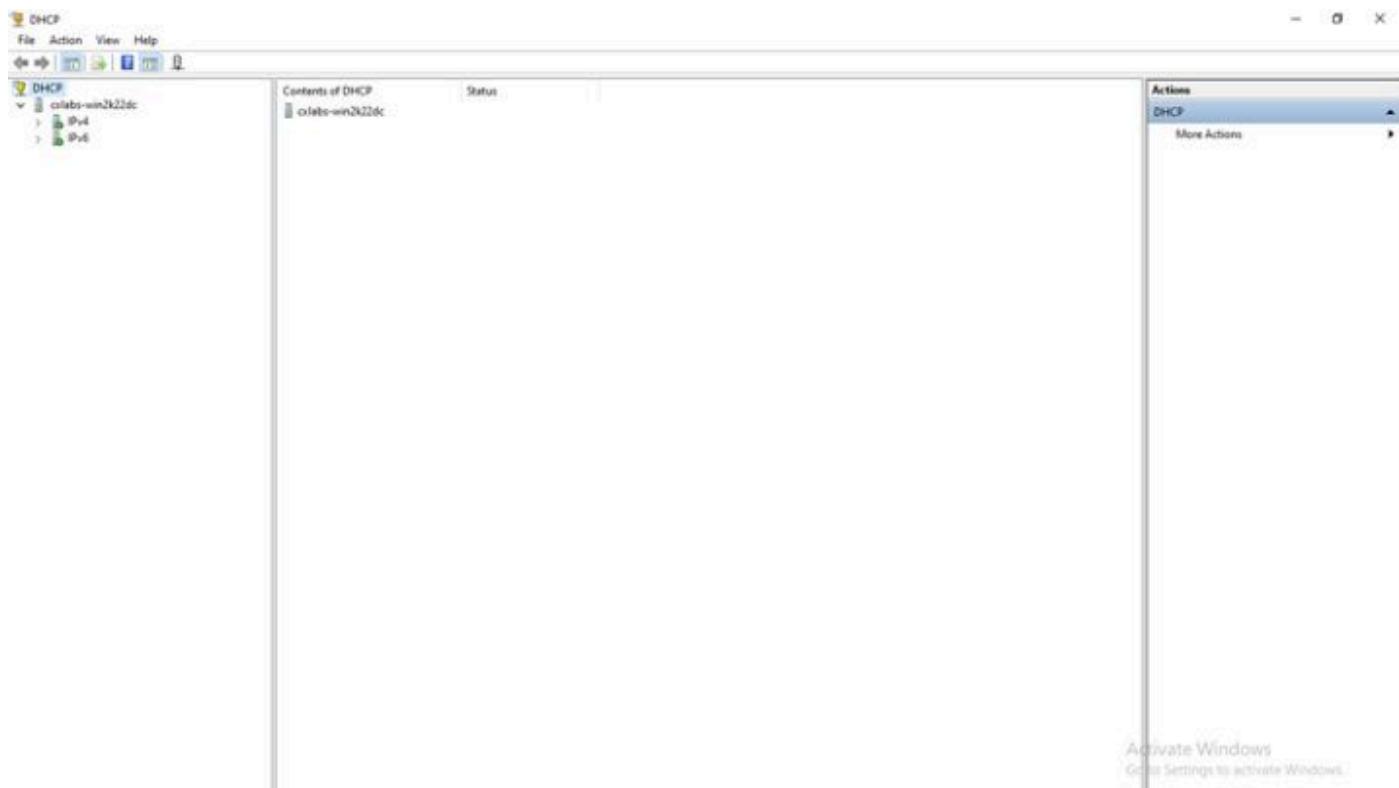


Dashboard vom Server Manager unter Windows Server 2022



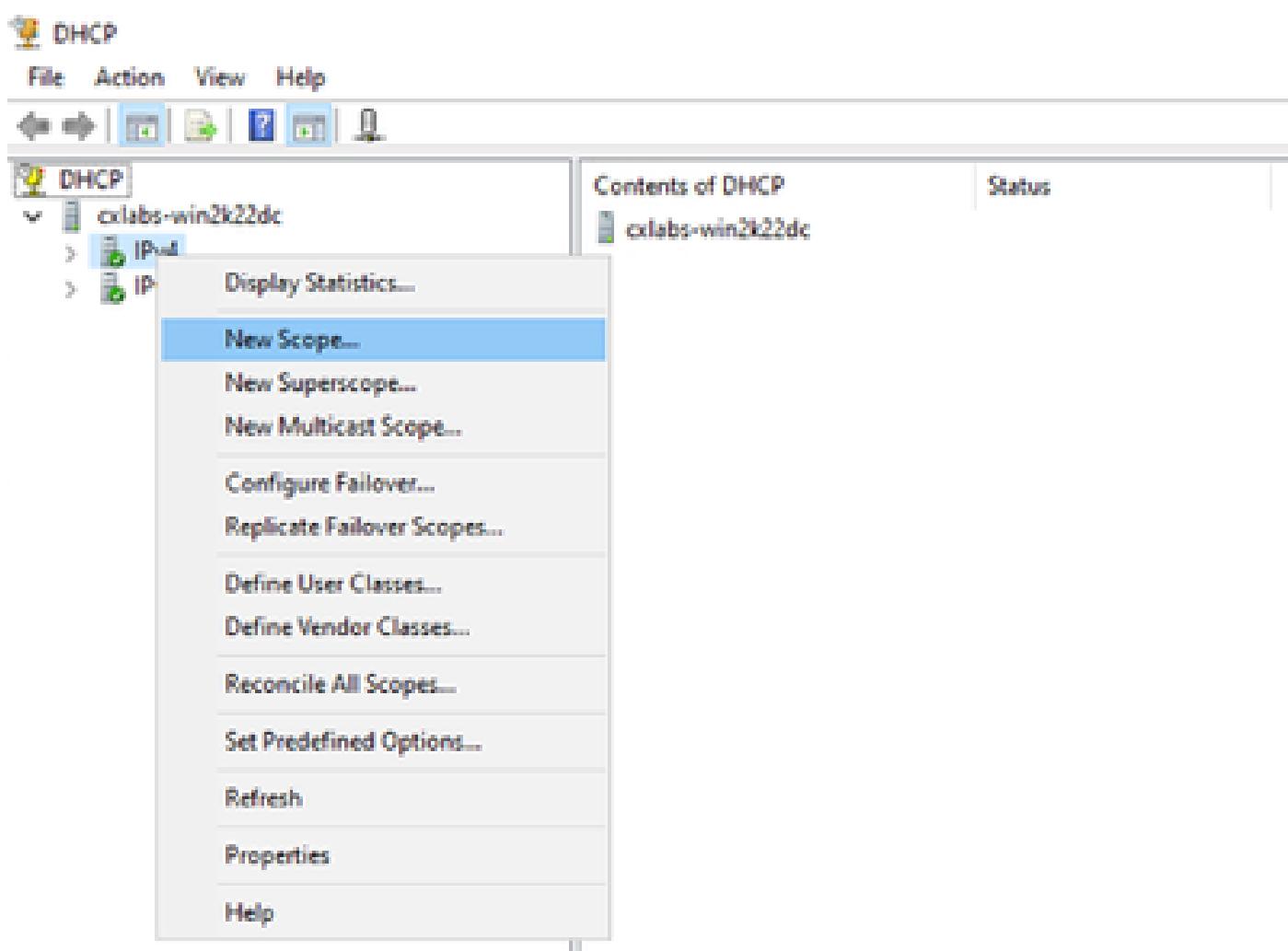
Tipp: Das Bild vergrößert sich beim Doppelklick.

Schritt 2: Öffnen Sie die DHCP-Serveranwendung.

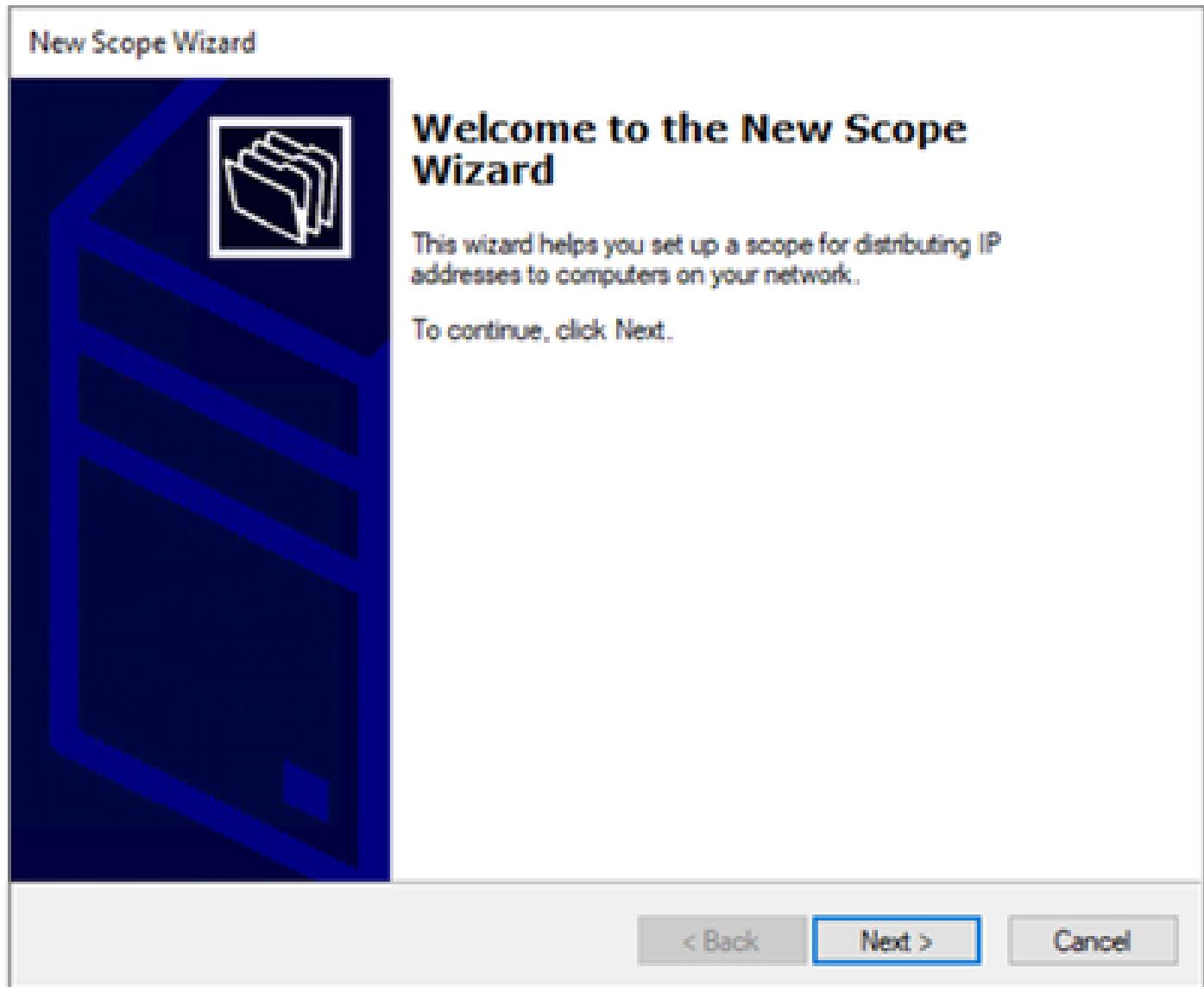


DHCP-Server unter Windows Server 2022

Schritt 3: Klicken Sie mit der rechten Maustaste auf IPv4, und klicken Sie auf Neuer Bereich.



Schritt 4: Klicken Sie auf Next (Weiter).



Schritt 5: Schreiben Sie einen Namen und eine Beschreibung. In diesem Beispiel ist der Name das Subnetz, das zu VLAN 10 gehört, und die Beschreibung ist L2VNI, da L2VNI in VLAN 10 aufgeführt ist.

New Scope Wizard

Scope Name

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



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

Name:

Description:

< Back

Next >

Cancel

Schritt 6: Konfigurieren des IP-Adressbereichs Dies ist der Pool für Hosts.

New Scope Wizard

IP Address Range

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



Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back

Next >

Cancel

Schritt 6: Schließen Sie die freigegebene IP-Adresse aus der SVI-Konfiguration in den VTEPs aus. In diesem Beispiel hat die Schnittstelle VLAN 10 die Adresse IP.10.10.1/24.



Warnung: Wenn die IP-Adresse nicht aus der SVI (oder dem Standard-Gateway) ausgeschlossen wird, kann es zu doppelten IP-Adressen kommen, was sich auf die Übermittlung des Datenverkehrs auswirkt.

```
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:

Add

Excluded address range:

Address 10.10.10.1	Remove

Remove

Subnet delay in milli second:

 0

< Back

Next >

Cancel

Schritt 7. Konfigurieren Sie die Lease-Dauer der IP-Adresse. Dies bezieht sich auf die Zeit, die ein Host die zugewiesene IP-Adresse vor der Verlängerung verwenden kann.

New Scope Wizard

Lease Duration

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



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

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

Limited to:

Days: Hours: Minutes:

< Back

Next >

Cancel

Schritt 8: Wählen Sie Ja, ich möchte diese Optionen jetzt konfigurieren.

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

Schritt 9. Konfigurieren Sie die IP-Adresse des Standardgateways.

New Scope Wizard

Router (Default Gateway)

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



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

IP address:

A text input field for entering an IP address, showing the placeholder ". . . .".

Add
Remove
Up
Down

A vertical stack of four buttons: "Add" (top), "Remove", "Up", and "Down".

< Back

Next >

Cancel

Schritt 10. Konfigurieren des Domänennamens und des DNS-Servers

New Scope Wizard

Domain Name and DNS Servers

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



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

Parent domain:

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

Server name:

IP address:

Schritt 11. Konfigurieren Sie ggf. den WINS-Server. Dies kann übersprungen werden, wenn die Informationen nicht bekannt sind.

New Scope Wizard

WINS Servers

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



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

Server name:

Resolve

IP address:

Add

Remove

Up

Down

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

< Back

Next >

Cancel

Schritt 12: Wählen Sie Ja, ich möchte diesen Bereich jetzt aktivieren.

New Scope Wizard

Activate Scope

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



Do you want to activate this scope now?

Yes, I want to activate this scope now.

No, I will activate this scope later

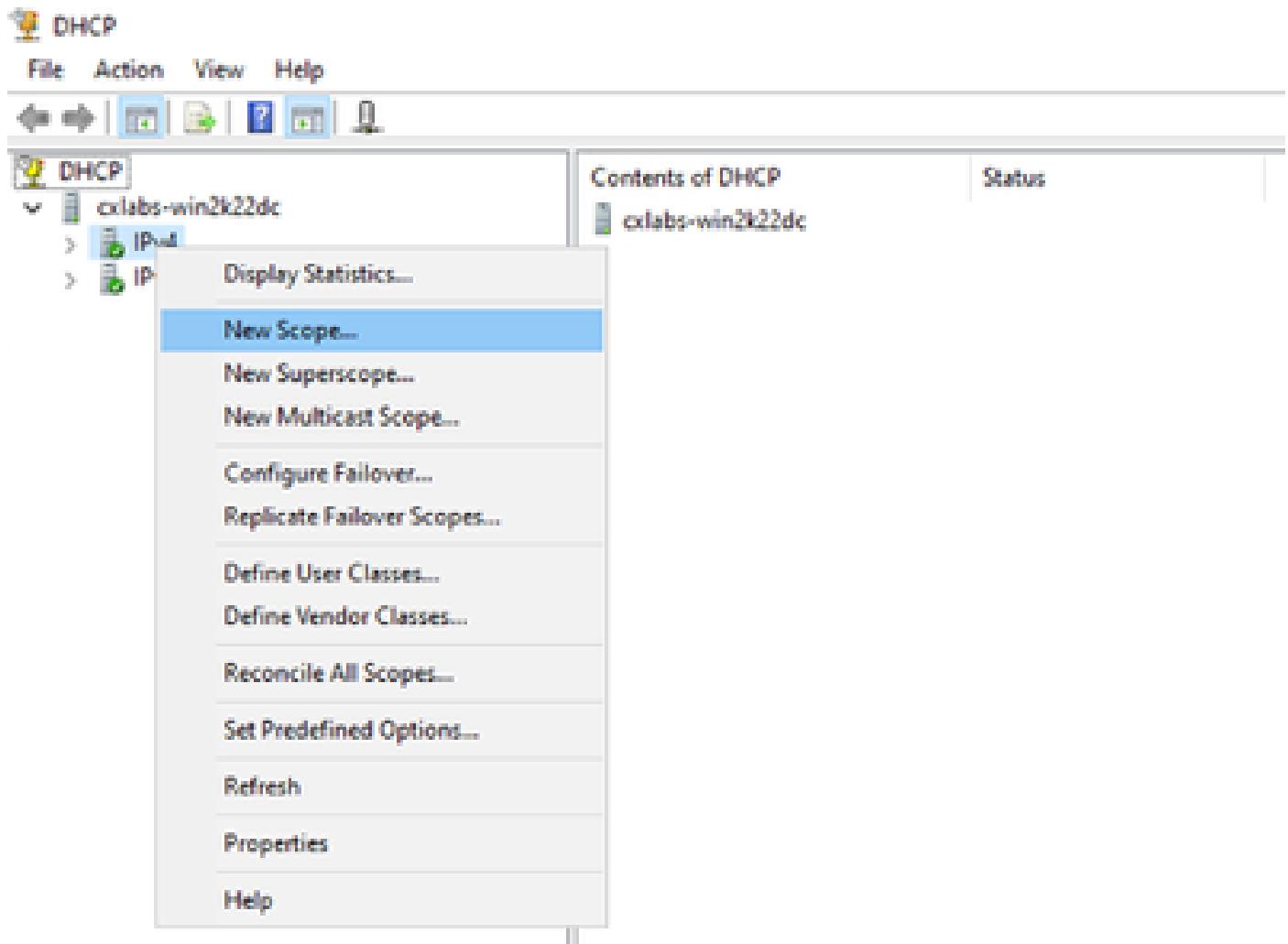
< Back

Next >

Cancel

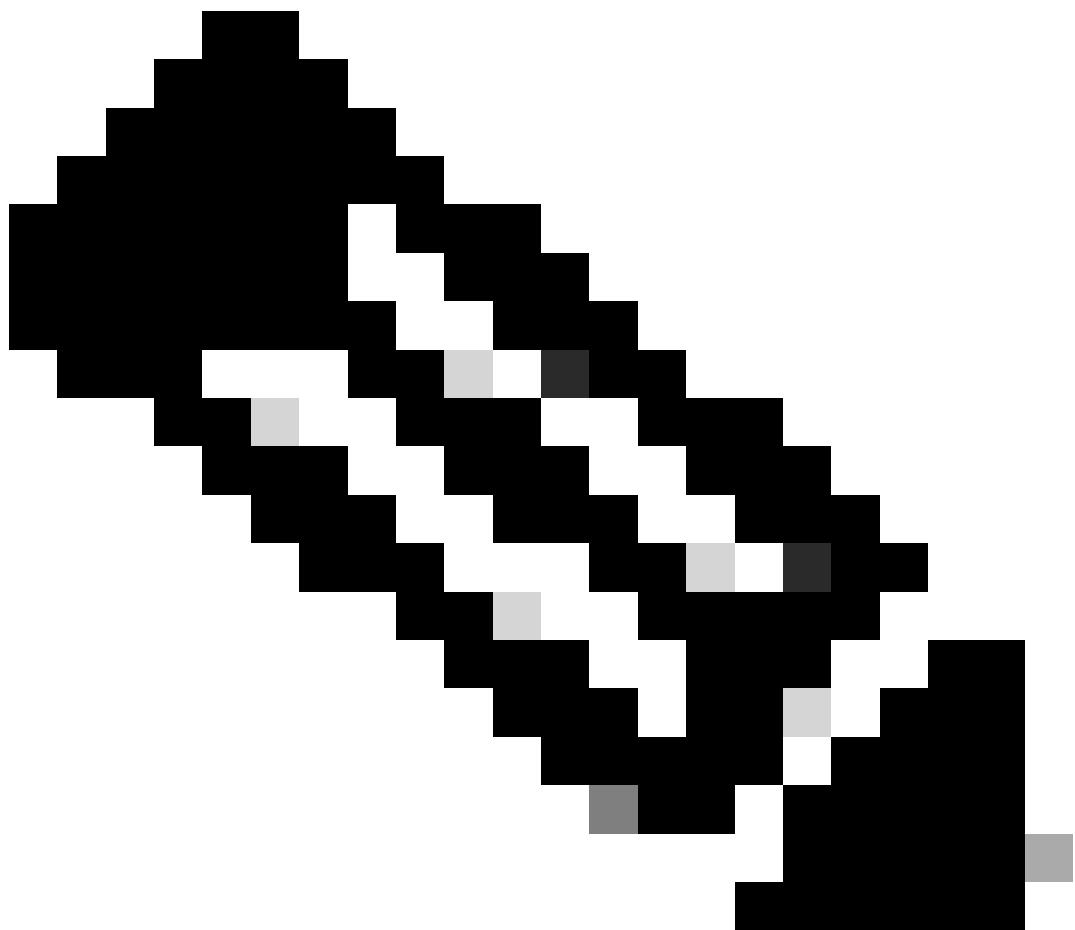
Konfigurieren des Bereichs für eindeutige IP-Adressen von Loopbacks in SVI als DHCP-Relay-Agent

Schritt 1: Klicken Sie mit der rechten Maustaste auf IPv4, und wählen Sie IPv4Scope aus.



Neuer Umfang in DCHP

Schritt 2: Schreiben Sie einen Namen und eine Beschreibung. In diesem Beispiel ist name das Subnetz, das für ein Subnetz mit Loopback-Adresse verwendet wird.



IPe: Ein Loopback wird als eindeutige Loopback-IP-Adresse in der gesamten VxLAN-Struktur für den VxLAN-Tenant verwendet. Dies muss bei der Neuverteilung der BGP-L2VPN-EVPN-Route im BGP innerhalb der VRF des entsprechenden Tenants in der IPv4-Adresse-FamilIPv4 angekündigt werden.

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

New Scope Wizard

Scope Name

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



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

Name:

Description:

< Back

Next >

Cancel

Schritt 3: Konfigurieren Sie den IP-AdressbereichIP. Dies ist der Pool für Loopbacks.

New Scope Wizard

IP Address Range

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



Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back

Next >

Cancel

Schritt 4: Konfigurieren Sie Ausschlüsse (optional, da der DHCP-Server IP-Adressen verleiht, die zu diesem Subnetz gehören).

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:

Add

Excluded address range:

Remove

Subnet delay in milli second:

 0

< Back

Next >

Cancel

Schritt 5: Überspringen Sie die Leasedauer, und klicken Sie auf Weiter.

New Scope Wizard

Lease Duration

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



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

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

Limited to:

Days: Hours: Minutes:

< Back

Next >

Cancel

Schritt 6: Wählen Sie Nein, diese Optionen werden zu einem späteren Zeitpunkt konfiguriert.

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

Schritt 7. Klicken Sie auf Beenden.

New Scope Wizard



Completing the New Scope Wizard

You have successfully completed the New Scope wizard.

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

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

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

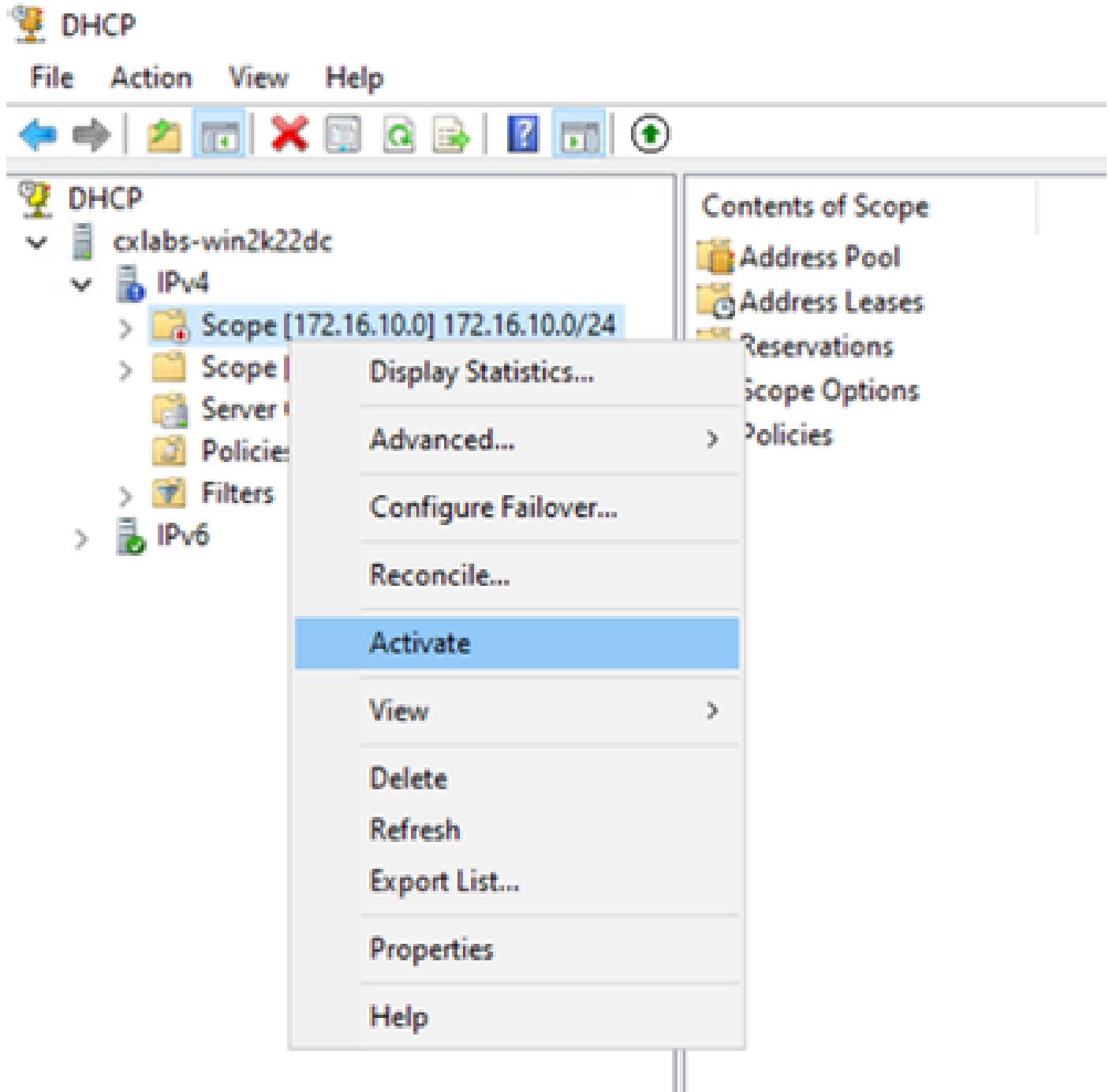
To close this wizard, click Finish.

< Back

Finish

Cancel

Schritt 8: Klicken Sie mit der rechten Maustaste auf den erstellten Bereich, und wählen Sie Aktivieren aus.



Konfigurieren der Bereichsgruppierung für die VxLAN-Struktur

Schritt 1: Klicken Sie mit der rechten Maustaste auf IPv4, und wählen Sie Neue Bereichsgruppierung aus.

Screenshot of the Windows Server 2008 DHCP Management Console. The left pane shows a tree view with 'DHCP' selected, and 'Global' expanded. Under 'Global', 'New Superscope...' is highlighted. The right pane displays 'Contents of DHCP Server' with two scopes listed: 'Scope [172.16.10.0] 172.16.10.0/24' and 'Scope [192.168.10.0] 192.168.10.0/24'. Below these are 'Server Options', 'Policies', and 'Filters'.

Schritt 2: Klicken Sie auf Next (Weiter).

New Superscope Wizard



Welcome to the New Superscope Wizard

This wizard helps you create a 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.

< Back **Next >** Cancel

Schritt 3: Schreiben Sie den Namen des Bereichsbereichs.

New Superscope Wizard

Superscope Name

You have to provide an identifying superscope name.

Name:



[**< Back**](#) [**Next >**](#) [**Cancel**](#)

Schritt 4: Wählen Sie alle Bereiche aus, die zu VxLAN Fabric gehören.

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

Schritt 5: Wählen Sie alle Bereiche aus, die zu VxLAN Fabric gehören.

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

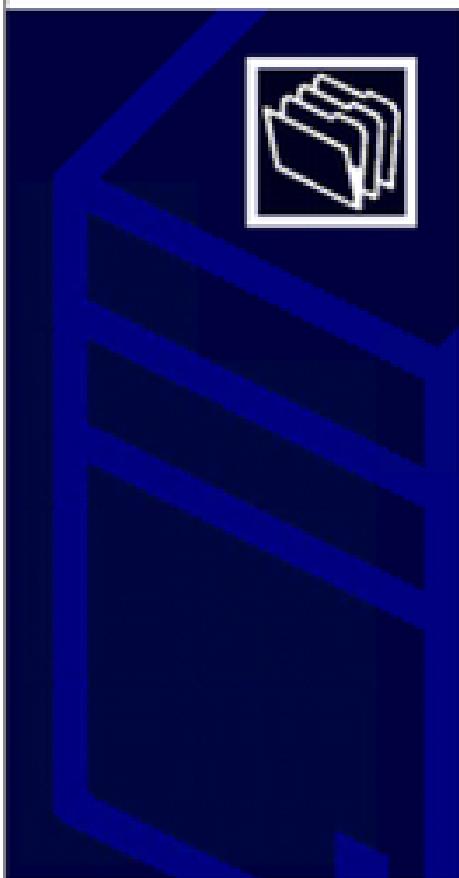
< Back

Next >

Cancel

Schritt 6: Überprüfen Sie, ob alle VxLAN-Fabric-Superskope vorhanden sind, und klicken Sie auf Fertig stellen.

New Superscope Wizard



Completing the New Superscope Wizard

You have successfully completed the New Superscope wizard.

The following superscope will be created:

Name: Scopes for VxLAN Fabric (with Opt. 82)

Scopes included in this superscope:

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

To close this wizard, click Finish.

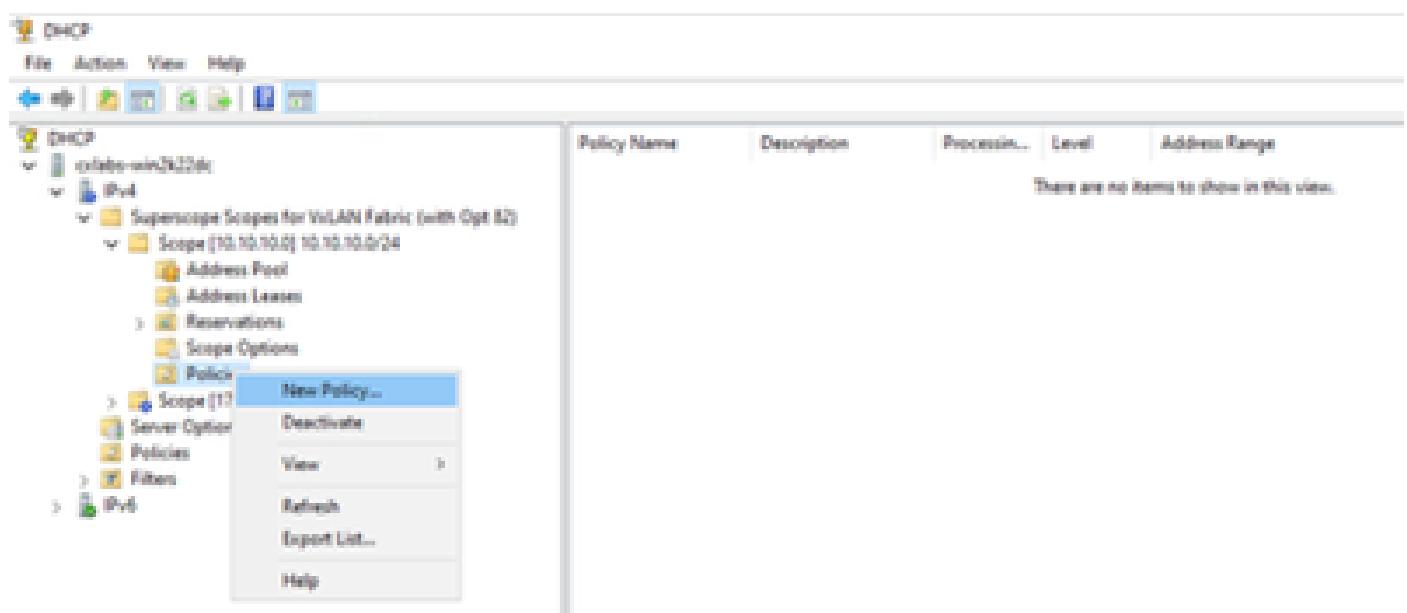
< Back

Finish

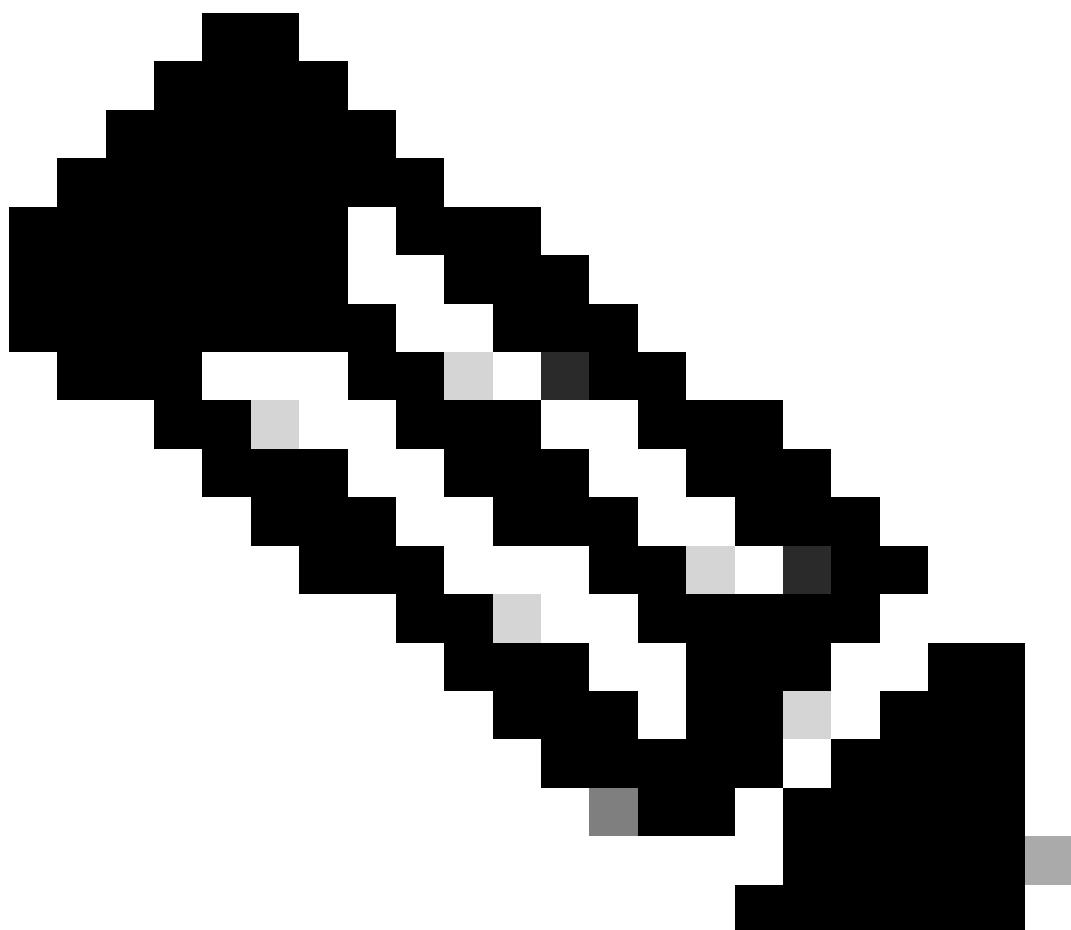
Cancel

Konfigurieren von Option 82 in Hostbereichen

Schritt 1: Klicken Sie mit der rechten Maustaste auf Policies (letzte Option) im Bereich für den Host, und klicken Sie auf New Policy.



Schritt 2: Schreiben Sie einen Namen und eine Beschreibung, und klicken Sie auf Weiter.



Hinweis: In diesem Beispiel wird die Richtlinie erstellt, um IP-Adressierung speziell für Hosts in Leaf-1 für VNI 101010-basierte VNI Remote-ID (Parameter von Option 82) auszuwählen.

DHCP Policy Configuration Wizard

Policy based IP Address and Option Assignment



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

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

Policy Name:

VNI 101010

Description:

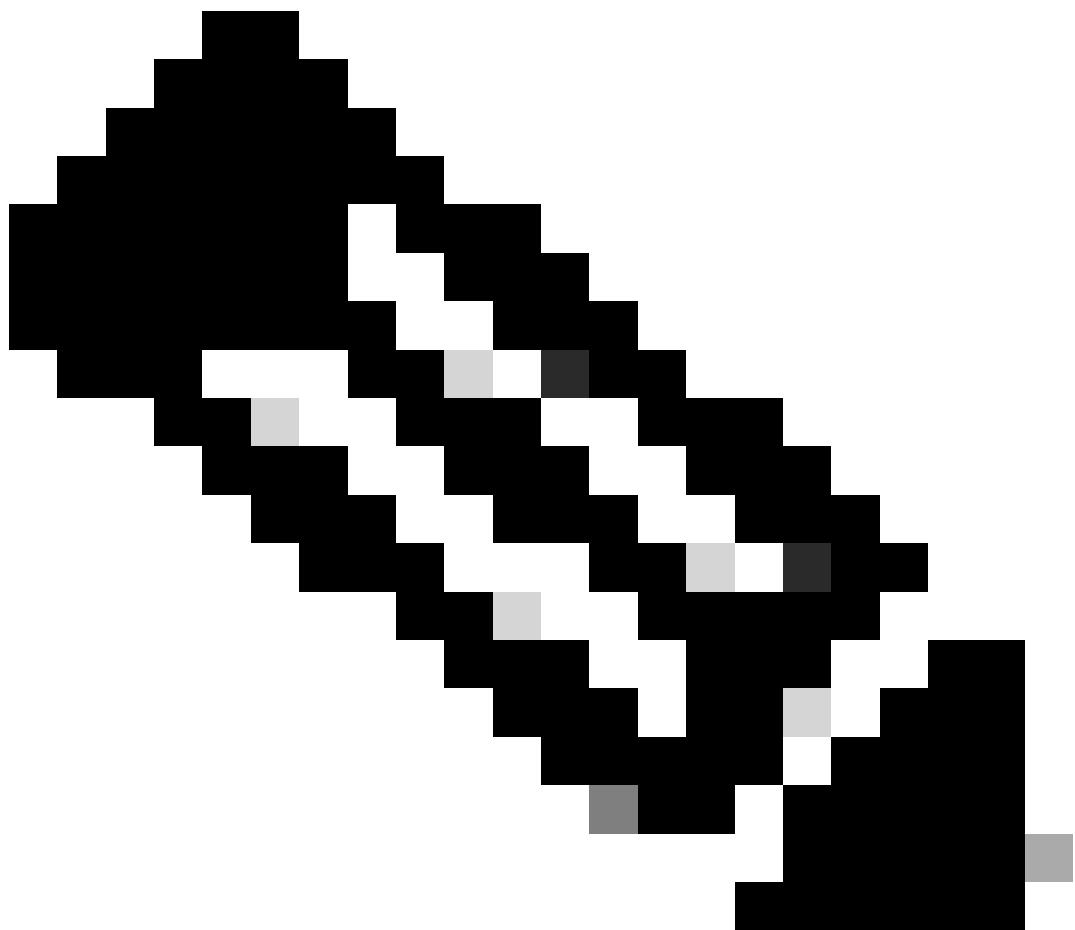
Policy to select scope for Leaf-1 using Remote-ID

< Back

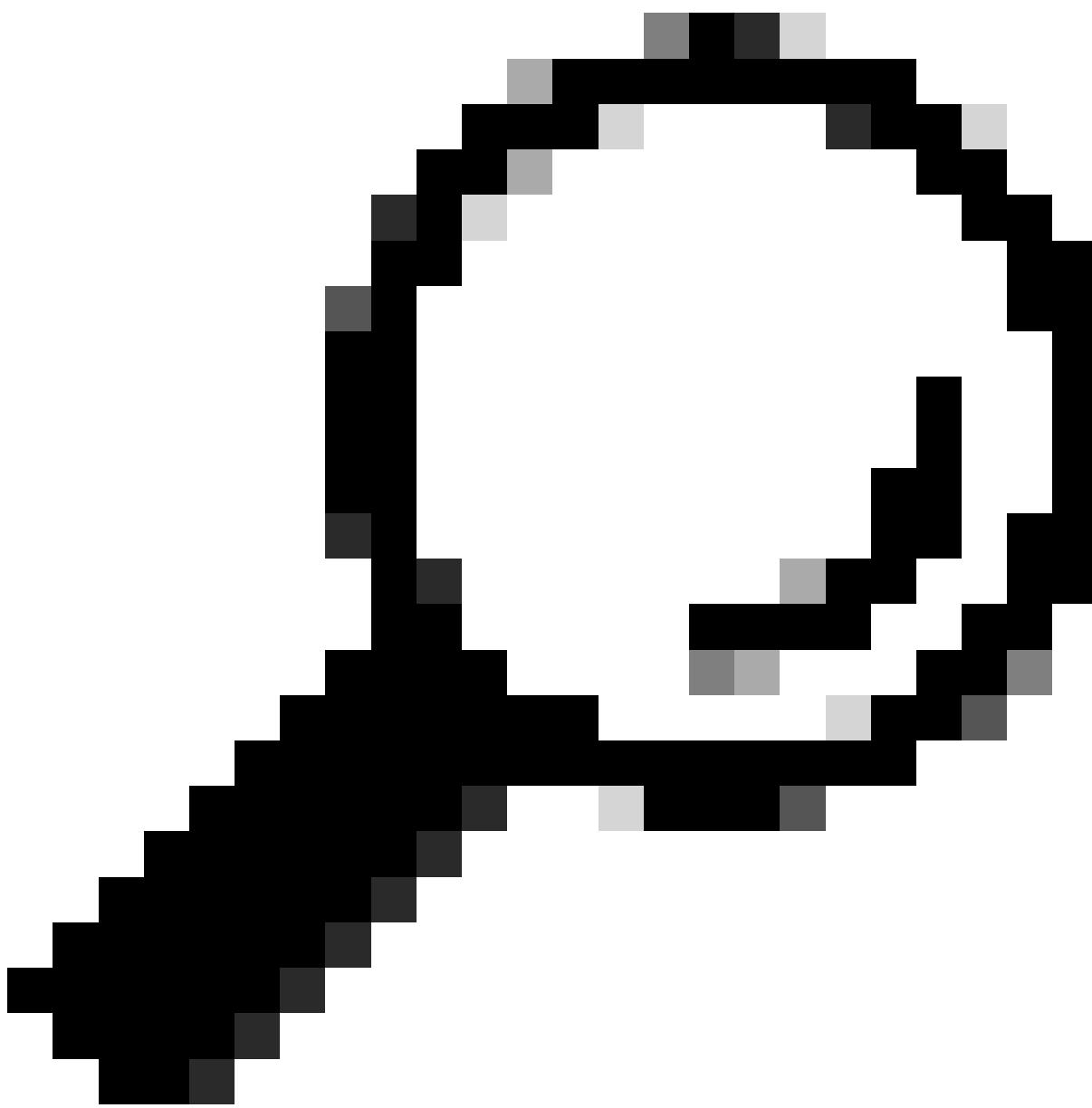
Next >

Cancel

Schritt 3: Klicken Sie auf Hinzufügen. Wählen Sie unter Criteria (Kriterien) die Option Relay Agent Information (Agenteninformationen weiterleiten). Wählen Sie in Operator die Option Equals aus. Wählen Sie dann Agent Remote ID aus, und geben Sie den Wert ein. Klicken Sie auf OK und dann auf Weiter.



Hinweis: Die Remote-ID wird aus der MAC-Adresse der SVI abgerufen, der der SVII zugeordnet ist.



Tipp: Eine Richtlinie kann auf mehrere Remote-IDs (oder VTEPs) angewendet werden, indem weitere Bedingungen hinzugefügt und OR anstelle von AND ausgewählt werden.

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

DHCP Policy Configuration Wizard

Add/Edit Condition

[?](#)[X](#)

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

Criteria: **Relay Agent Information**

Operator: **Equals**

Value (in hex)

Relay Agent Information:

Agent Circuit ID:

Agent Remote ID: **707db9b84daf**

Subscriber ID:

Prefix wildcard(*)

Append wildcard(*)

Ok

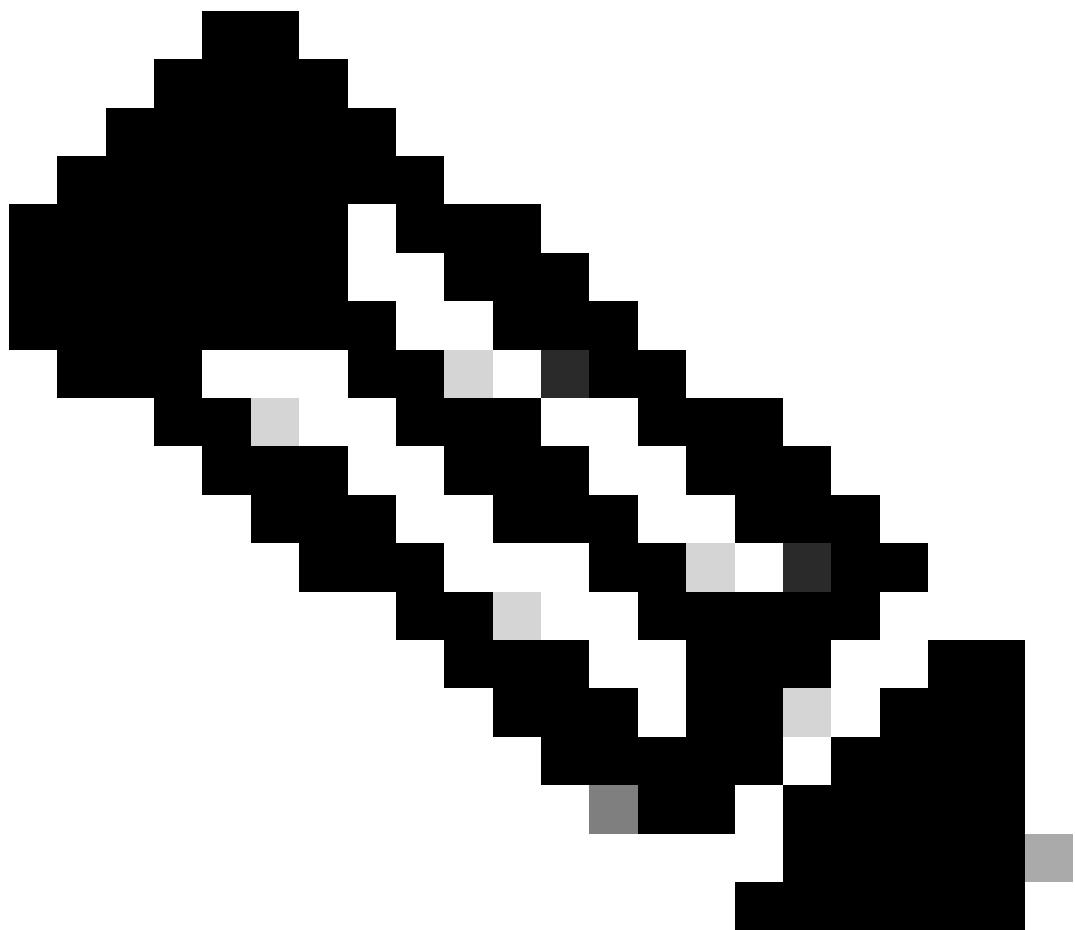
Cancel

< Back

Next >

Cancel

Schritt 4: Konfigurieren Sie die IP-Adressierung, die vorhandene IP-Adressen auf den durch die ID ausgewählten VTEPs verwenden können, und klicken Sie dann auf Weiter.



Hinweis: In diesem Beispiel ist nur ein virtuelles System mit Leaf-1 verbunden, sodass nur eine IP-Adresse IPd erfordert. Hier wird eine zweite IP-Adresse hinzugefügt! Pn falls ein anderer Host eine Verbindung herstellt.

DHCP Policy Configuration Wizard

Configure settings for the policy

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



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

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

The current scope IP address range is 10.10.10.1 - 10.10.10.254

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

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

Start IP address:

End IP address:

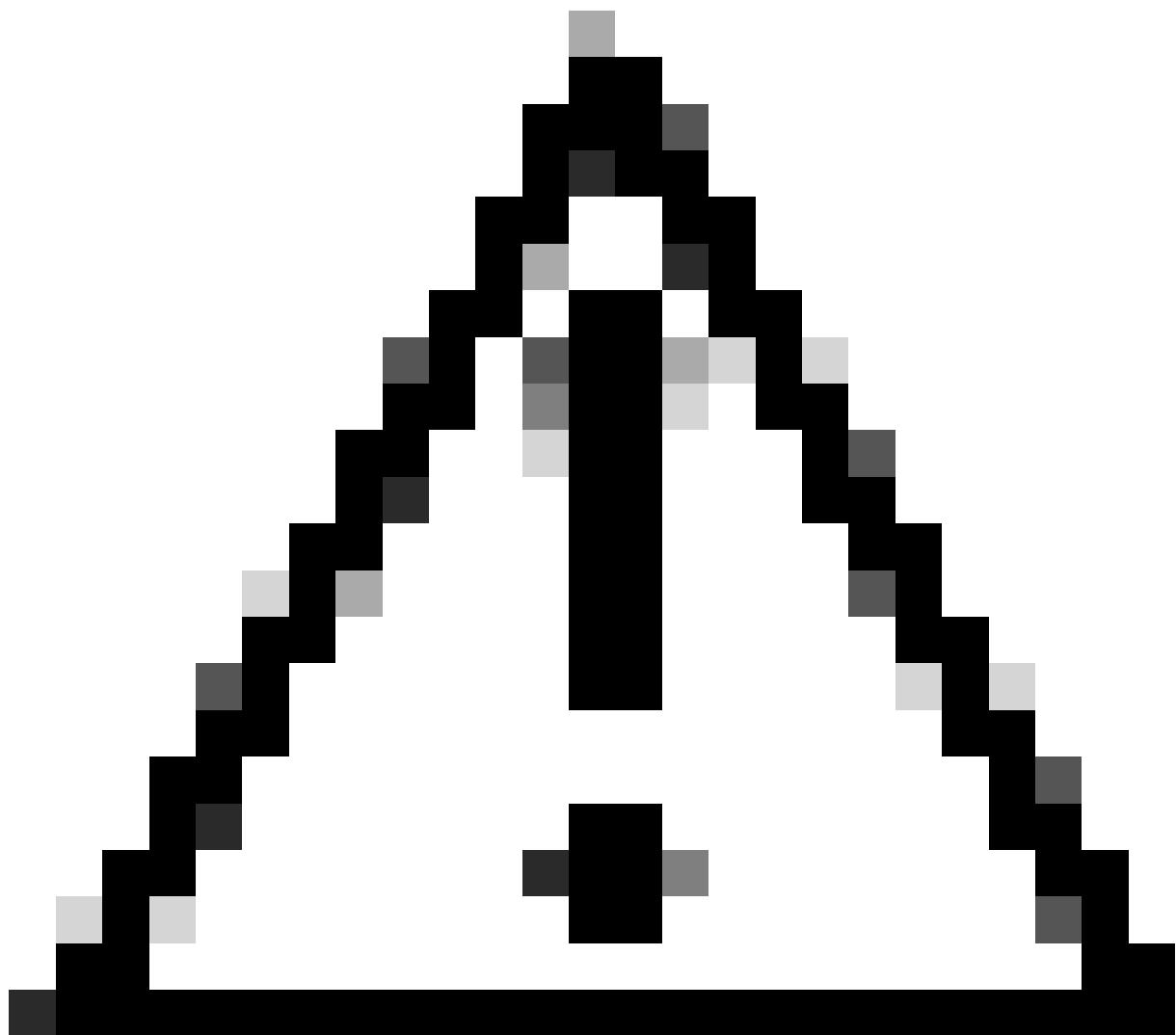
Percentage of IP address range: 0.8

< Back

Next >

Cancel

Schritt 5: Aktivieren Sie das Kontrollkästchen links neben 003 Router unter DCHP Standard Option. Schreiben Sie dann die IP-Adresse des Standard-Gateways für die Hosts, die zu dieser Richtlinie gehören, und drücken Sie Add. Klicken Sie auf Next (Weiter).



Vorsicht: Sie können mehrere Optionen auswählen. Wenn Sie sich jedoch nicht sicher sind, welchen Wert Sie eingeben sollen, sollten Sie dies nicht tun. Inkonsistente oder fehlerhafte Konfigurationen können zu unerwartetem Verhalten führen.

DHCP Policy Configuration Wizard

Configure settings for the policy

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



Vendor class:

DHCP Standard Options



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

Data entry

Server name:

Resolve

IP address:

10.10.10.1

Add
Remove
Up
Down

< Back

Next >

Cancel

Schritt 6: Überprüfen Sie die Richtlinienbedingungen, und klicken Sie auf Fertig stellen.

The screenshot shows the Microsoft DHCP Management console interface. The left pane displays a tree view of DHCP configurations, including scopes and policies. The right pane shows a detailed list of policies. One policy is selected, named "VNI 101010", which is described as "Policy to select scope for Leaf-1 using Remote-ID". The policy has a processing level of 1, is at scope level, and its address range is 10.10.10.2 - 10.10.10.3. It is currently enabled. The "Actions" column for this policy shows a "More Actions" option.

DCHP-Paket-Walk von Anfang bis Ende in VxLAN Fabric.

Erkennung gesendet von HOST-1

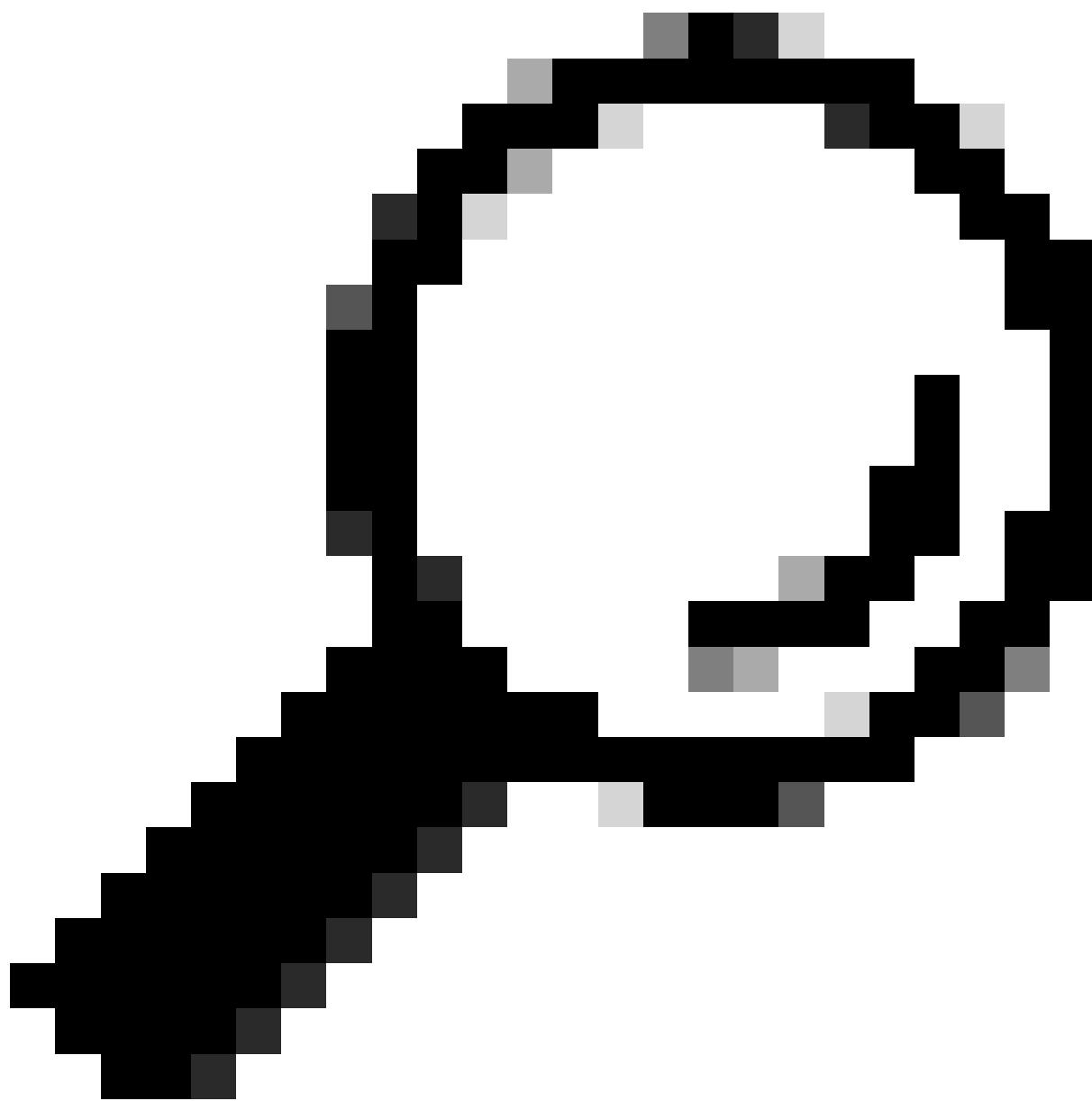
```
> Ethernet II, Src: 00:50:56:a5:fd:dd, Dst: ff:ff:ff:ff:ff:ff
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
< Dynamic Host Configuration Protocol (Discover)

    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: 000000000000000000000000
    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: (255) End
    Option End: 255
    Padding: 000000000000000000000000
```

Erkennung auf LEAF-1

Erkennung empfangen auf LEAF-1	Erkennung gesendet von LEAF-1
<pre> > 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: 0xe9e9e35087 Seconds elapsed: 0 > Bootp flags: 0x8000, Broadcast flag (Broadcast) = 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: 000000000000000000000000 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: 0103060ff1f212b2c2e2f7779f9fc> 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 Padding: 0000000000000000 </pre>	<pre> Ethernet II, Src: 70:7db9:b8:4d:af, Dst: 10:b3:3:d6:a4:85:97 > Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254 > User Datagram Protocol, Src Port: 65233, Dst Port: 4789 > Virtual extensible local Area Network Flags: 0x8080, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 0 > Ethernet II, Src: 70:7db9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe > Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 > User Datagram Protocol, Src Port: 67, Dst Port: 67 > Dynamic Host Configuration Protocol (Discover) Message type: Boot Request (1) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 1 Transaction ID: 0xe9e9e35087 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: 000000000000000000000000 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: 0103060ff1f212b2c2e2f7779f9fc> 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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00> > Option 82 Suboption: (1) Agent Circuit ID Length: 14 <Value: 0108000600018a9200a0000000> Agent Circuit ID: 0108000600018a9200a0000000000 > Option 82 Suboption: (2) Agent Remote ID Length: 6 <Value: 707db9b84daf> Agent Remote ID: 707db9b84daf > Option 82 Suboption: (151) VRF name/VPN ID Length: 9 <Value: 0074656e616e742d61> - VRF name: [Expert Info (Warning/Undecoded): Trailing stray characters] > Option 82 Suboption: (11) Server ID Override (10.10.10.1) Length: 4 <Value: 0a0aa0a0> Server ID Override: 10.10.10.1 > Option 82 Suboption: (5) Link selection (10.10.10.0) Length: 4 <Value: 0a0aa0a0> Link selection: 10.10.10.0 > Option: (255) End Padding: 0000000000000000 </pre>



Tipp: Das Bild vergrößert sich beim Doppelklick.

Erkennung auf SPINE

Erkennung empfangen auf SPINE	Erkennung gesendet von SPINE
-------------------------------	------------------------------

```

Ethernet II, Src: 70:7d:b9:b8:4d:a9, Dst: 10:b3:d6:a4:85:97
Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
User Datagram Protocol, Src Port: 65233, Dst Port: 4789
Virtual extensible Local Area Network
  Flags: 0x0800, VXLAN Network ID (VNI)
  Group Policy ID: 0
  VXLAN Network Identifier (VNI): 303030
  Reserved: 0
Ethernet II, Src: 70:7d:b9:b8:4d:a9, Dst: 02:00:0d:0d:0d:fe
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 000000000000000000000000
  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: 01005056a5ffff>
    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
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    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: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a00a00>
  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]
  Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a@01>
    Server ID Override: 10.10.10.1
  Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a@00>
    Link selection: 10.10.10.0
  Option: (255) End
  Option End: 255
  Padding: 0000000000000000

```

```

Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 60:26:aa:85:98:87
Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
User Datagram Protocol, Src Port: 65233, Dst Port: 4789
Virtual extensible Local Area Network
  Flags: 0x0800, VXLAN Network ID (VNI)
  Group Policy ID: 0
  VXLAN Network Identifier (VNI): 303030
  Reserved: 0
Ethernet II, Src: 70:7d:b9:b8:4d:a9, Dst: 02:00:0d:0d:0d:fe
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 000000000000000000000000
  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: 01005056a5ffff>
    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: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a00a00>
  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]
  Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a@01>
    Server ID Override: 10.10.10.1
  Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a@00>
    Link selection: 10.10.10.0
  Option: (255) End
  Option End: 255
  Padding: 0000000000000000

```

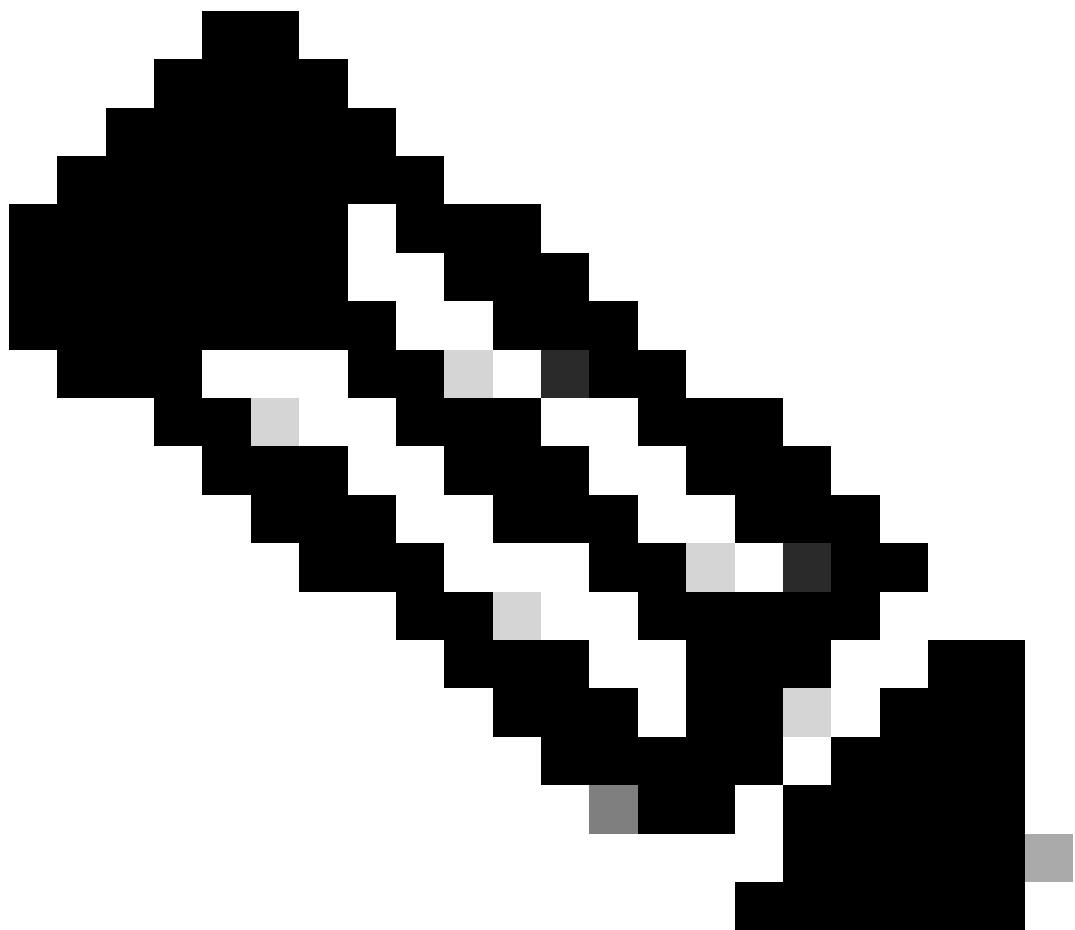
Erkennung auf LEAF-1-vPC

Erkennung empfangen auf LEAF-1-vPC	Erkennung gesendet von LEAF-1-vPC
------------------------------------	-----------------------------------

```

Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 60:26:aa:85:98:87
Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
User Datagram Protocol, Src Port: 65233, Dst Port: 4789
Virtual extensible Local Area Network
  Flags: 0x0800, VXLAN Network ID (VNI)
    Group Policy ID: 0
    VXLAN Network Identifier (VNI): 303030
    Reserved: 0
Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 02:00:0d:0d:0d:fe
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Boot 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: 000000000000000000000000
  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: 16
    <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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a00>
  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]
  Option 82 Suboption: (11) Server ID Override (10.10.10.1)
  Length: 4
  <Value: 0a0a0a01>
  Server ID Override: 10.10.10.1
  Option 82 Suboption: (5) Link selection (10.10.10.0)
  Length: 4
  <Value: 0a0a0a00>
  Link selection: 10.10.10.0
  Option: (255) End
  Padding: 00000000000000000000

```



Hinweis: LEAF-2-vPC empfängt das Discover-Paket, dieses wird jedoch nur geswitcht.
Die Ziel-MAC-Adresse gehört zum DHCP-Server.

Erkennung empfangen auf DHCP-Server

```
> Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
> Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
> User Datagram Protocol, Src Port: 67, Dst Port: 67
> Dynamic Host Configuration Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 000000000000000000000000
  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: 00000000000000000000
```

DCHP-Angebot von DCHP-Server gesendet

```
> 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: 000000000000000000000000
    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: 00000000000000000000
```

DHCP-Angebot für LEAF-2-vPC

Angebot erhalten bei LEAF-2-vPC	Angebot gesendet von LEAF-2-vPC
<pre> > Ethernet II, Src: 00:50:56:a5:de:cc, Dst: 00:00:00:00:00:00 > Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 > User Datagram Protocol, Src Port: 67, Dst Port: 67 > Dynamic Host Configuration Protocol (Offer) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 0 Transaction ID: 0xe0e35087 Seconds elapsed: 0 Bootp flags: 0x0000, Broadcast flag (Broadcast) 1... = Broadcast flag: Broadcast .000 0000 0000 0000 = Reserved flags: 0x0000 Client IP address: 0.0.0.0 Your (client) IP address: 10.10.10.3 Next server IP address: 10.10.10.150 Relay agent IP address: 172.16.10.8 Client MAC address: 00:50:56:a5:f1:dd Client hardware address padding: 000000000000000000000000 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) Option: (51) IP Address Lease Time Length: 4 <Value: 00015180> IP Address Lease Time: 1 day (86400) Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4 <Value: 0a0a0a01> DHCP Server Identifier: 10.10.10.1 Option: (3) Router Length: 4 <Value: 0a0a0a01> Router: 10.10.10.1 Option: (15) Domain Name Length: 10 <Value: 636973636f2e636f6d00> Domain Name: cisco.com Option: (82) Agent Information Option Length: 47 <Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a105040a0a0a0a00> 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 </pre>	<pre> > Ethernet II, Src: 00:26:aa:85:95:87, Dst: 10:b3:d61a4:85:97 > Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 > User Datagram Protocol, Src Port: 65518, Dst Port: 4789 > Virtual extensible Local Area Network Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 0 Ethernet II, Src: 02:00:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af > Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 > User Datagram Protocol, Src Port: 67, Dst Port: 67 > Dynamic Host Configuration Protocol (Offer) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 0 Transaction ID: 0xe0e35087 Seconds elapsed: 0 Bootp flags: 0x0000, Broadcast flag (Broadcast) 1... = Broadcast flag: Broadcast .000 0000 0000 0000 = Reserved flags: 0x0000 Client IP address: 0.0.0.0 Your (client) IP address: 10.10.10.3 Next server IP address: 10.10.10.150 Relay agent IP address: 172.16.10.8 Client MAC address: 00:50:56:a5:f1:dd Client hardware address padding: 000000000000000000000000 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) Option: (51) IP Address Lease Time Length: 4 <Value: 00015180> IP Address Lease Time: 1 day (86400) Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4 <Value: 0a0a0a01> DHCP Server Identifier: 10.10.10.1 Option: (3) Router Length: 4 <Value: 0a0a0a01> Router: 10.10.10.1 Option: (15) Domain Name Length: 10 <Value: 636973636f2e636f6d00> Domain Name: cisco.com Option: (82) Agent Information Option Length: 47 <Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a105040a0a0a00> 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 </pre>

DHCP-Angebot vPC SPINE

Angebot erhalten auf SPINE	Angebot gesendet von SPINE
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<pre> > Ethernet II, Src: 60:26:aa:85:95:87, Dst: 10:b3:d6:a4:85:97 > Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 > User Datagram Protocol, Src Port: 65518, Dst Port: 4789 > Virtual extensible Local Area Network > Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 0 > Ethernet II, Src: 02:00:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af > Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 > User Datagram Protocol, Src Port: 67, Dst Port: 67 > Dynamic Host Configuration Protocol (Offer) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 0 Transaction ID: 0xe9e35087 Seconds elapsed: 0 Bootp flags: 0x8000, Broadcast flag (Broadcast) 1... = Broadcast flag: Broadcast .000 0000 0000 = Reserved flags: 0x0000 Client IP Address: 0.0.0.0 Your (client) IP address: 10.10.10.3 Next server IP address: 10.10.10.150 Relay agent IP address: 172.16.10.8 Client MAC address: 00:50:56:a5:fd:dd Client hardware address padding: 00000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP Option: (53) DHCP Message Type (Offer) Length: 1 <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) Option: (51) IP Address Lease Time Length: 4 <Value: 00015180> IP Address Lease Time: 1 day (86400) Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4 <Value: 0a0a0a01> DHCP Server Identifier: 10.10.10.1 Option: (3) Router Length: 4 <Value: 0a0a0a01> Router: 10.10.10.1 Option: (15) Domain Name Length: 10 <Value: 636973636f2e636f6d00> Domain Name: cisco.com Option: (82) Agent Information Option Length: 47 <Value: 010e0108000600018a0200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00> 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: > [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: 235 </pre>	<pre> > Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af > Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 > User Datagram Protocol, Src Port: 65518, Dst Port: 4789 > Virtual extensible Local Area Network > Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 0 > Ethernet II, Src: 02:00:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af > Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 > User Datagram Protocol, Src Port: 67, Dst Port: 67 > Dynamic Host Configuration Protocol (Offer) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 0 Transaction ID: 0xe9e35087 Seconds elapsed: 0 Bootp flags: 0x8000, Broadcast flag (Broadcast) Client IP address: 0.0.0.0 Your (client) IP address: 10.10.10.3 Next server IP address: 10.10.10.150 Relay agent IP address: 172.16.10.8 Client MAC address: 00:50:56:a5:fd:dd Client hardware address padding: 00000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP 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) 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: (15) Domain Name Length: 10 <Value: 636973636f2e636f6d00> Domain Name: cisco.com Option: (82) Agent Information Option Length: 47 <Value: 010e0108000600018a0200a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00> 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: > [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: 235 </pre>
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DHCP-Angebot auf LEAF-1

Auf LEAF-1 empfangenes Angebot	Senden auf LEAF-1
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> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af
> Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5
> User Datagram Protocol, Src Port: 65518, Dst Port: 4789
> Virtual extensible Local Area Network
  > Flags: 0x0800, VXLAN Network ID (VNI)
    Group Policy ID: 0
    VXLAN Network Identifier (VNI): 303030
    Reserved: 0
> Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af
> Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8
> User Datagram Protocol, Src Port: 67, Dst Port: 67
> Dynamic Host Configuration Protocol (Offer)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 10.10.10.3
  Next server IP address: 10.10.10.150
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000000000000000
  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: 00008c00>
    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: (15) Domain Name
    Length: 10
    <Value: 6369736f2e636f6d00>
    Domain Name: cisco.com
  Option: (82) Agent Information Option
    Length: 47
    <Value: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e610e742d610b040a0a0105040a0a0a00>
  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: 0074656e610e742d61>
    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
  > 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: 00000000000000000000000000000000
    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: 00008c00>
    Renewal Time Value: 12 hours (43200)
  Option: (59) Rebinding Time Value
    Length: 4
    <Value: 00012750>
    Rebinding Time Value: 21 hours (75600)
  Option: (51) IP Address Lease Time
    Length: 4
    <Value: 00015180>
    IP Address Lease Time: 1 day (86400)
  Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  Option: (3) Router
    Length: 4
    <Value: 0a0a0a01>
    Router: 10.10.10.1
  Option: (15) Domain Name
    Length: 10
    <Value: 6369736f2e636f6d00>
    Domain Name: cisco.com
  Option: (255) End
  Option End: 255

```

DHCP-Angebot empfangen auf 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: 000000000000000000000000
    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)
    < Option: (51) IP Address Lease Time
        Length: 4
        <Value: 00015180>
        IP Address Lease Time: 1 day (86400)
    < Option: (54) DHCP Server Identifier (10.10.10.1)
        Length: 4
        <Value: 0a0a0a01>
        DHCP Server Identifier: 10.10.10.1
    < Option: (3) Router
        Length: 4
        <Value: 0a0a0a01>
        Router: 10.10.10.1
    < Option: (15) Domain Name
        Length: 10
        <Value: 636973636f2e636f6d00>
        Domain Name: cisco.com
    < Option: (255) End
        Option End: 255
```

Anfrage gesendet von 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)
        .000 .000 0000 0000 = 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: 000000000000000000000000
    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
```

Anfrage zu LEAF-1

Anfrage erhalten auf LEAF-1	Anfrage gesendet von LEAF-1
<pre> > 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: 0x0000, Broadcast flag (Broadcast) 1... = Broadcast flag: Broadcast .000 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: 000000000000000000000000 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: 0x00 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 </pre>	<pre> Ethernet II, Src: 70:7d:b9:b8:4daf, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254 User Datagram Protocol, Src Port: 51730, Dst Port: 4789 Virtual eXtensible Local Area Network Flags: 0x8000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 383030 Reserved: 0 Ethernet II, Src: 70:7d:b9:b8:4daf, Dst: 02:00:0d:0d:0d:fe Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (Request) Message type: Boot Request (1) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 1 Transaction ID: 0xe9e35087 Seconds elapsed: 0 Bootp flags: 0x0000, Broadcast flag (Broadcast) Client IP address: 0.0.0.0 Your (client) IP address: 0.0.0.0 Next server IP address: 172.16.10.8 Relay agent IP address: 172.16.10.8 Client MAC address: 00:50:56:a5:fd:dd Client hardware address padding: 000000000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP Option: (53) DHCP Message Type (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: 010e008000500018a9200a000000000020670d9b84daf9790074656e616e742d610b040a0a0105040a0a0a00> Option 82 Suboption: (1) Agent Circuit ID Length: 14 <Value: 010800600018a9200a00000000> Agent Circuit ID: 0108000600018a9200a00000000 Option 82 Suboption: (2) Agent Remote ID Length: 14 <Value: 707d9b84daf> Agent Remote ID: 707d9b84daf Option 82 Suboption: (151) VRF name/VPN ID Length: 9 <Value: 0074656e616e742d61> VRF name: [Expert Info (Warning/Undecoded): Trailing stray characters] Option 82 Suboption: (11) Server ID Override (10.10.10.1) Length: 4 <Value: 0a0a0a01> Server ID Override: 10.10.10.1 Option 82 Suboption: (5) Link selection (10.10.10.8) Length: 4 <Value: 0a0a0a00> Link selection: 10.10.10.8 Option: (255) End Option End: 255 </pre>

Anfrage zu SPINE

Anfrage erhalten auf SPINE	Anfrage gesendet von SPINE
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```

Ethernet II, Src: 70:7db9:b8:4daf, Dst: 10:b3:d6:a4:85:97
Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
User Datagram Protocol, Src Port: 51730, Dst Port: 4789
Virtual extensible Local Area Network
  Flags: 0x0000, VLAN Network Identifier (VNI)
  Group Policy ID: 0
  VLAN Network Identifier (VNI): 303030
  Reserved: 0
Ethernet II, Src: 70:7db9:b8:4daf, Dst: 02:00:0d:0d:0d:fe
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  > Boot 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: 00000000000000000000000000000000
  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: 0aa0a0a03>
    Requested IP Address: 10.10.10.3
  - Option: (54) DHCP Server Identifier (10.10.10.150)
    Length: 4
    <Value: 0aa0a0a96>
    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: 01030601ff212b2c2e2f7779f9fc>
    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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00>
  - Option 82 Suboption: (1) Agent Circuit ID
    Length: 14
    <Value: 0108000600018a9200a0000000>
    Agent Circuit ID: 0108000600018a9200a0000000000
  - Option 82 Suboption: (2) Agent Remote ID
    Length: 6
    <Value: 707db9b84daf>
    Agent Remote ID: 707db9b84daf
  - Option 82 Suboption: (151) VRF name/VPN ID
    Length: 9
    <Value: 0074656e616e742d61>
    > VRF name:
      [Expert Info (Warning/Undecoded): Trailing stray characters]
  - Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    Server ID Override: 10.10.10.1
  - Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a0a00>
    Link selection: 10.10.10.0
  - Option: (255) End
    Option End: 255

```

Anforderung auf LEAF-2-vPC

Empfangen von PCd auf LEAF-2-vPC anfordern	Anforderung wird von vPCAF-2-vPC gesendet
<pre> Ethernet II, Src: 10:83:d6:a4:85:97, Dst: 60:26:aa:85:95:87 > Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.13.254 > User Datagram Protocol, Src Port: 51730, Dst Port: 4789 > Virtual extensible Local Area Network > Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 0 Ethernet II, Src: 70:7db9:b8:4daf, Dst: 02:00:0d:0d:0d:fe > Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 > User Datagram Protocol, Src Port: 67, Dst Port: 67 > Dynamic Host Configuration Protocol (Request) Message type: Boot Request (1) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 1 Transaction ID: 0xe9e9e35087 Seconds elapsed: 0 > Boot 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: 000000000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP > Option: (53) DHCP Message Type (Request) Length: 1 <Value: 0x3> DHCP: Request (3) > Option: (61) Client identifier Length: 7 <Value: #0005056a5fddd> 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: 0xa0a0a03> Requested IP Address: 10.10.10.3 > Option: (54) DHCP Server Identifier (10.10.10.150) Length: 4 <Value: 0xa0a0a096> 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: 0x0 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: #01030601ff212b2c2e2f7779f9fc> 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: #010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00> > 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 </pre>	<pre> > Ethernet II, Src: 60:26:aa:85:95:87, Dst: 00:50:56:a5:dc:ca > Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150 > User Datagram Protocol, Src Port: 67, Dst Port: 67 > Dynamic Host Configuration Protocol (Request) Message type: Boot Request (1) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 1 Transaction ID: 0xe9e9e35087 Seconds elapsed: 0 > Boot flags: 0x8000, Broadcast flag (Broadcast) 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: 000000000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP > Option: (53) DHCP Message Type (Request) Length: 1 <Value: 0x3> DHCP: Request (3) > Option: (61) Client identifier Length: 7 <Value: #0005056a5fddd> 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: 0xa0a0a03> Requested IP Address: 10.10.10.3 > Option: (54) DHCP Server Identifier (10.10.10.150) Length: 4 <Value: 0xa0a0a096> 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: 0x0 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: #01030601ff212b2c2e2f7779f9fc> Parameter Request List Item: (1) Subnet Mask Parameter Request List Item: (3) Router Parameter Request List Item: (6) Domain Name Server Parameter Request List Item: (15) Domain Name Parameter Request List Item: (31) Perform Router Discover Parameter Request List Item: (33) Static Route Parameter Request List Item: (43) Vendor-Specific Information Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type Parameter Request List Item: (47) NetBIOS over TCP/IP Scope Parameter Request List Item: (119) Domain Search Parameter Request List Item: (121) Classless Static Route Parameter Request List Item: (249) Private/Classless Static Route (Microsoft) Parameter Request List Item: (252) Private/Proxy autodiscovery > Option: (82) Agent Information Option Length: 47 <Value: #010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0105040a0a0a00> > Option 82 Suboption: (1) Agent Circuit ID Length: 14 <Value: #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 </pre>

Anfrage auf DHCP-Server empfangen

```

> Ethernet II, Src: 60:26:aa:85:95:87, Dst: 00:50:56:a5:dc:ca
> Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
> User Datagram Protocol, Src Port: 67, Dst Port: 67
> Dynamic Host Configuration Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 1
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 000000000000000000000000
  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: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
  > Option 82 Suboption: (1) Agent Circuit ID
    Length: 14
    <Value: 0108000600018a9200a000000000>
    Agent Circuit ID: 0108000600018a9200a000000000
  > Option 82 Suboption: (2) Agent Remote ID
    Length: 6
    <Value: 707db9b84daf>
    Agent Remote ID: 707db9b84daf
  > Option 82 Suboption: (151) VRF name/VPN ID
    Length: 9
    <Value: 0074656e616e742d61>
    > VRF name:
  > Option 82 Suboption: (11) Server ID Override (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    Server ID Override: 10.10.10.1
  > Option 82 Suboption: (5) Link selection (10.10.10.0)
    Length: 4
    <Value: 0a0a0a00>
    Link selection: 10.10.10.0
  > Option: (255) End
  Option End: 255

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ACK gesendet vom DHCP-Server

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> 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)
    . . . . . = 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: 000000000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (ACK)
    Length: 1
    <Value: 05>
    DHCP: ACK (5)
  Option: (58) Renewal Time Value
    Length: 4
    <Value: 0000a8c0>
    Renewal Time Value: 12 hours (43200)
  Option: (59) Rebinding Time Value
    Length: 4
    <Value: 00012750>
    Rebinding Time Value: 21 hours (75600)
  Option: (51) IP Address Lease Time
    Length: 4
    <Value: 00015180>
    IP Address Lease Time: 1 day (86400)
  Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  Option: (1) Subnet Mask (255.255.255.0)
    Length: 4
    <Value: ffffff00>
    Subnet Mask: 255.255.255.0
  Option: (81) Client Fully Qualified Domain Name
    Length: 3
    <Value: 00ffff>
    Flags: 0x00
    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: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
  Option 82 Suboption: (1) Agent Circuit ID
    Length: 14
    <Value: 0108000600018a9200a0000000000>
    Agent Circuit ID: 0108000600018a9200a0000000000
  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 auf LEAF-2-vPC

ACK empfangen auf LEAF-2-vPC	ACK gesendet von LEAF-2-vPC
<pre> Ethernet II, Src: 00:50:56:a5:dc:ca, Dst: 00:00:0a:0a:0a:0a (08:02:00:00:00:00) 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 Boot flags: 0x8000, Broadcast flag (Broadcast) = 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: 000000000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP Option: (53) DHCP Message Type (ACK) Length: 1 <Value: 05> DHCP: ACK (5) Option: (58) Renewal Time Value Length: 4 <Value: 0000a8c0> Renewal Time Value: 12 hours (43200) Option: (59) Rebinding Time Value Length: 4 <Value: 00012750> Rebinding Time Value: 21 hours (75600) Option: (51) IP Address Lease Time Length: 4 <Value: 00015180> IP Address Lease Time: 1 day (86400) Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4 <Value: 0a0a0a01> DHCP Server Identifier: 10.10.10.1 Option: (1) Subnet Mask (255.255.255.0) Length: 4 <Value: ffffff00> Subnet Mask: 255.255.255.0 Option: (81) Client Fully Qualified Domain Name Length: 3 <Value: 0fff> 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: 010e0108000000018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a105040a0a0a00> 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 </pre>	<pre> Ethernet II, Src: 60:26:aa:85:95:87, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual extensible Local Area Network Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 6 Ethernet II, Src: 02:00:0d:0d:0d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: Transaction ID: 0xe9e35087 Seconds elapsed: 0 Boot flags: 0x8000, Broadcast flag (Broadcast) = 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: 000000000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP Option: (53) DHCP Message Type (ACK) Length: 1 <Value: 05> DHCP: ACK (5) Option: (58) Renewal Time Value Length: 4 <Value: 0000a8c0> Renewal Time Value: 12 hours (43200) Option: (59) Rebinding Time Value Length: 4 <Value: 00012750> Rebinding Time Value: 21 hours (75600) Option: (51) IP Address Lease Time Length: 4 <Value: 00015180> IP Address Lease Time: 1 day (86400) Option: (54) DHCP Server Identifier (10.10.10.1) Length: 4 <Value: 0a0a0a01> DHCP Server Identifier: 10.10.10.1 Option: (1) Subnet Mask (255.255.255.0) Length: 4 <Value: ffffff00> Subnet Mask: 255.255.255.0 Option: (81) Client Fully Qualified Domain Name Length: 3 <Value: 0fff> 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: 010e0108000000018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a105040a0a00> 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 </pre>

ACK on SPINE

ACK empfangen auf SPINE	ACK gesendet von SPINE
<pre> Ethernet II, Src: 60:26:aa:85:97:87, Dst: 10:b3:d6:a4:85:97 Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual extensible Local Area Network Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 0 Ethernet II, Src: 02:00:0d:0d:b9:4d, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 0 Transaction ID: 0xe6e9e35087 Seconds elapsed: 0 Boot flags: 0x8000, Broadcast flag (Broadcast) 1... = Broadcast flag: Broadcast .000 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:f1:dd Client hardware address padding: 00000000000000000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP Option: (53) DHCP Message Type (ACK) Length: 1 <Value: 0\$> 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) Options: (54) DHCP Server Identifier (10.10.10.1) Length: 4 <Value: 0a0a0a01> DHCP Server Identifier: 10.10.10.1 Options: (1) Subnet Mask (255.255.255.0) Length: 4 <Value: ffffff00> Subnet Mask: 255.255.255.0 Options: (81) Client Fully Qualified Domain Name Length: 3 <Value: 0xffff> Flags: 0x00 0000 = Reserved flags: 0x0 0... = Server DONS: Some server updates 0. = Encoding: ASCII encoding 0. = Server overrides: No override 0 = Server: Client A-RR result: 255 PTR-RR result: 255 Option: (3) Router Length: 4 <Value: 0a0a0a01> Router: 10.10.10.1 Option: (15) Domain Name Length: 10 <Value: 636973636f2e636f6d00> Domain Name: cisco.com Option: (82) Agent Information Option Length: 47 <Value: 010e01080006000018a9200a00000000000206707db9b84daf970900874656e610e742d610b040a0a0a0105040a0a0a0a00> 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 </pre>	<pre> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5 User Datagram Protocol, Src Port: 65518, Dst Port: 4789 Virtual extensible Local Area Network Flags: 0x0000, VXLAN Network ID (VNI) Group Policy ID: 0 VXLAN Network Identifier (VNI): 303030 Reserved: 0 Ethernet II, Src: 02:00:0d:0d:b9:4d:fe, Dst: 70:7d:b9:b8:4d:af Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8 User Datagram Protocol, Src Port: 67, Dst Port: 67 Dynamic Host Configuration Protocol (ACK) Message type: Boot Reply (2) Hardware type: Ethernet (0x01) Hardware address length: 6 Hops: 0 Transaction ID: 0xe6e9e35087 Seconds elapsed: 0 Boot flags: 0x8000, Broadcast flag (Broadcast) 1... = Broadcast flag: Broadcast .000 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:f1:dd Client hardware address padding: 00000000000000000000000000000000 Server host name not given Boot file name not given Magic cookie: DHCP Option: (53) DHCP Message Type (ACK) Length: 1 <Value: 0\$> 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) Options: (54) DHCP Server Identifier (10.10.10.1) Length: 4 <Value: 0a0a0a01> DHCP Server Identifier: 10.10.10.1 Options: (1) Subnet Mask (255.255.255.0) Length: 4 <Value: ffffff00> Subnet Mask: 255.255.255.0 Options: (81) Client Fully Qualified Domain Name Length: 3 <Value: 0xffff> Flags: 0x00 0000 = Reserved flags: 0x0 0... = Server DONS: Some server updates 0. = Encoding: ASCII encoding 0. = Server overrides: No override 0 = Server: Client A-RR result: 255 PTR-RR result: 255 Option: (3) Router Length: 4 <Value: 0a0a0a01> Router: 10.10.10.1 Option: (15) Domain Name Length: 10 <Value: 636973636f2e636f6d00> Domain Name: cisco.com Option: (82) Agent Information Option Length: 47 <Value: 010e01080006000018a9200a00000000000206707db9b84daf970900874656e610e742d610b040a0a0a0105040a0a0a00> 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 </pre>

ACK auf LEAF-1

ACK empfangen auf LEAF-1	ACK gesendet von LEAF-1
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> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 70:7d:b9:b8:4d:af
> Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5
> User Datagram Protocol, Src Port: 65518, Dst Port: 4789
Virtual Extensible Local Area Network
  Flags: 0x0000, VXLAN Network ID (VNI)
    Group Policy ID: 0
    VXLAN Network Identifier (VNI): 303030
    Reserved: 0
> Ethernet II, Src: 02:00:0d:0d:bdfc, Dst: 70:7d:b9:b8:4d:af
> Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8
> User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (ACK)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Boot 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: 0fff>
    Flags: 0x00
      0000 .... = Reserved flags: 0x0
      .... 0... = Server DDNS: Some server updates
      .... .0.. = Encoding: ASCII encoding
      .... ..0. = Server overrides: No override
      .... .0 = Server: Client
    A-RR result: 255
    PTR-RR result: 255
  Option: (3) Router
    Length: 4
    <Value: 0a0a0a01>
    Router: 10.10.10.1
  Option: (15) Domain Name
    Length: 10
    <Value: 636973636f2e636f6d00>
    Domain Name: cisco.com
Option: (82) Agent Information Option
  Length: 47
  <Value: 010e0108000600018a9200a00000000206707db9b84daf97090074656e616e742d610b040a0a0185040a0a0a00>
  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:
      [Insert 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
> 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
  Boot 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: 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: 0fff>
    Flags: 0x00
      0000 .... = Reserved flags: 0x0
      .... 0... = Server DDNS: Some server updates
      .... .0.. = Encoding: ASCII encoding
      .... ..0. = Server overrides: No override
      .... .0 = Server: Client
    A-RR result: 255
    PTR-RR result: 255
  Option: (3) Router
    Length: 4
    <Value: 0a0a0a01>
    Router: 10.10.10.1
  Option: (15) Domain Name
    Length: 10
    <Value: 636973636f2e636f6d00>
    Domain Name: cisco.com
  Option: (255) End
  Option End: 255

```

ACK auf HOST-1

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

Zugehörige Informationen

[Konfigurieren des VXLAN-BGP-EVPN](#)

[Konfigurieren von VXLAN](#)

[Fehlerbehebung bei DHCP-bezogenen Problemen auf dem Nexus 9000](#)

[Cisco Nexus Serie 9000 NX-OS VXLAN Konfigurationsleitfaden, Version 10.4\(x\)](#)

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