Configuration et vérification de DHCP dans un fabric VxLAN pour Nexus 9000 avec NX-OS et Windows Server 2022

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ACK sur LEAF-1

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Informations connexes

Introduction

Ce document décrit comment configurer et dépanner DHCP dans un fabric VxLAN avec des commutateurs Nexus 9000.

Conditions préalables

Exigences

Cisco vous recommande de prendre connaissance des rubriques suivantes :

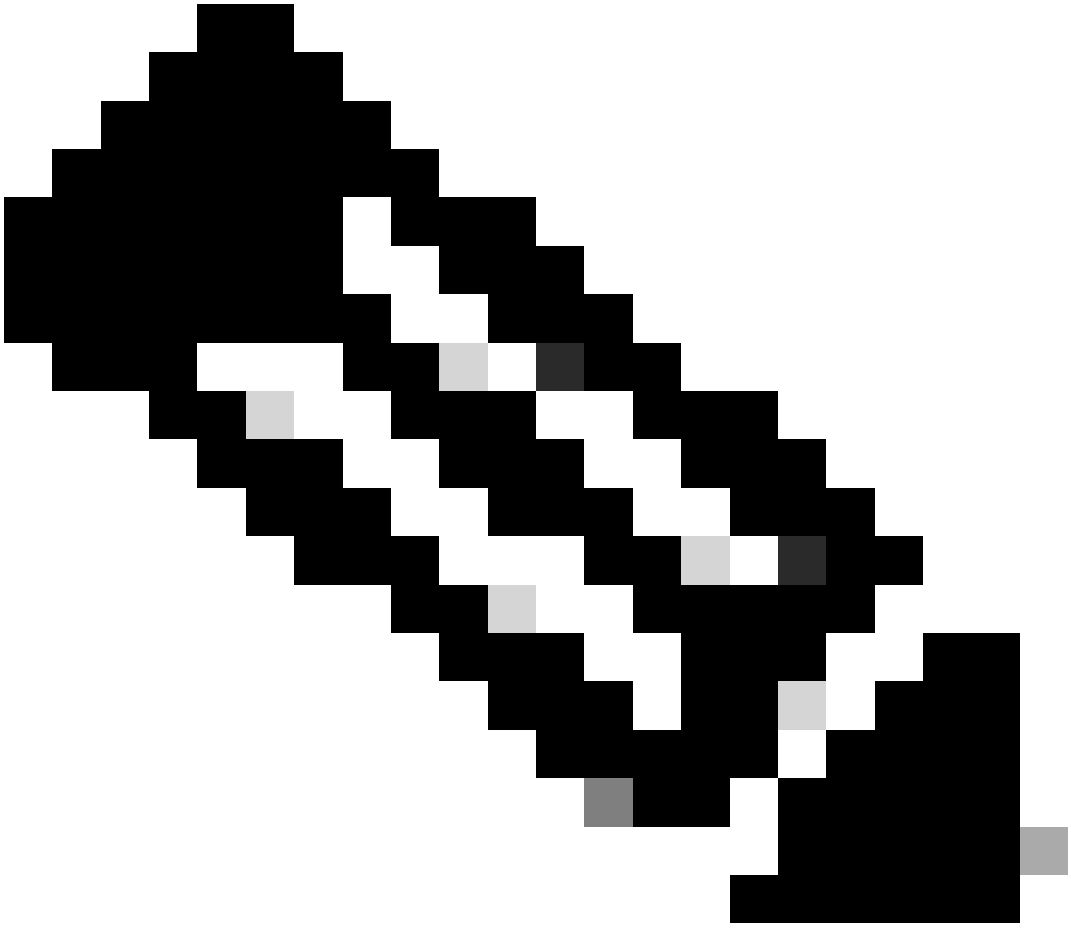
- Logiciel Nexus NX-OS.
- Virtual Port Channel (vPC).
- VxLAN BGP L2VPN EVPN
- BGP address-family IPv4
- OSPF
- PIM multidiffusion (mode intermédiaire)
- DHCP

Composants utilisés

Les informations contenues dans ce document sont basées sur les versions de matériel et de logiciel suivantes :

- Cisco Nexus 9000 avec Cisco NX-OS.
  - N9K-C93180YC-EX
  - N9K-C93180YC-FX
  - NX-OS 10.3(4a)
- Centre de données Windows Server 2022

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. Si votre réseau est en ligne, assurez-vous de bien comprendre l’incidence possible des commandes.



Remarque : toute question relative à la configuration et à l'intégrabilité de logiciels ou de matériels tiers n'est pas prise en charge par Cisco. L'utilisation d'outils tiers est le meilleur moyen de démontrer votre configuration et votre fonctionnement avec les équipements Cisco au client.

Informations générales

Configuration de sous-couche et de superposition pour VxLAN en laboratoire

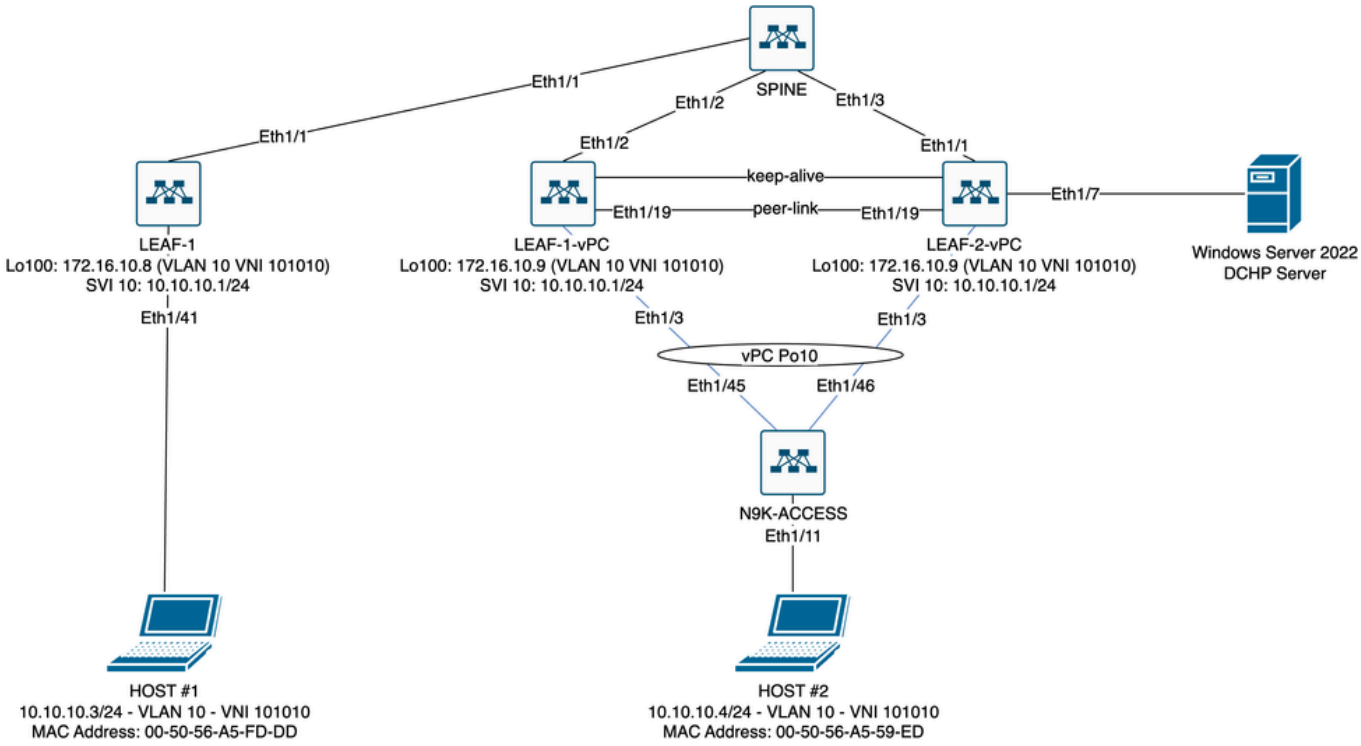


Schéma de fabric VxLAN en laboratoire

- COLONNE VERTÉBRALE :
  - Ce commutateur Nexus envoie des paquets DHCP (Discover, Offer, Request, Ack) sans être décapsulé dans ce scénario. Seul l'en-tête externe est utilisé.
  - Sert de points de routage centraux dans la structure du réseau.
  - Responsable de l'interconnexion de tous les commutateurs LEAF et de la facilitation du flux de données entre eux.
  - Participe au protocole BGP pour distribuer des routes EVPN aux commutateurs LEAF.
  - Effectue le routage IP et peut acheminer le trafic entre différents sous-réseaux ou segments VxLAN en examinant les en-têtes IP externes.
  - Sépare le réseau de superposition (VxLAN) du réseau physique sous-jacent.
  - Gère le sous-réseau avec les protocoles de routage IP traditionnels, tandis que le sous-réseau est géré par VxLAN avec BGP EVPN, fournissant une architecture réseau évolutive et flexible.

- LEAF-1 :
  - Les commutateurs LEAF fournissent une connectivité physique pour les terminaux tels que les serveurs, les périphériques de stockage et d'autres appareils réseau.
  - Les commutateurs LEAF agissent comme des VTEP, ce qui signifie qu'ils encapsulent et désencapsulent les paquets VxLAN.
  - Dans ce scénario, HOST#1 effectue la requête d'adresse IP.
  - LEAF-1 est responsable de l'encapsulation des paquets DHCP dans l'en-tête VxLAN.
  - L'HÔTE 1 reçoit des paquets DHCP de manière transparente en tant qu'Ethernet classique.

- LEAF-1-vPC et LEAF-2-vPC :
  - Les commutateurs LEAF participent au plan de contrôle EVPN en exécutant le protocole BGP et en échangeant des informations de route. Cela permet la distribution

des informations d'adresses MAC et IP, garantissant que le trafic peut être acheminé efficacement à travers le fabric VxLAN.
    - Dans ce scénario, le serveur DHCP est associé au VLAN 10 avec le VNI 101010, tout comme l’HÔTE 1. Cela signifie qu'il s'agit uniquement du pontage VxLAN.
    - Si le serveur DHCP était associé à un VNI autre que l’hôte 1, un L3VNI serait strictement nécessaire pour le routage. Le VNI source et de destination doit être créé.
    - Le serveur DCHP reçoit des paquets DCHP de manière transparente en tant qu'Ethernet classique.
    - Le trafic du module BUM est reçu par les deux commutateurs Nexus dans vPC, mais seul le commutateur Nexus principal opérationnel dans vPC envoie le trafic. Le commutateur Nexus secondaire abandonne le trafic. Dans ce scénario, LEAF-1-vPC est le principal système opérationnel.
    - L'utilisation d'infra-VLAN est obligatoire, car si l'interface de LEAF-2-vPC vers SPINE tombe en panne, les paquets DHCP ne peuvent pas être envoyés. Pour envoyer du trafic encapsulé par VxLAN à LEAF-1-vPC, ce VLAN de sauvegarde est requis. De cette façon, LEAF-1-vPC pouvait envoyer des paquets DCHP à SPINE.

- N9K-ACCESS :
    - Ce commutateur Nexus fournit uniquement la connectivité aux deux leafs à l'aide d'un port-channel vPC à des fins de redondance vers HOST#2

DOS

```
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
```

LEAF-1

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

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

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

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

spanning-tree vlan 10 priority 4096

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

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

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

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

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

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

```
  member vni 303030 associate-vrf

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

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

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

router ospf 1

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

LEAF-1-vPC

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

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

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

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

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

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

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

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

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

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

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

interface mgmt0
  vrf member management
  ip address 10.88.238.194/29

interface loopback0
```

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

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

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

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

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

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

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

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

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

```
  member vni 303030 associate-vrf

router ospf 1

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

LEAF-2-vPC

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

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

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

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

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

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

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

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

system nve infra-vlans 777

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

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

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

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

interface mgmt0
  vrf member management
  ip address 10.88.238.195/29

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

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

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

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

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

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

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

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

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

```
  member vni 303030 associate-vrf

router ospf 1

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

ACCÈS N9K

```
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
```

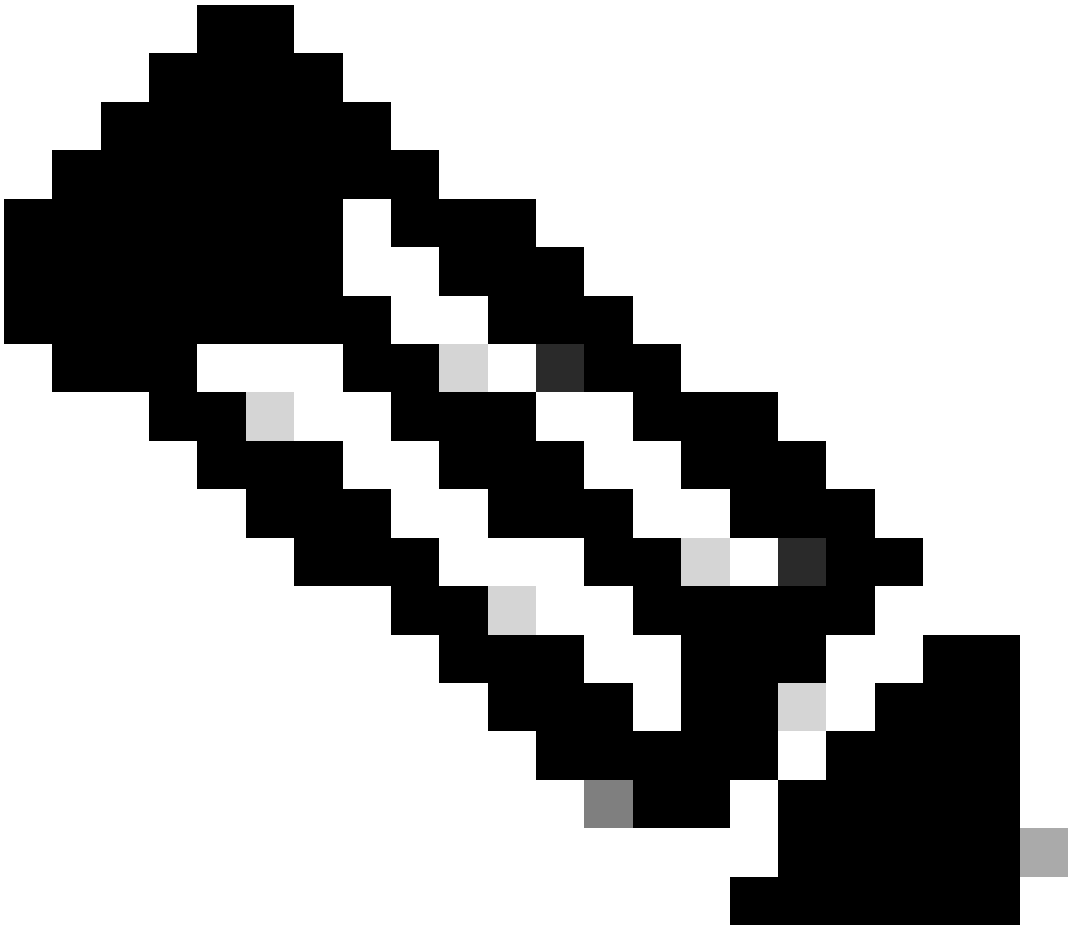
```
switchport mode trunk
channel-group 10 mode active
no shutdown
```

Configuration DHCP sur les commutateurs Nexus

LEAF-1

Étape 1. Activez la fonctionnalité DCHP.

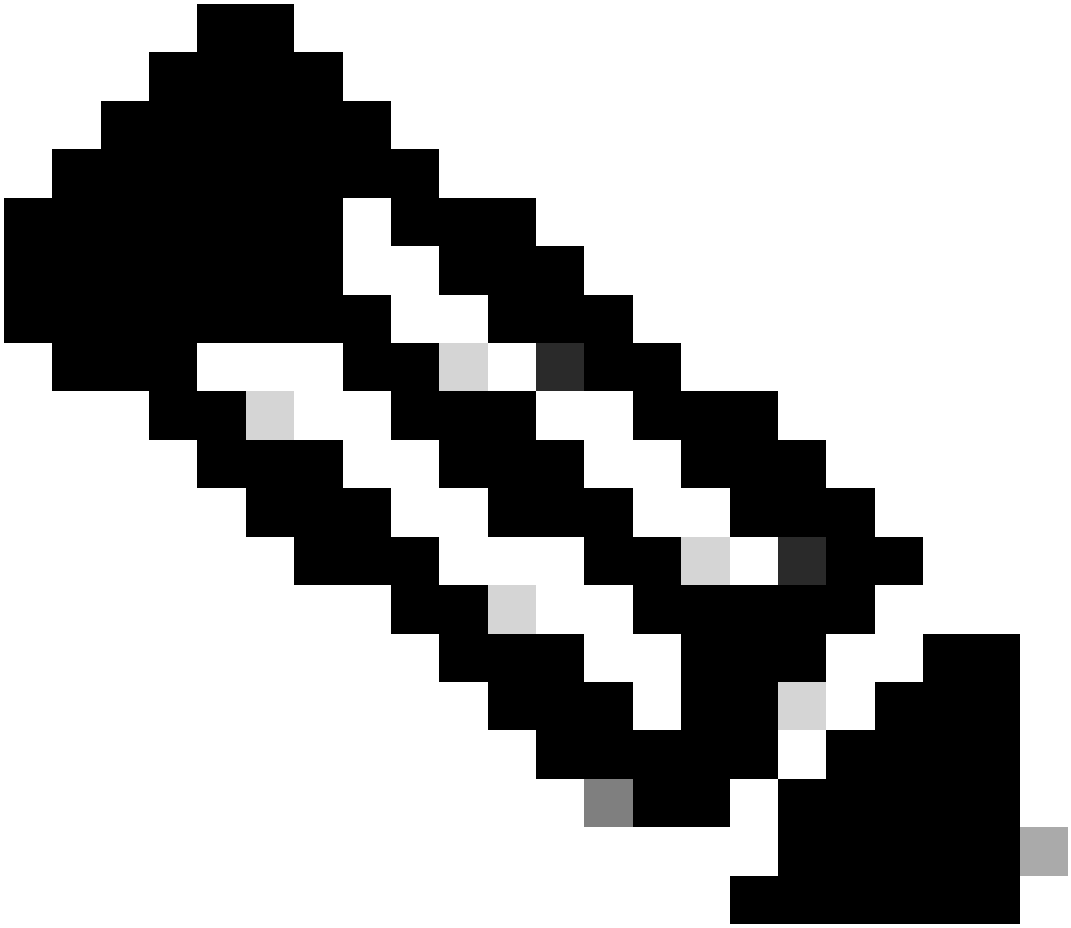
```
LEAF-1(config)# feature dhcp
```



> Remarque : le serveur DHCP et la commande relay agent service dhcp, ip dhcp relay, et ipv6 dhcp relay sont activés par défaut depuis NX-OS 7.x.

Étape 2. Appliquez la commande ip dhcp relay information option.

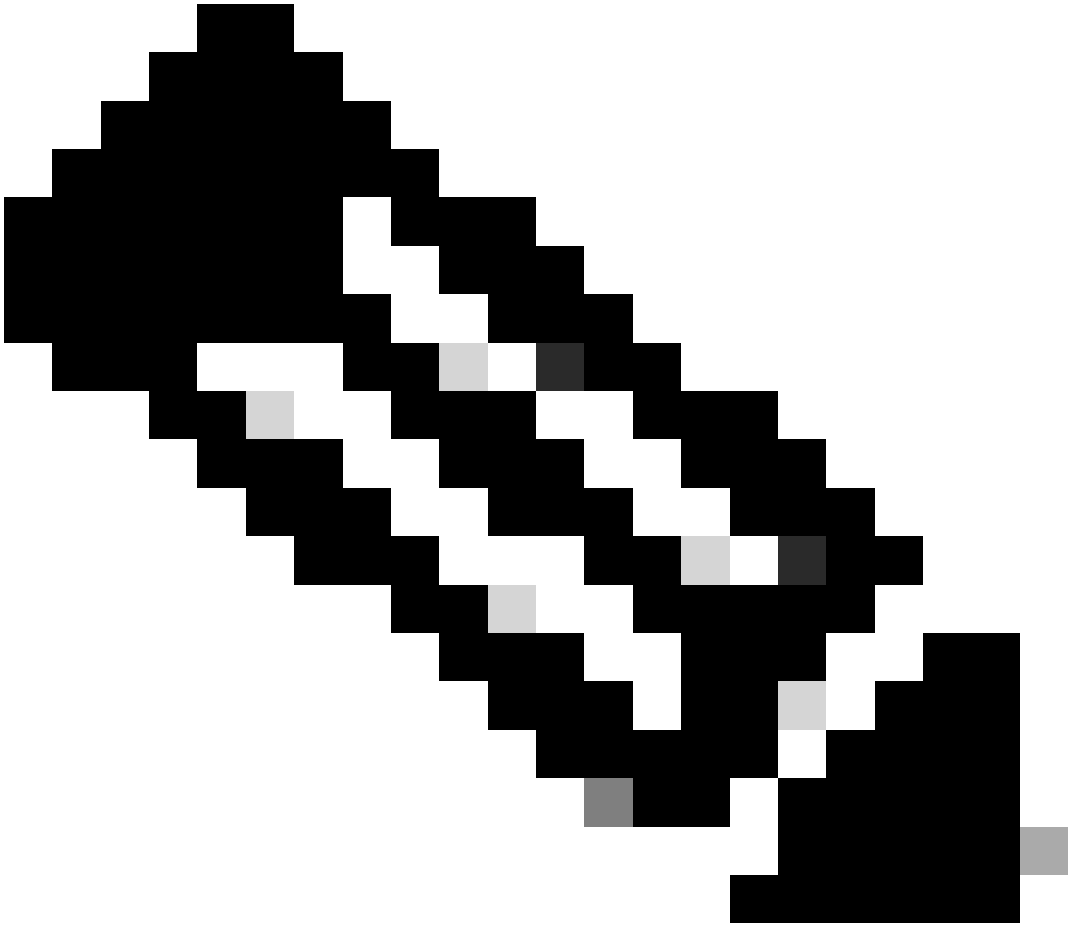
```
LEAF-1(config)# ip dhcp relay information option
```



> Remarque : cette commande permet à l'agent de relais DHCP d'insérer et de supprimer des informations de l'option 82 sur les paquets qui sont transférés.

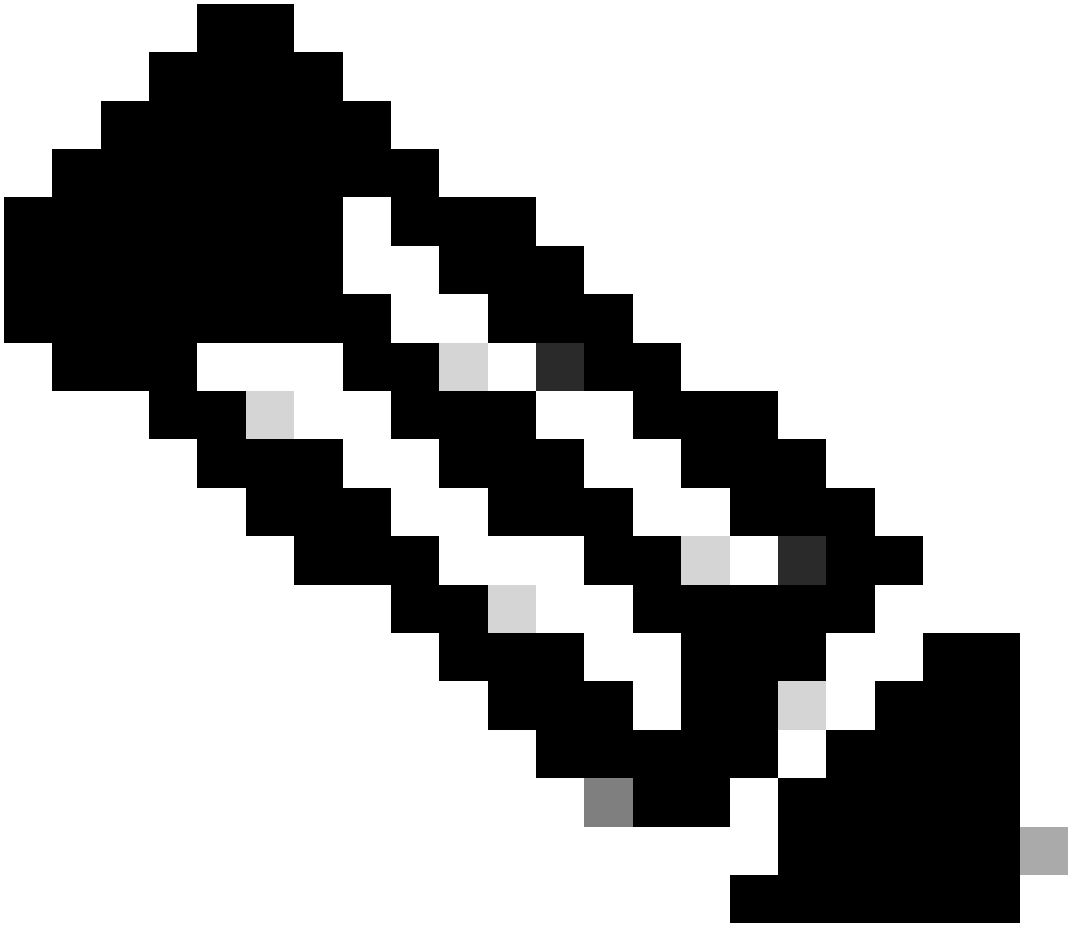
Étape 3. Appliquez la commande ip dhcp relay information option vpn.

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



Remarque : cette commande active les requêtes de relais DHCP qui arrivent sur un VRF différent auquel appartient le serveur DHCP.

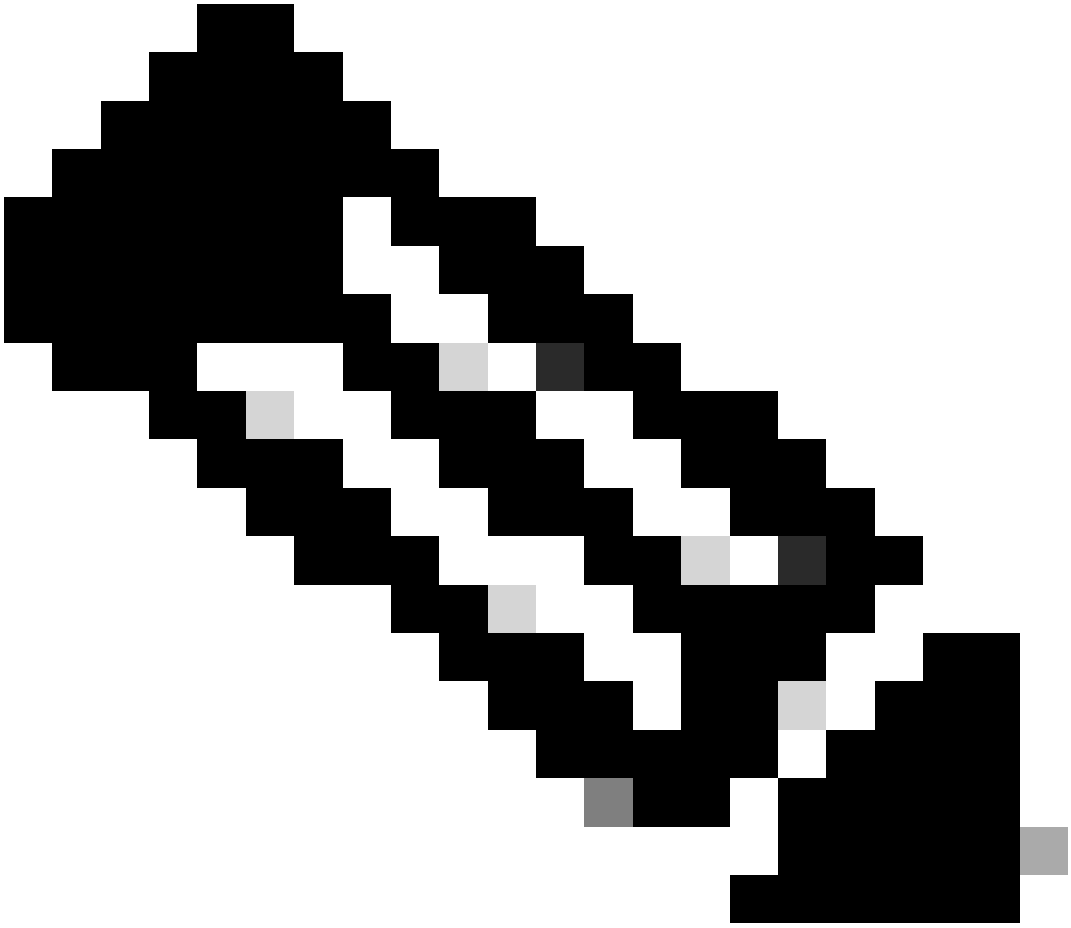
Étape 4. Appliquez la commande « ip dhcp relay address [ip address of DCHP server] ».



Remarque : dans cet exemple, l'adresse IP du serveur DHCP est 10.10.10.150.

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

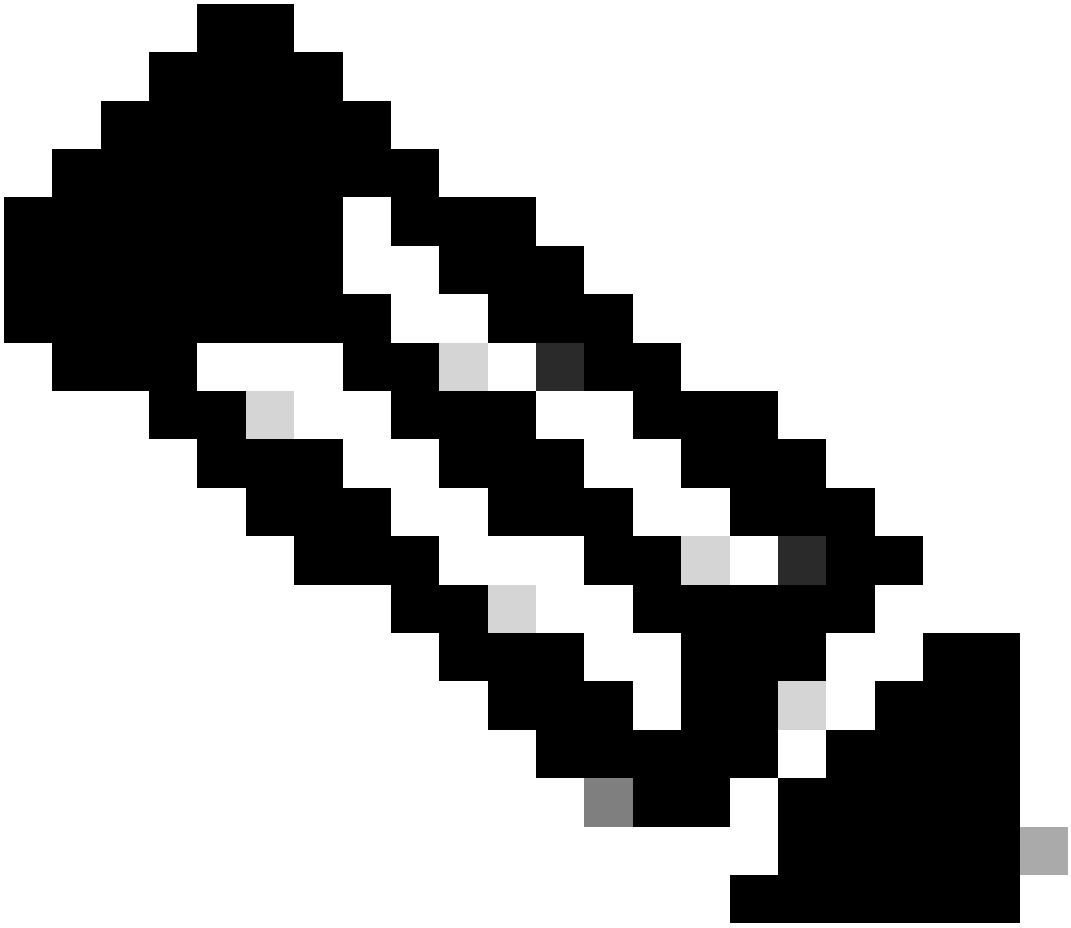
Étape 5. Appliquez la commande « ip dhcp relay source-interface [unique loopback] ».



Remarque : cette commande configure l'adresse IP source de l'agent de relais DHCP pour qu'elle gère les commandes Discover, Offer, Request et ACK pour les communications monodiffusion, l'agent de relais DHCP utilisant l'adresse IP de l'interface SVI comme adresse IP source de l'agent de relais DHCP. Cela n'est pas souhaitable, car cette adresse IP est partagée par plusieurs VTEP et un trou noir des paquets DHCP peut se produire. Pour éviter cela, une adresse IP unique (à l'aide d'une interface de bouclage) est nécessaire pour différencier chaque VTEP.

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

Étape 6. Dans le locataire correspondant VRF dans BGP, redistribuez directement la route avec une liste de préfixes et une route-map qui inclut l'adresse IP de l'interface de bouclage.



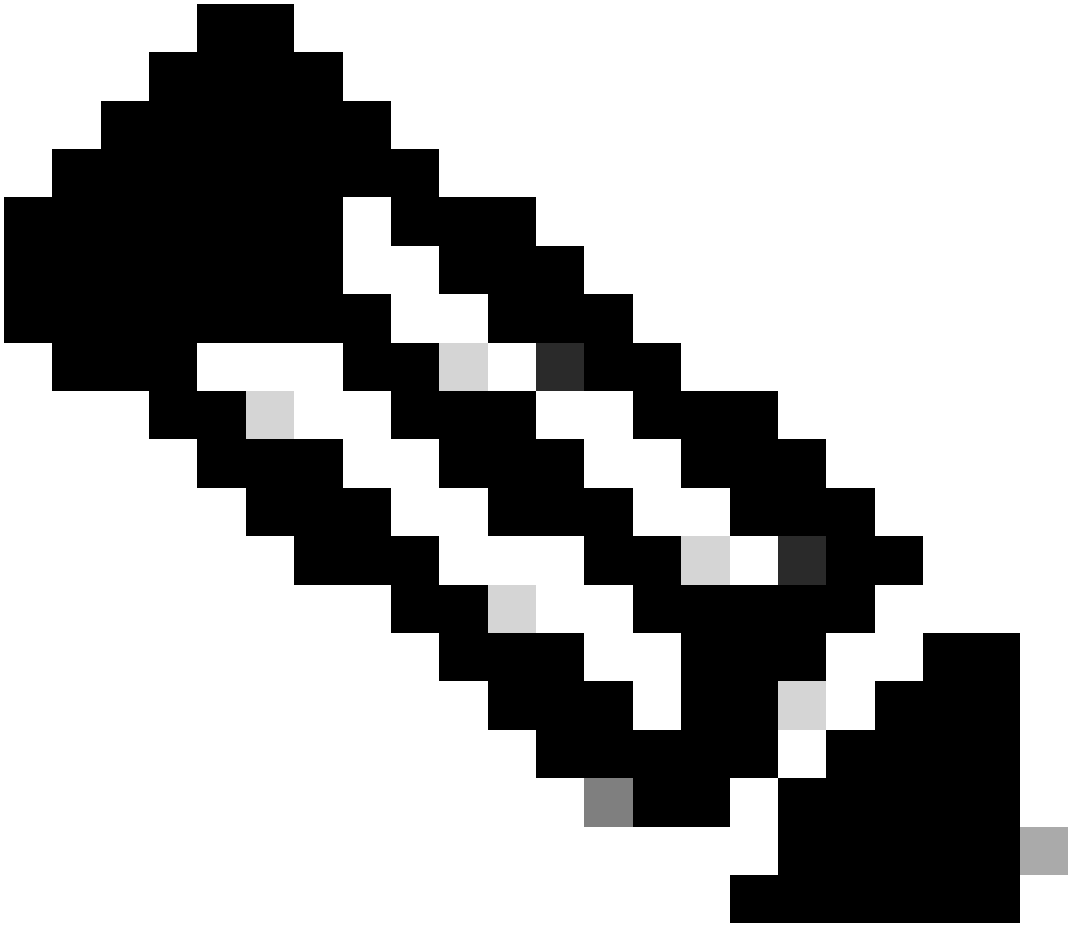
Remarque : cette interface de bouclage appartient au locataire de l'interface SVI.

```
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
```

Étape 7. Vérifiez que l'adresse IP de l'interface de bouclage est annoncée dans BGP L2VPN EVPN aux Spines avec la commande : show bgp l2vpn evpn [loopback IP] vrf [tenant vrf].

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

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

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

Étape 8. Vérifiez que l'adresse IP de l'interface de bouclage est injectée dans l'EVPN L2VPN BGP où se trouve le serveur DHCP.

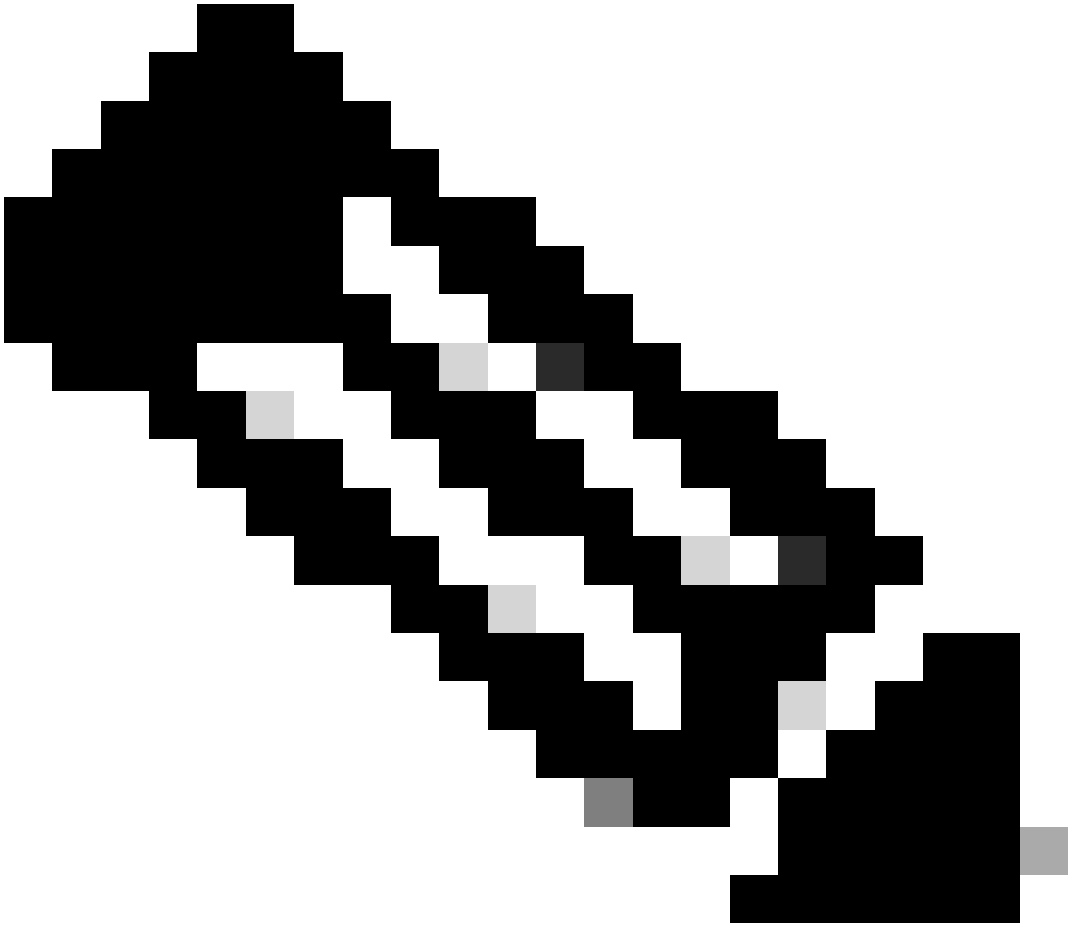


Remarque : s'il y a des commutateurs Nexus dans vPC, vérifiez qu'ils apprennent tous les deux l'adresse IP de l'interface de bouclage dans BGP L2VPN EVPN.

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

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

```
  Path-id 1 not advertised to any peer

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

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

  Path-id 1 not advertised to any peer
```

Étape 9. Vérifiez qu'il y a une route pour le serveur DHCP sur le locataire source avec la commande show ip route [DHCP server IP] vrf [tenant vrf].



Remarque : l'entrée de route à utiliser doit être de VxLAN à VRF par défaut. Si aucune route n'est disponible, vérifiez si le VTEP connaît localement l'adresse IP du serveur DHCP.

```
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:
```

Étape 10. Vérifiez que l'adresse IP du serveur DHCP est accessible en utilisant l'interface de bouclage et le VRF correspondant comme source VRF avec la commande 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
```

Étape 11. Vérifiez l'état de l'agent de relais DHCP.

```
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
```

Étape 12. Vérifiez l'option82, telle que l'option vpn et l'adresse IP de relais correcte sous l'agent de relais.

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

Étape 13. Vérifiez les statistiques des paquets traités et transférés.

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

Étape 14. Vérifiez les statistiques des paquets de relais.

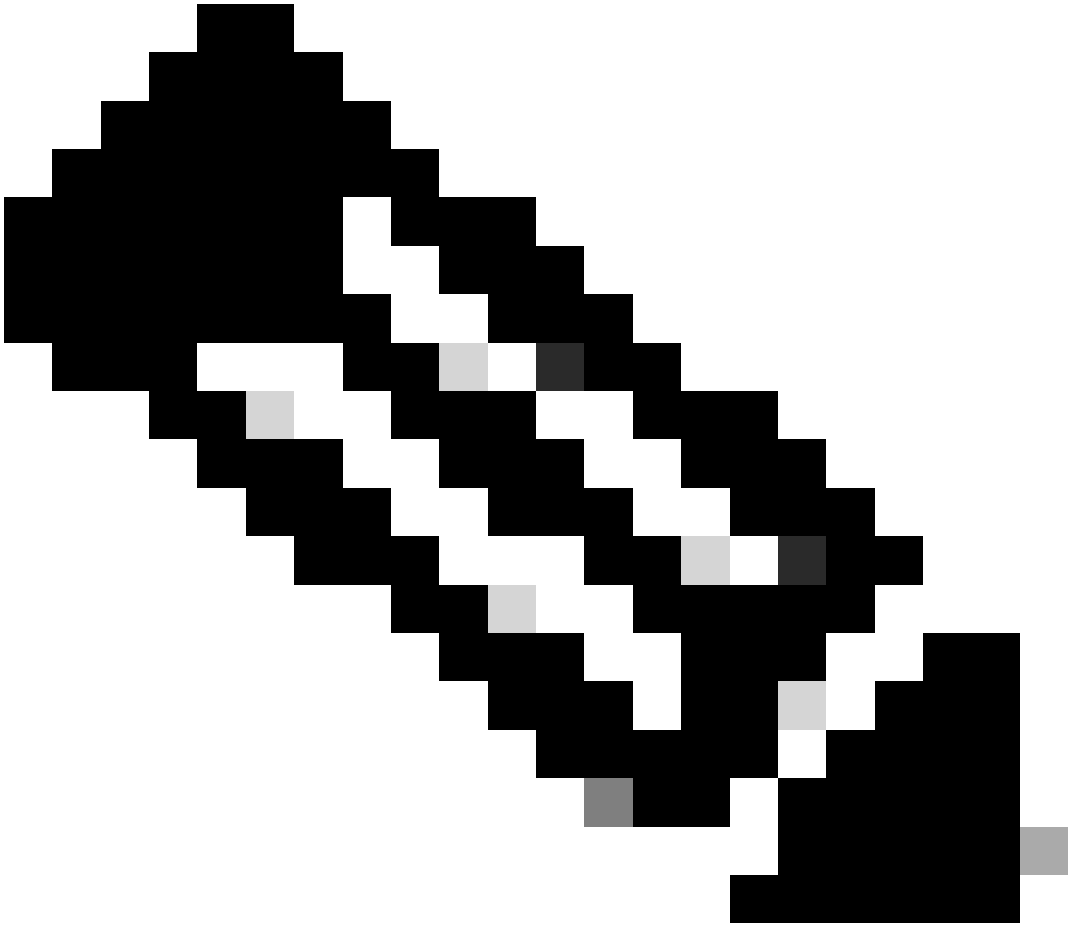
```
LEAF-1# show ip dhcp relay statistics
---------------------------------------------------------------------
Message Type              Rx              Tx           Drops
---------------------------------------------------------------------
Discover             260521          260520               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
```

DHCP LEAF-1-vPC

Étape 1. Activez la fonctionnalité DCHP.

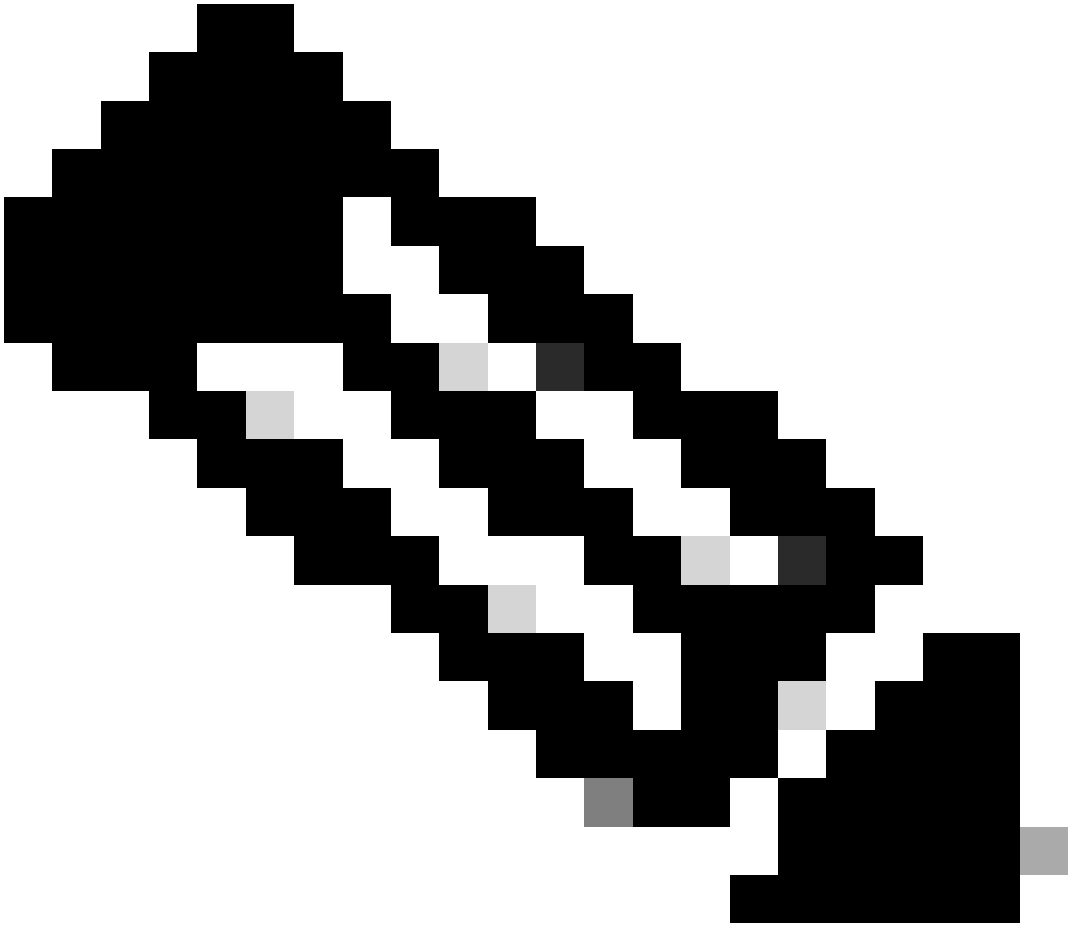
```
LEAF-1-VPC(config)#feature dhcp
```



Remarque : le serveur DHCP et la commande relay agent service dhcp, ip dhcp relay, et ipv6 dhcp relay sont activés par défaut depuis NX-OS 7.x.

Étape 2. Appliquez la commande ip dhcp relay information option.

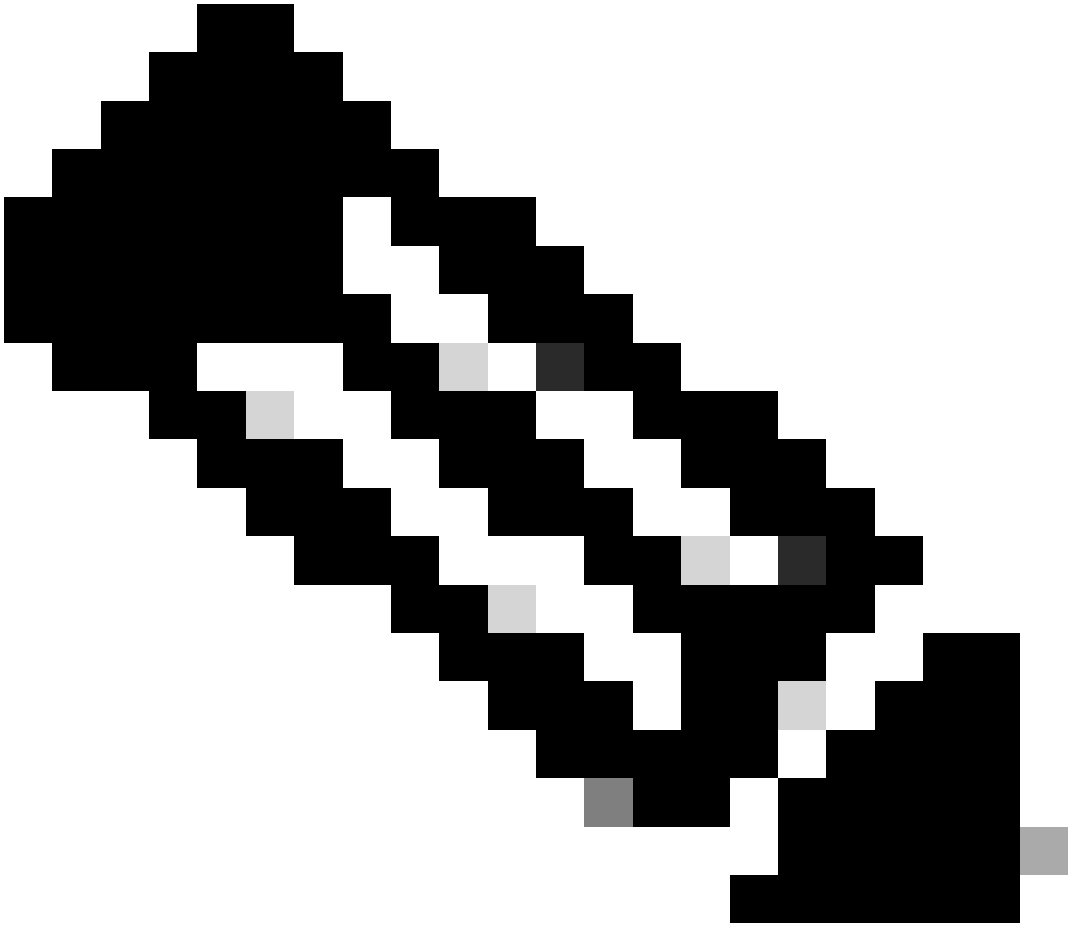
```
LEAF-1-VPC(config)#ip dhcp relay information option
```



Remarque : cette commande permet à l'agent de relais DHCP d'insérer et de supprimer des informations de l'option 82 sur les paquets qui sont transférés.

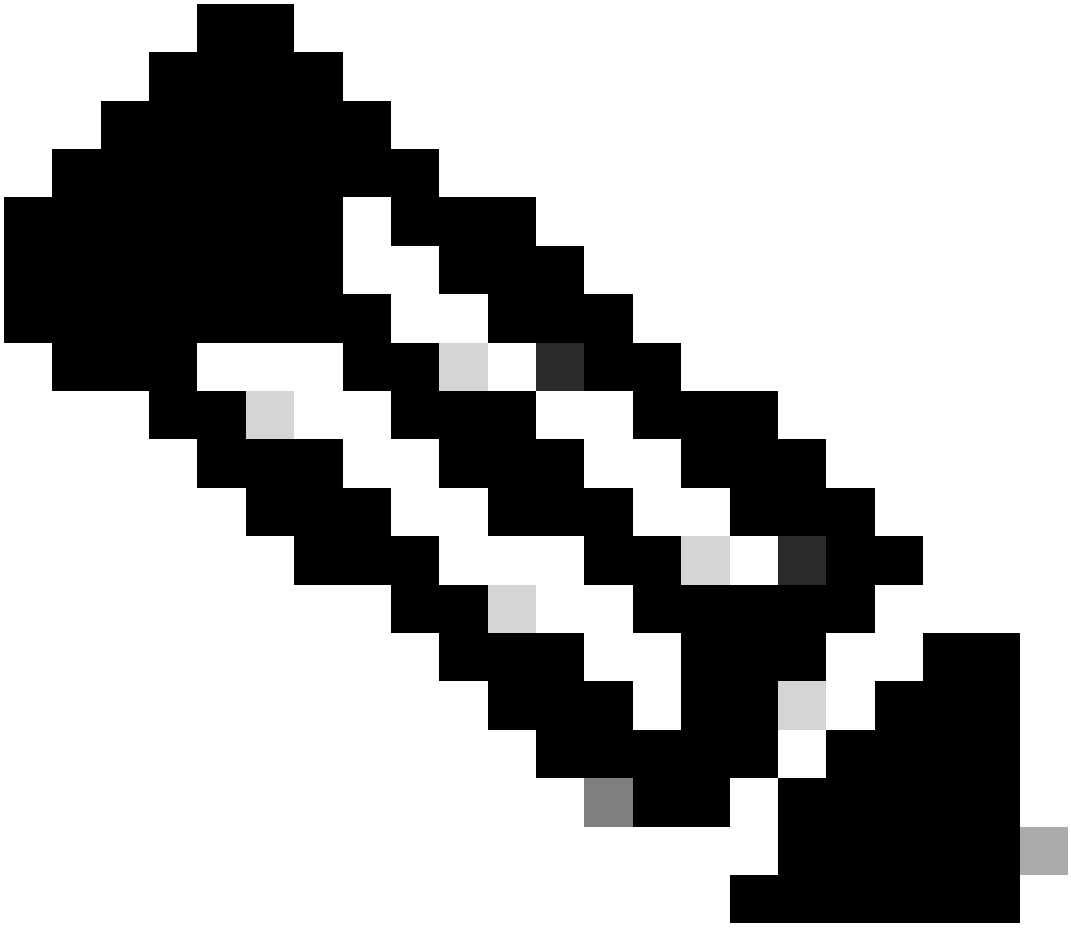
Étape 3. Appliquez la commande « ip dhcp relay information option vpn ».

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



Remarque : cette commande active les requêtes de relais DHCP qui arrivent sur un VRF différent auquel appartient le serveur DHCP.

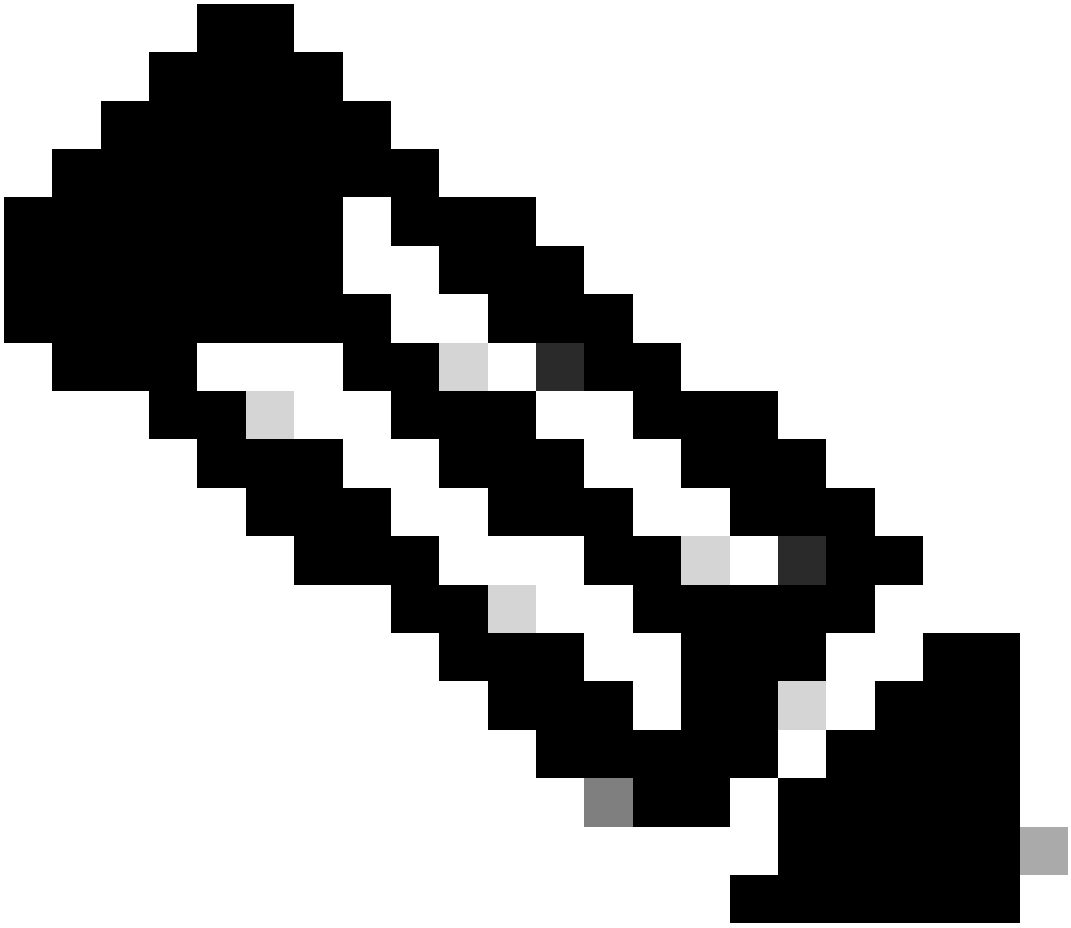
Étape 4. Appliquez la commande ip dhcp relay address [adresse ip du serveur DHCP].



Remarque : dans cet exemple, l'adresse IP du serveur DHCP est 10.10.10.150.

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

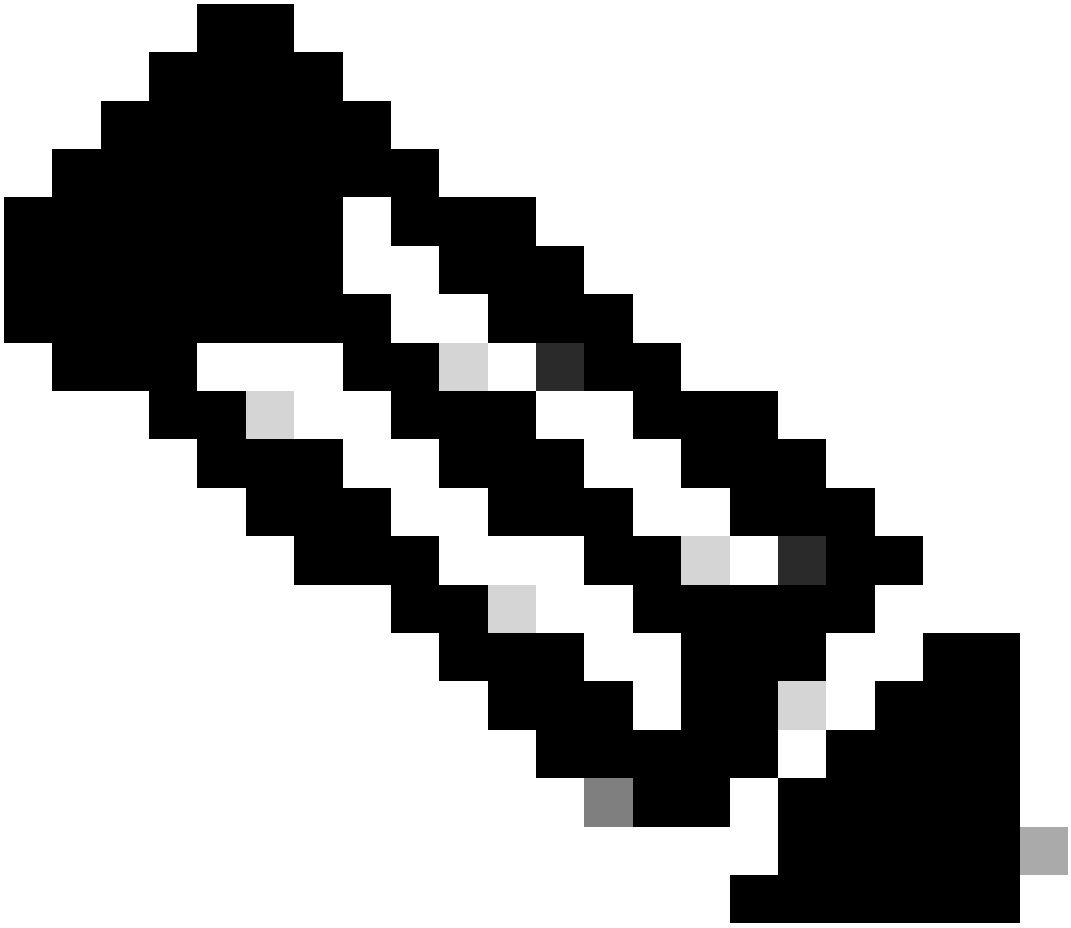
Étape 5. Appliquez la commande « ip dhcp relay source-interface [unique loopback] ».



Remarque : cette commande configure l'adresse IP source de l'agent de relais DHCP pour qu'elle gère les commandes Discover, Offer, Request et ACK pour les communications monodiffusion, l'agent de relais DHCP utilisant l'adresse IP de l'interface SVI comme adresse IP source de l'agent de relais DHCP. Cela n'est pas souhaitable, car cette adresse IP est partagée par plusieurs VTEP et un trou noir des paquets DHCP peut se produire. Pour éviter cela, une adresse IP unique (à l'aide d'une interface de bouclage) est nécessaire pour différencier chaque VTEP.

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

Étape 6. Dans le locataire correspondant VRF dans BGP, redistribuez directement la route avec une liste de préfixes et une route-map qui inclut l'adresse IP de l'interface de bouclage.



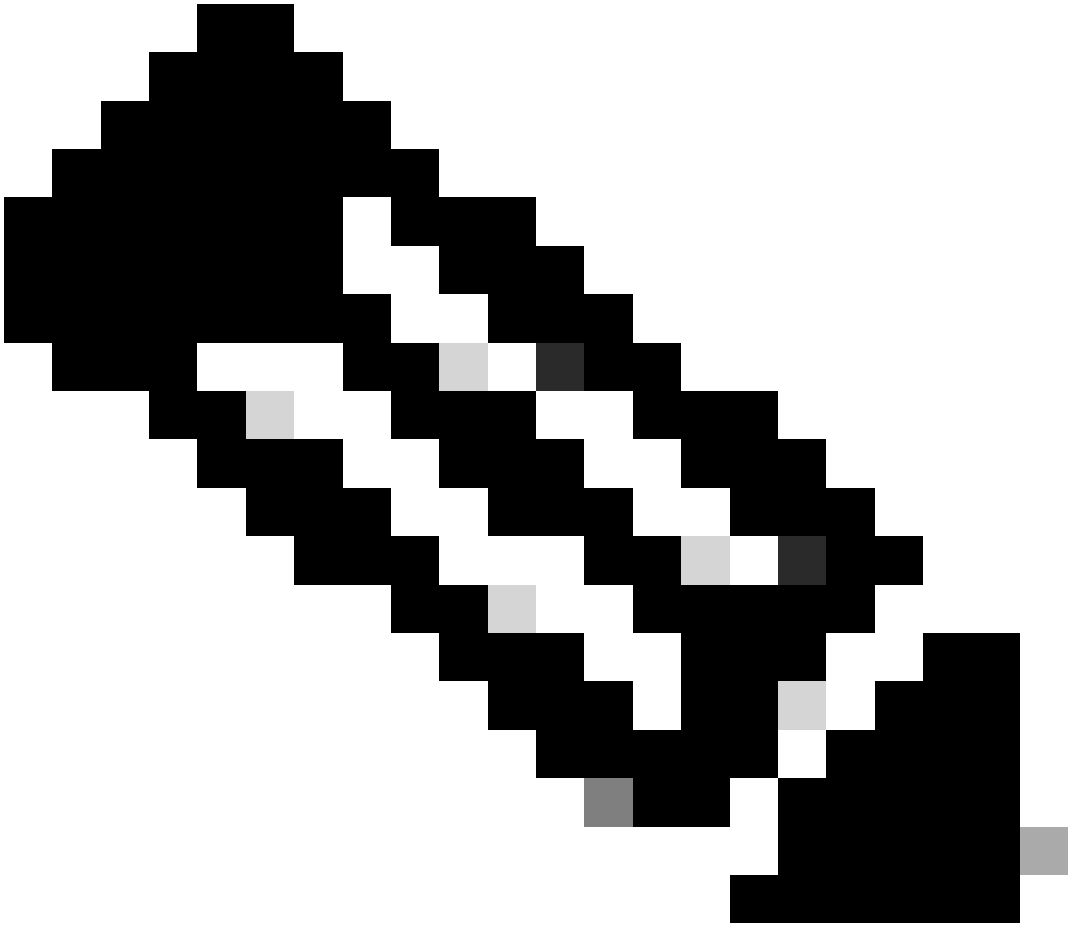
Remarque : cette interface de bouclage appartient au locataire de l'interface SVI.

```
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
```

Étape 7. Vérifiez que l'adresse IP de l'interface de bouclage est annoncée dans BGP L2VPN EVPN aux Spines avec la commande : show bgp l2vpn evpn [loopback IP] vrf [tenant vrf].

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

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

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

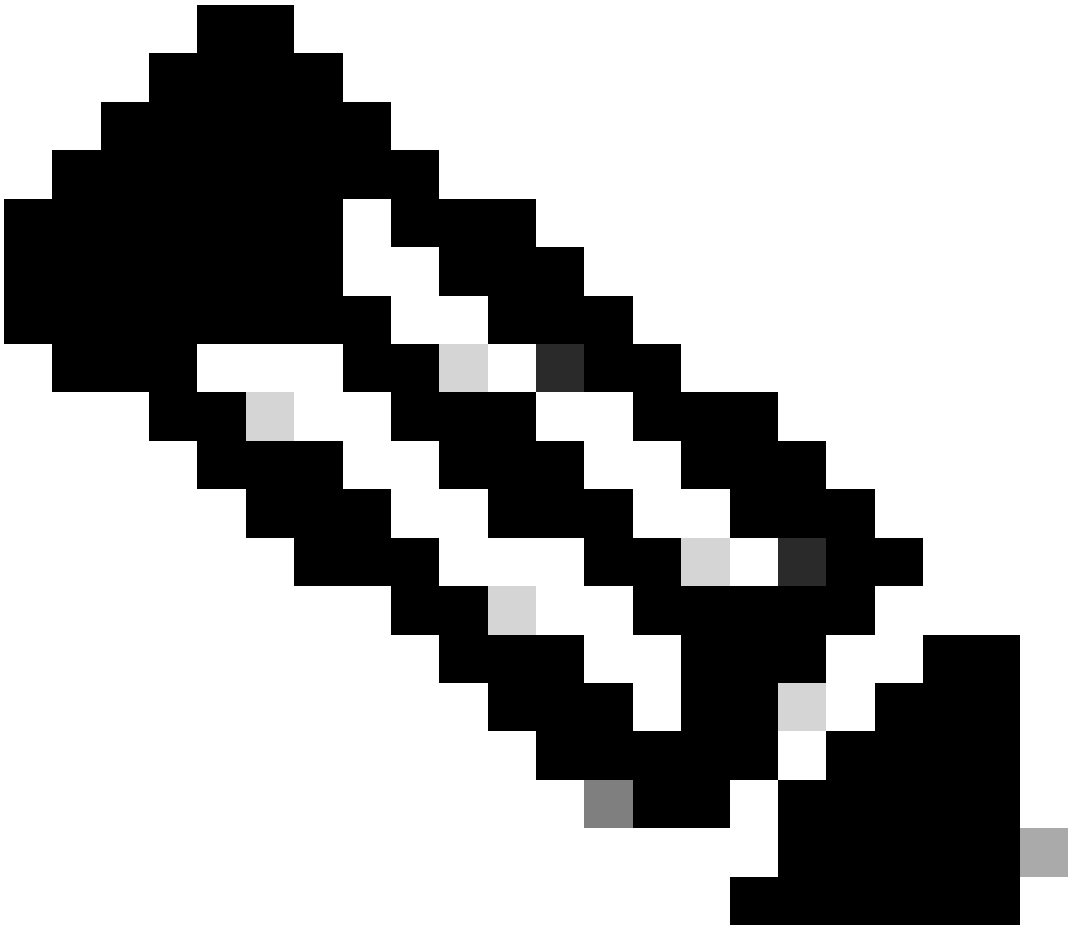
Étape 8. Vérifiez que l'adresse IP de l'interface de bouclage est injectée dans l'EVPN L2VPN BGP où se trouve le serveur DHCP.



Remarque : s'il y a des commutateurs Nexus dans vPC, vérifiez qu'ils apprennent tous les deux l'adresse IP de l'interface de bouclage dans BGP L2VPN EVPN.

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

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

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

Étape 9. Vérifiez qu'il existe une route pour le serveur DHCP sur le locataire source à l'aide de la commande show ip route [DHCP server IP] vrf[tenant vrf].



Remarque : l'entrée de route à utiliser doit être de VxLAN à VRF par défaut. Si aucune route n'est disponible, vérifiez si le VTEP connaît localement l'adresse IP du serveur DHCP.

```
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
```

Étape 10. Vérifiez que l'adresse IP du serveur DHCP est accessible à l'aide de l'interface de bouclage et du VRF correspondant en tant que source VRF avec la commande ping [DHCP server IP] source-interface loopback [x] vrf [tenvrf].

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

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

Étape 11. Vérifiez l'état de l'agent de relais DHCP.

```
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
```

Étape 12. Vérifiez l'option82, telle que l'option vpn et l'adresse IP de relais correcte sous l'agent de relais.

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

Étape 13. Vérifiez les statistiques des paquets traités et transférés.

```
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
```

Étape 14. Vérifiez les statistiques des paquets de relais.

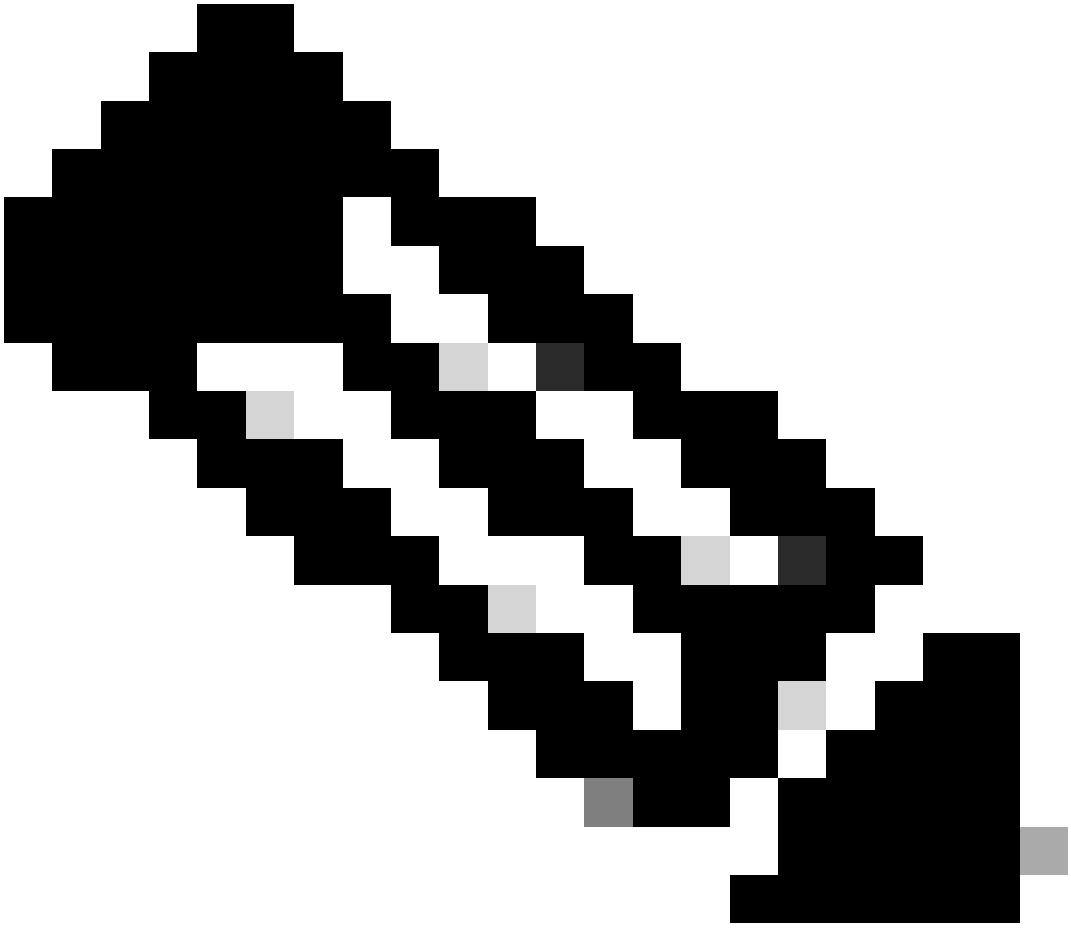
```
LEAF-1-VPC# show ip dhcp relay statistics
--------------------------------------------------------------------------
Message Type             Rx              Tx           Drops
--------------------------------------------------------------------------
Discover                  8               7               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
```

DHCP LEAF-2-vPC

Étape 1. Activez la fonctionnalité DCHP.

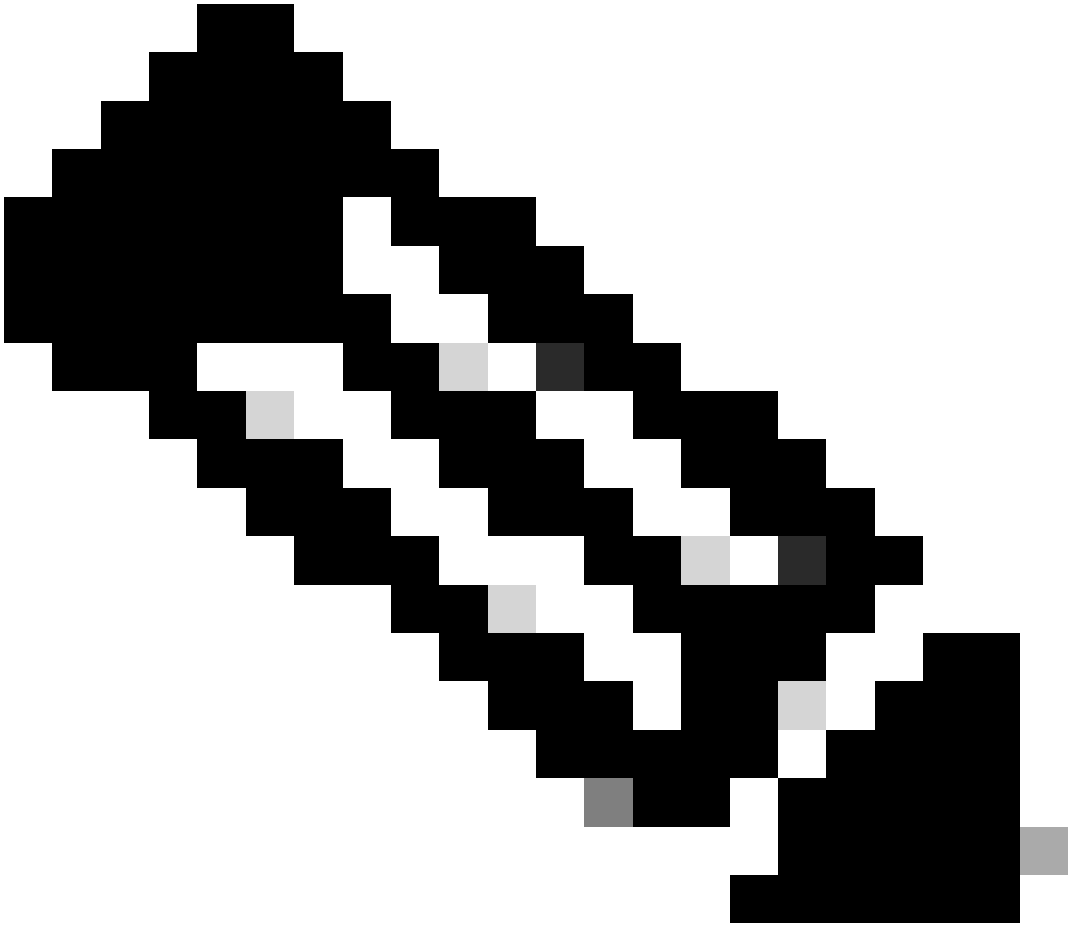
```
LEAF-2-VPC(config)# feature dhcp
```



Remarque : le serveur DHCP et la commande relay agent service dhcp, ip dhcp relay et ipv6 dhcp relay sont activés par défaut depuis NX-OS 7.x.

Étape 2. Appliquez la commande « ip dhcp relay information option ».

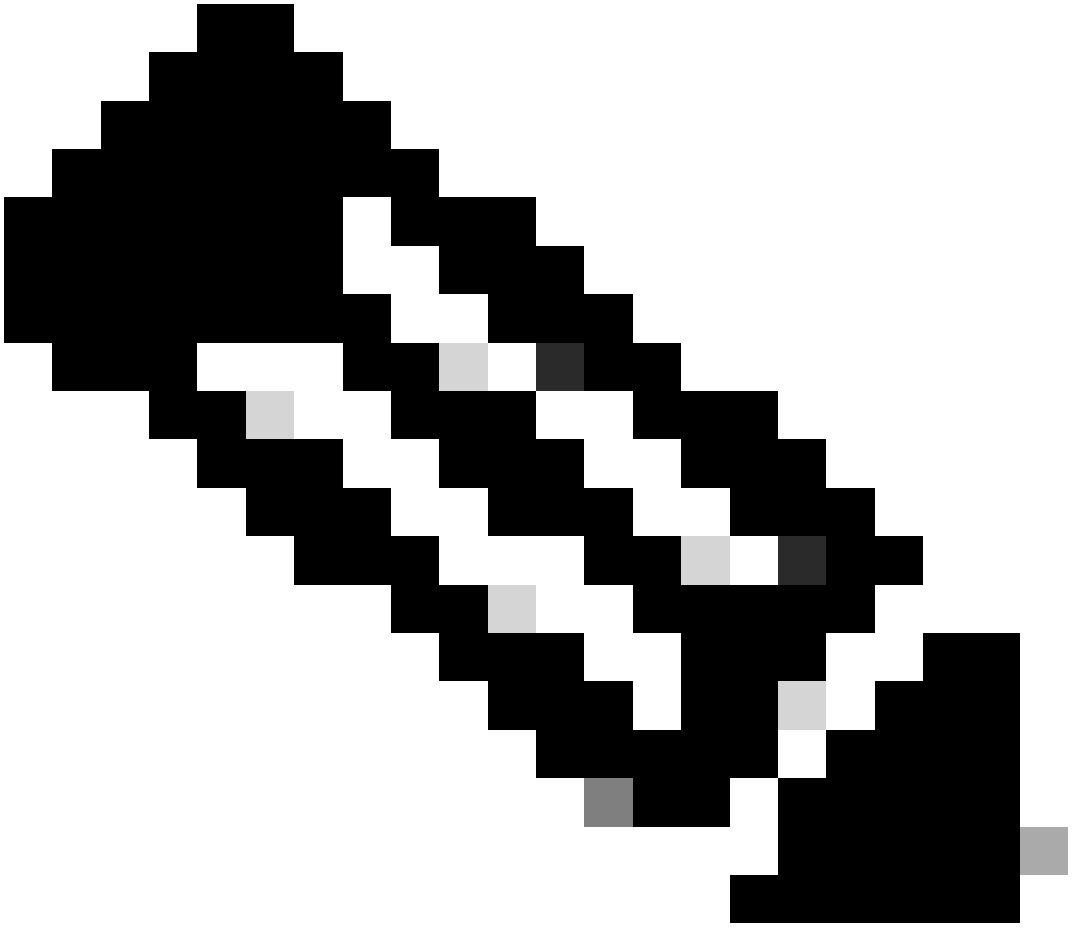
```
LEAF-2-VPC(config)# ip dhcp relay information option
```



Remarque : cette commande permet à l'agent de relais DHCP d'insérer et de supprimer des informations de l'option 82 sur les paquets qui sont transférés.

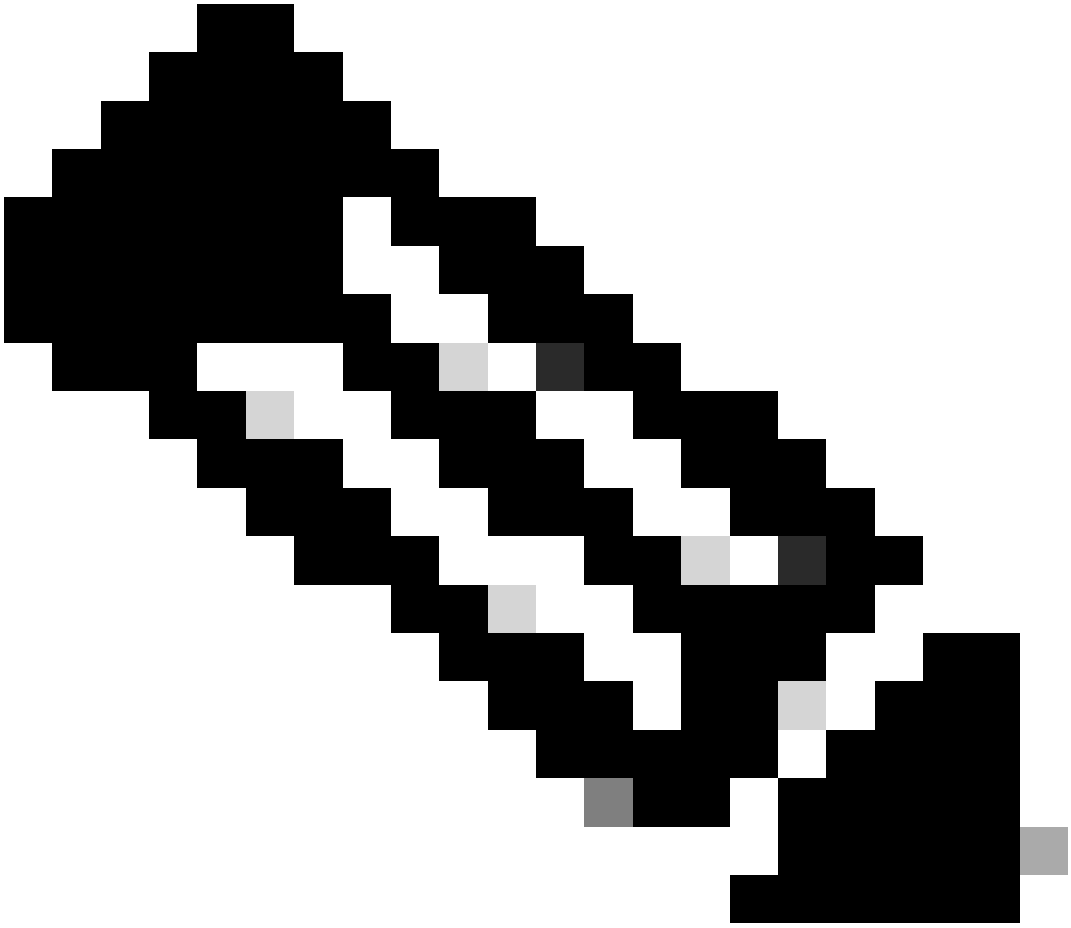
Étape 3. Appliquez la commande « ip dhcp relay information option vpn ».

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



Remarque : cette commande active les requêtes de relais DHCP qui arrivent sur un VRF différent auquel appartient le serveur DHCP.

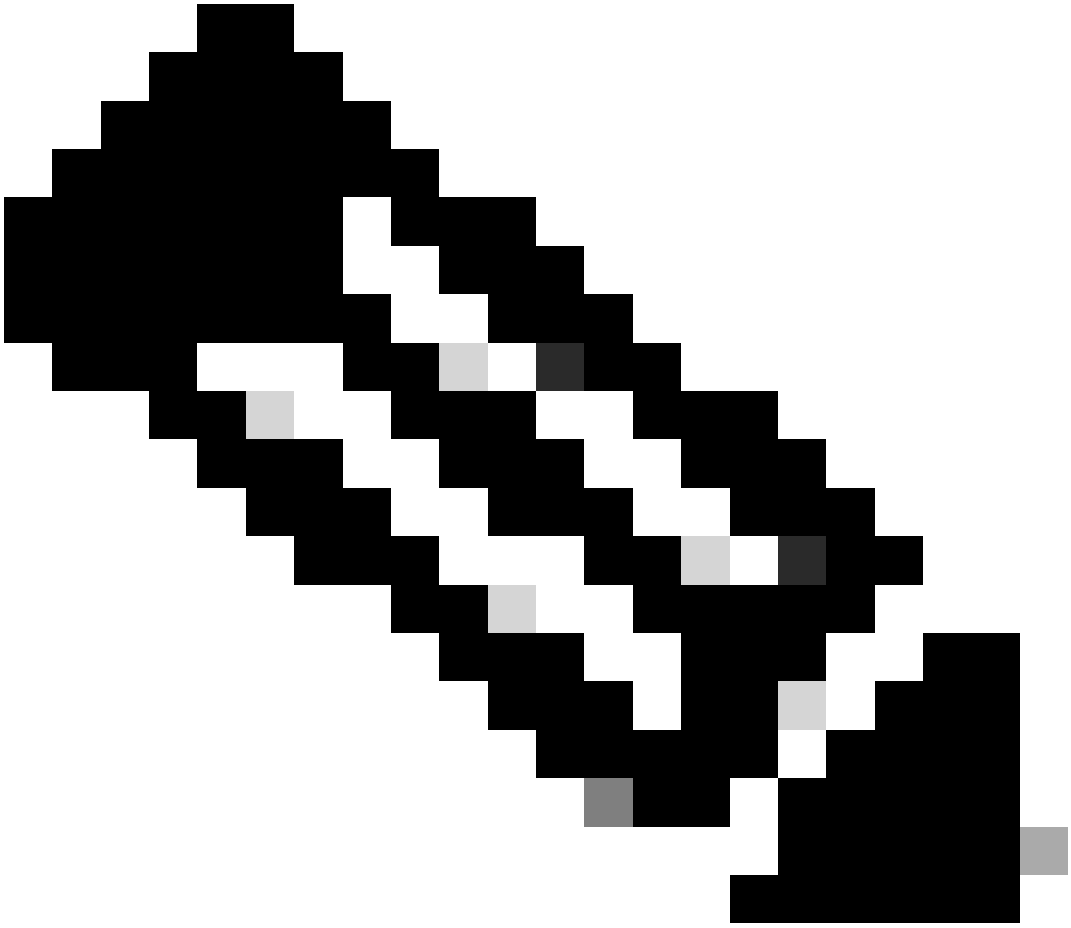
Étape 4. Appliquez la commande « ip dhcp relay address [ip address of DCHP server] ».



Remarque : dans cet exemple, l'adresse IP du serveur DHCP est 10.10.10.150.

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

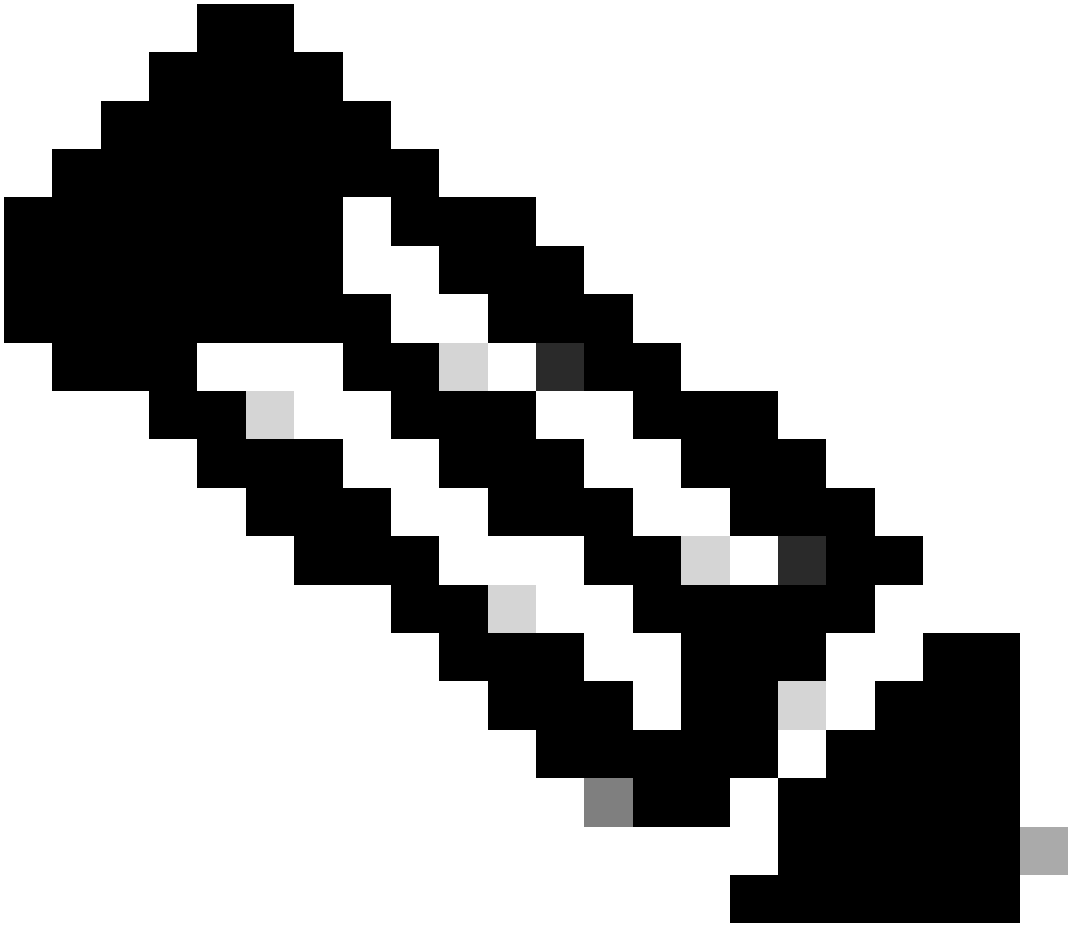
Étape 5. Appliquez la commande « ip dhcp relay source-interface [unique loopback] ».



Remarque : cette commande configure l'adresse IP source de l'agent de relais DHCP pour qu'elle gère les commandes Discover, Offer, Request et ACK pour les communications monodiffusion, l'agent de relais DHCP utilisant l'adresse IP de l'interface SVI comme adresse IP source de l'agent de relais DHCP. Cela n'est pas souhaitable, car cette adresse IP est partagée par plusieurs VTEP et un trou noir des paquets DHCP peut se produire. Pour éviter cela, une adresse IP unique (à l'aide d'une interface de bouclage) est nécessaire pour différencier chaque VTEP.

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

Étape 6. Dans le locataire correspondant VRF dans BGP, redistribuez directement la route avec une liste de préfixes et une route-map qui inclut l'adresse IP de l'interface de bouclage.



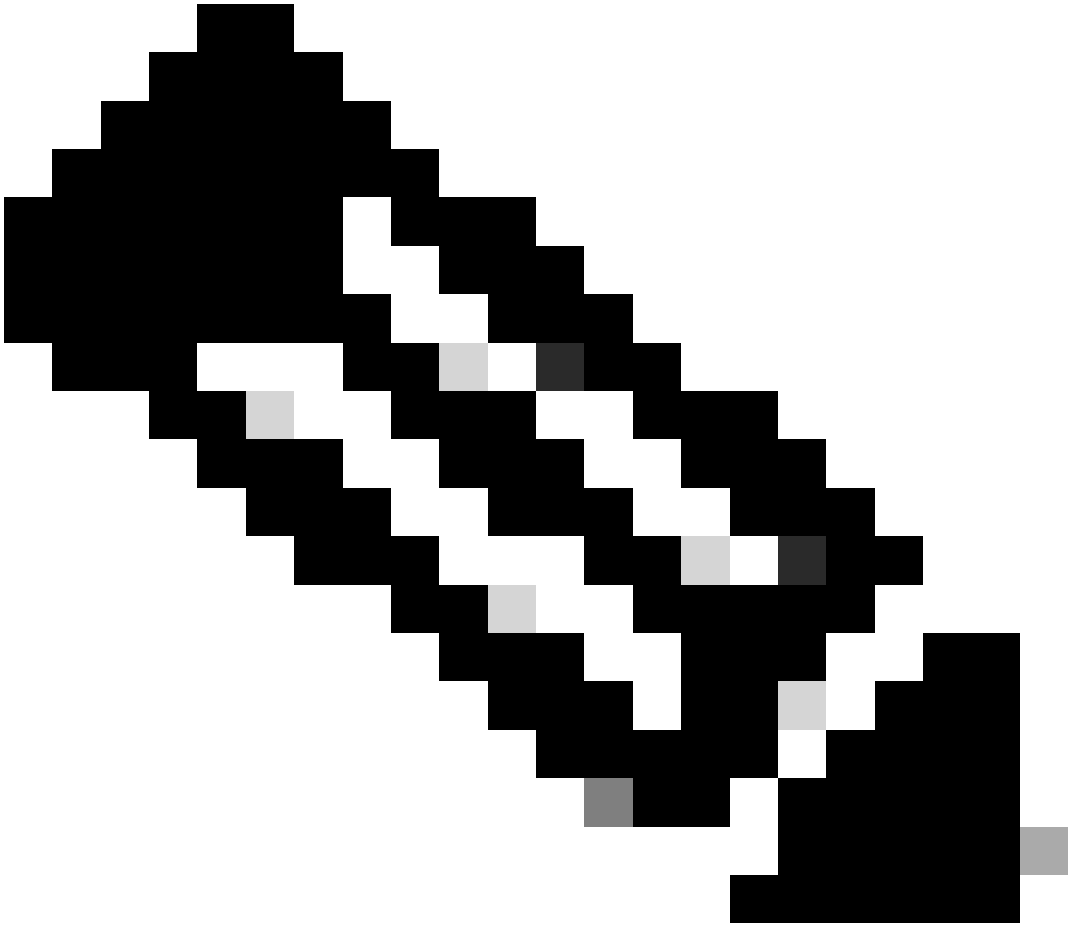
Remarque : cette interface de bouclage appartient au locataire de l'interface SVI.

```
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
```

Étape 7. Vérifiez que l'adresse IP de l'interface de bouclage est annoncée dans BGP L2VPN EVPN aux Spines avec la commande : 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
```

Étape 8. Vérifiez que l'adresse IP de l'interface de bouclage est injectée dans l'EVPN L2VPN BGP où se trouve le serveur DHCP.

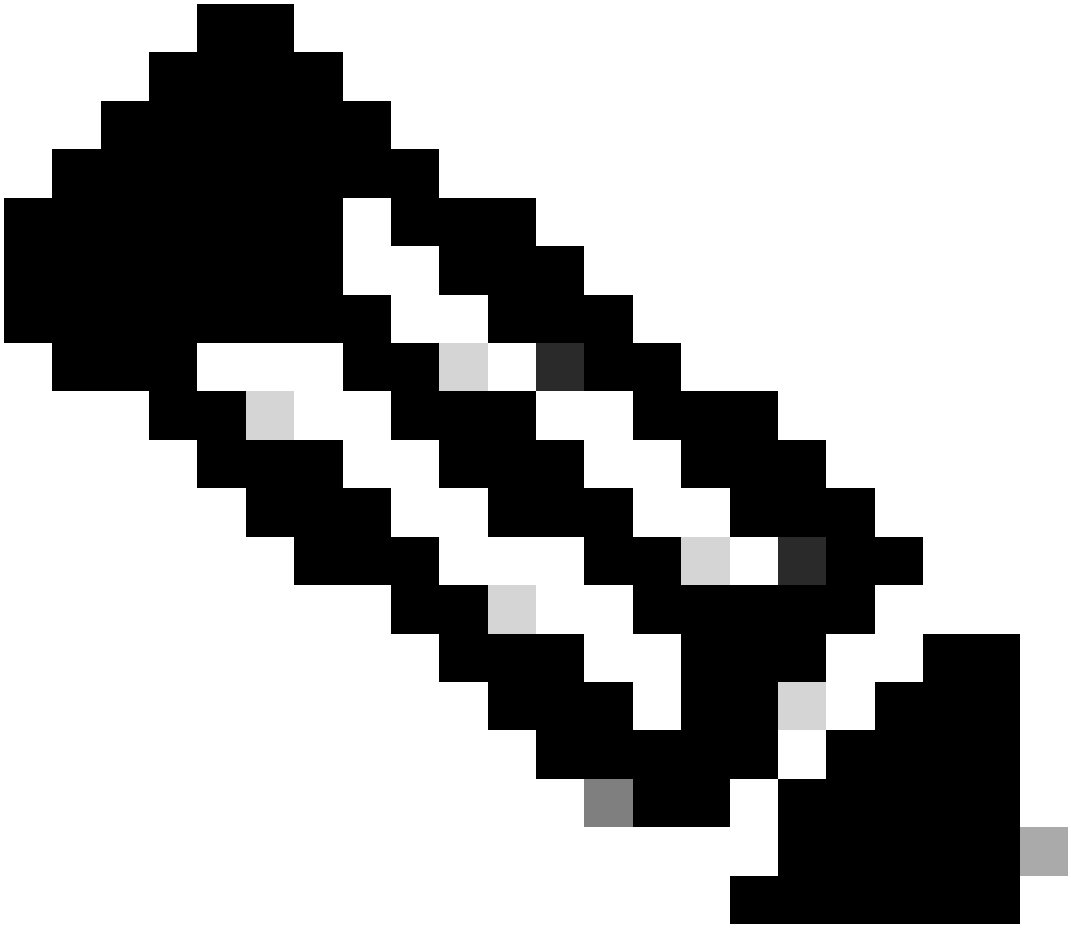


Remarque : s'il y a des commutateurs Nexus dans vPC, vérifiez qu'ils apprennent tous les deux l'adresse IP de l'interface de bouclage dans BGP L2VPN EVPN.

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

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

  Path-id 1 advertised to peers:
```

```
    192.168.0.11
```

Étape 9. Vérifiez qu'il y a une route pour le serveur DHCP sur le locataire source avec la commande show ip route [DHCP server IP] vrf[tenvrf].



Remarque : l'entrée de route à utiliser doit être de VxLAN à VRF par défaut. Si aucune route n'est disponible, vérifiez si le VTEP connaît localement l'adresse IP du serveur DHCP.

```
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
```

Étape 10. Vérifiez que l'adresse IP du serveur DHCP est accessible en utilisant l'interface de bouclage et le VRF correspondant comme source VRF avec la commande 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 ---
```

Étape 11. Vérifiez l'état de l'agent de relais DHCP.

```
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
```

Étape 12. Vérifiez l'option82, telle que l'option vpn et l'adresse IP de relais correcte sous l'agent de relais.

```
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 <<<<
```

Étape 13. Vérifiez les statistiques des paquets traités et transférés.

```
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
```

Étape 14. Vérifiez les statistiques des paquets de relais.

```
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
```

Configuration du serveur DHCP sous Windows Server 2022

Configuration de l'étendue d'adressage IP pour les hôtes.

Étape 1. Ouvrez le Gestionnaire de serveur et vérifiez qu'aucune alarme n'est présente sur le serveur DHCP dans le tableau de bord.

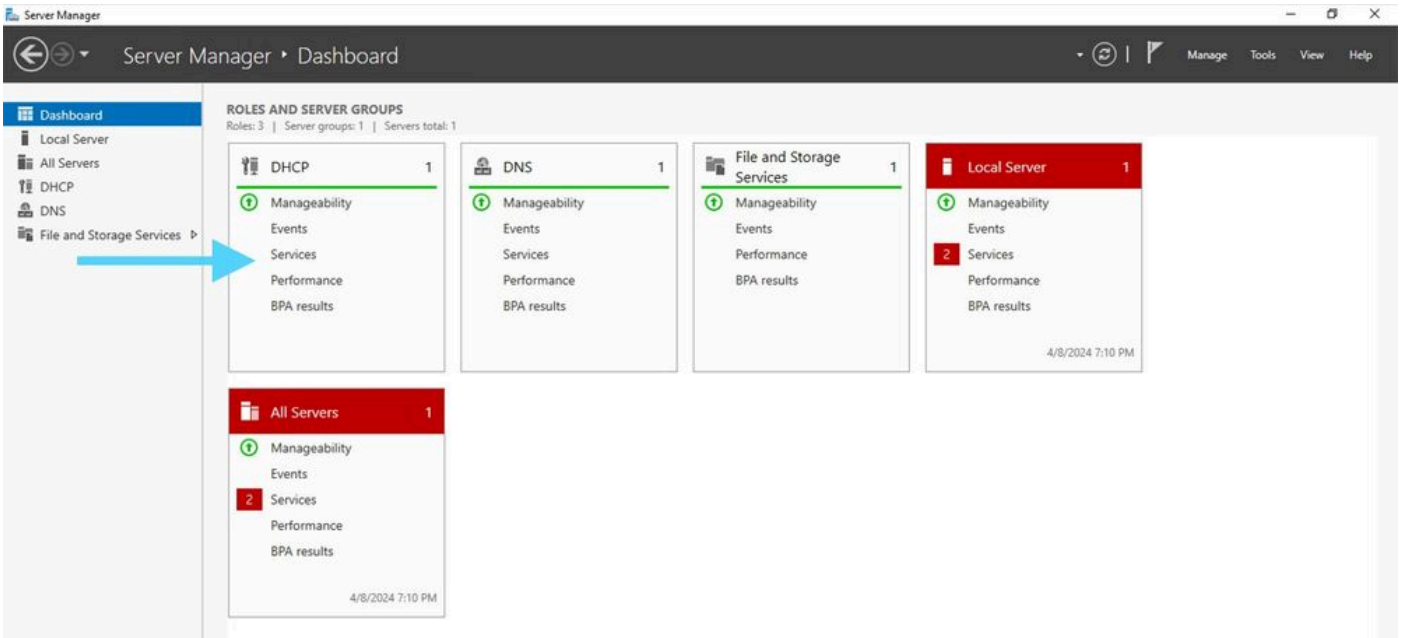
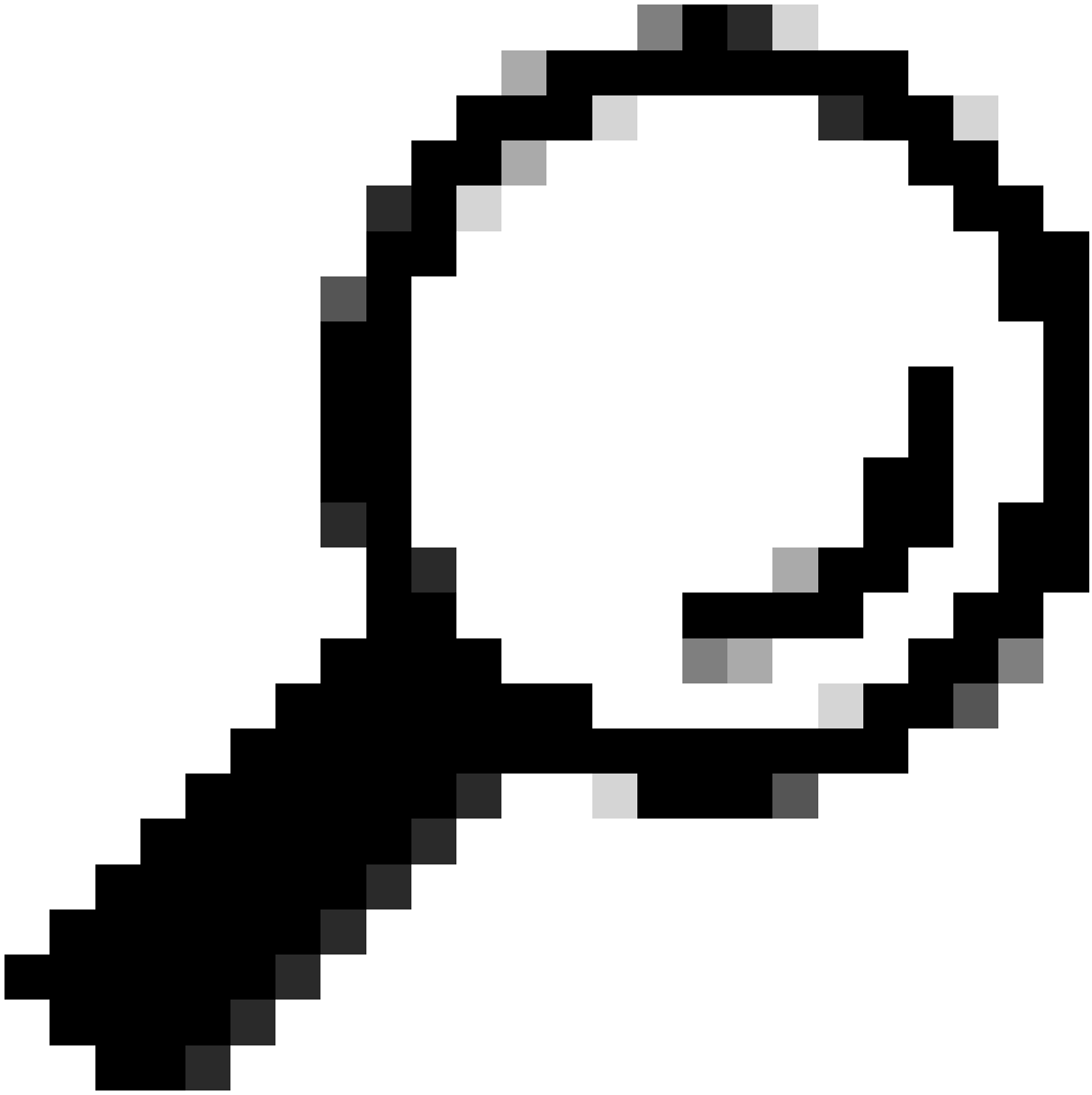
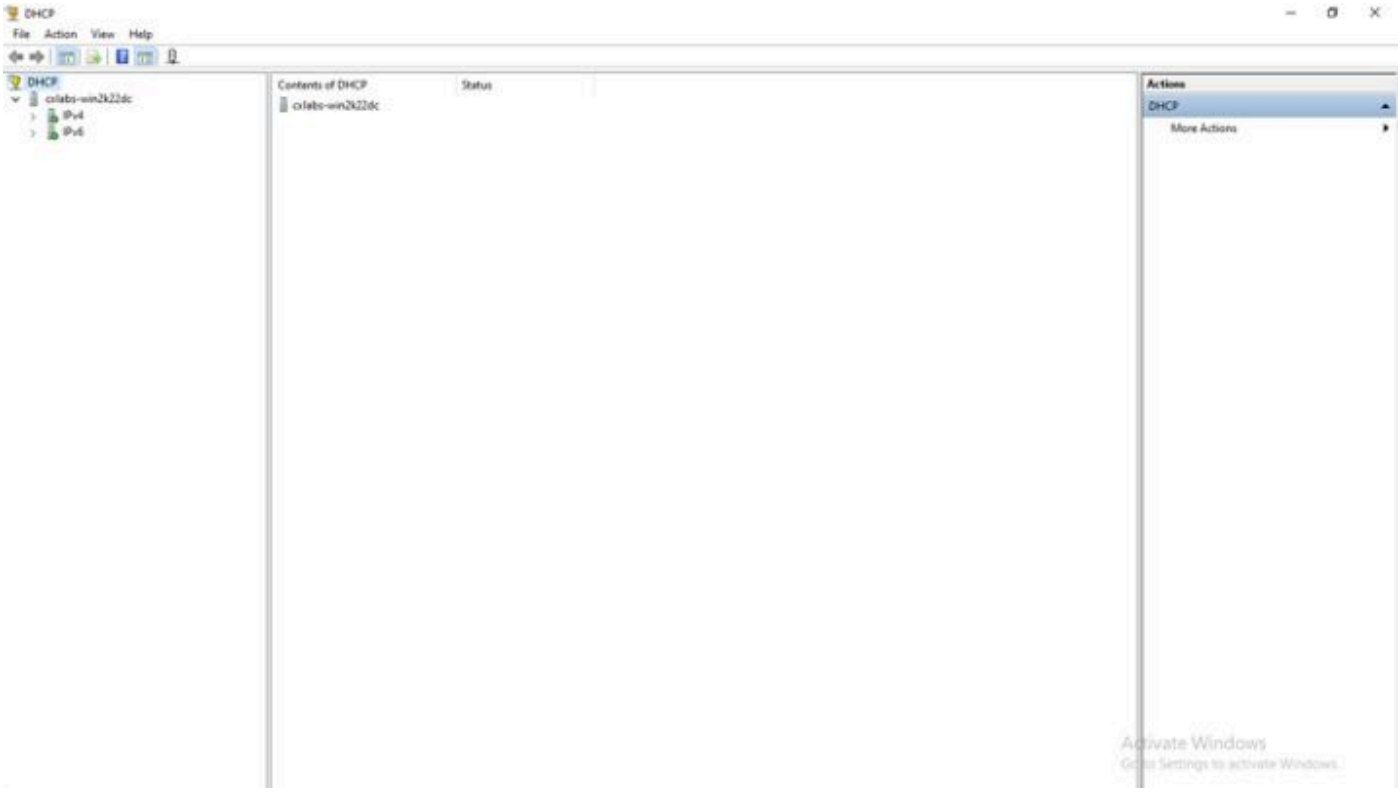


Tableau de bord du Gestionnaire de serveur sur Windows Server 2022



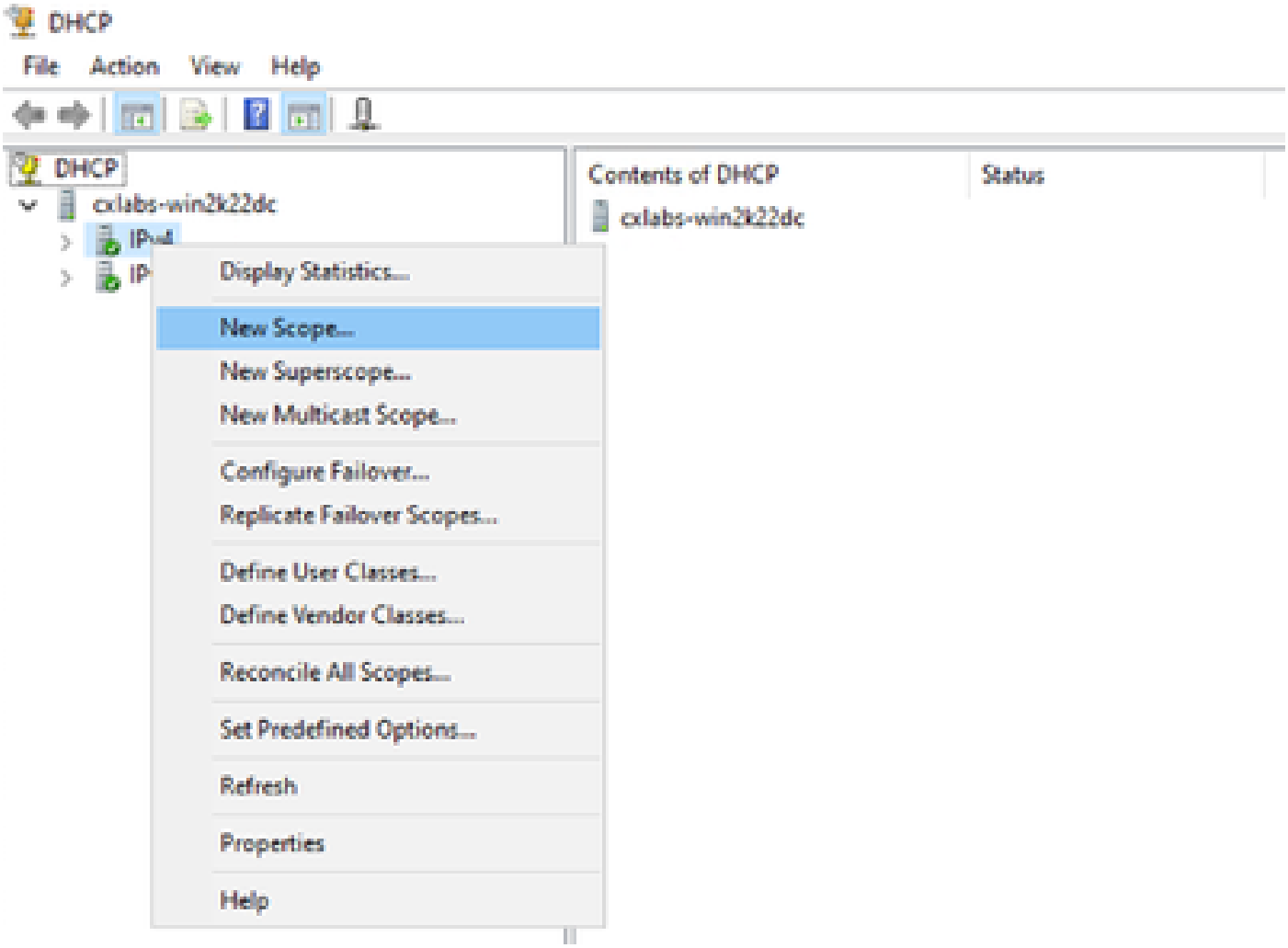
Conseil : l'image s'agrandit lorsque vous double-cliquez.

Étape 2. Ouvrez l'application DHCP Server.

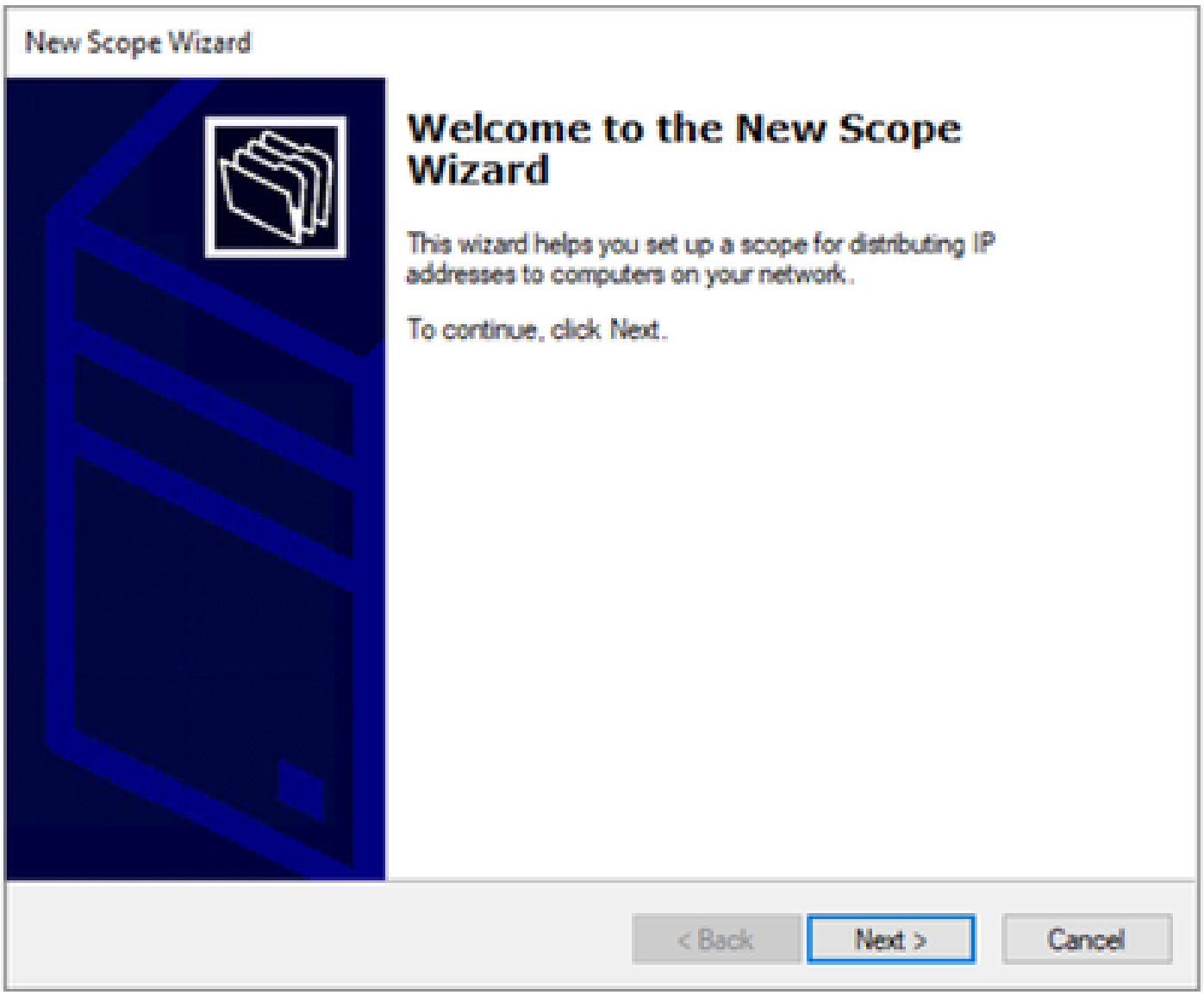


Serveur DHCP sur Windows Server 2022

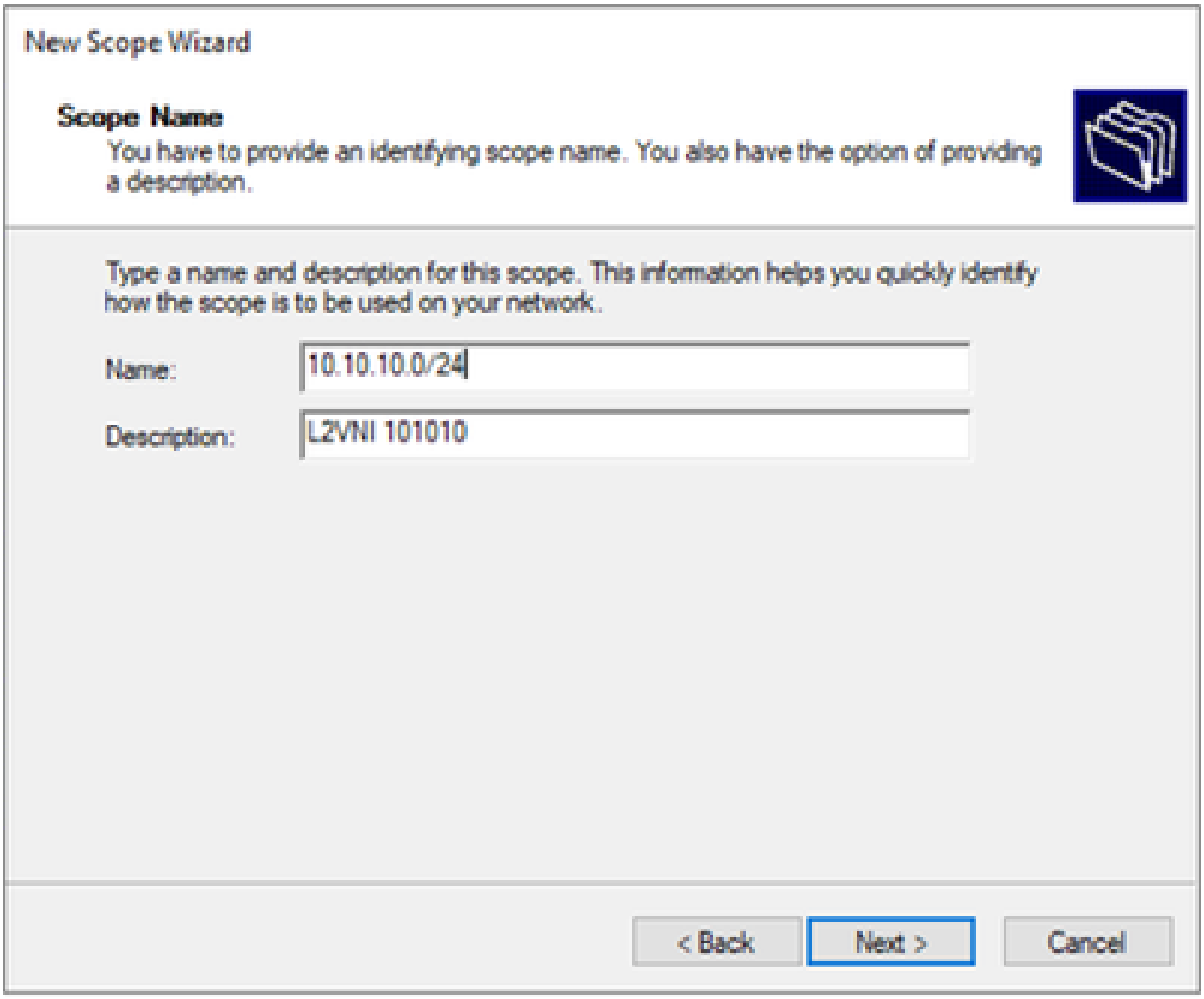
Étape 3. Cliquez avec le bouton droit sur IPv4, puis cliquez sur New Scope.



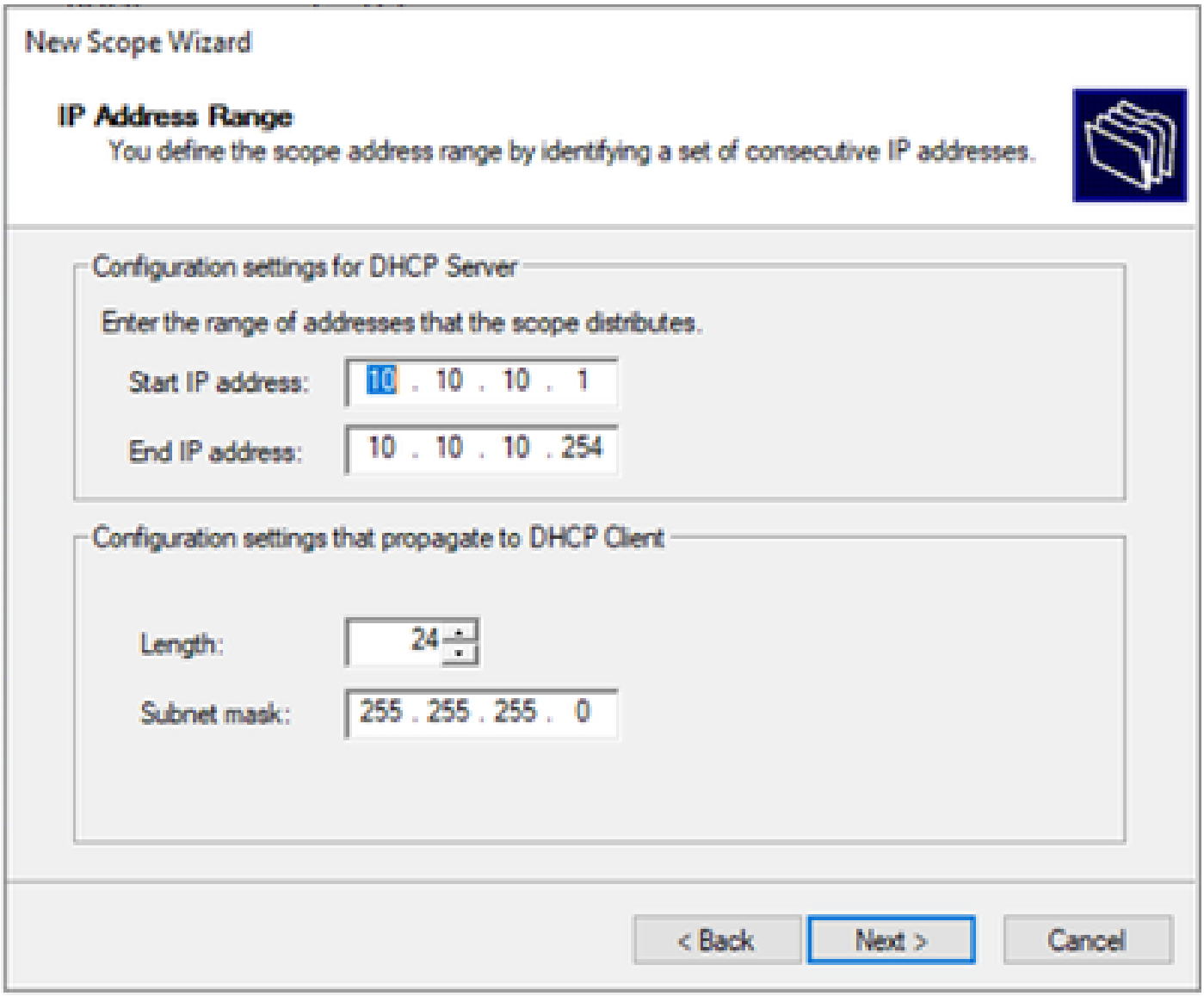
Étape 4. Cliquez sur Next (Suivant).



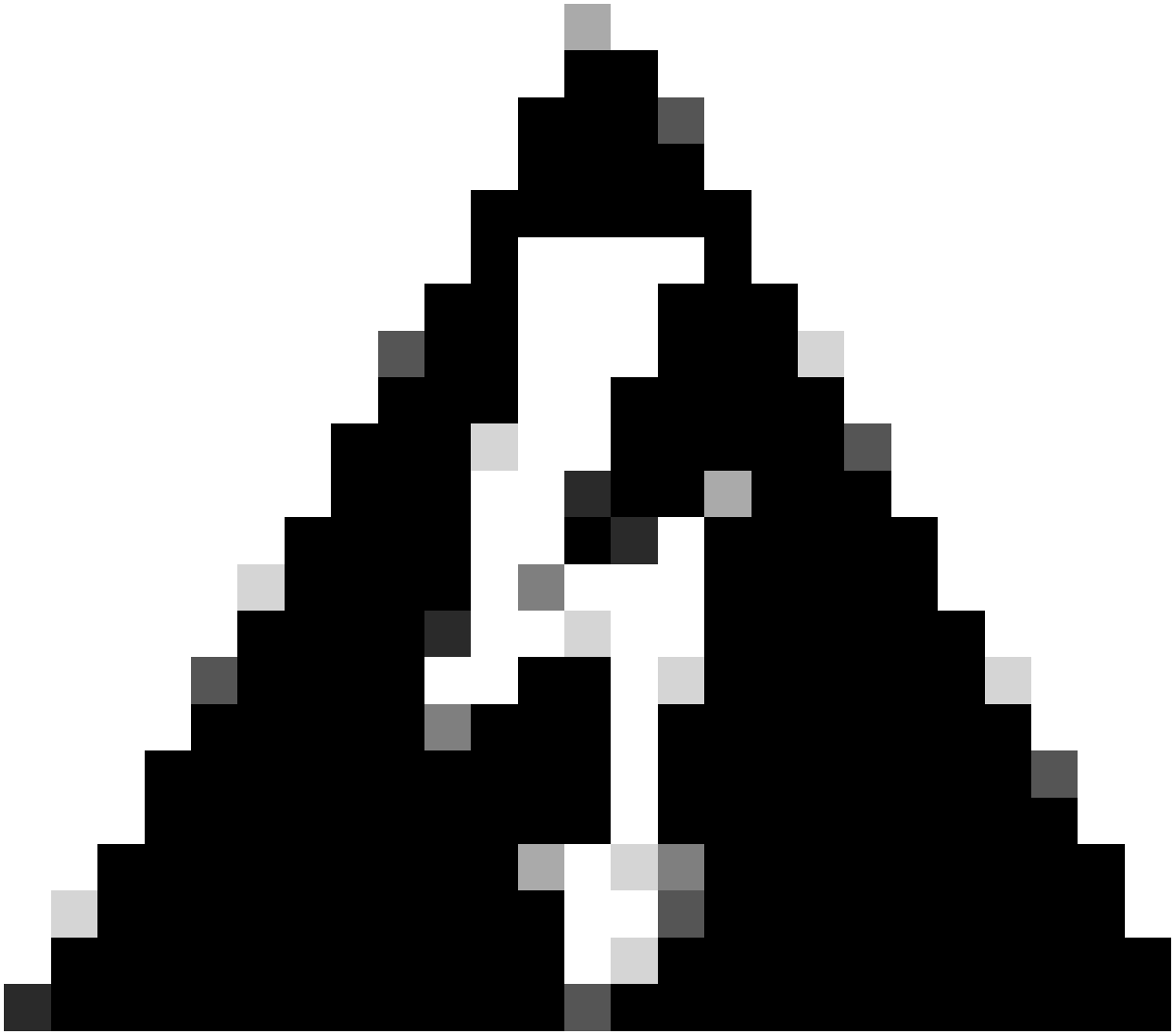
Étape 5. Indiquez un nom et une description. Dans cet exemple, le nom est le sous-réseau qui appartient au VLAN 10 et la description est L2VNI comme L2VNI répertorié au VLAN 10.



Étape 6. Configurez la plage d'adresses IP. Il s’agit du pool d’hôtes.

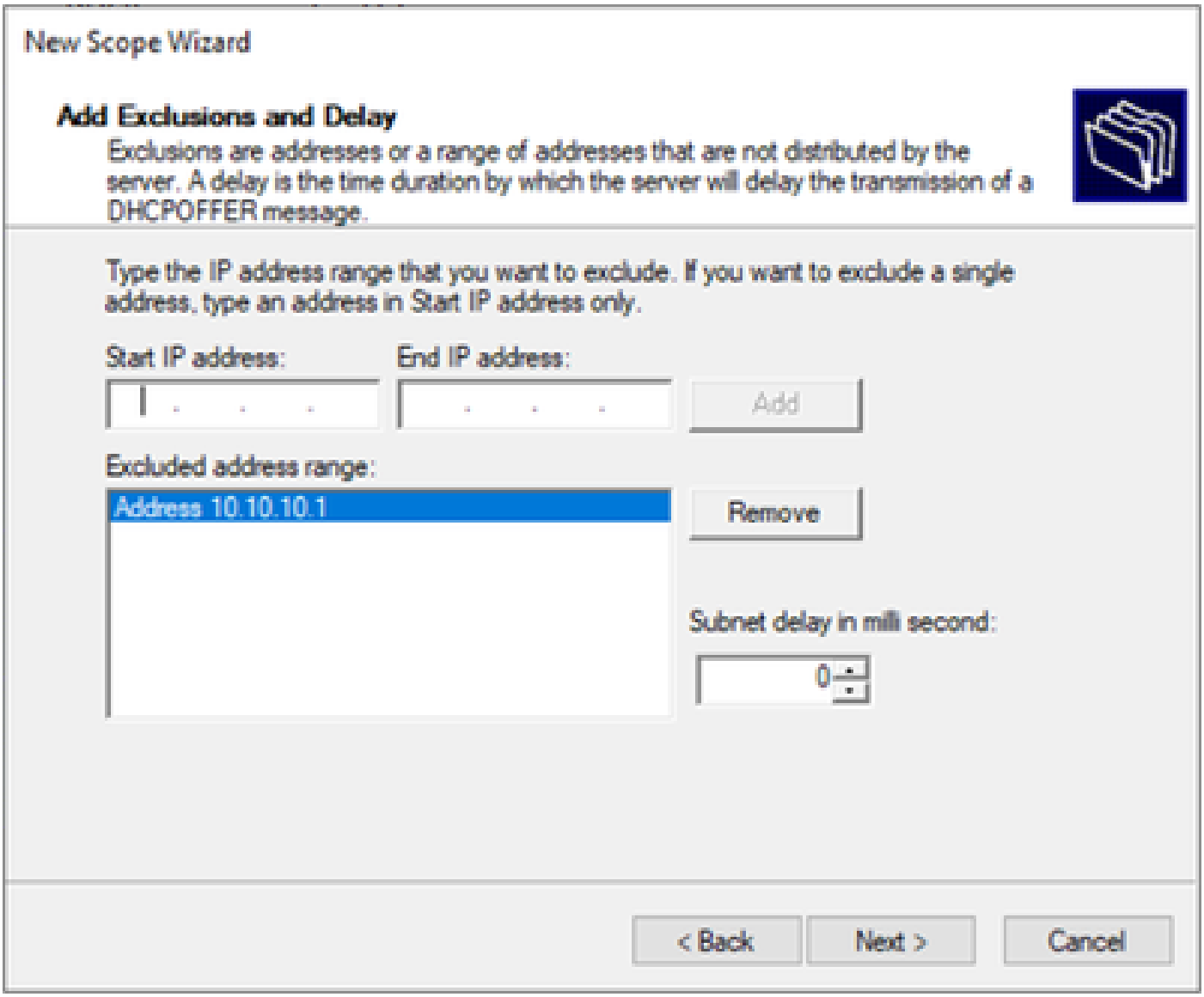


Étape 6. Excluez l'adresse IP partagée de la configuration SVI dans les VTEP. Dans cet exemple, l'interface VLAN 10 a l'adresse IP.10.10.1/24.

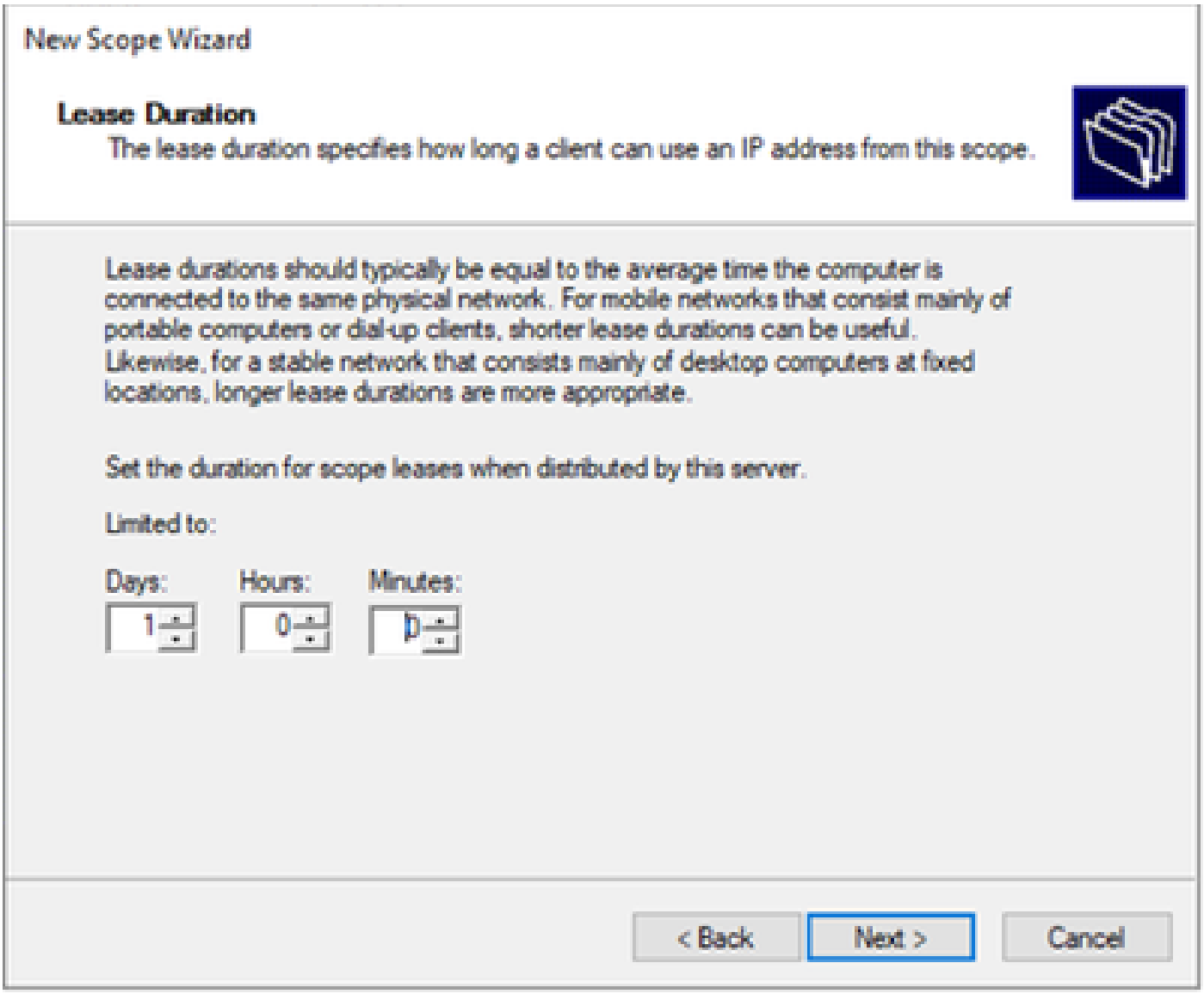


Avertissement : si l'adresse IP n'est pas exclue de l'interface SVI (ou de la passerelle par défaut), la duplication des adresses IP peut avoir un impact sur la livraison du trafic.

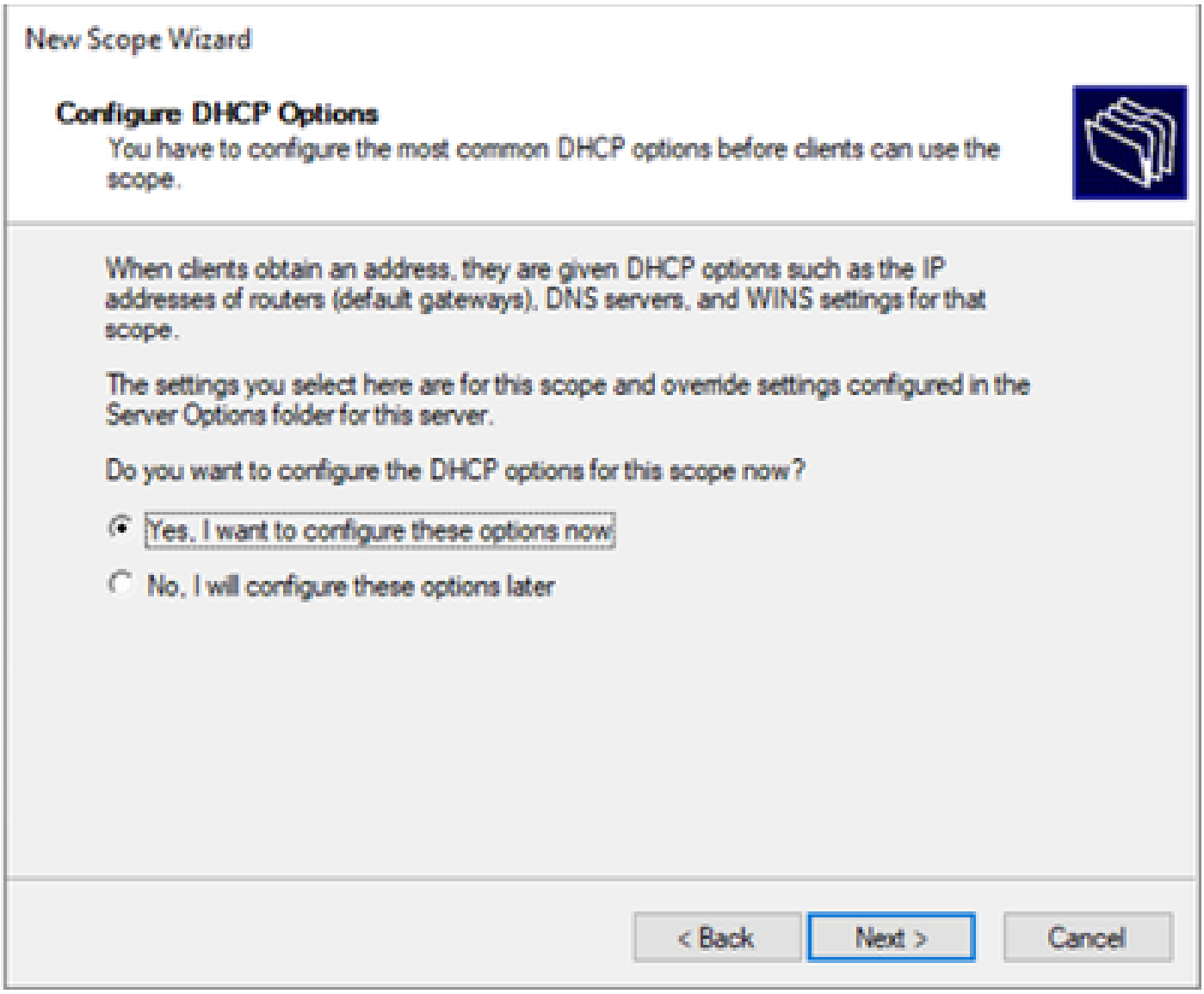
```
LEAF-1# show running-config interface vlan 10
<snip>
interface Vlan10
  no shutdown
  vrf member tenant-a
  no ip redirects
  ip address 10.10.10.1/24
  no ipv6 redirects
  fabric forwarding mode anycast-gateway
  ip dhcp relay address 10.10.10.150
  ip dhcp relay source-interface loopback100
```



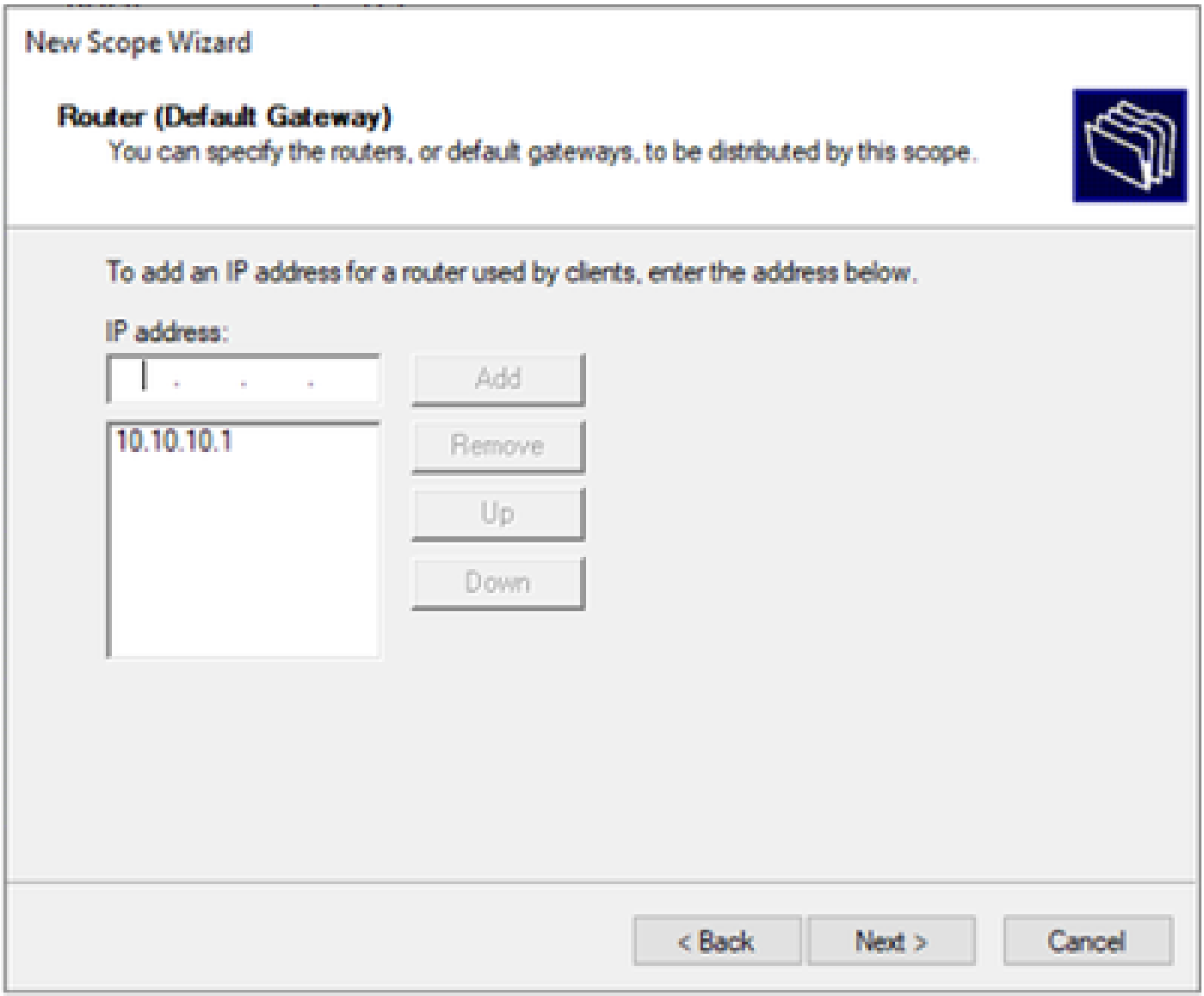
Étape 7. Configurez la durée du bail de l'adresse IP. Il s’agit de la durée pendant laquelle un hôte peut utiliser l’adresse IP attribuée avant de la renouveler.



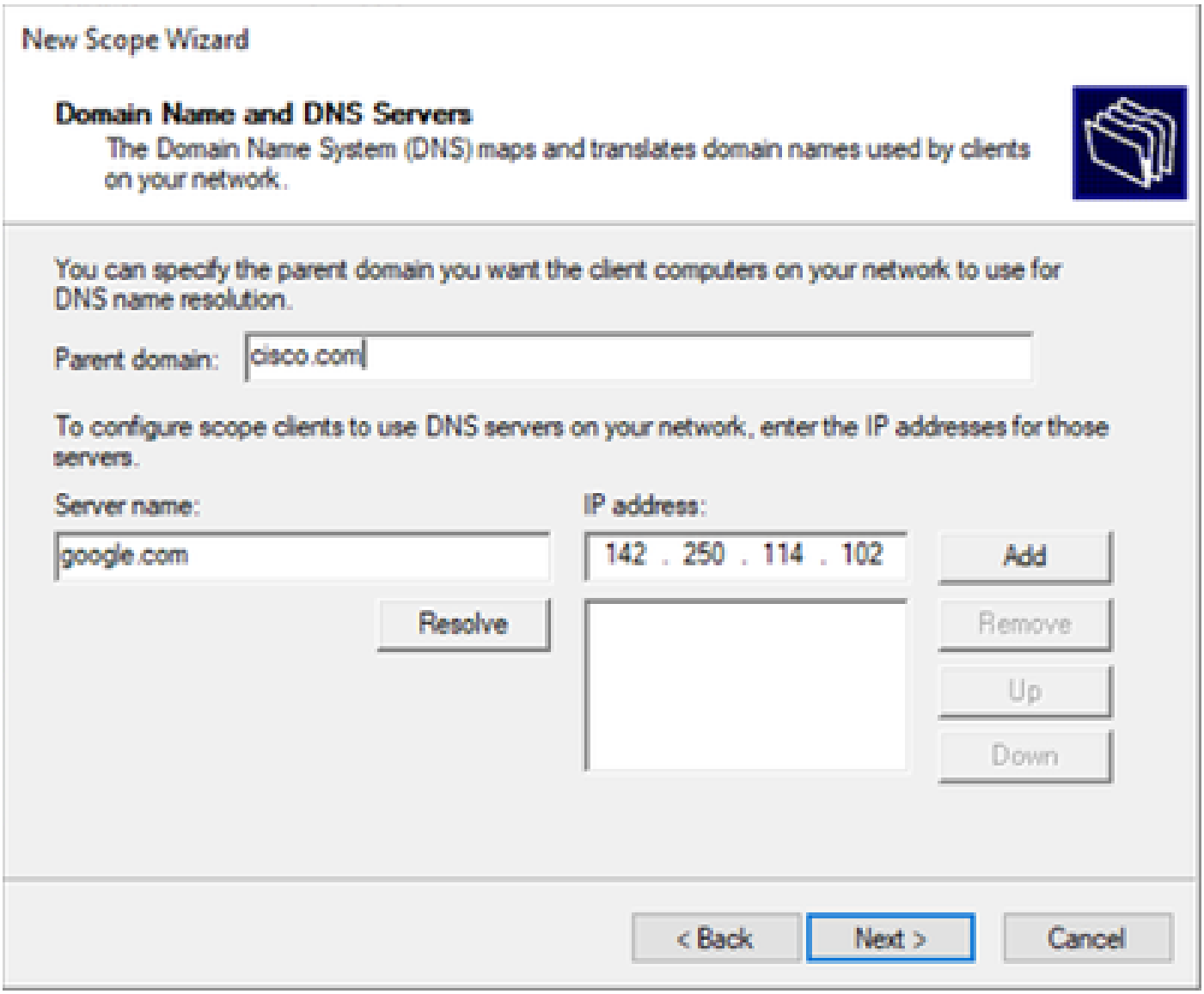
Étape 8. Sélectionnez Yes, I want to configure these options now.



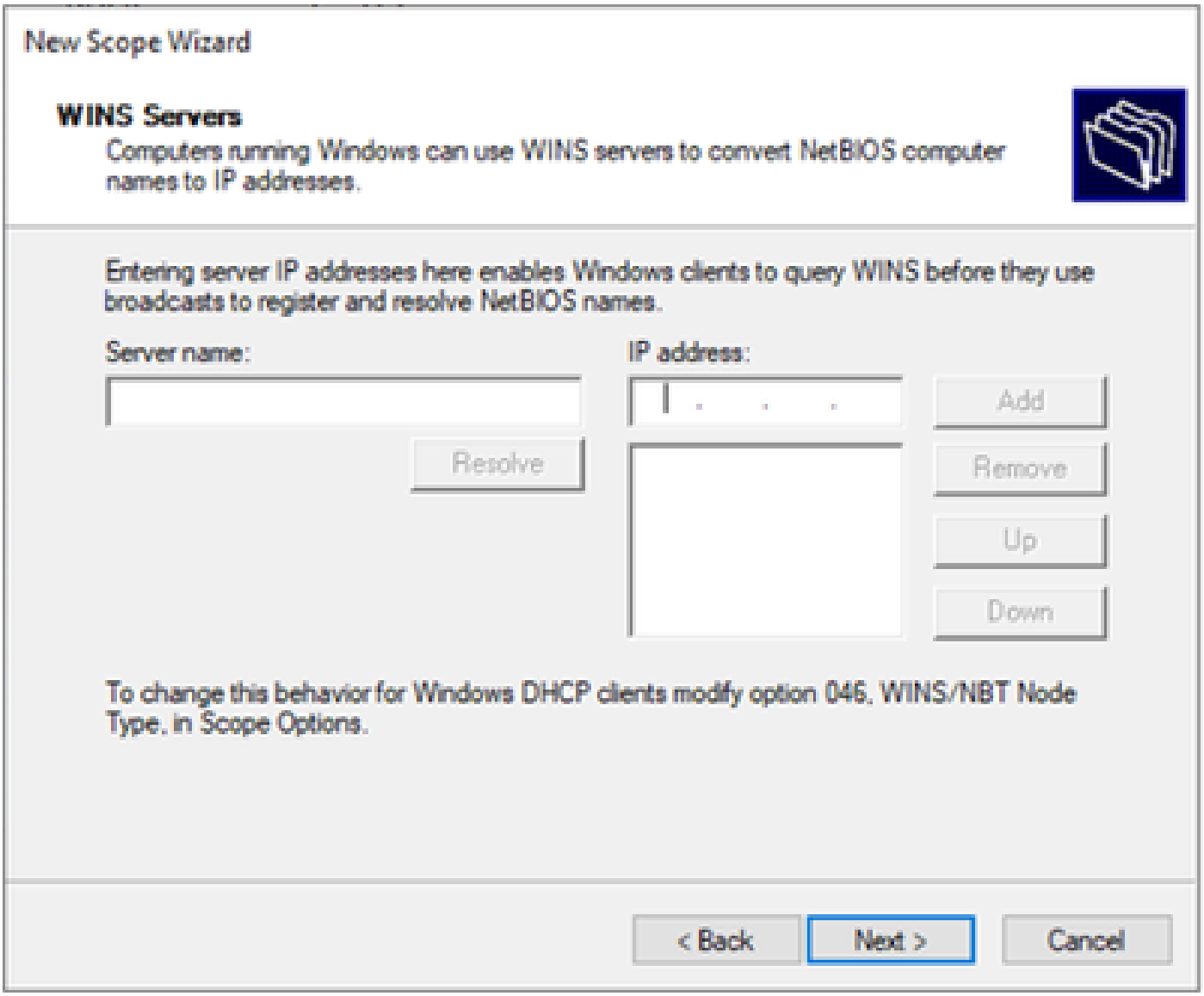
Étape 9. Configurez l'adresse IP de la passerelle par défaut.



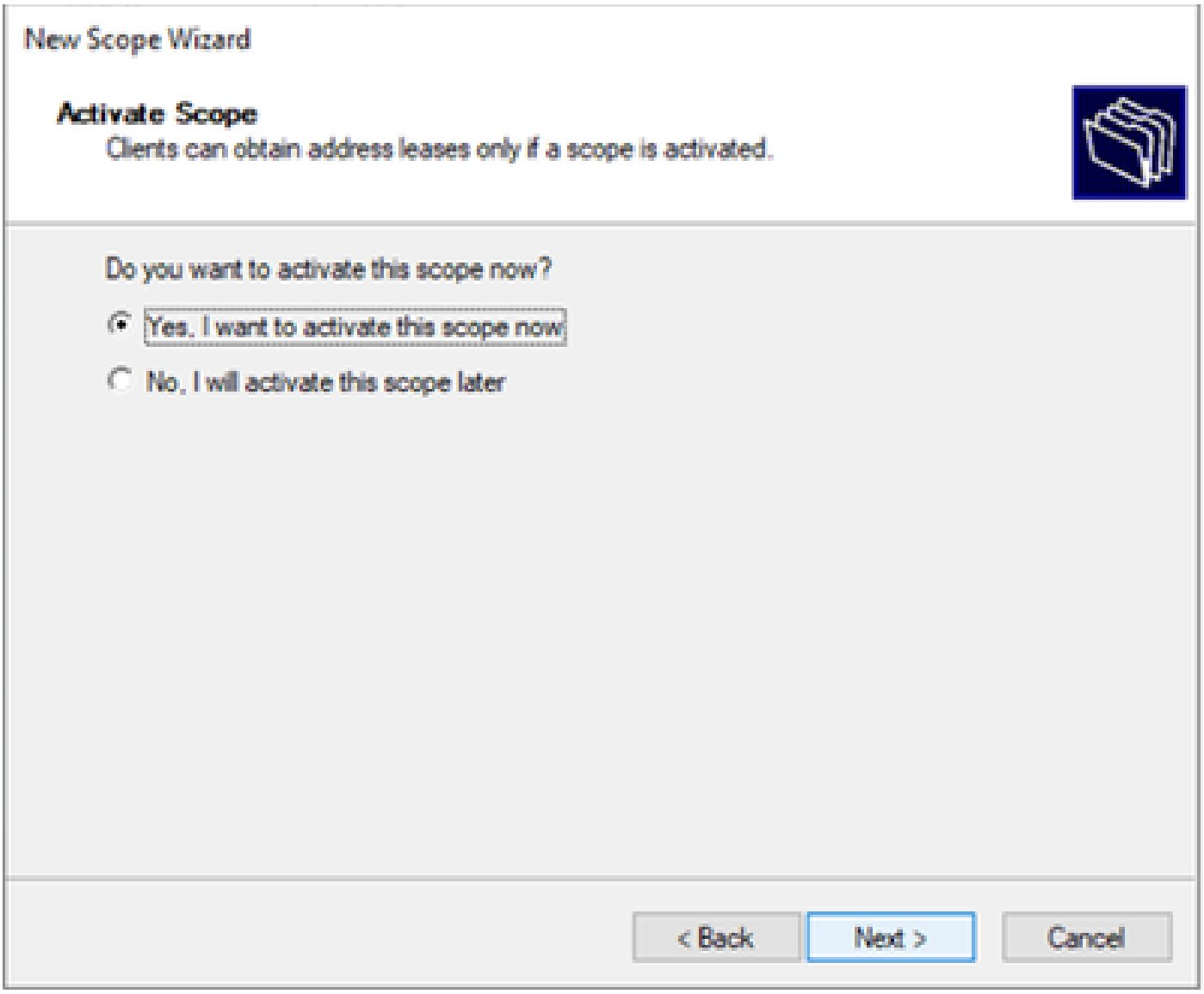
Étape 10. Configurer le nom de domaine et le serveur DNS



Étape 11. Configurez le serveur WINS, le cas échéant. Cette opération peut être ignorée si les informations ne sont pas connues.

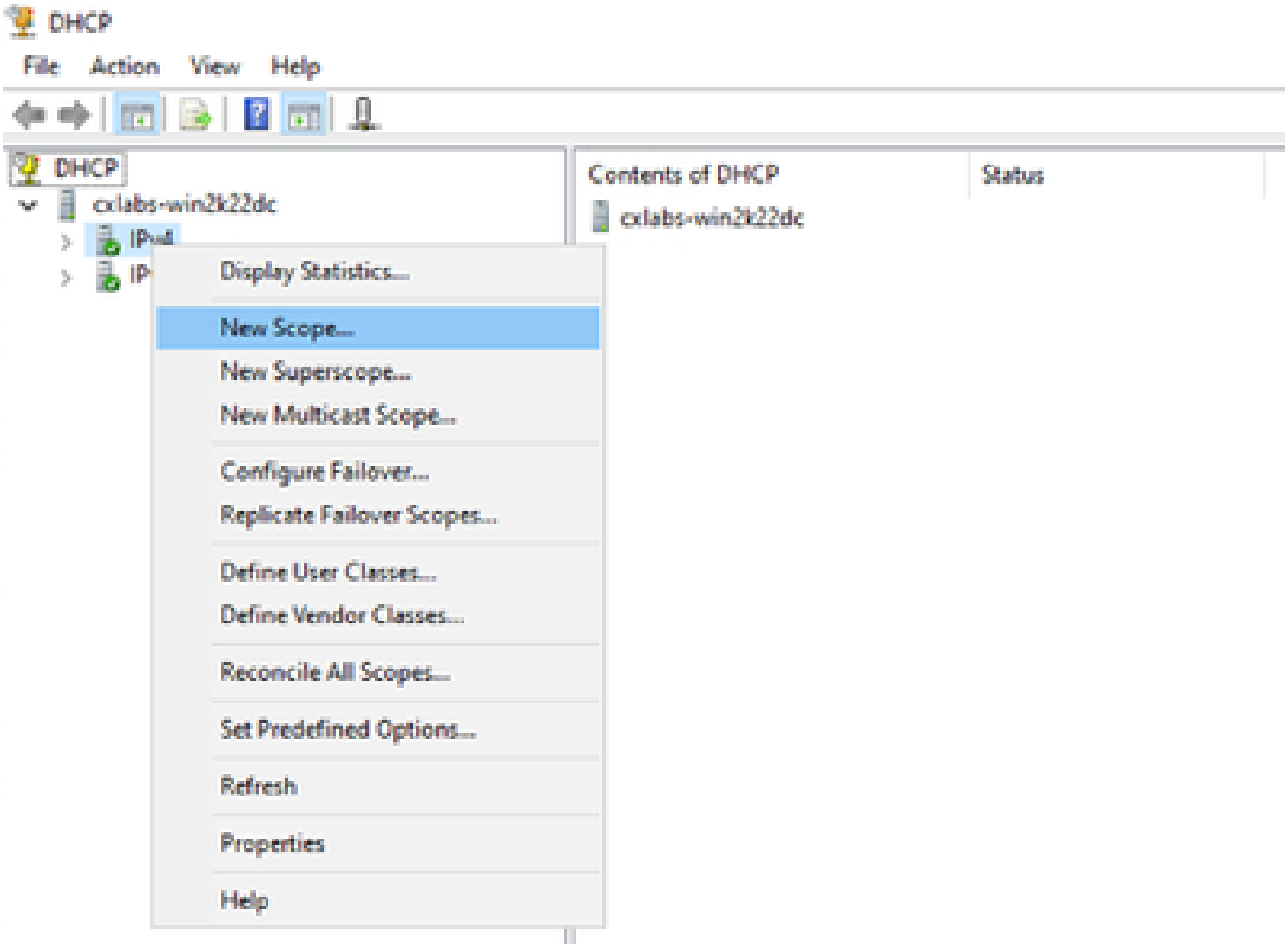


Étape 12. Sélectionnez Oui, je souhaite activer cette étendue maintenant.



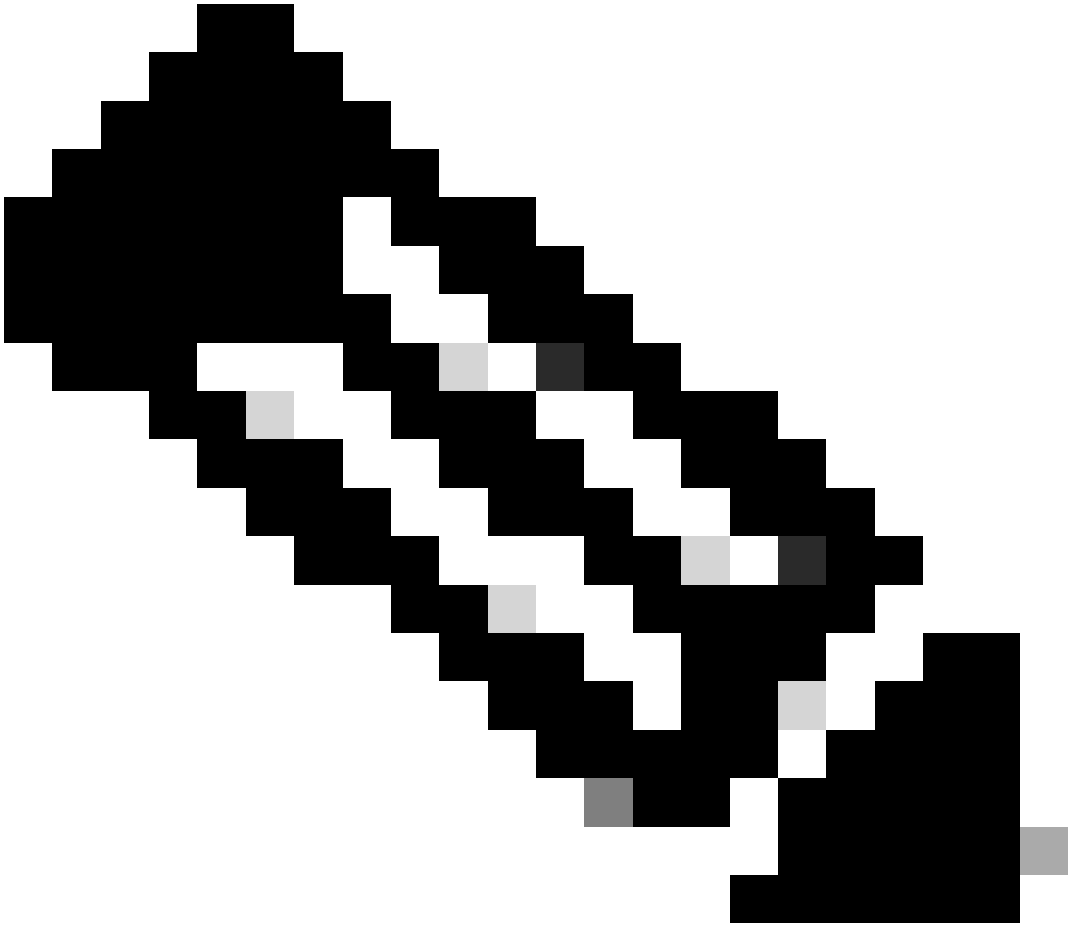
Configuration de l'étendue pour les adresses IP uniques des boucles dans SVI en tant qu'agent de relais DHCP.

Étape 1. Cliquez avec le bouton droit sur IPv4 et sélectionnez IPv4Scope.



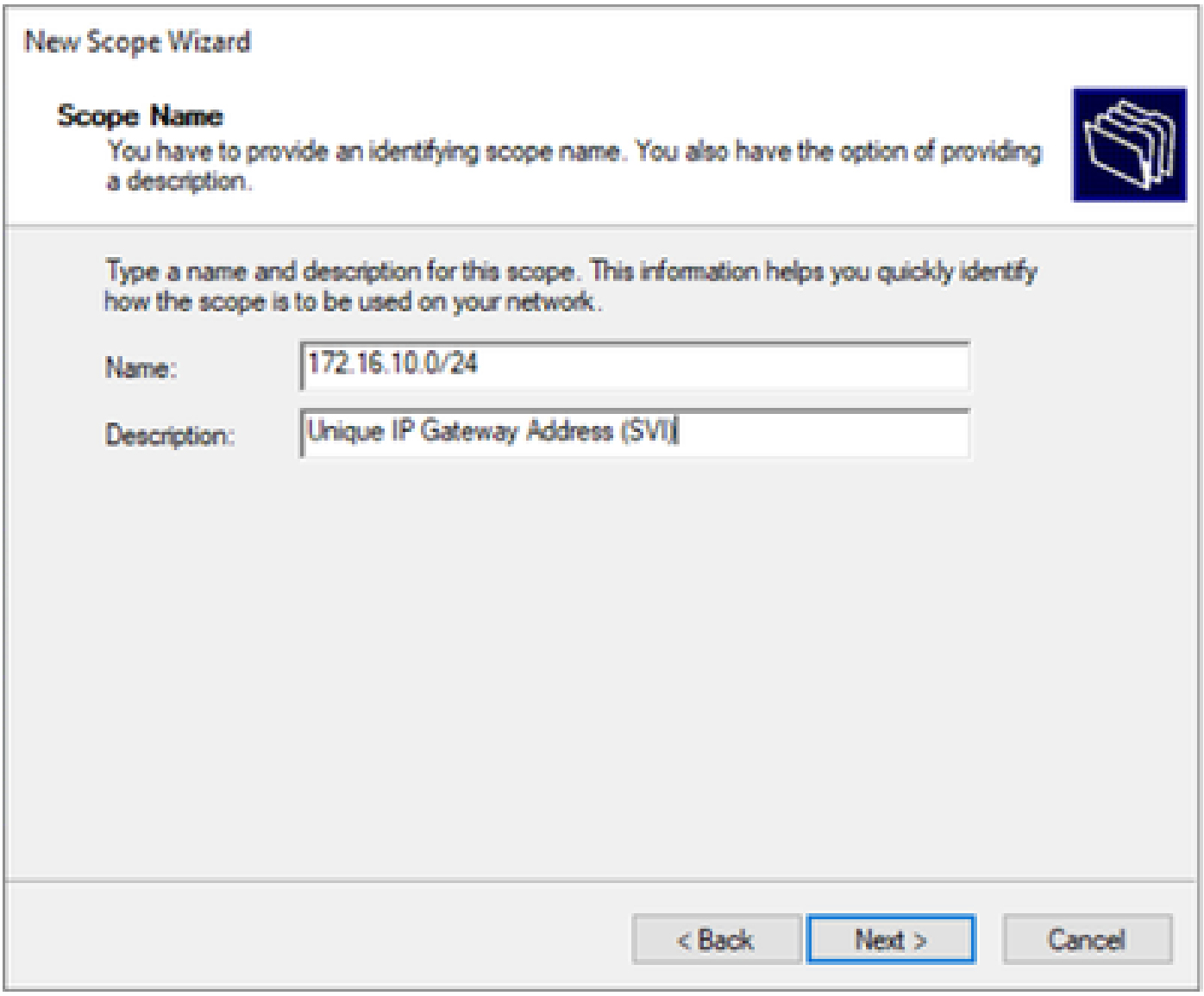
Nouvelle étendue dans DCHP

Étape 2. Indiquez un nom et une description. Dans cet exemple, name est le sous-réseau utilisé pour le sous-réseau avec adresse de bouclage.

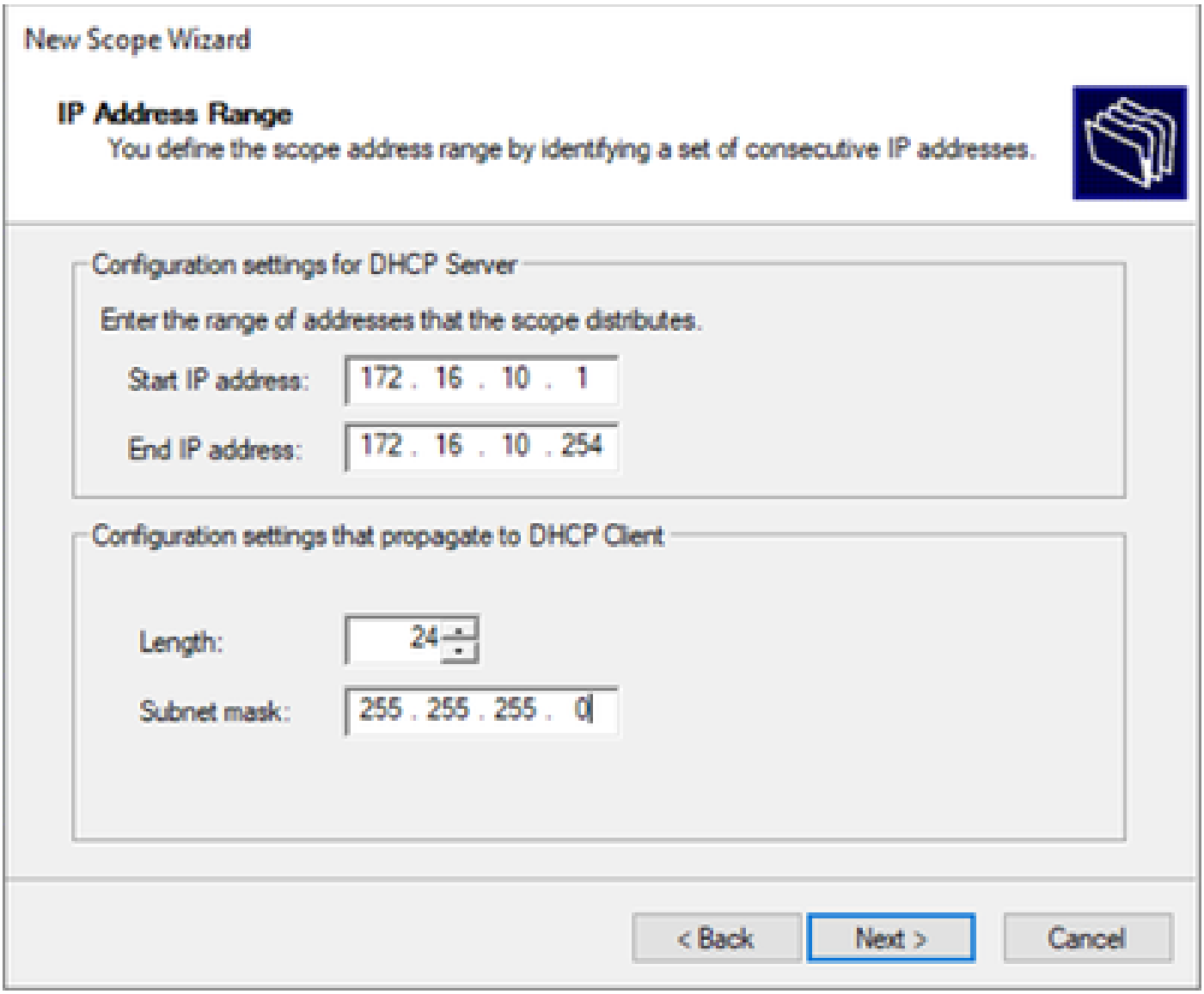


IPte : un bouclage est utilisé en mode bouclé adresse IP unique dans le fabric VxLAN pour le locataire VxLAN. Ceci doit être annoncé dans la redistribution de route EVPN L2VPN BGP dans BGP dans le VRF du locataire correspondant dans l'adresse IPv4-famIPv4

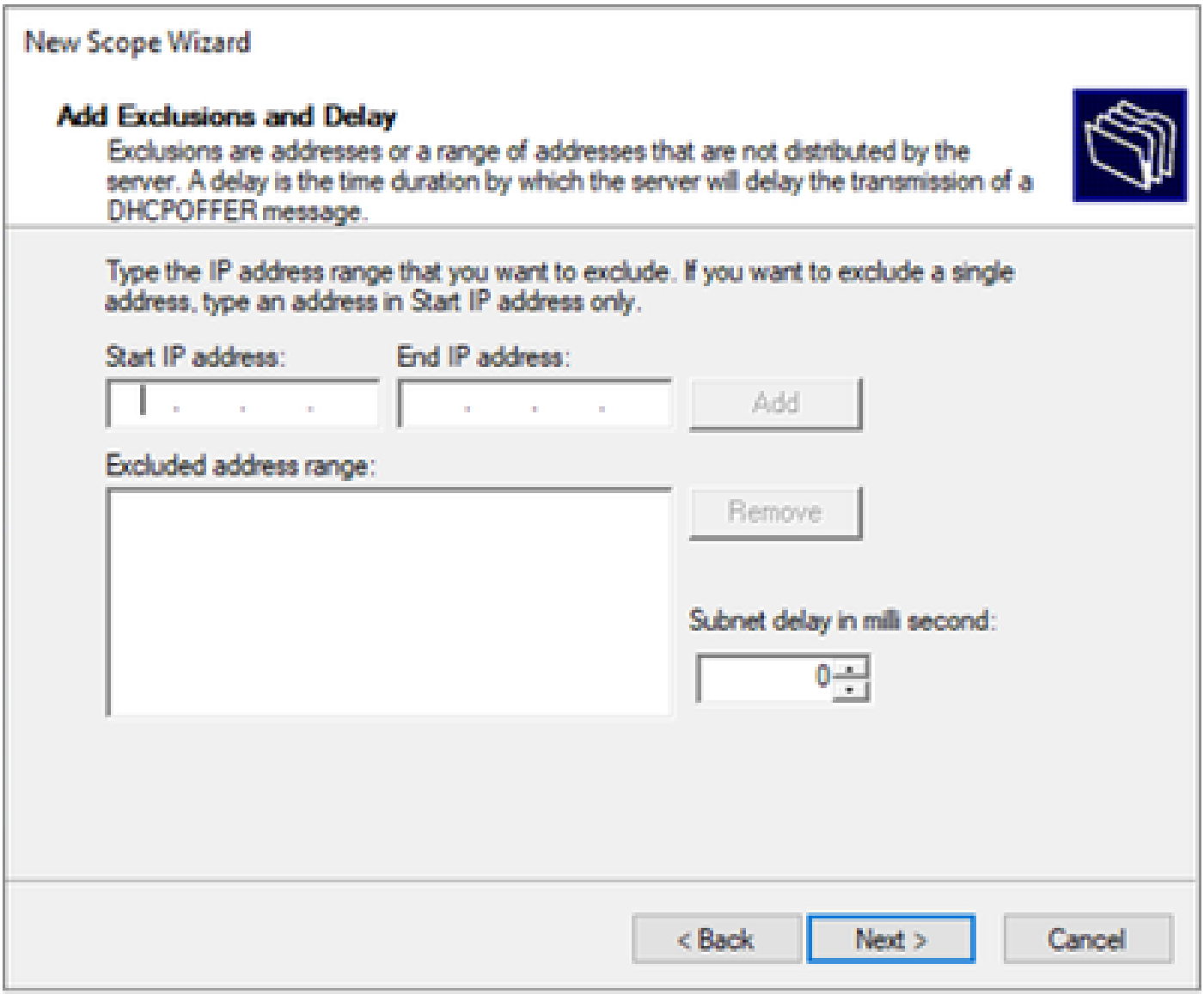
```
LEAF-1# show running-config interface loopback 100
<snip>
interface loopback100
  vrf member tenant-a
  ip address 172.16.10.8/32
```



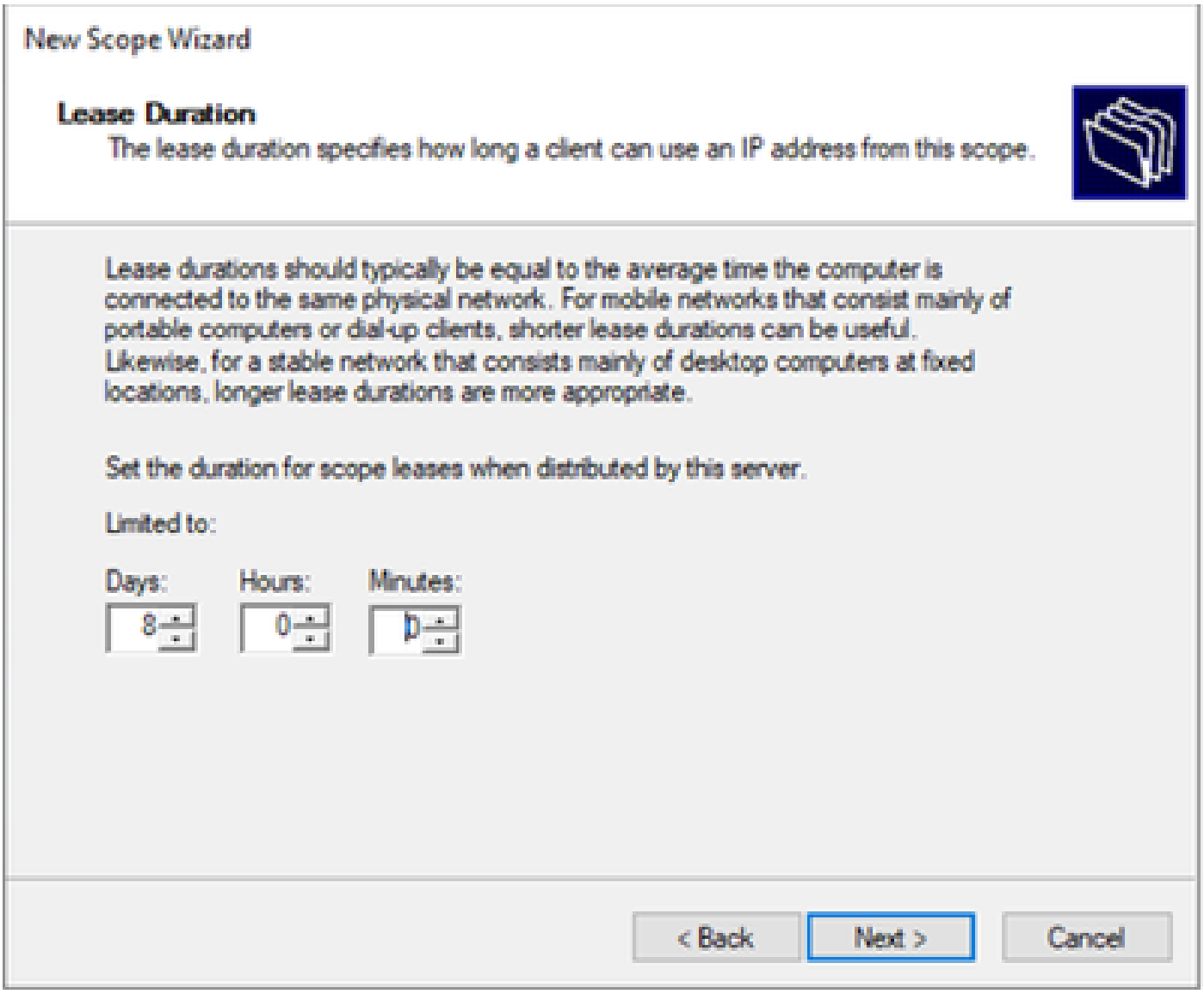
Étape 3. Configurez la plage d'adresses IPip. Il s'agit du pool pour les boucles.



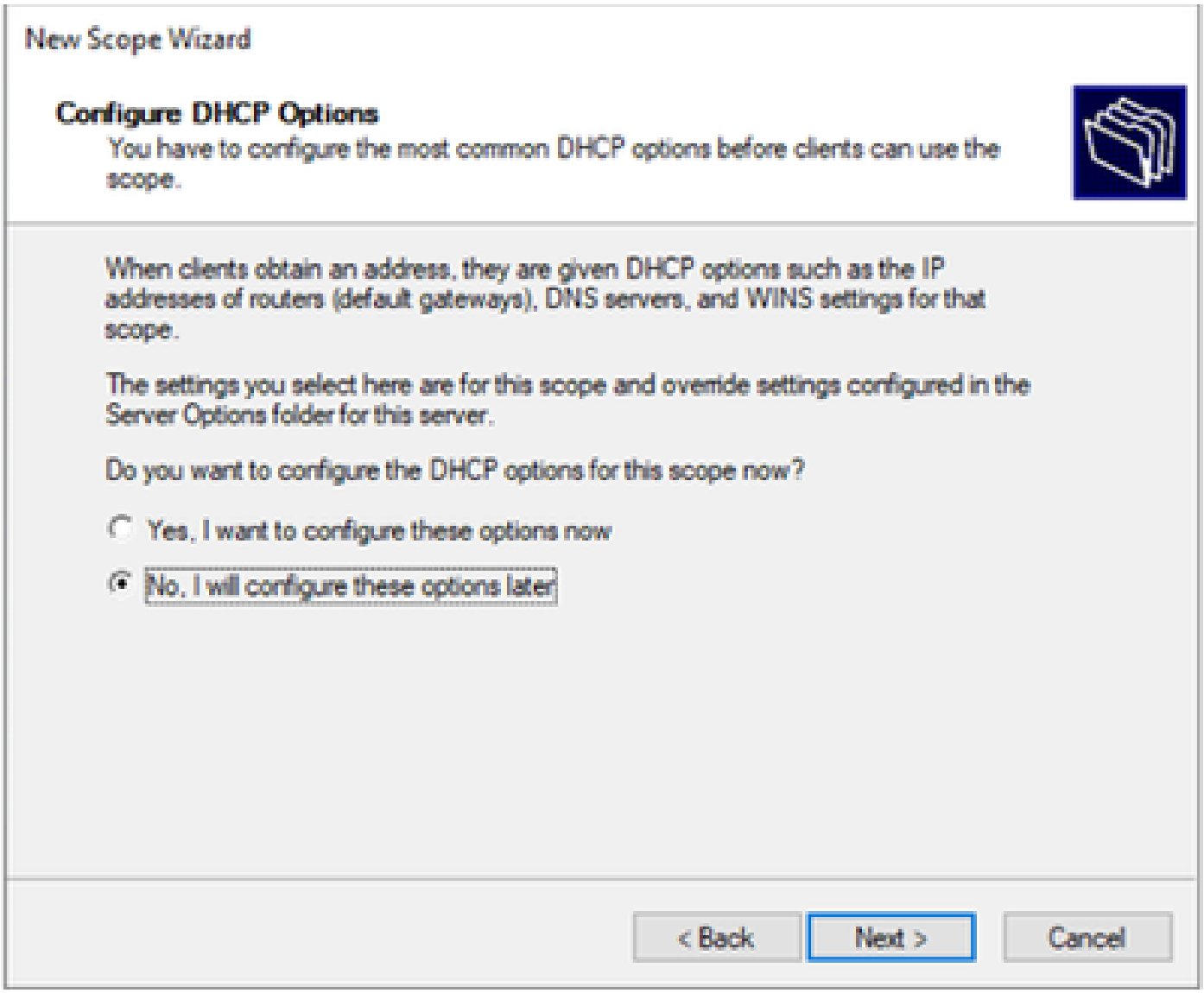
Étape 4. Configurez les exclusions (facultatif car le serveur DHCP loue les adresses IP appartenant à ce sous-réseau).



Étape 5. Ignorez la durée du bail et cliquez sur Next.

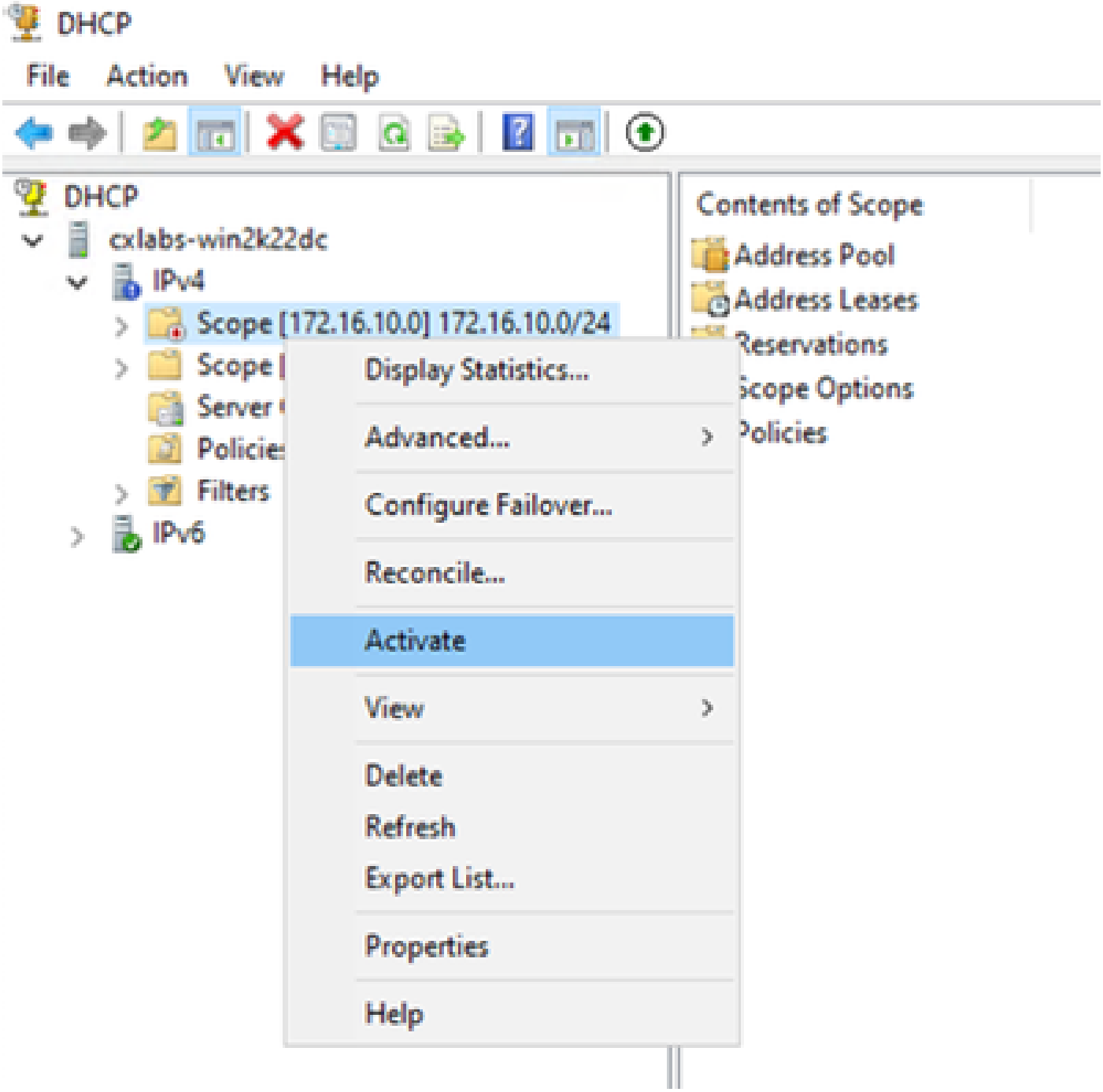


Étape 6. Sélectionnez Non, je configurerai ces options ultérieurement.



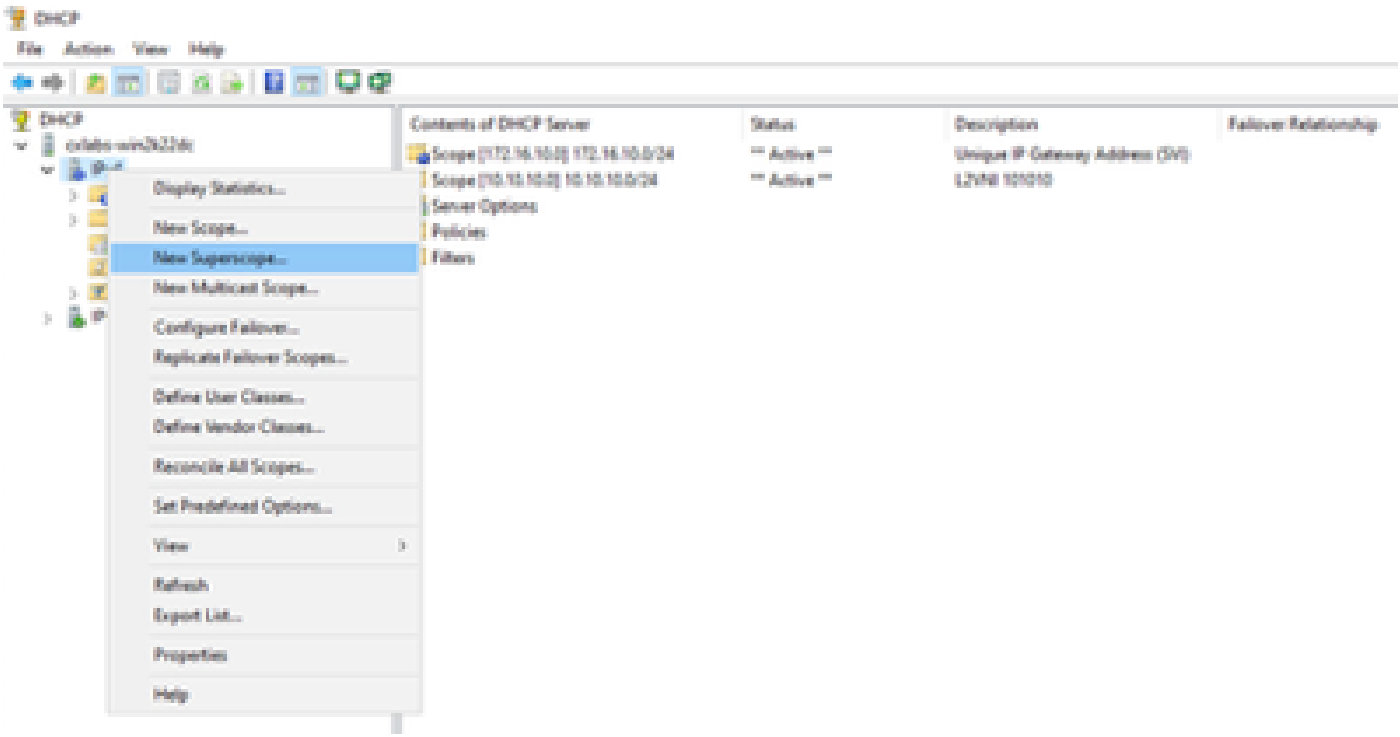
Étape 7. Cliquez sur Finish (Terminer).

Étape 8. Cliquez avec le bouton droit sur l'étendue créée et sélectionnez Activer.

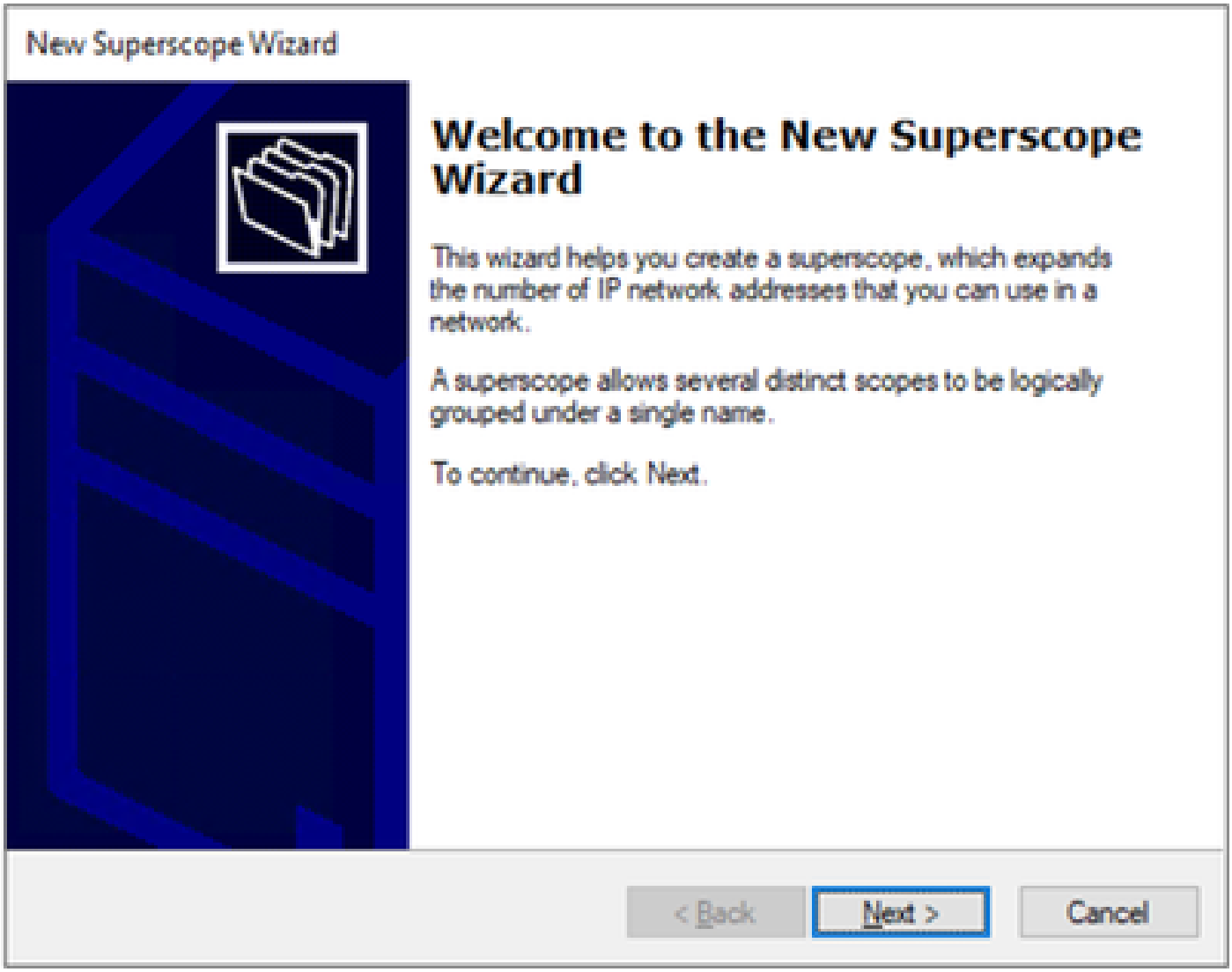


Configuration de la super-étendue pour le fabric VxLAN.

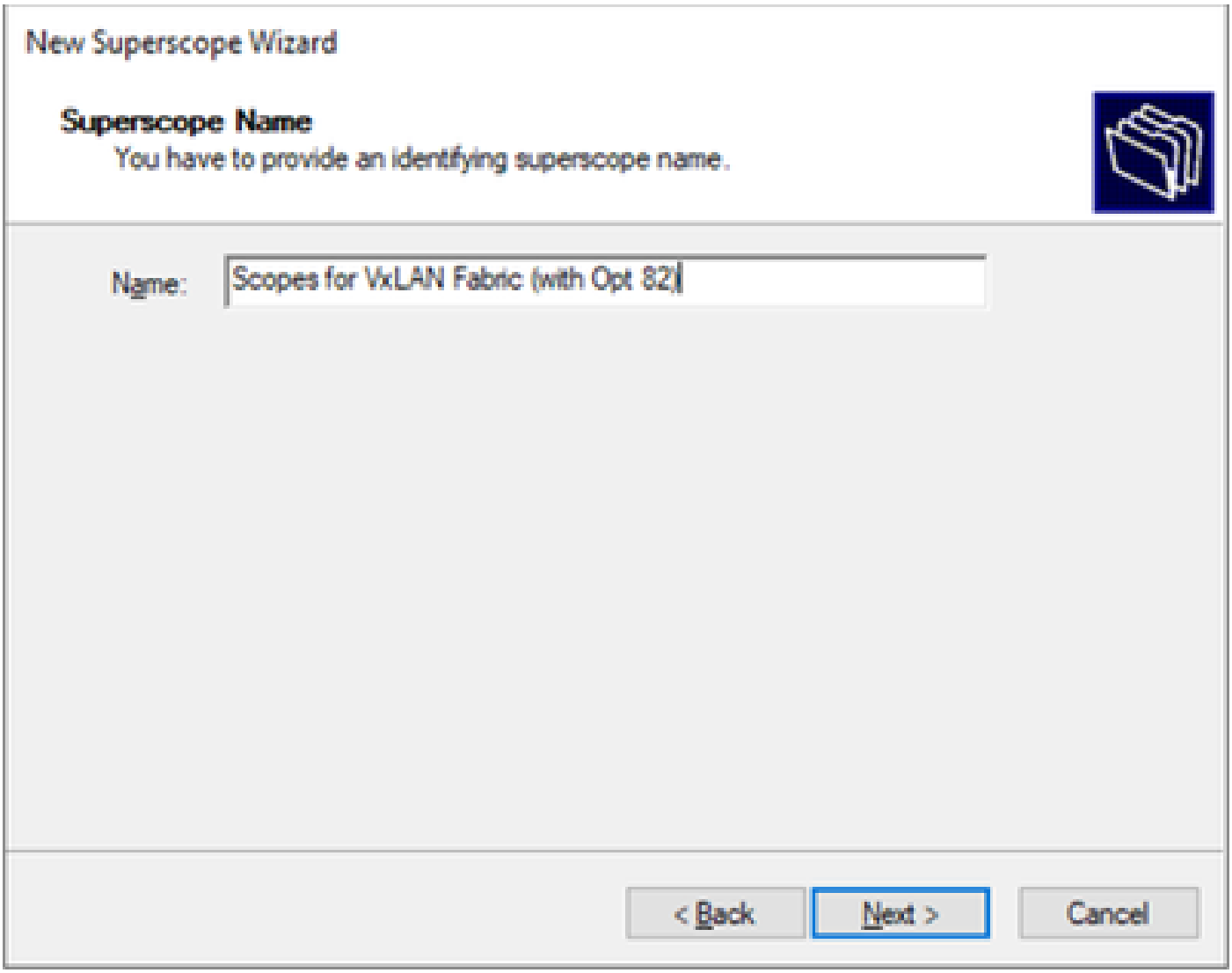
Étape 1. Cliquez avec le bouton droit dans IPv4 et sélectionnez Nouvelle étendue globale.



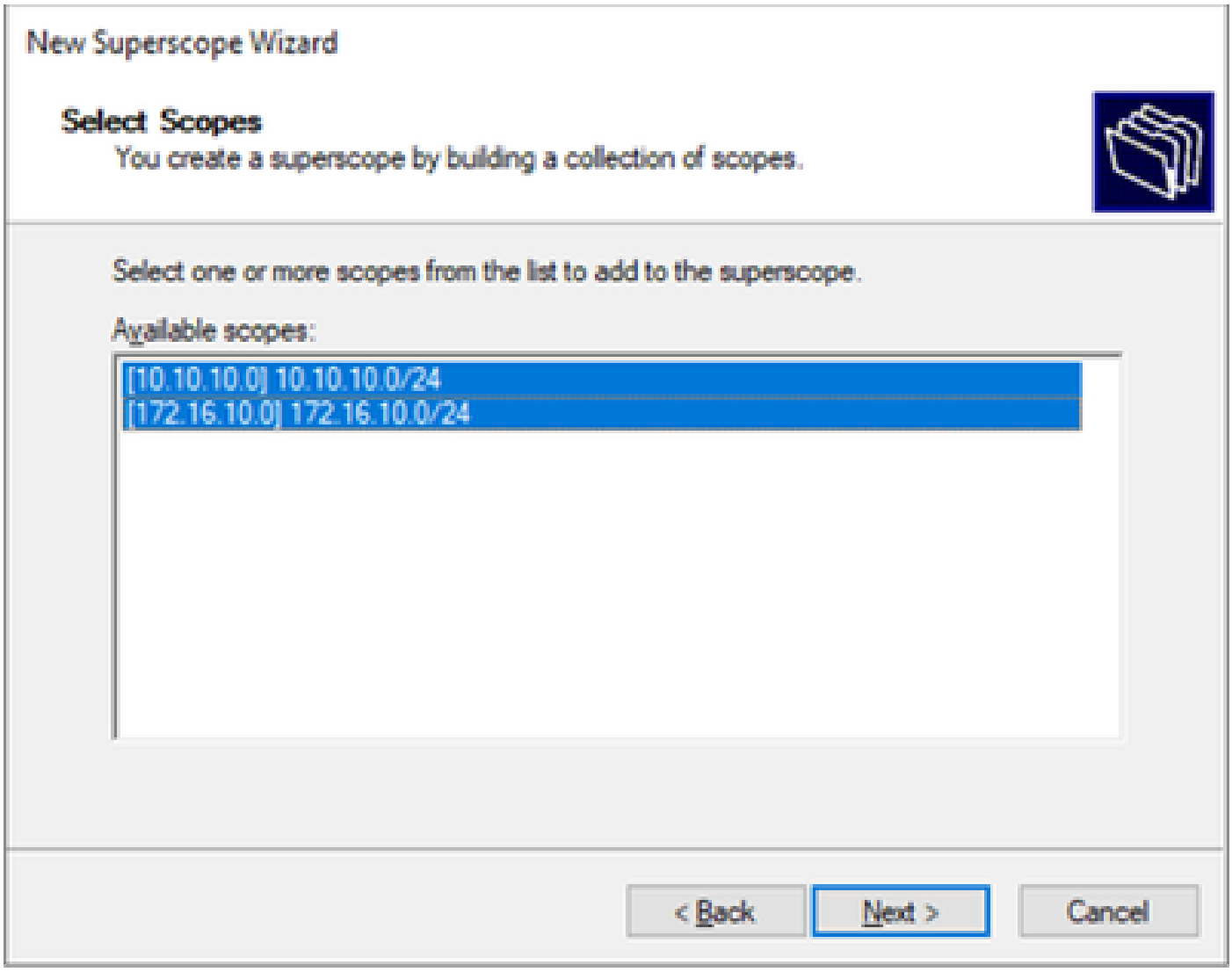
Étape 2. Cliquez sur Next (Suivant).



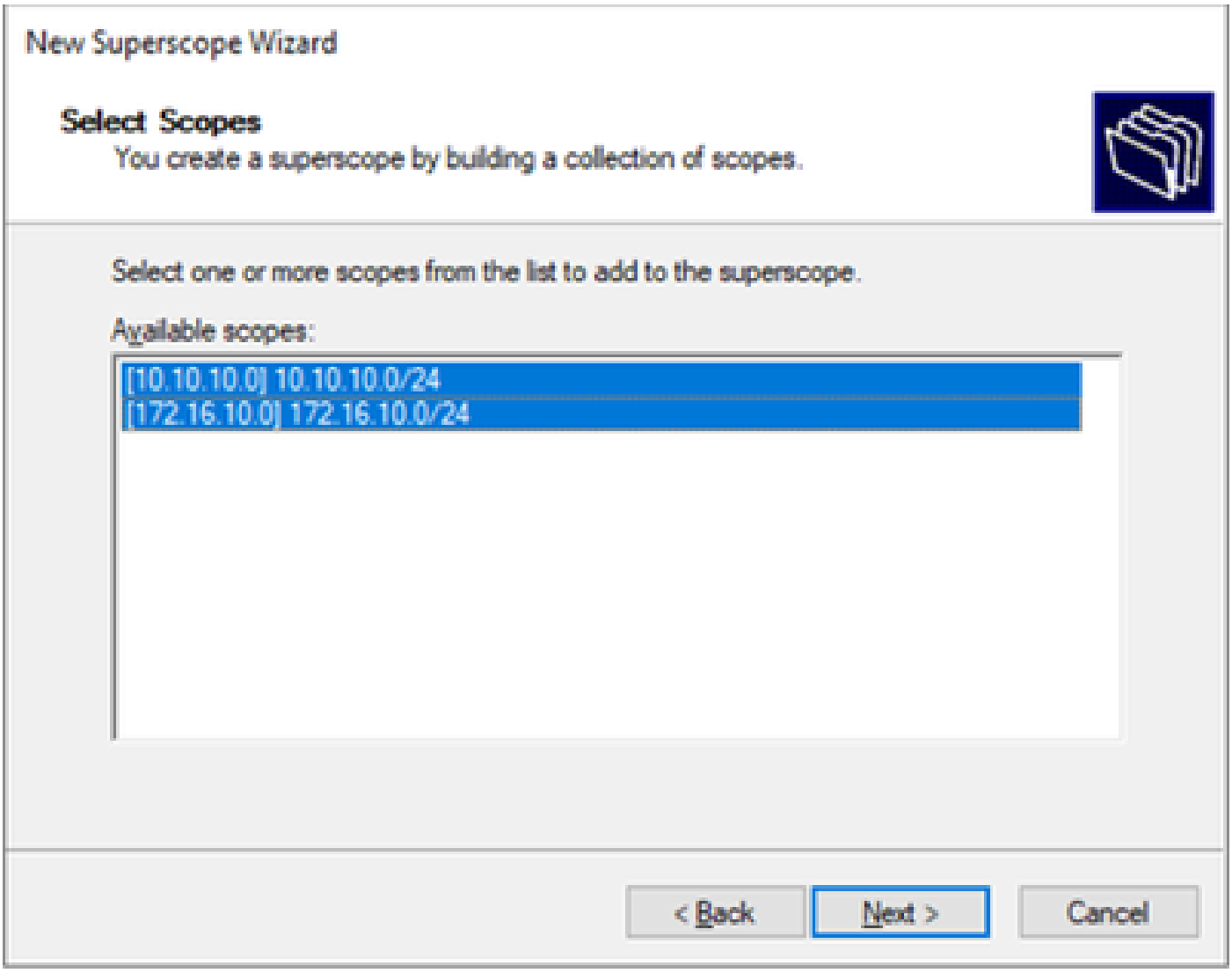
Étape 3. Écrivez le nom de l'étendue globale.



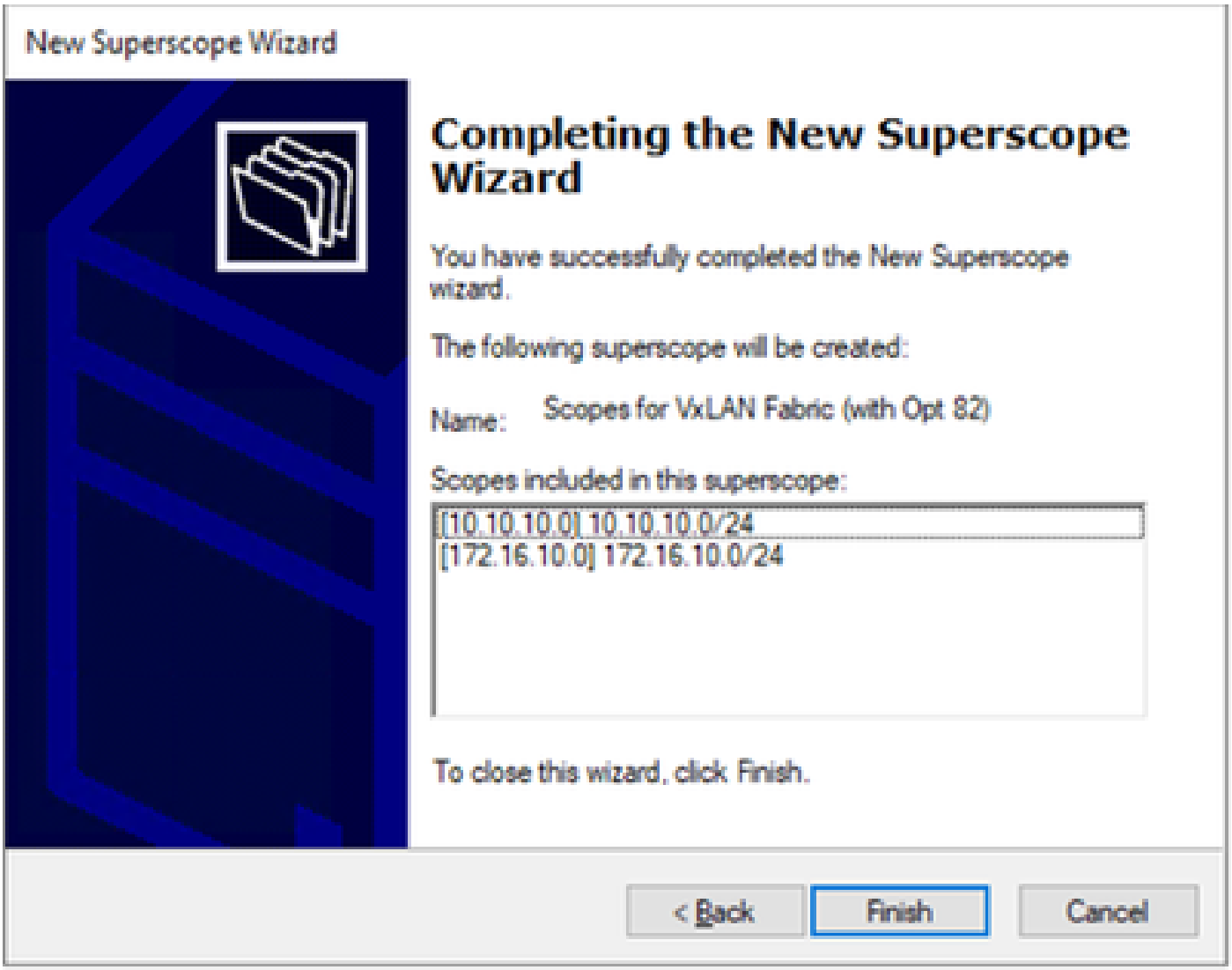
Étape 4. Sélectionnez toutes les étendues qui appartiennent au fabric VxLAN.



Étape 5. Sélectionnez toutes les étendues qui appartiennent au fabric VxLAN.

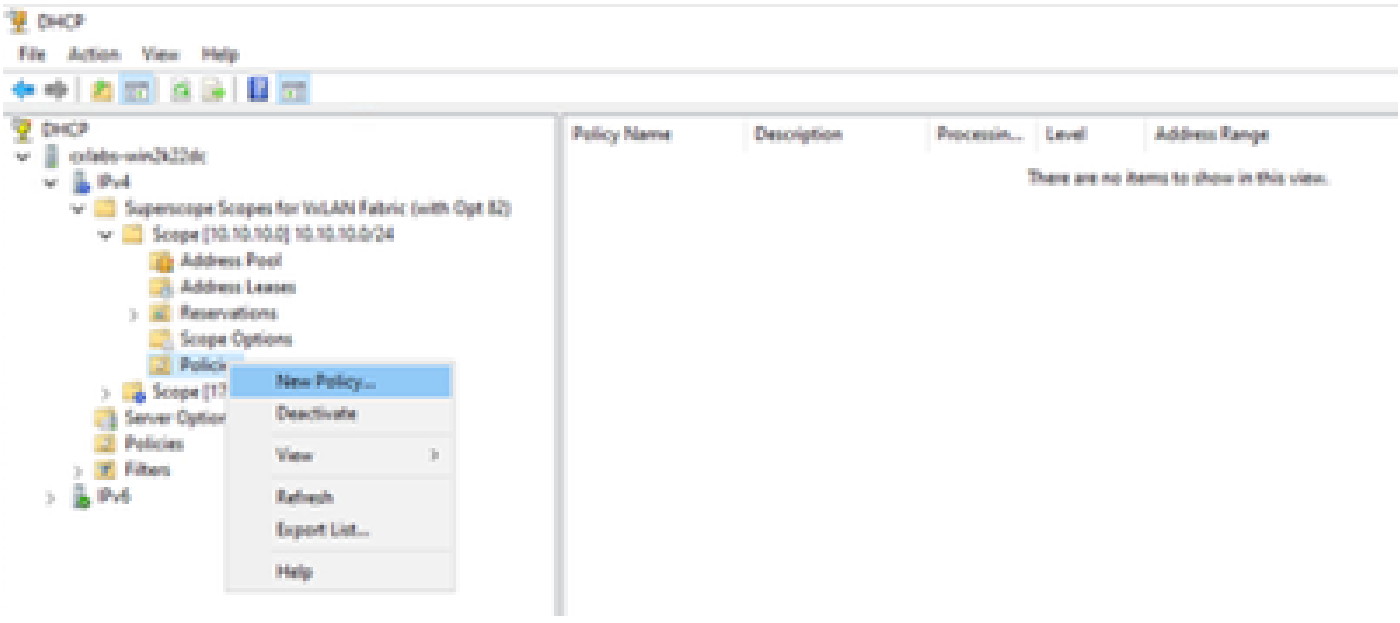


Étape 6. Vérifiez que toutes les étendues globales de fabric VxLAN sont en place et cliquez sur Finish.

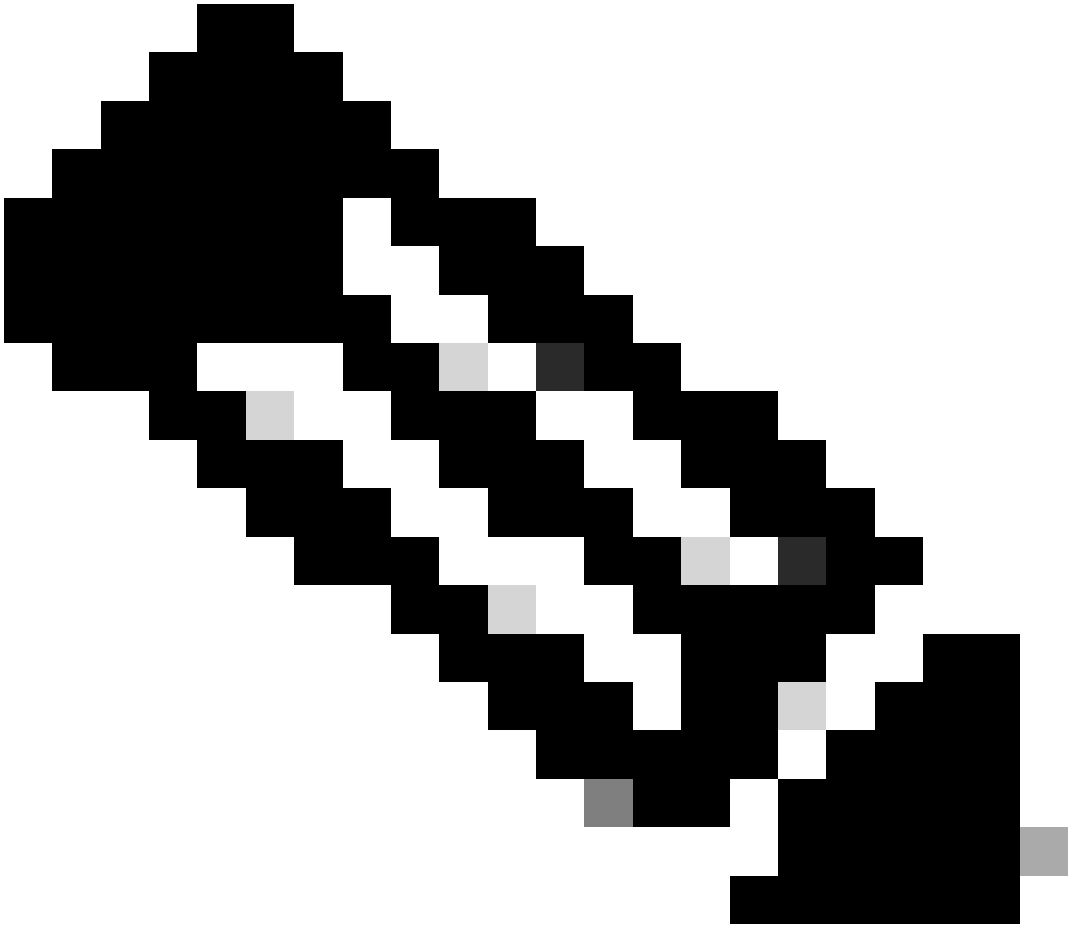


Configurez l'option 82 dans les étendues d'hôte.

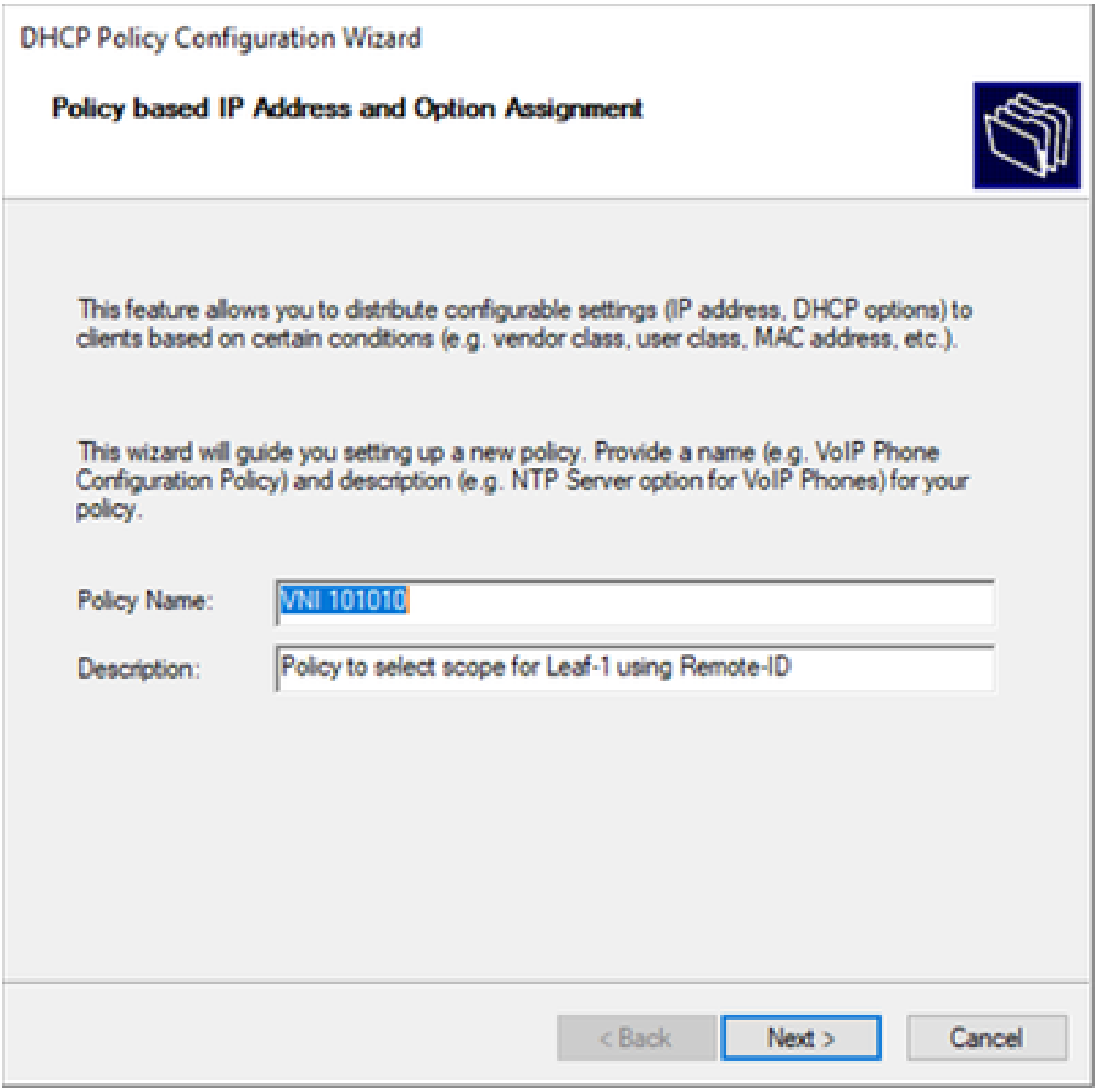
Étape 1. Cliquez avec le bouton droit sur Stratégies (dernière option) dans l'étendue de l'hôte et cliquez sur Nouvelle stratégie.



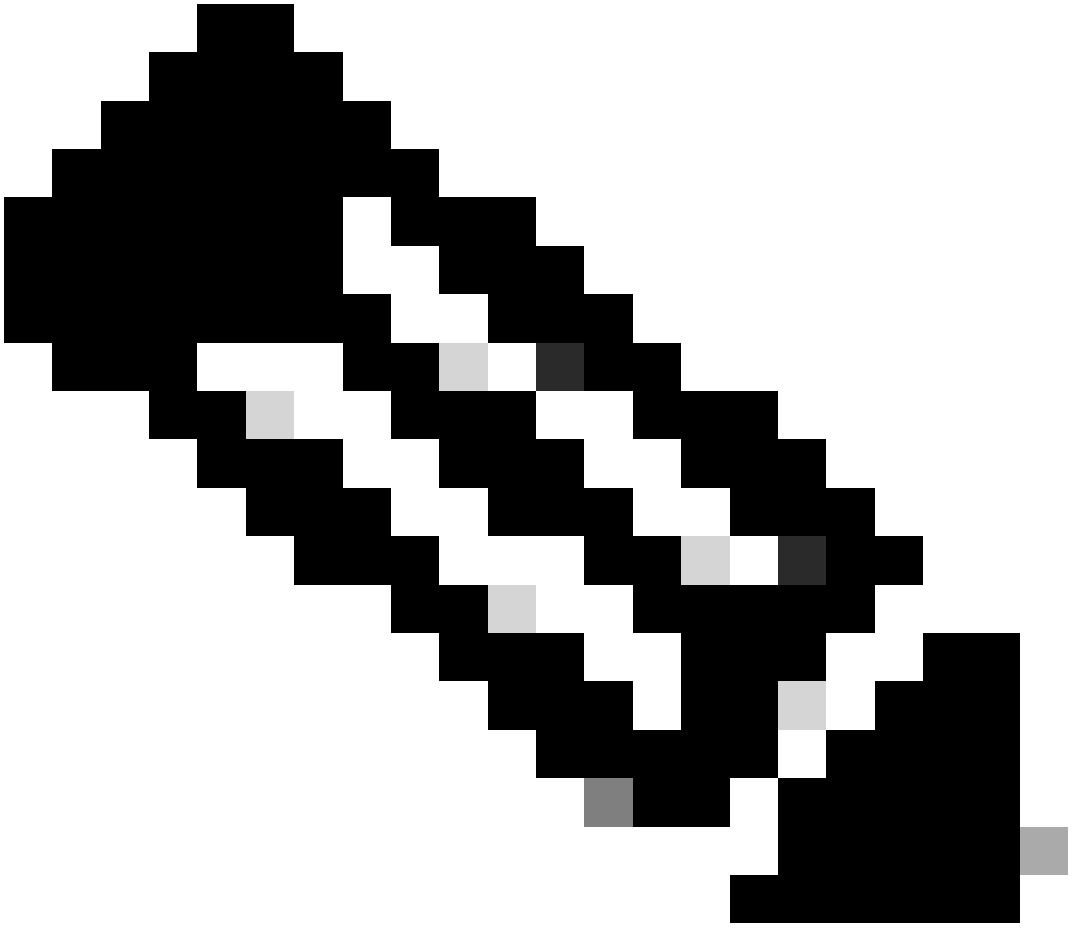
Étape 2. Écrivez un nom et une description, puis cliquez sur Next.



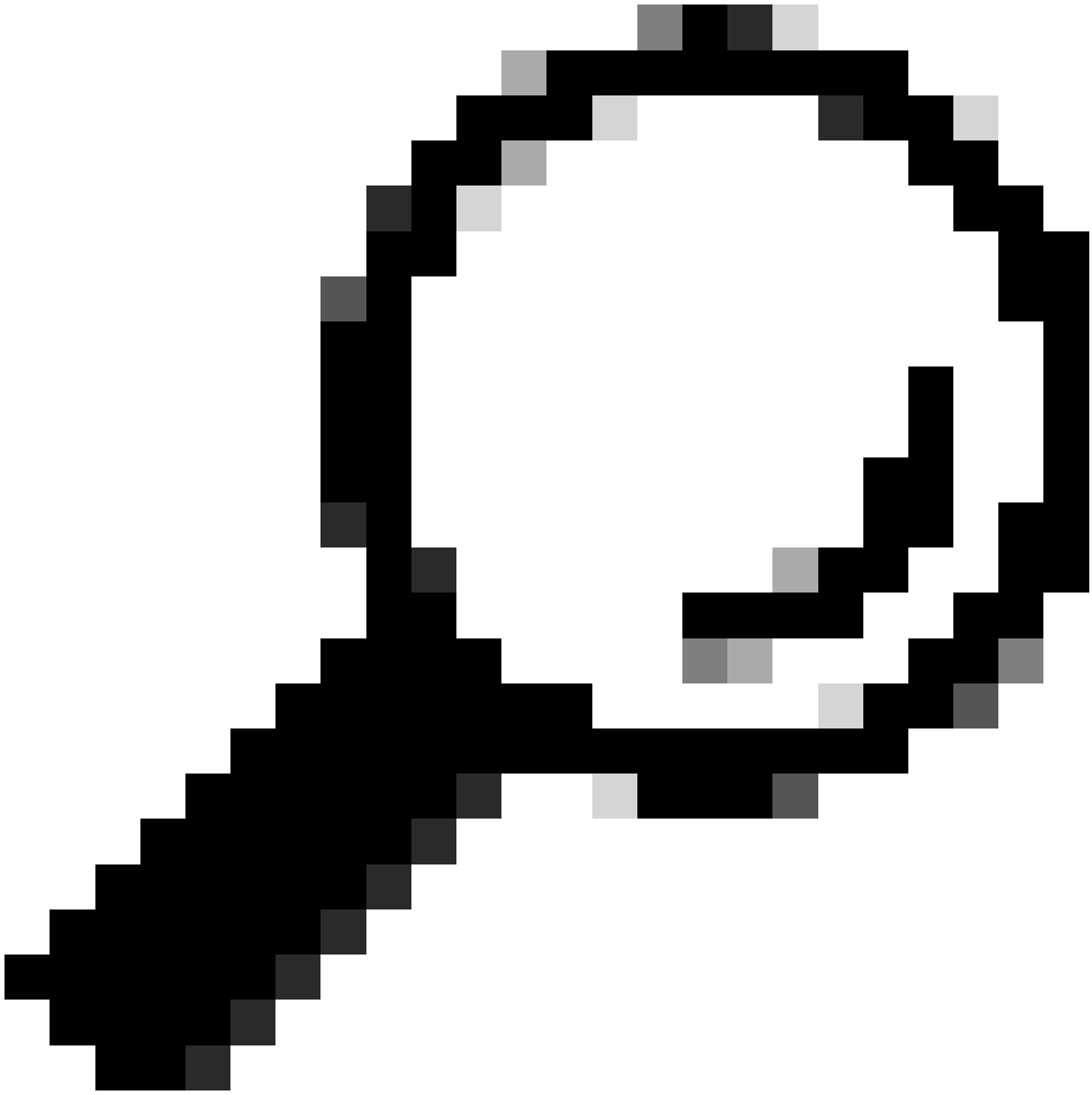
Remarque : dans cet exemple, la stratégie est créée pour sélectionner l'adressage IP paIPicularly pour les hôtes dans Leaf-1 pour VNI 101010 basé sur VNI Remote-ID (paramètre de l'option 82).



Étape 3. Cliquez sur Add. Dans Critères, sélectionnez Informations sur l'agent relais. Dans Opérateur, sélectionnez Égal à. Sélectionnez ensuite Agent Remote ID et saisissez la valeur. Cliquez sur OK, puis sur Suivant.

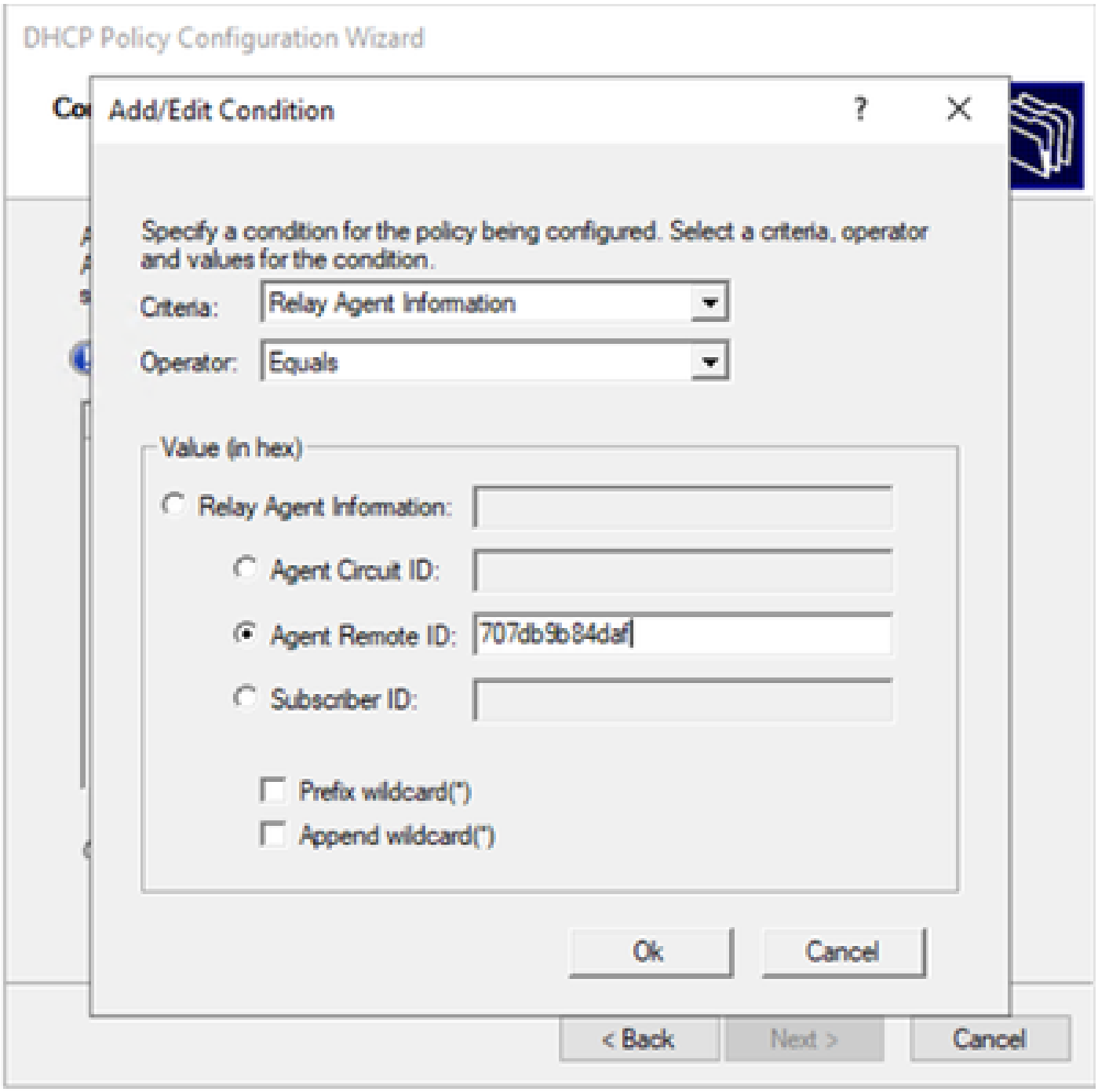


Remarque : l'ID distant est obtenu à partir de l'adresse MAC de l'interface SVI à laquelle l'interface SVII est associée.

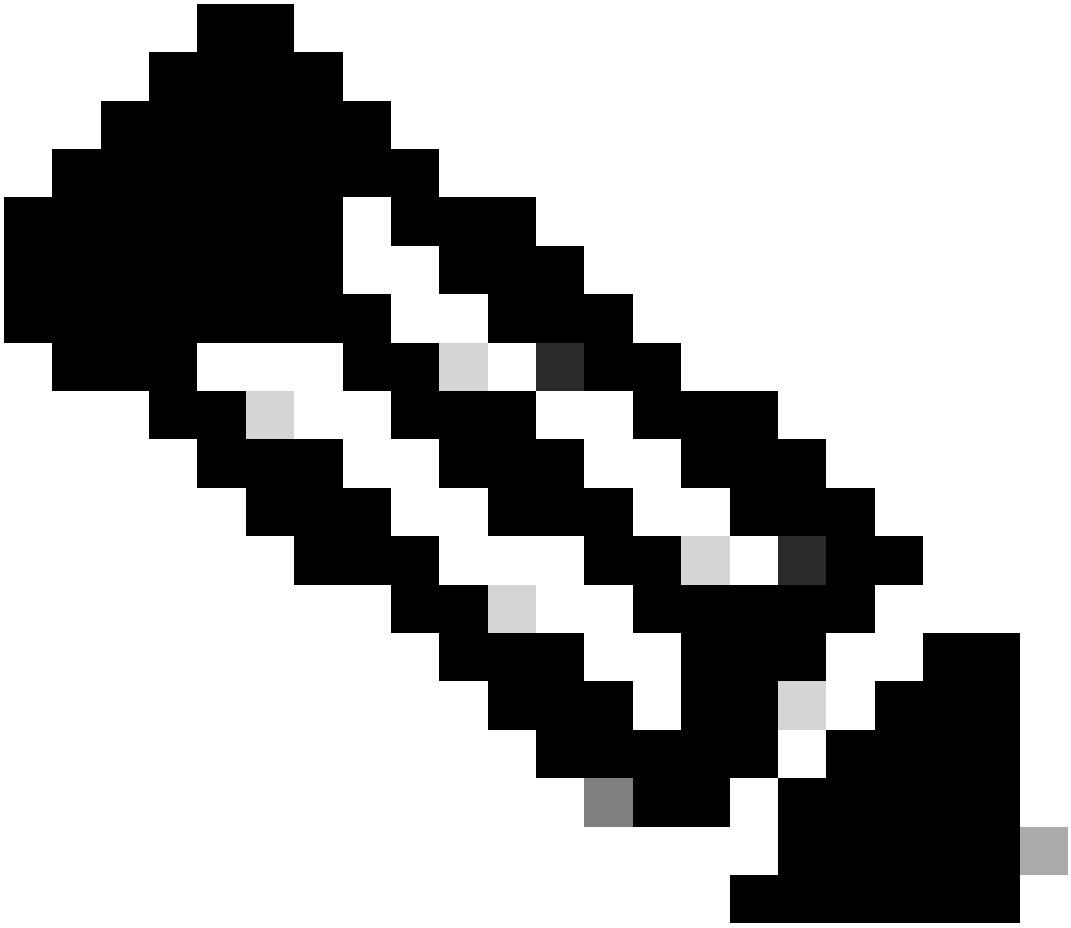


Conseil : une stratégie peut être appliquée à plusieurs ID distants (ou VTEP) en ajoutant d'autres conditions et en sélectionnant OU au lieu de ET.

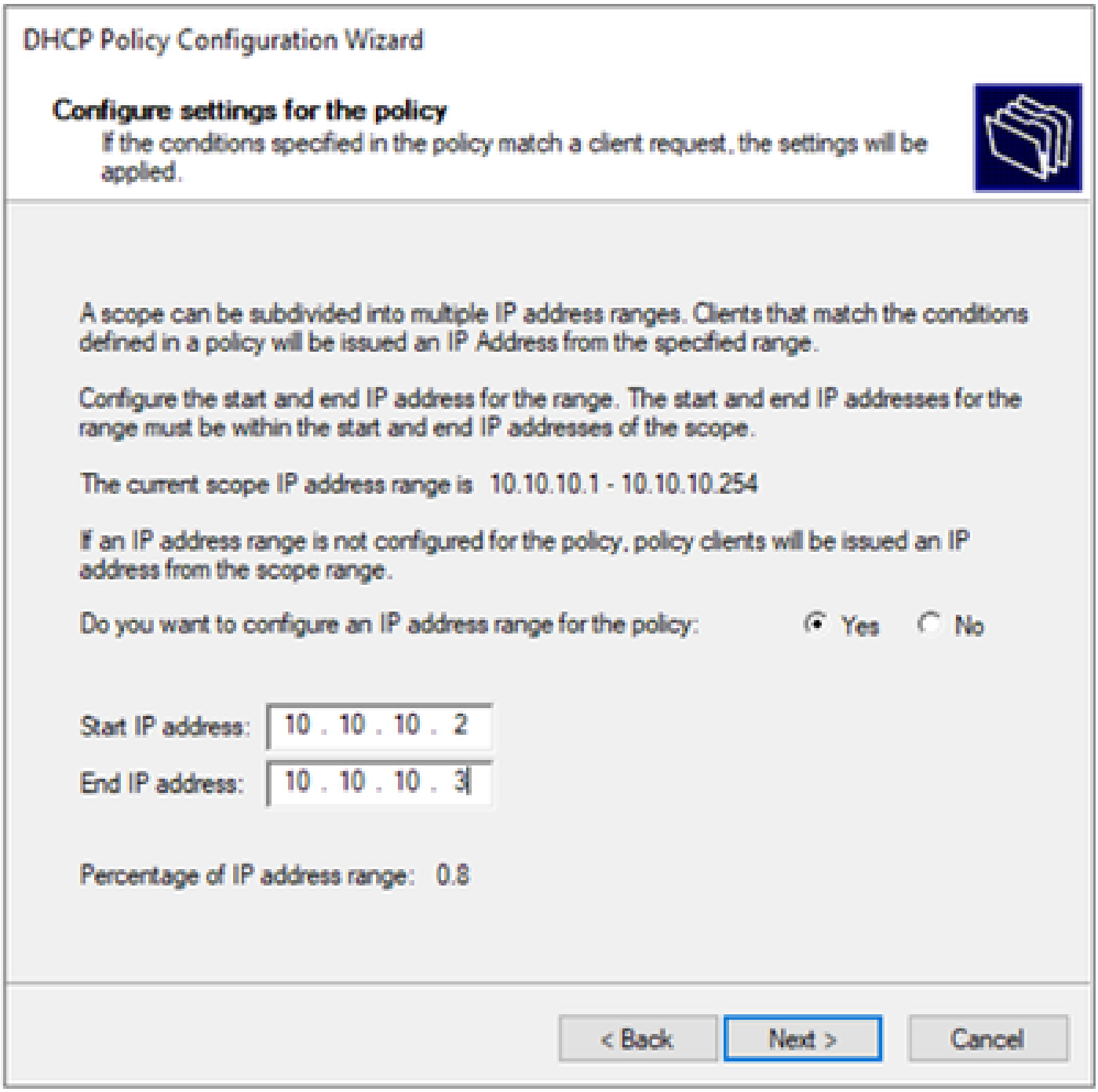
```
LEAF-1# show interface vlan 10
Vlan10 is up, line protocol is up, autostate enabled
  Hardware is EtherSVI, address is  707d.b9b8.4daf <<<<
  Internet Address is 10.10.10.1/24
 <snip>
```



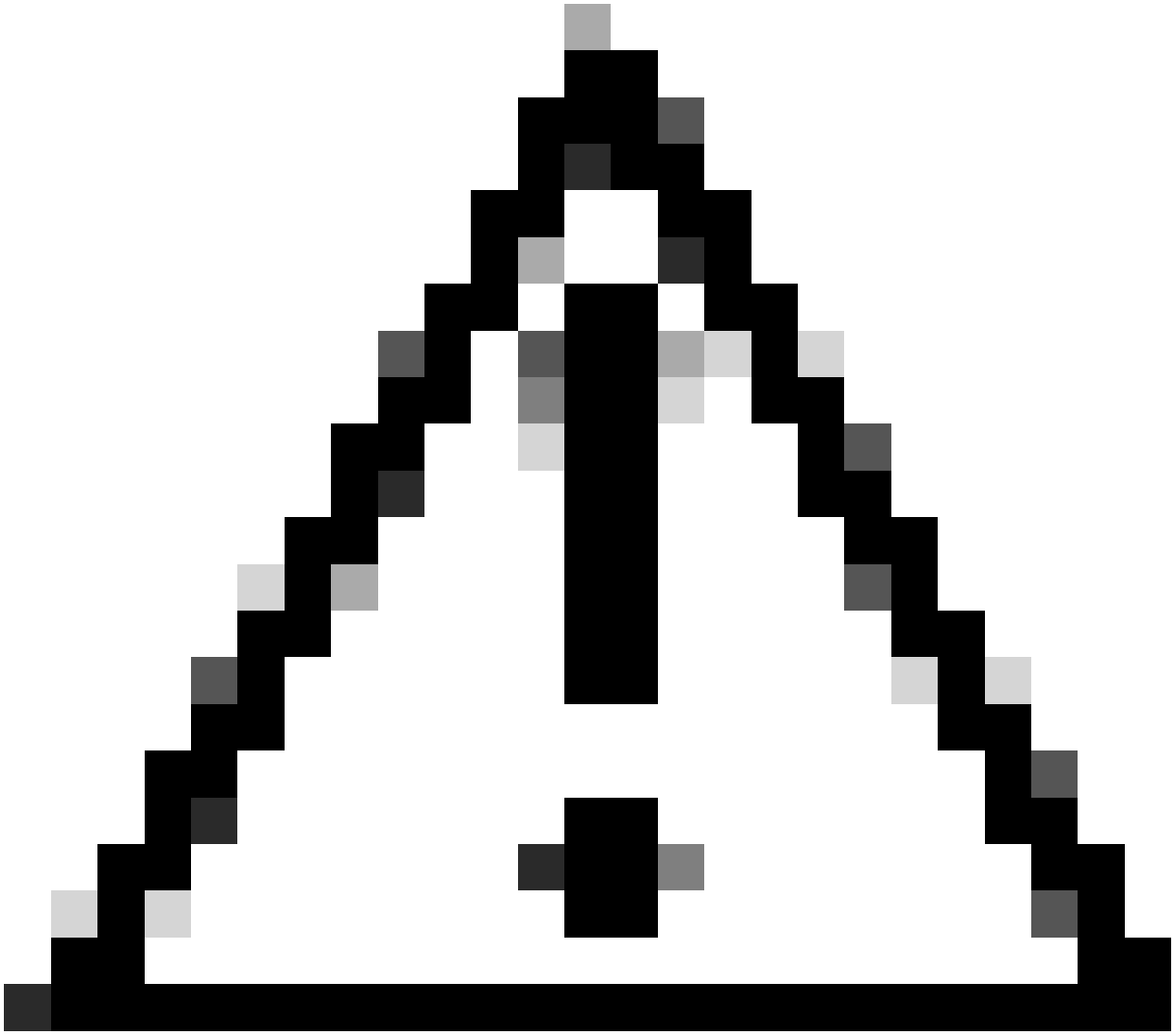
Étape 4. Configurez l'adressage IP que l'adresse IP existante peut utiliser sur le ou les VTEP sélectionnés par l'ID, puis cliquez sur Next.



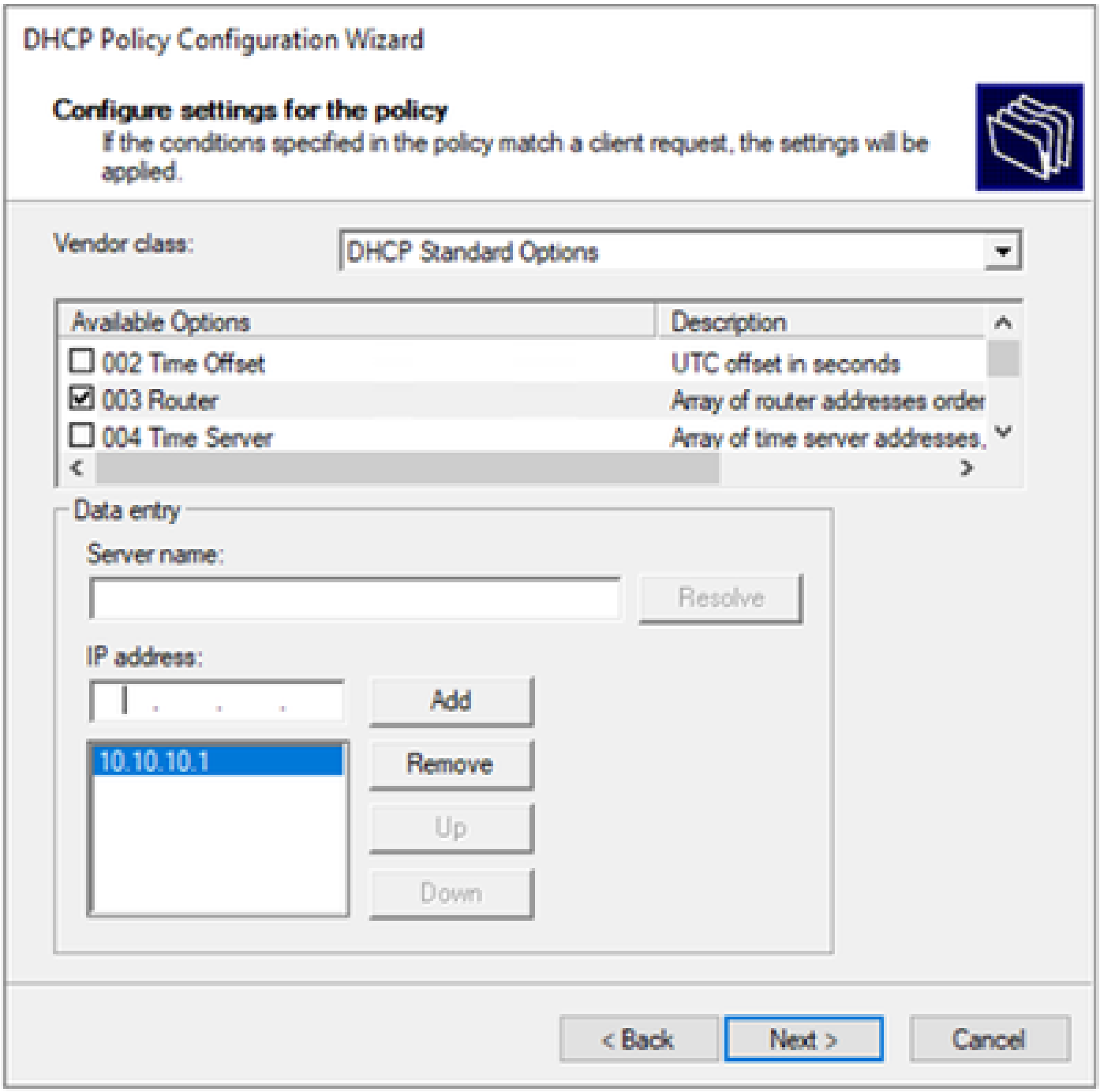
Remarque : dans cet exemple, il n'y a qu'une seule machine virtuelle connectée à Leaf-1, donc une seule adresse IP est requise. Ici, une deuxième adresse IP est ajoutéeIPn si un autre hôte se connecte.



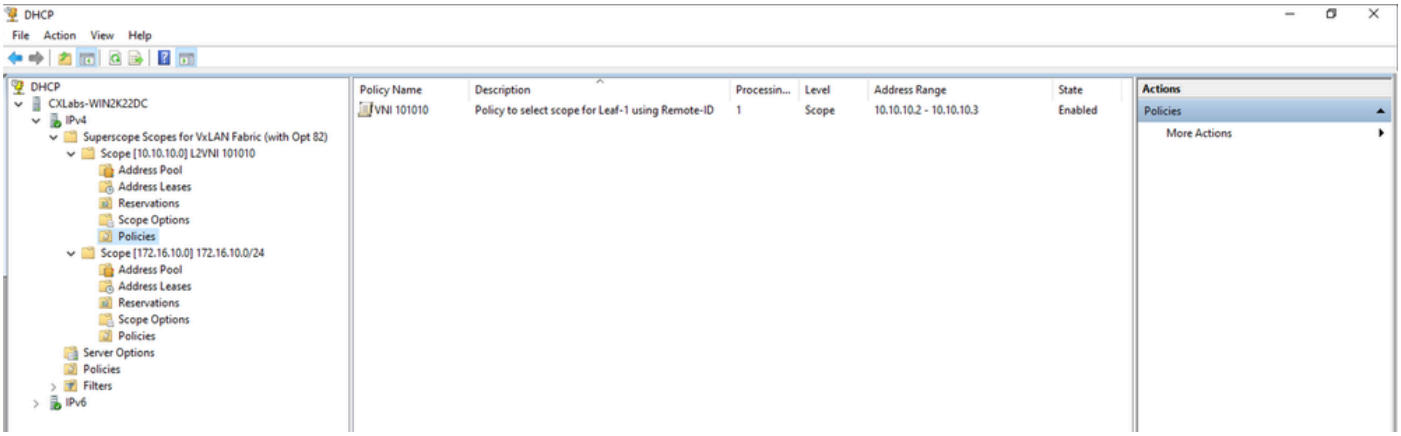
Étape 5. Cochez la case à gauche de Routeur 003 sous DCHP Standard Option. Ensuite, écrivez l'adresse IP de la passerelle par défaut pour les hôtes qui appartiennent à cette stratégie et appuyez sur Add. Cliquez sur Next (Suivant).



Attention : vous pouvez sélectionner plusieurs options, mais si vous ne savez pas quelle valeur entrer, ne le faites pas. Une configuration incohérente ou erronée peut provoquer un comportement inattendu.



Étape 6. Vérifiez les conditions de la stratégie et cliquez sur Finish.

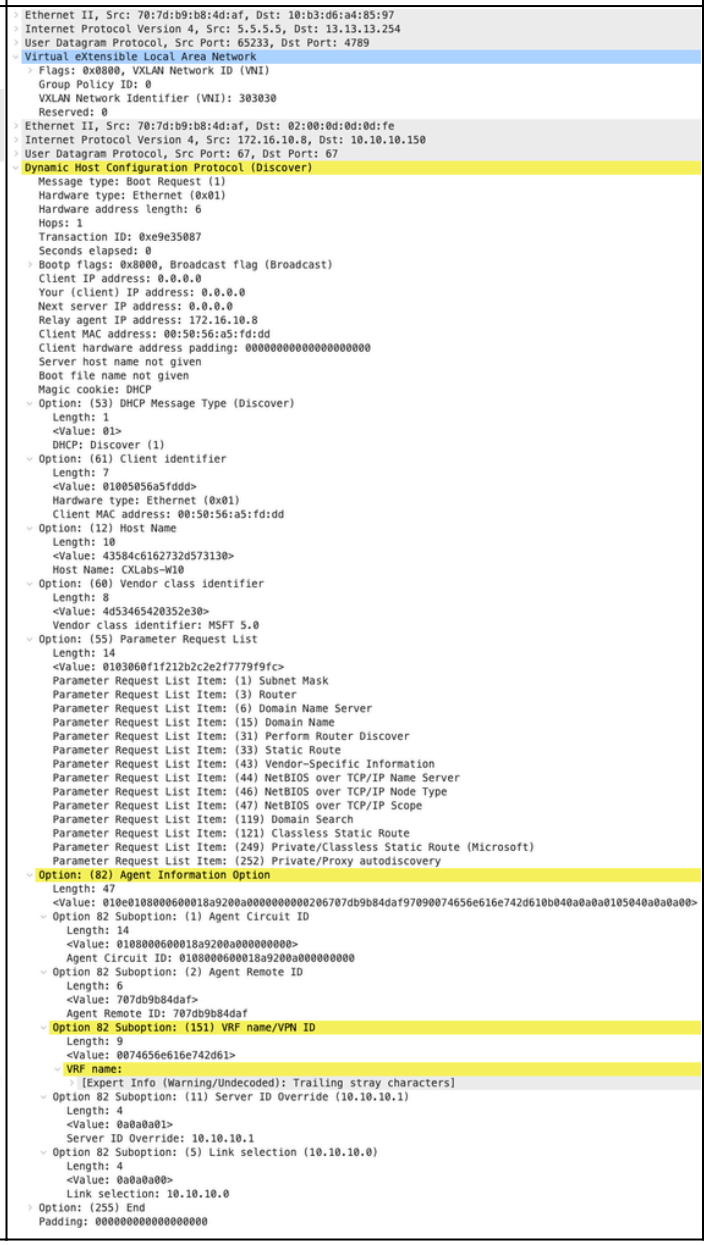


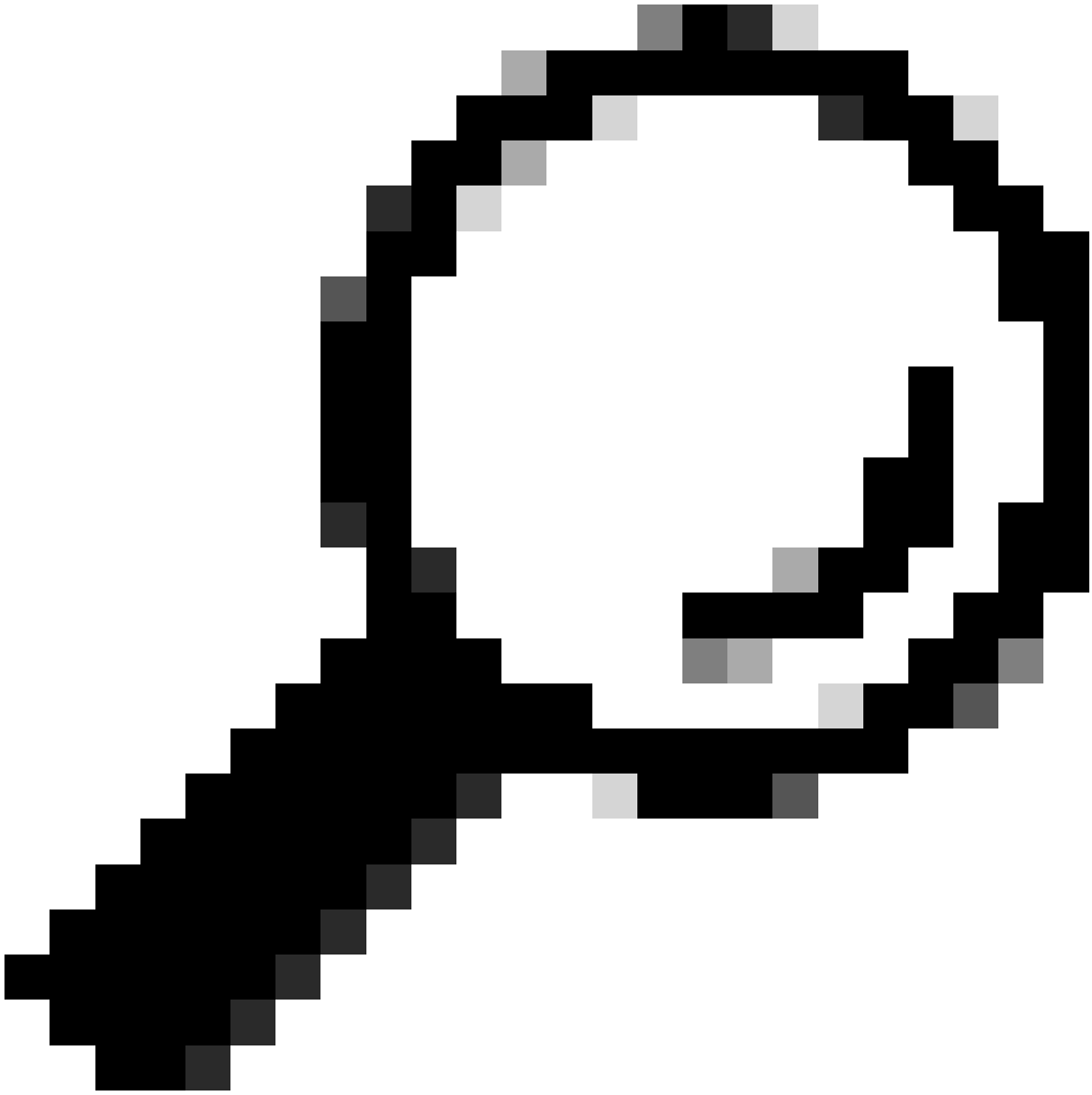
DCHP packet-walk du début à la fin dans le fabric VxLAN.

Détection envoyée par HOST-1

```
> Ethernet II, Src: 00:50:56:a5:fd:dd, Dst: ff:ff:ff:ff:ff:ff
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
v Dynamic Host Configuration Protocol (Discover)
    Message type: Boot Request (1)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 0
    Transaction ID: 0xe9e35087
    Seconds elapsed: 0
  v Bootp flags: 0x8000, Broadcast flag (Broadcast)
      1... .... .... .... = Broadcast flag: Broadcast
      .000 0000 0000 0000 = Reserved flags: 0x0000
    Client IP address: 0.0.0.0
    Your (client) IP address: 0.0.0.0
    Next server IP address: 0.0.0.0
    Relay agent IP address: 0.0.0.0
    Client MAC address: 00:50:56:a5:fd:dd
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
  v Option: (53) DHCP Message Type (Discover)
      Length: 1
      <Value: 01>
      DHCP: Discover (1)
  v Option: (61) Client identifier
      Length: 7
      <Value: 01005056a5fddd>
      Hardware type: Ethernet (0x01)
      Client MAC address: 00:50:56:a5:fd:dd
  v Option: (12) Host Name
      Length: 10
      <Value: 43584c6162732d573130>
      Host Name: CXLabs-W10
  v Option: (60) Vendor class identifier
      Length: 8
      <Value: 4d53465420352e30>
      Vendor class identifier: MSFT 5.0
  v Option: (55) Parameter Request List
      Length: 14
      <Value: 0103060f1f212b2c2e2f7779f9fc>
      Parameter Request List Item: (1) Subnet Mask
      Parameter Request List Item: (3) Router
      Parameter Request List Item: (6) Domain Name Server
      Parameter Request List Item: (15) Domain Name
      Parameter Request List Item: (31) Perform Router Discover
      Parameter Request List Item: (33) Static Route
      Parameter Request List Item: (43) Vendor-Specific Information
      Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
      Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
      Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
      Parameter Request List Item: (119) Domain Search
      Parameter Request List Item: (121) Classless Static Route
      Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
      Parameter Request List Item: (252) Private/Proxy autodiscovery
  v Option: (255) End
      Option End: 255
    Padding: 000000000000000000
```

Découverte sur LEAF-1

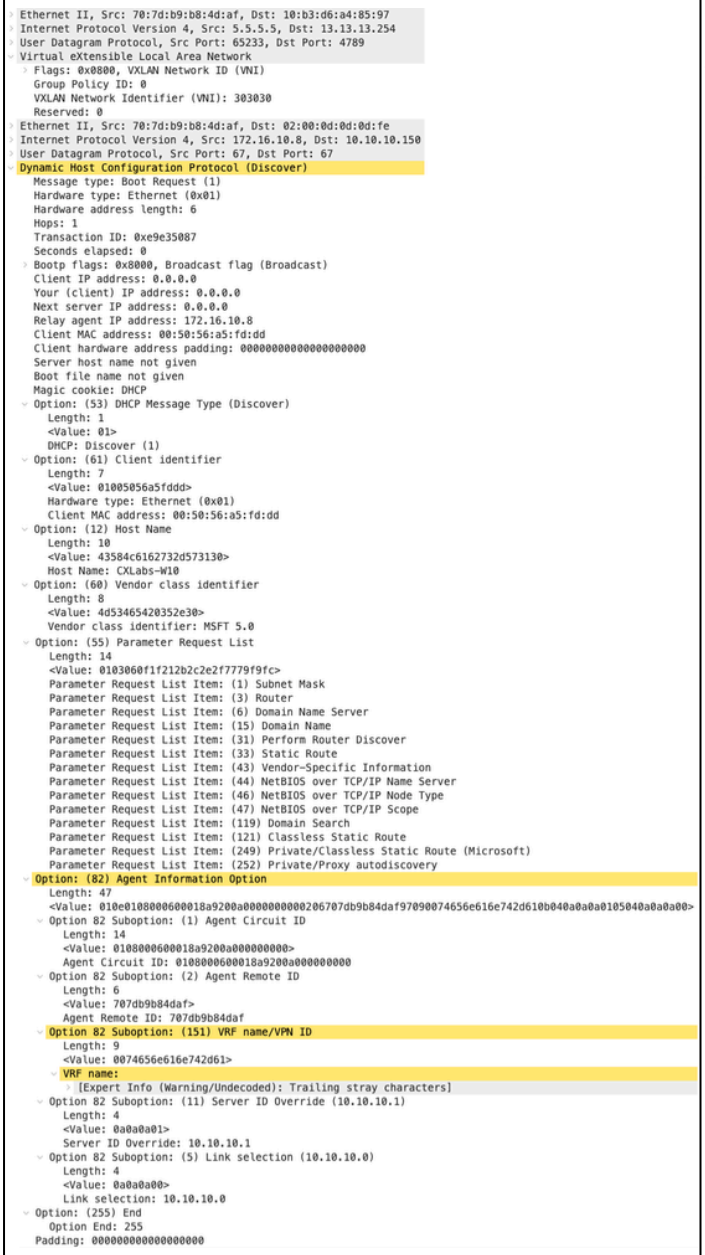
Détection reçue sur LEAF-1	Détection envoyée par LEAF-1
	

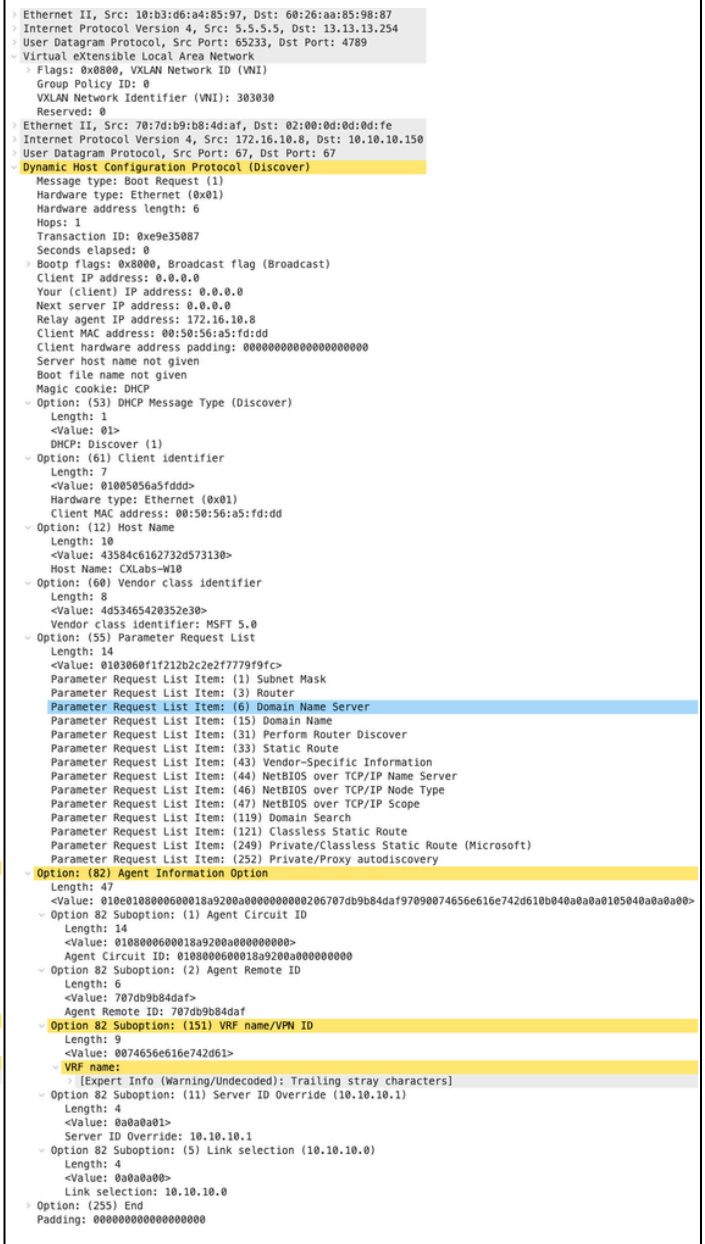


Conseil : l'image s'agrandit lorsque vous double-cliquez.

Détection sur SPINE

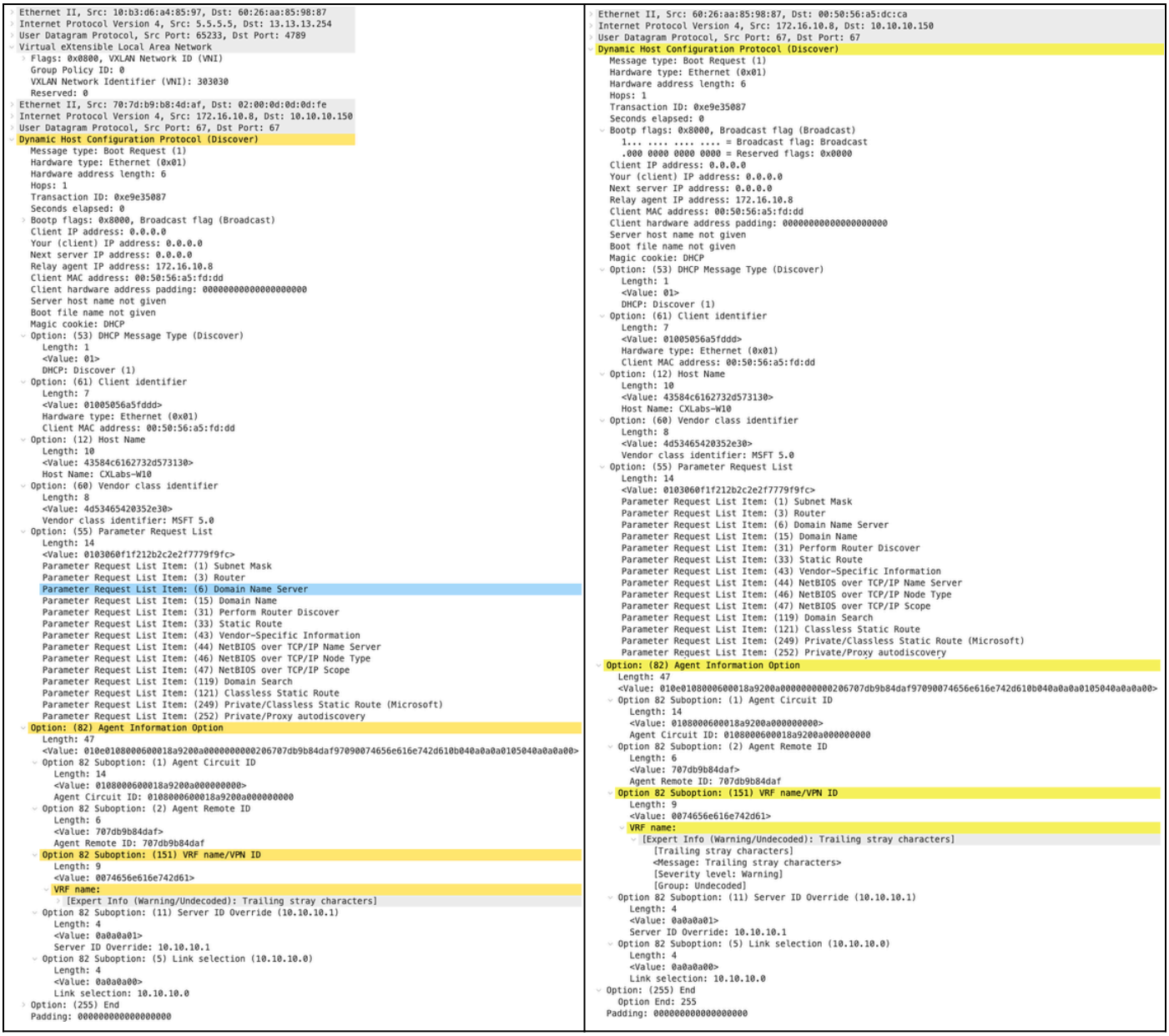
Détection reçue sur SPINE	Détection envoyée par SPINE

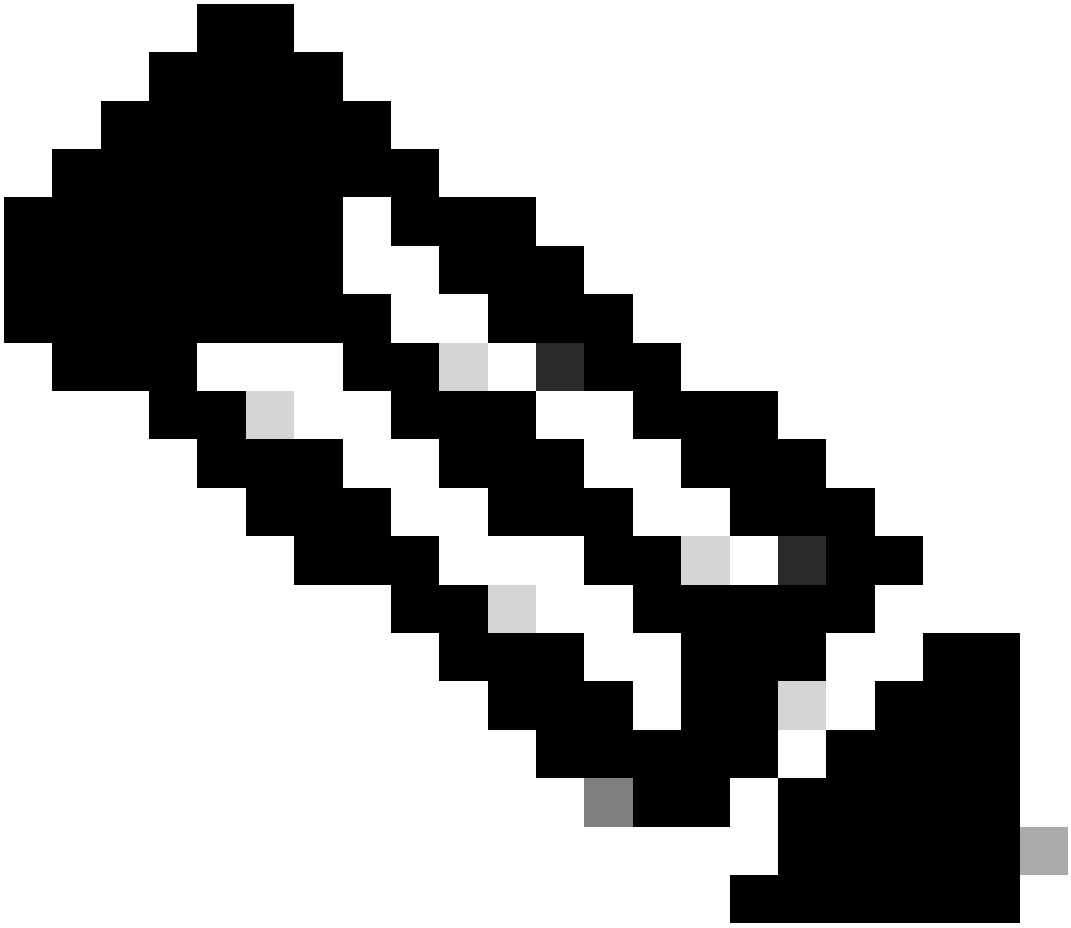




Découverte sur LEAF-1-vPC

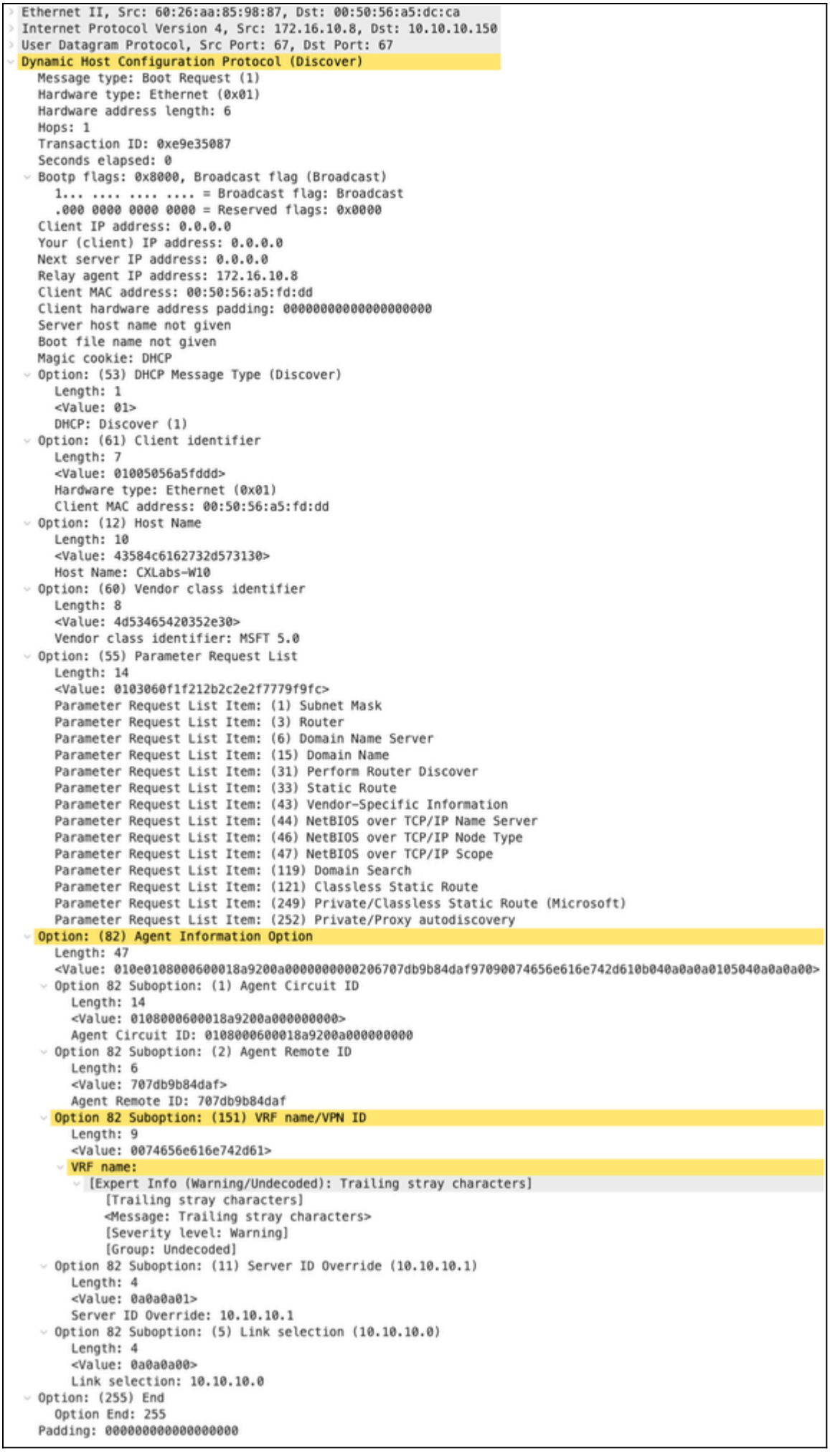
Détection reçue sur LEAF-1-vPC	Détection envoyée par LEAF-1-vPC


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
Bootp flags: 0x8000, Broadcast flag (Broadcast)
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Discover)
Length: 1
<Value: 01>
DHCP: Discover (1)
Option: (61) Client identifier
Length: 7
<Value: 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: 0108000600018a9200a000000000>
Agent Circuit ID: 0108000600018a9200a000000000
Option 82 Suboption: (2) Agent Remote ID
Length: 6
<Value: 707db9b84daf>
Agent Remote ID: 707db9b84daf
Option 82 Suboption: (151) VRF name/VPN ID
Length: 9
<Value: 0074656e616e742d61>
VRF name:
[Expert Info (Warning/Undecoded): Trailing stray characters]
Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Length: 4
<Value: 0a0a0a01>
Server ID Override: 10.10.10.1
Option 82 Suboption: (5) Link selection (10.10.10.0)
Length: 4
<Value: 0a0a0a00>
Link selection: 10.10.10.0
Option: (255) End
Padding: 000000000000000000
Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 1
Transaction ID: 0xe9e35087
Seconds elapsed: 0
Bootp flags: 0x8000, Broadcast flag (Broadcast)
1... .... = Broadcast flag: Broadcast
.000 0000 0000 0000 = Reserved flags: 0x0000
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Discover)
Length: 1
<Value: 01>
DHCP: Discover (1)
Option: (61) Client identifier
Length: 7
<Value: 01005056a5fddd>
Hardware type: Ethernet (0x01)
Client MAC address: 00:50:56:a5:fd:dd
Option: (12) Host Name
Length: 10
<Value: 43584c6162732d573130>
Host Name: CXLabs-W10
Option: (60) Vendor class identifier
Length: 8
<Value: 4d53465420352e30>
Vendor class identifier: MSFT 5.0
Option: (55) Parameter Request List
Length: 14
<Value: 0103060f1f212b2c2e2f7779f9fc>
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (3) Router
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (31) Perform Router Discover
Parameter Request List Item: (33) Static Route
Parameter Request List Item: (43) Vendor-Specific Information
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
Parameter Request List Item: (119) Domain Search
Parameter Request List Item: (121) Classless Static Route
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (252) Private/Proxy autodiscovery
Option: (82) Agent Information Option
Length: 47
<Value: 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:
[Expert Info (Warning/Undecoded): Trailing stray characters]
[Trailing stray characters]
<Message: Trailing stray characters>
[Severity level: Warning]
[Group: Undecoded]
Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Length: 4
<Value: 0a0a0a01>
Server ID Override: 10.10.10.1
Option 82 Suboption: (5) Link selection (10.10.10.0)
Length: 4
<Value: 0a0a0a00>
Link selection: 10.10.10.0
Option: (255) End
Option End: 255
Padding: 000000000000000000

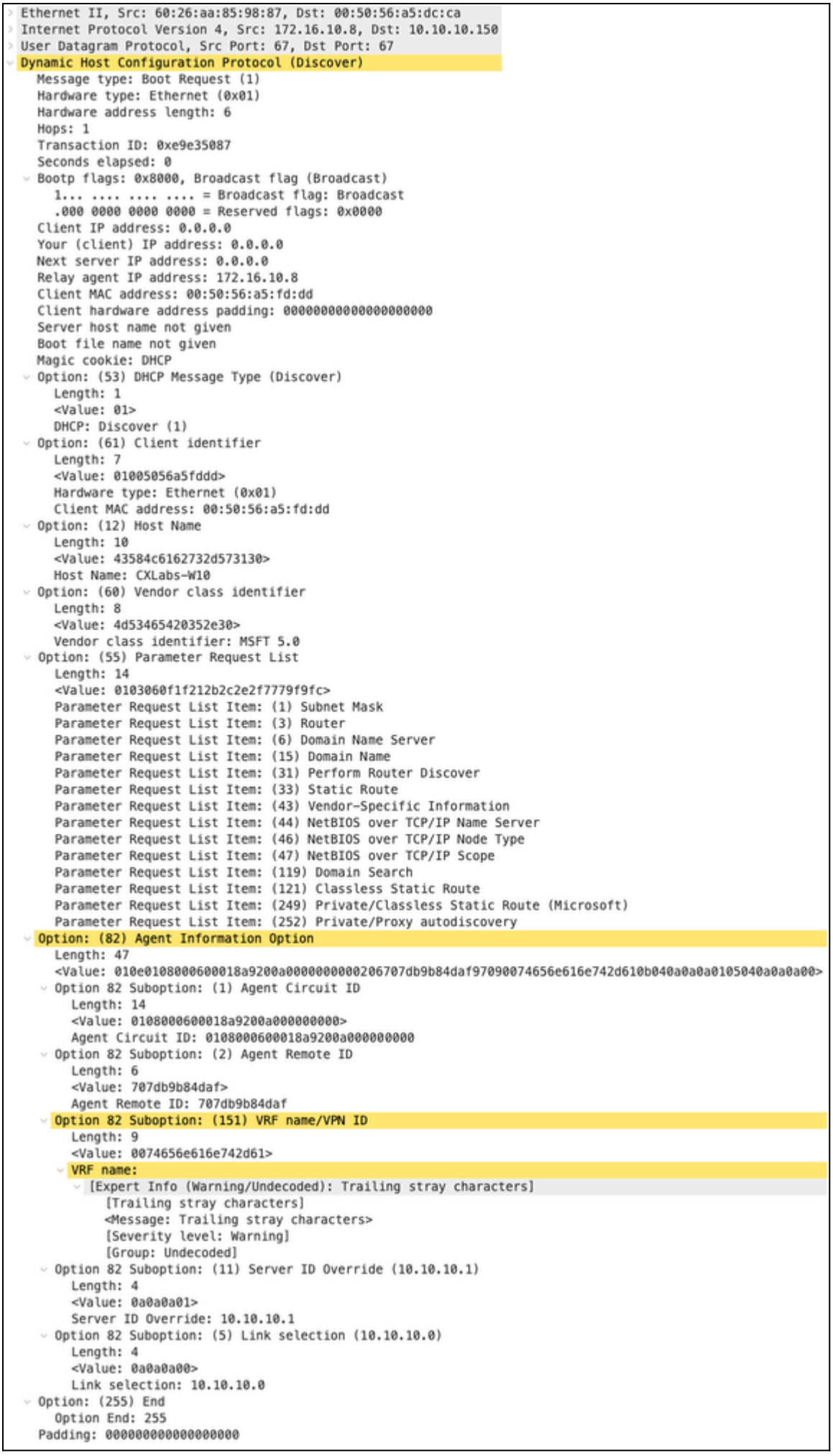


Remarque : LEAF-2-vPC reçoit le paquet Discovert, mais uniquement commuté. L'adresse MAC de destination appartient au serveur DHCP.

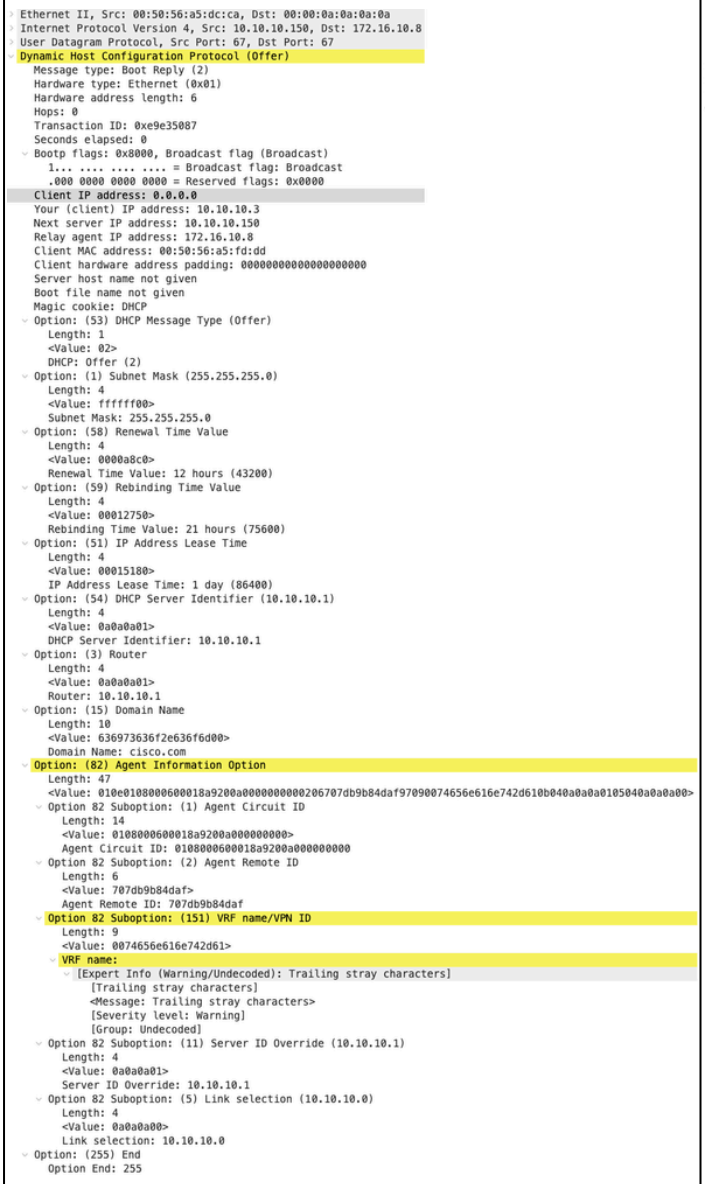
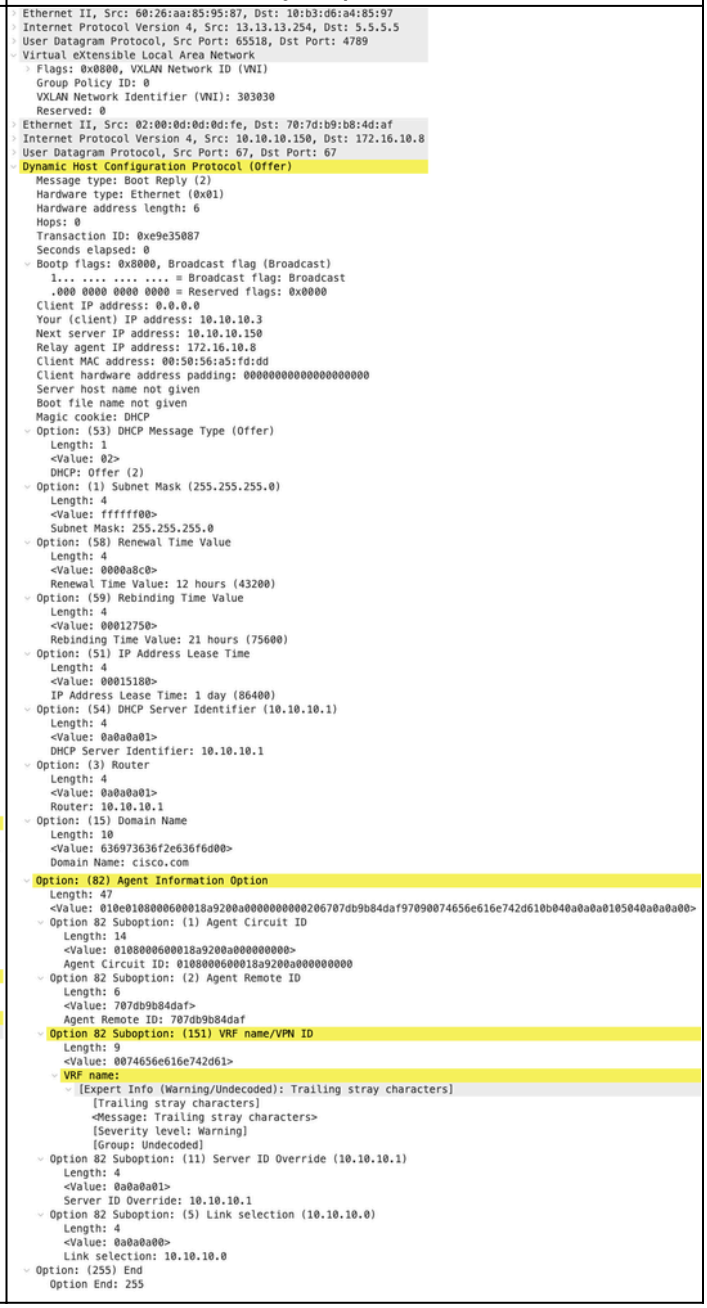
Détection reçue sur le serveur DHCP


Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 1
Transaction ID: 0xe9e35087
Seconds elapsed: 0
Bootp flags: 0x8000, Broadcast flag (Broadcast)
1... .... = Broadcast flag: Broadcast
.000 0000 0000 0000 = Reserved flags: 0x0000
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Discover)
Length: 1
<Value: 01>
DHCP: Discover (1)
Option: (61) Client identifier
Length: 7
<Value: 01005056a5fddd>
Hardware type: Ethernet (0x01)
Client MAC address: 00:50:56:a5:fd:dd
Option: (12) Host Name
Length: 10
<Value: 43584c6162732d573130>
Host Name: CXLabs-W10
Option: (60) Vendor class identifier
Length: 8
<Value: 4d53465420352e30>
Vendor class identifier: MSFT 5.0
Option: (55) Parameter Request List
Length: 14
<Value: 0103060f1f212b2c2e2f7779f9fc>
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (3) Router
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (31) Perform Router Discover
Parameter Request List Item: (33) Static Route
Parameter Request List Item: (43) Vendor-Specific Information
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
Parameter Request List Item: (119) Domain Search
Parameter Request List Item: (121) Classless Static Route
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (252) Private/Proxy autodiscovery
Option: (82) Agent Information Option
Length: 47
<Value: 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:
[Expert Info (Warning/Undecoded): Trailing stray characters]
[Trailing stray characters]
<Message: Trailing stray characters>
[Severity level: Warning]
[Group: Undecoded]
Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Length: 4
<Value: 0a0a0a01>
Server ID Override: 10.10.10.1
Option 82 Suboption: (5) Link selection (10.10.10.0)
Length: 4
<Value: 0a0a0a00>
Link selection: 10.10.10.0
Option: (255) End
Option End: 255
Padding: 000000000000000000

Offre DHCP envoyée par le serveur DHCP


Ethernet II, Src: 60:26:aa:85:98:87, Dst: 00:50:56:a5:dc:ca
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 1
Transaction ID: 0xe9e35087
Seconds elapsed: 0
Bootp flags: 0x8000, Broadcast flag (Broadcast)
1... .... = Broadcast flag: Broadcast
.000 0000 0000 0000 = Reserved flags: 0x0000
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Discover)
Length: 1
<Value: 01>
DHCP: Discover (1)
Option: (61) Client identifier
Length: 7
<Value: 01005056a5fddd>
Hardware type: Ethernet (0x01)
Client MAC address: 00:50:56:a5:fd:dd
Option: (12) Host Name
Length: 10
<Value: 43584c6162732d573130>
Host Name: CXLabs-W10
Option: (60) Vendor class identifier
Length: 8
<Value: 4d53465420352e30>
Vendor class identifier: MSFT 5.0
Option: (55) Parameter Request List
Length: 14
<Value: 0103060f1f212b2c2e2f7779f9fc>
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (3) Router
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (31) Perform Router Discover
Parameter Request List Item: (33) Static Route
Parameter Request List Item: (43) Vendor-Specific Information
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
Parameter Request List Item: (119) Domain Search
Parameter Request List Item: (121) Classless Static Route
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (252) Private/Proxy autodiscovery
Option: (82) Agent Information Option
Length: 47
<Value: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
Option 82 Suboption: (1) Agent Circuit ID
Length: 14
<Value: 0108000600018a9200a000000000>
Agent Circuit ID: 0108000600018a9200a000000000
Option 82 Suboption: (2) Agent Remote ID
Length: 6
<Value: 707db9b84daf>
Agent Remote ID: 707db9b84daf
Option 82 Suboption: (151) VRF name/VPN ID
Length: 9
<Value: 0074656e616e742d61>
VRF name:
[Expert Info (Warning/Undecoded): Trailing stray characters]
[Trailing stray characters]
<Message: Trailing stray characters>
[Severity level: Warning]
[Group: Undecoded]
Option 82 Suboption: (11) Server ID Override (10.10.10.1)
Length: 4
<Value: 0a0a0a01>
Server ID Override: 10.10.10.1
Option 82 Suboption: (5) Link selection (10.10.10.0)
Length: 4
<Value: 0a0a0a00>
Link selection: 10.10.10.0
Option: (255) End
Option End: 255
Padding: 000000000000000000

Offre DHCP sur LEAF-2-vPC

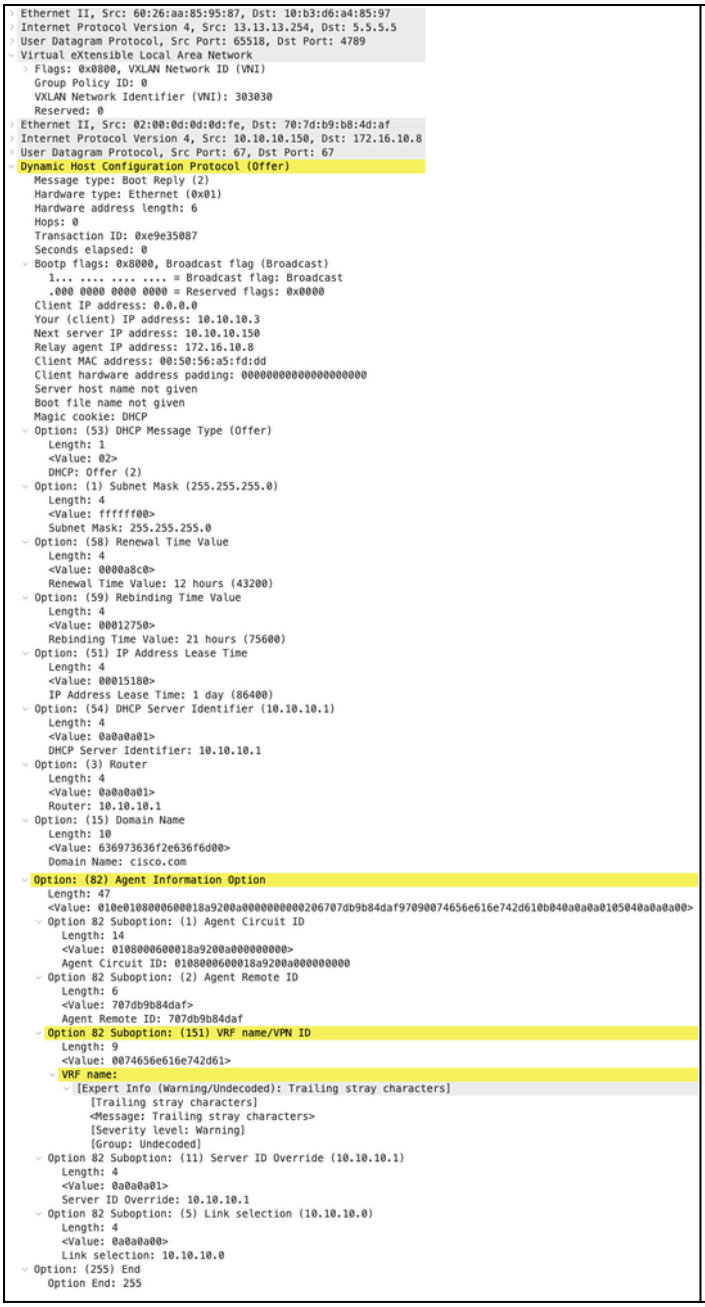
Offre reçue sur LEAF-2-vPC	Offre envoyée par LEAF-2-vPC
	

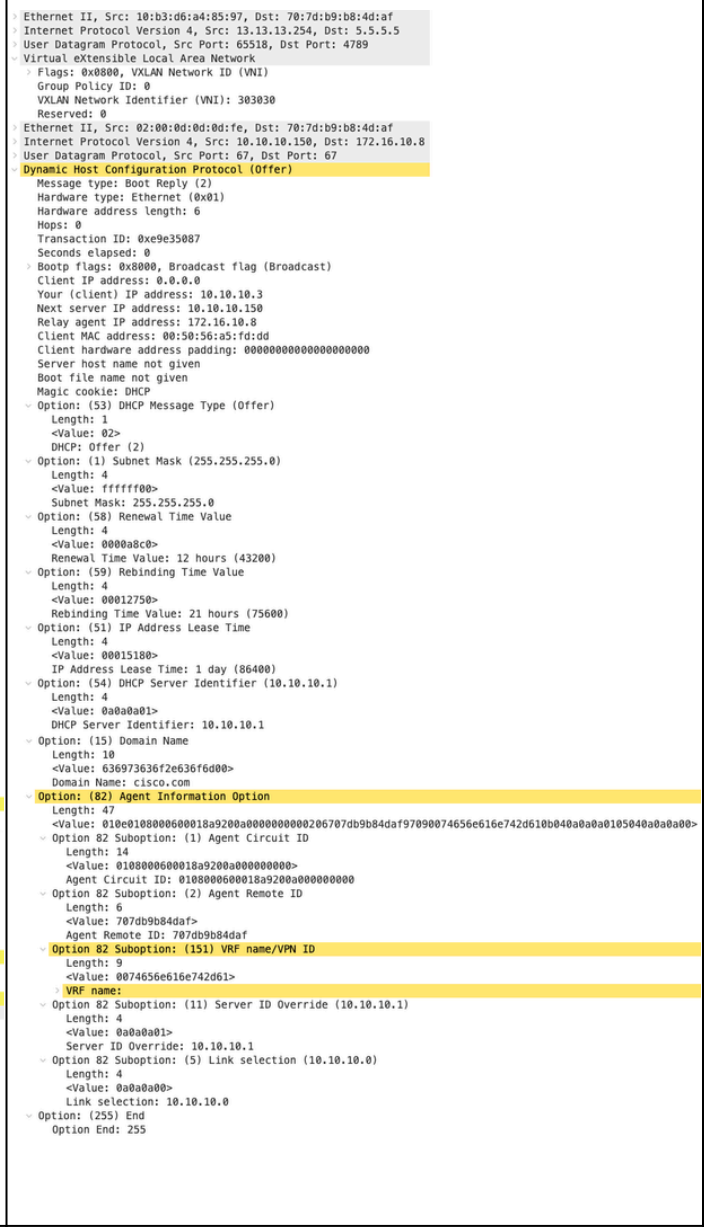
```
Ethernet II, Src: 00:50:56:a5:dc:ca, Dst: 00:00:0a:0a:0a:0a
Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Offer)
    Message type: Boot Reply (2)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 0
    Transaction ID: 0xe9e35087
    Seconds elapsed: 0
  Bootp flags: 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: 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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
    Option 82 Suboption: (1) Agent Circuit ID
        Length: 14
        <Value: 0108000600018a9200a000000000>
        Agent Circuit ID: 0108000600018a9200a000000000
    Option 82 Suboption: (2) Agent Remote ID
        Length: 6
        <Value: 707db9b84daf>
        Agent Remote ID: 707db9b84daf
    Option 82 Suboption: (151) VRF name/VPN ID
        Length: 9
        <Value: 0074656e616e742d61>
      VRF name:
        [Expert Info (Warning/Undecoded): Trailing stray characters]
            [Trailing stray characters]
            <Message: Trailing stray characters>
            [Severity level: Warning]
            [Group: Undecoded]
    Option 82 Suboption: (11) Server ID Override (10.10.10.1)
        Length: 4
        <Value: 0a0a0a01>
        Server ID Override: 10.10.10.1
    Option 82 Suboption: (5) Link selection (10.10.10.0)
        Length: 4
        <Value: 0a0a0a00>
        Link selection: 10.10.10.0
  Option: (255) End
      Option End: 255
```

```
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: 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)
      1... .... .... .... = Broadcast flag: Broadcast
      .000 0000 0000 0000 = Reserved flags: 0x0000
    Client IP address: 0.0.0.0
    Your (client) IP address: 10.10.10.3
    Next server IP address: 10.10.10.150
    Relay agent IP address: 172.16.10.8
    Client MAC address: 00:50:56:a5:fd:dd
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
  Option: (53) DHCP Message Type (Offer)
      Length: 1
      <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: 010e0108000600018a9200a000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
    Option 82 Suboption: (1) Agent Circuit ID
        Length: 14
        <Value: 0108000600018a9200a000000000>
        Agent Circuit ID: 0108000600018a9200a000000000
    Option 82 Suboption: (2) Agent Remote ID
        Length: 6
        <Value: 707db9b84daf>
        Agent Remote ID: 707db9b84daf
    Option 82 Suboption: (151) VRF name/VPN ID
        Length: 9
        <Value: 0074656e616e742d61>
      VRF name:
        [Expert Info (Warning/Undecoded): Trailing stray characters]
            [Trailing stray characters]
            <Message: Trailing stray characters>
            [Severity level: Warning]
            [Group: Undecoded]
    Option 82 Suboption: (11) Server ID Override (10.10.10.1)
        Length: 4
        <Value: 0a0a0a01>
        Server ID Override: 10.10.10.1
    Option 82 Suboption: (5) Link selection (10.10.10.0)
        Length: 4
        <Value: 0a0a0a00>
        Link selection: 10.10.10.0
  Option: (255) End
      Option End: 255
```

Offre DHCP vPC SPINE

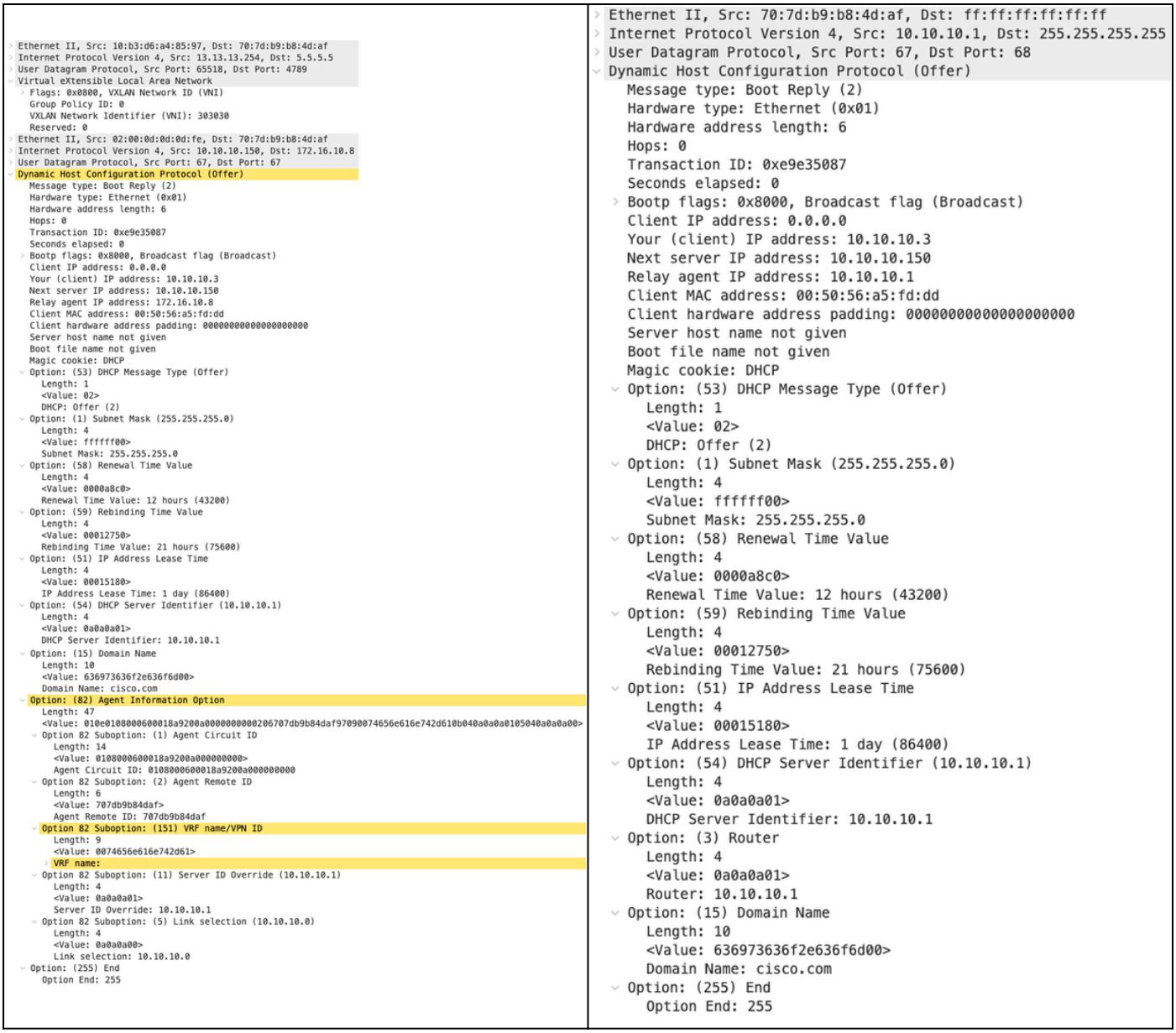
Offre reçue sur SPINE	Offre envoyée par SPINE





Offre DHCP sur LEAF-1

Offre reçue sur LEAF-1	Offre envoyée sur LEAF-1



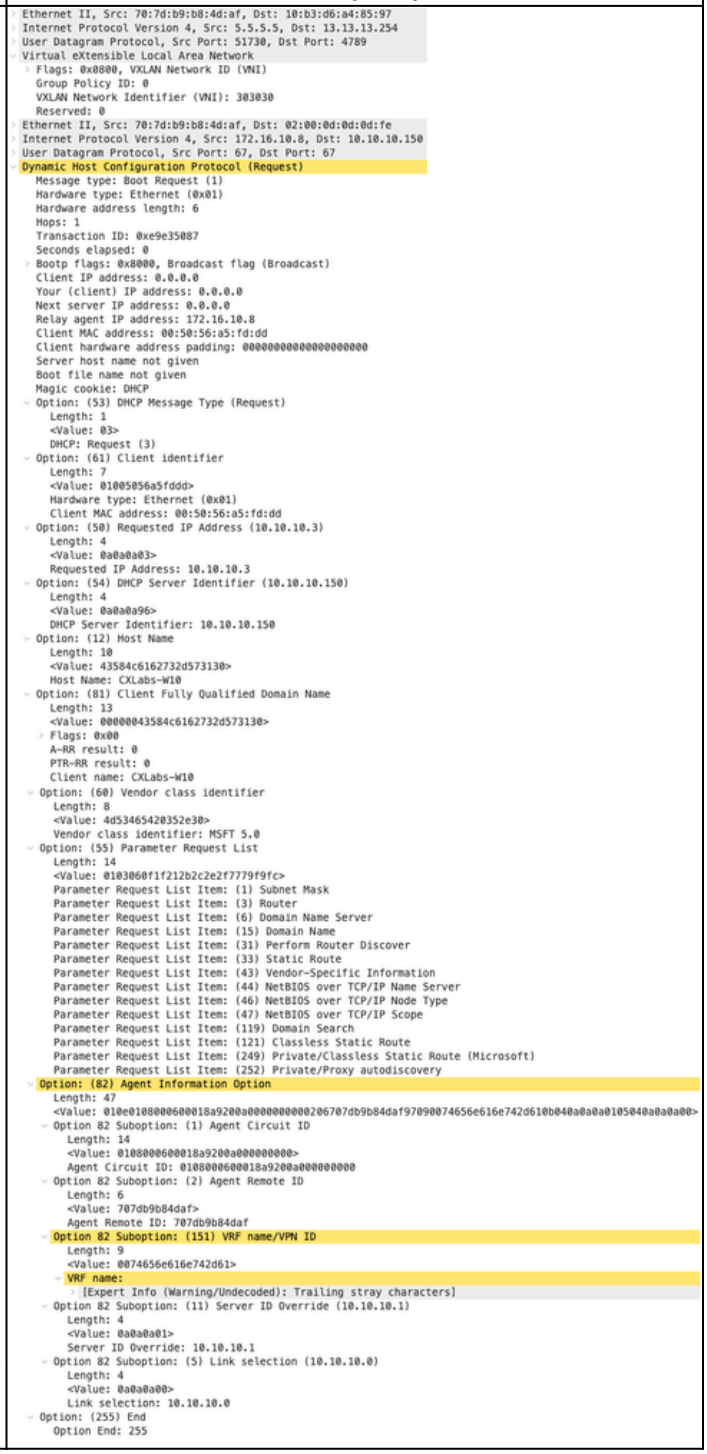
Offre DHCP reçue sur HOST-1

```
> 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
v 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: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
  v Option: (53) DHCP Message Type (Offer)
      Length: 1
      <Value: 02>
      DHCP: Offer (2)
  v Option: (1) Subnet Mask (255.255.255.0)
      Length: 4
      <Value: ffffff00>
      Subnet Mask: 255.255.255.0
  v Option: (58) Renewal Time Value
      Length: 4
      <Value: 0000a8c0>
      Renewal Time Value: 12 hours (43200)
  v Option: (59) Rebinding Time Value
      Length: 4
      <Value: 00012750>
      Rebinding Time Value: 21 hours (75600)
  v Option: (51) IP Address Lease Time
      Length: 4
      <Value: 00015180>
      IP Address Lease Time: 1 day (86400)
  v Option: (54) DHCP Server Identifier (10.10.10.1)
      Length: 4
      <Value: 0a0a0a01>
      DHCP Server Identifier: 10.10.10.1
  v Option: (3) Router
      Length: 4
      <Value: 0a0a0a01>
      Router: 10.10.10.1
  v Option: (15) Domain Name
      Length: 10
      <Value: 636973636f2e636f6d00>
      Domain Name: cisco.com
  v Option: (255) End
      Option End: 255
```

Demande envoyée par HOST-1

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

Demande sur LEAF-1

Requête reçue sur LEAF-1	Demande envoyée par LEAF-1
	

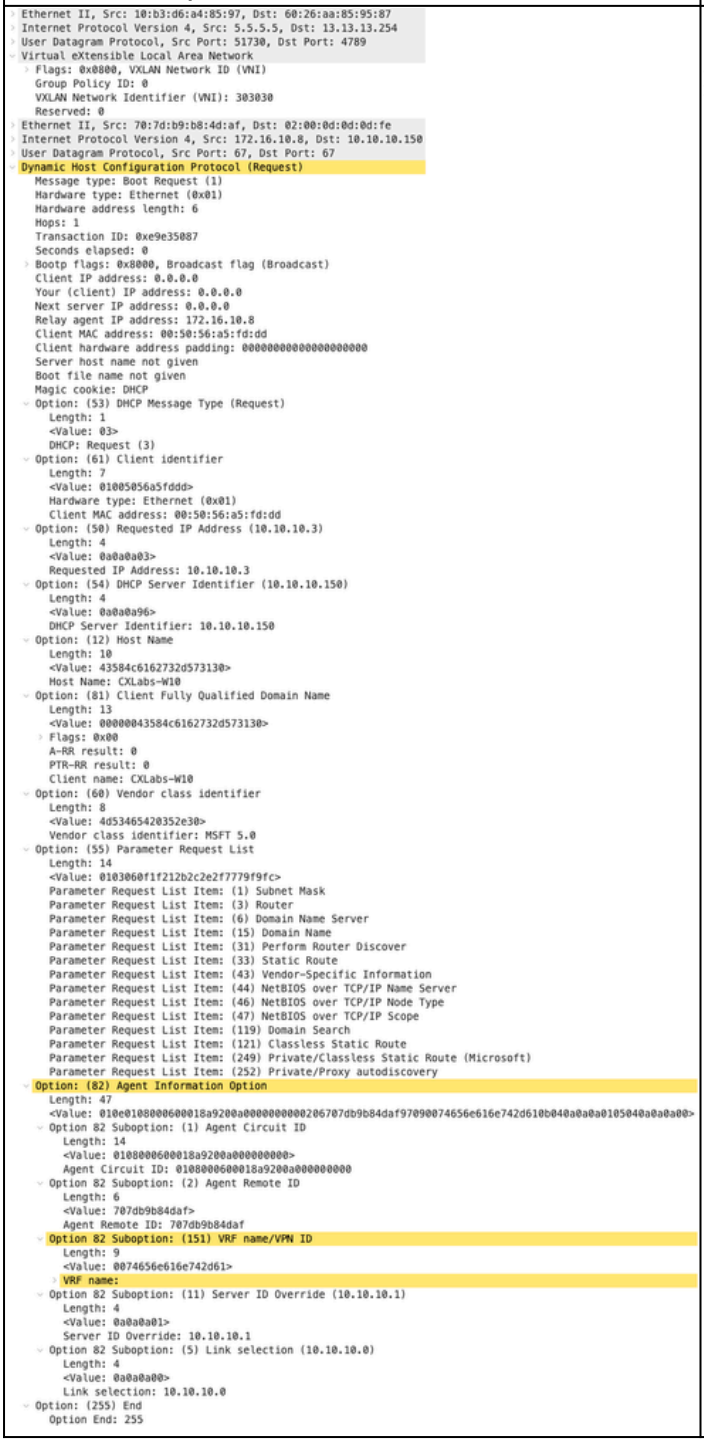
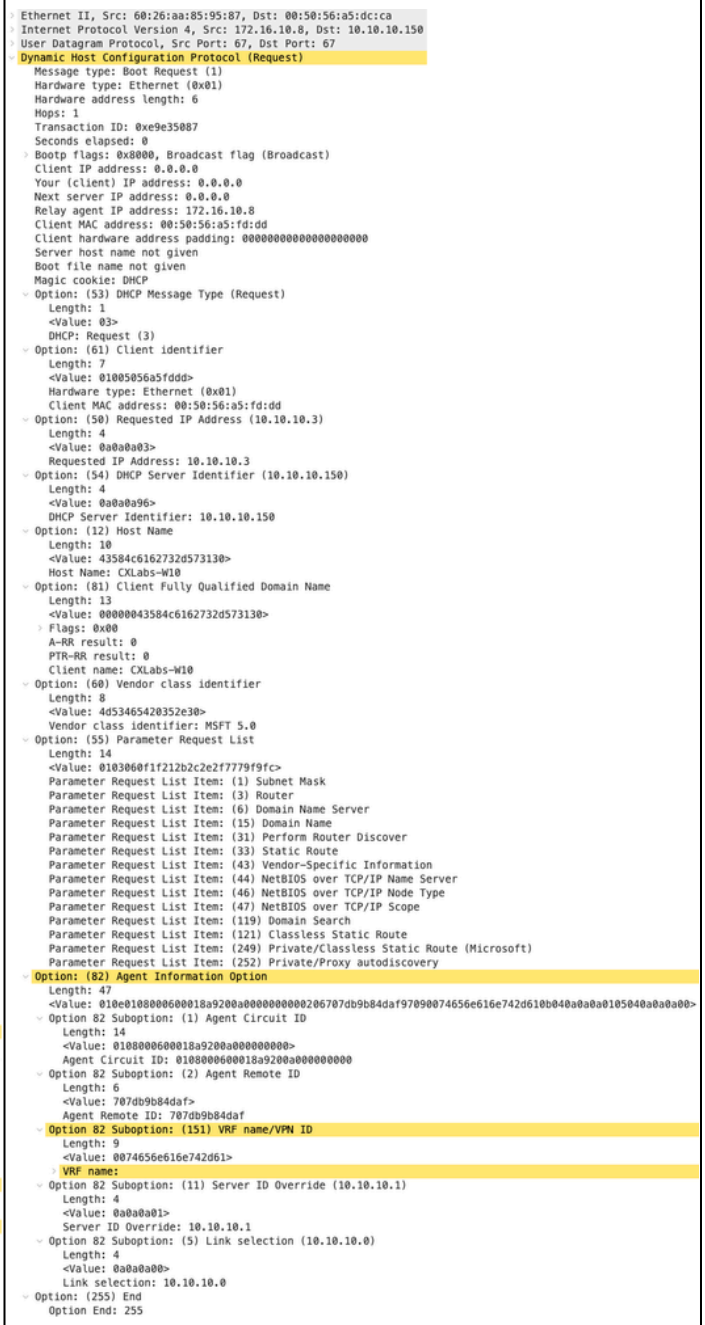
Demande sur SPINE

Requête reçue sur SPINE	Demande envoyée par SPINE

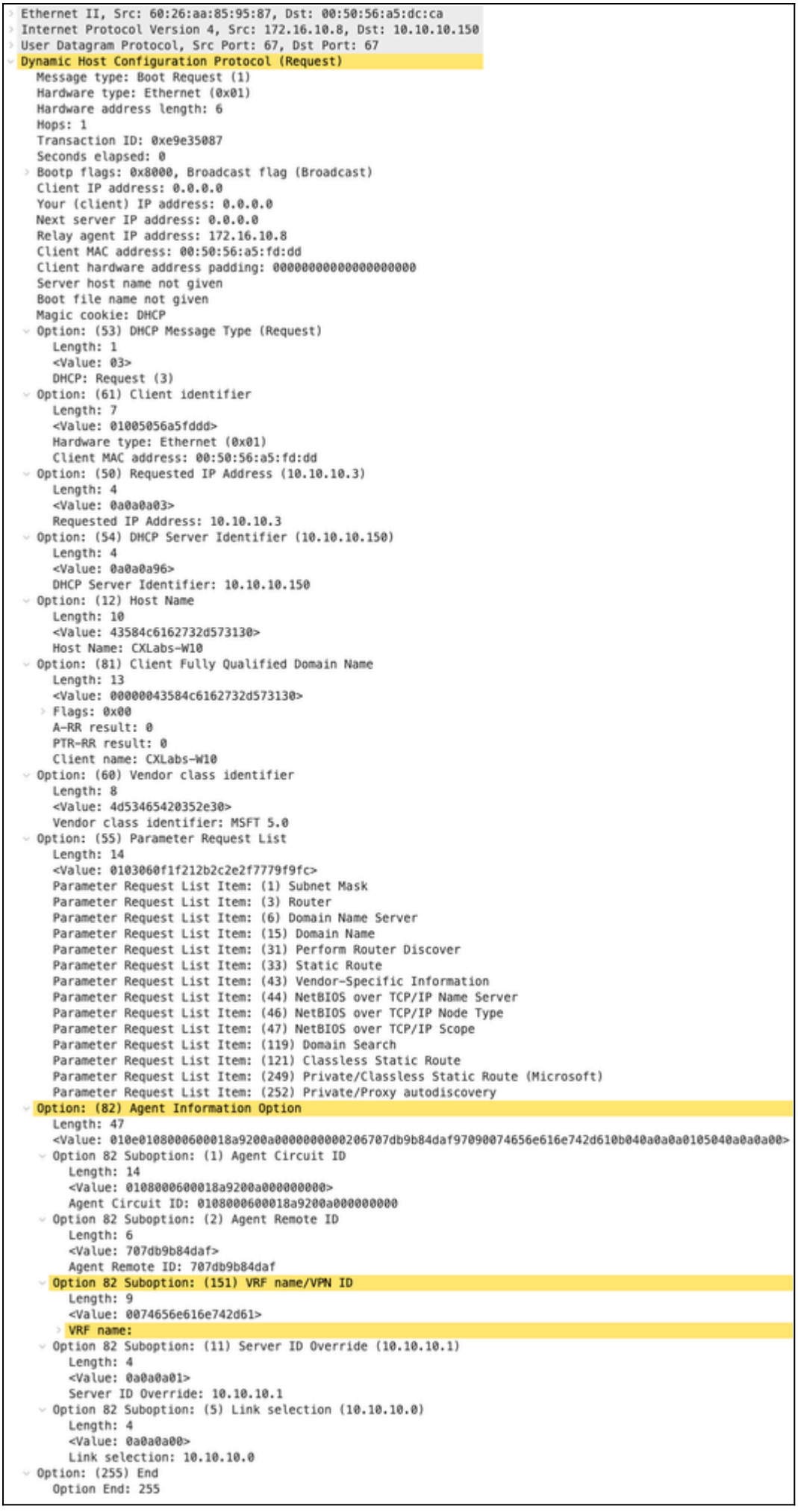
```
> Ethernet II, Src: 70:7d:b9:b8:4d:af, Dst: 10:b3:d6:a4:85:97
> Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
> User Datagram Protocol, Src Port: 51730, Dst Port: 4789
v Virtual eXtensible Local Area Network
  > Flags: 0x0800, VXLAN Network ID (VNI)
    Group Policy ID: 0
    VXLAN 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
v Dynamic Host Configuration Protocol (Request)
    Message type: Boot Request (1)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 1
    Transaction ID: 0xe9e35087
    Seconds elapsed: 0
  > Bootp flags: 0x8000, Broadcast flag (Broadcast)
    Client IP address: 0.0.0.0
    Your (client) IP address: 0.0.0.0
    Next server IP address: 0.0.0.0
    Relay agent IP address: 172.16.10.8
    Client MAC address: 00:50:56:a5:fd:dd
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
  v Option: (53) DHCP Message Type (Request)
      Length: 1
      <Value: 03>
      DHCP: Request (3)
  v Option: (61) Client identifier
      Length: 7
      <Value: 01005056a5fddd>
      Hardware type: Ethernet (0x01)
      Client MAC address: 00:50:56:a5:fd:dd
  v Option: (50) Requested IP Address (10.10.10.3)
      Length: 4
      <Value: 0a0a0a03>
      Requested IP Address: 10.10.10.3
  v Option: (54) DHCP Server Identifier (10.10.10.150)
      Length: 4
      <Value: 0a0a0a96>
      DHCP Server Identifier: 10.10.10.150
  v Option: (12) Host Name
      Length: 10
      <Value: 43584c6162732d573130>
      Host Name: CXLabs-W10
  v 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
  v Option: (60) Vendor class identifier
      Length: 8
      <Value: 4d53465420352e30>
      Vendor class identifier: MSFT 5.0
  v Option: (55) Parameter Request List
      Length: 14
      <Value: 0103060f1f212b2c2e2f7779f9fc>
      Parameter Request List Item: (1) Subnet Mask
      Parameter Request List Item: (3) Router
      Parameter Request List Item: (6) Domain Name Server
      Parameter Request List Item: (15) Domain Name
      Parameter Request List Item: (31) Perform Router Discover
      Parameter Request List Item: (33) Static Route
      Parameter Request List Item: (43) Vendor-Specific Information
      Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
      Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
      Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
      Parameter Request List Item: (119) Domain Search
      Parameter Request List Item: (121) Classless Static Route
      Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
      Parameter Request List Item: (252) Private/Proxy autodiscovery
  v Option: (82) Agent Information Option
      Length: 47
      <Value: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
    v Option 82 Suboption: (1) Agent Circuit ID
        Length: 14
        <Value: 0108000600018a9200a000000000>
        Agent Circuit ID: 0108000600018a9200a000000000
    v Option 82 Suboption: (2) Agent Remote ID
        Length: 6
        <Value: 707db9b84daf>
        Agent Remote ID: 707db9b84daf
    v Option 82 Suboption: (151) VRF name/VPN ID
        Length: 9
        <Value: 0074656e616e742d61>
      v VRF name:
          [Expert Info (Warning/Undecoded): Trailing stray characters]
    v Option 82 Suboption: (11) Server ID Override (10.10.10.1)
        Length: 4
        <Value: 0a0a0a01>
        Server ID Override: 10.10.10.1
    v Option 82 Suboption: (5) Link selection (10.10.10.0)
        Length: 4
        <Value: 0a0a0a00>
        Link selection: 10.10.10.0
  v Option: (255) End
      Option End: 255
```

```
> Ethernet II, Src: 10:b3:d6:a4:85:97, Dst: 60:26:aa:85:95:87
> Internet Protocol Version 4, Src: 5.5.5.5, Dst: 13.13.13.254
> User Datagram Protocol, Src Port: 51730, Dst Port: 4789
v 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
v Dynamic Host Configuration Protocol (Request)
    Message type: Boot Request (1)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 1
    Transaction ID: 0xe9e35087
    Seconds elapsed: 0
  > Bootp flags: 0x8000, Broadcast flag (Broadcast)
    Client IP address: 0.0.0.0
    Your (client) IP address: 0.0.0.0
    Next server IP address: 0.0.0.0
    Relay agent IP address: 172.16.10.8
    Client MAC address: 00:50:56:a5:fd:dd
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
  v Option: (53) DHCP Message Type (Request)
      Length: 1
      <Value: 03>
      DHCP: Request (3)
  v Option: (61) Client identifier
      Length: 7
      <Value: 01005056a5fddd>
      Hardware type: Ethernet (0x01)
      Client MAC address: 00:50:56:a5:fd:dd
  v Option: (50) Requested IP Address (10.10.10.3)
      Length: 4
      <Value: 0a0a0a03>
      Requested IP Address: 10.10.10.3
  v Option: (54) DHCP Server Identifier (10.10.10.150)
      Length: 4
      <Value: 0a0a0a96>
      DHCP Server Identifier: 10.10.10.150
  v Option: (12) Host Name
      Length: 10
      <Value: 43584c6162732d573130>
      Host Name: CXLabs-W10
  v 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
  v Option: (60) Vendor class identifier
      Length: 8
      <Value: 4d53465420352e30>
      Vendor class identifier: MSFT 5.0
  v Option: (55) Parameter Request List
      Length: 14
      <Value: 0103060f1f212b2c2e2f7779f9fc>
      Parameter Request List Item: (1) Subnet Mask
      Parameter Request List Item: (3) Router
      Parameter Request List Item: (6) Domain Name Server
      Parameter Request List Item: (15) Domain Name
      Parameter Request List Item: (31) Perform Router Discover
      Parameter Request List Item: (33) Static Route
      Parameter Request List Item: (43) Vendor-Specific Information
      Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
      Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
      Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
      Parameter Request List Item: (119) Domain Search
      Parameter Request List Item: (121) Classless Static Route
      Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
      Parameter Request List Item: (252) Private/Proxy autodiscovery
  v Option: (82) Agent Information Option
      Length: 47
      <Value: 010e0108000600018a9200a0000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
    v Option 82 Suboption: (1) Agent Circuit ID
        Length: 14
        <Value: 0108000600018a9200a000000000>
        Agent Circuit ID: 0108000600018a9200a000000000
    v Option 82 Suboption: (2) Agent Remote ID
        Length: 6
        <Value: 707db9b84daf>
        Agent Remote ID: 707db9b84daf
    v Option 82 Suboption: (151) VRF name/VPN ID
        Length: 9
        <Value: 0074656e616e742d61>
      > VRF name:
    v Option 82 Suboption: (11) Server ID Override (10.10.10.1)
        Length: 4
        <Value: 0a0a0a01>
        Server ID Override: 10.10.10.1
    v Option 82 Suboption: (5) Link selection (10.10.10.0)
        Length: 4
        <Value: 0a0a0a00>
        Link selection: 10.10.10.0
  v Option: (255) End
      Option End: 255
```

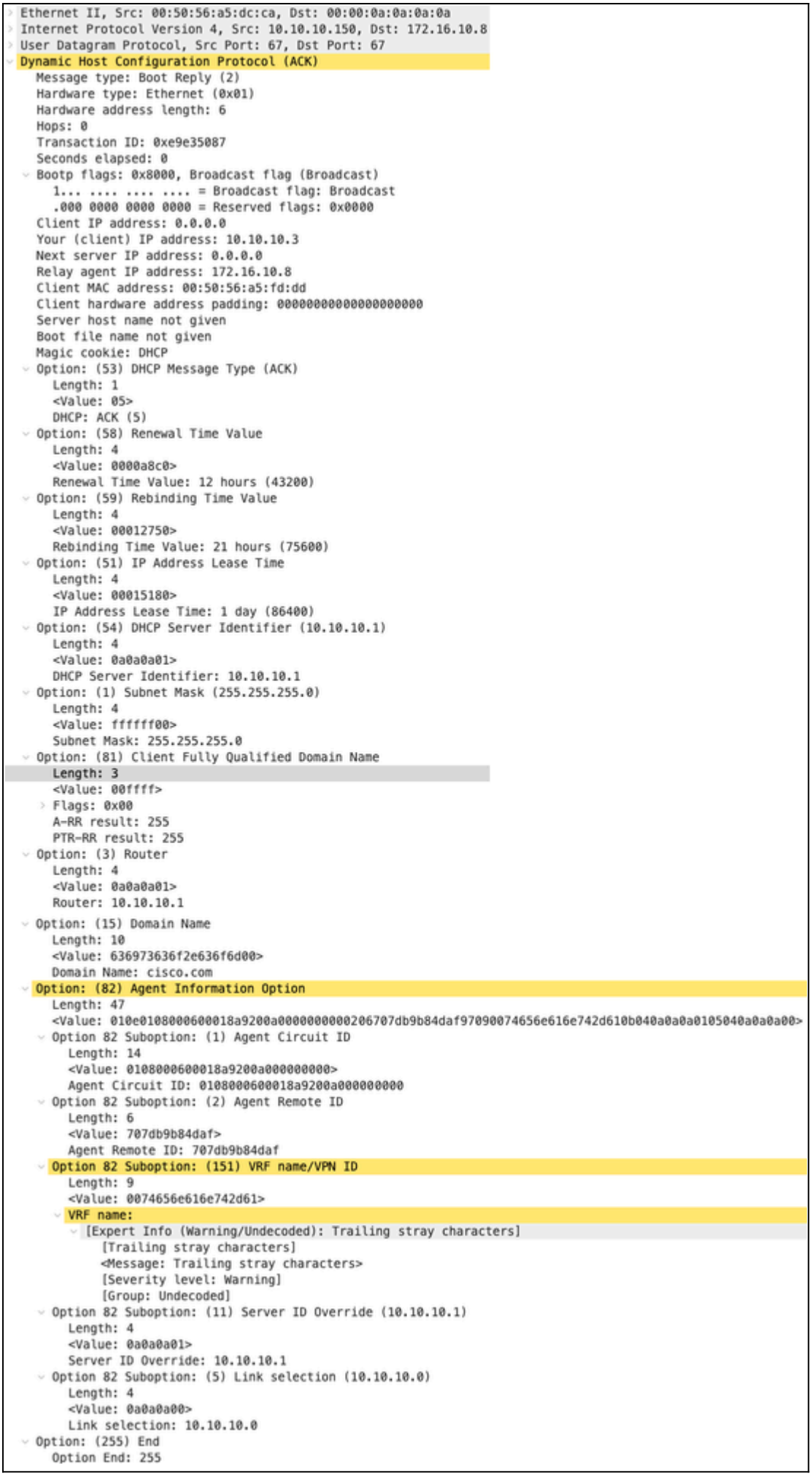
Requête sur LEAF-2-vPC

Requête PCd sur LEAF-2-vPC	Demande d'envoi par vPCAF-2-vPC
	

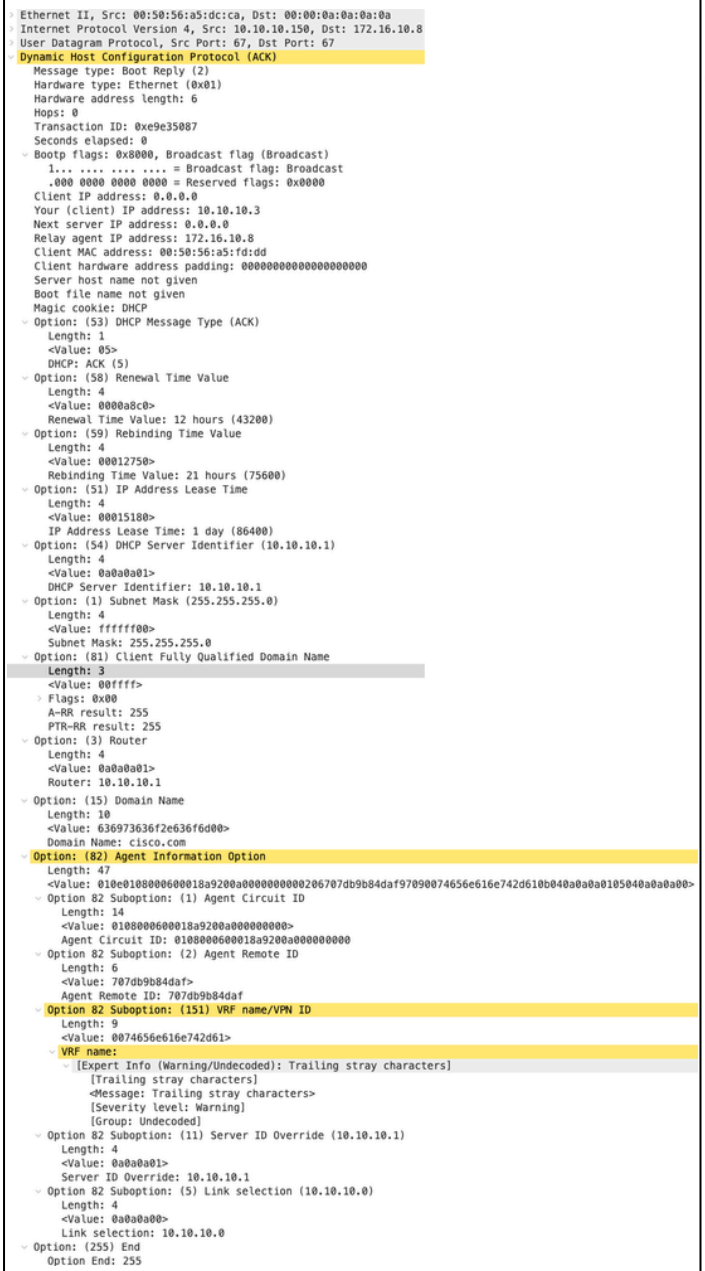
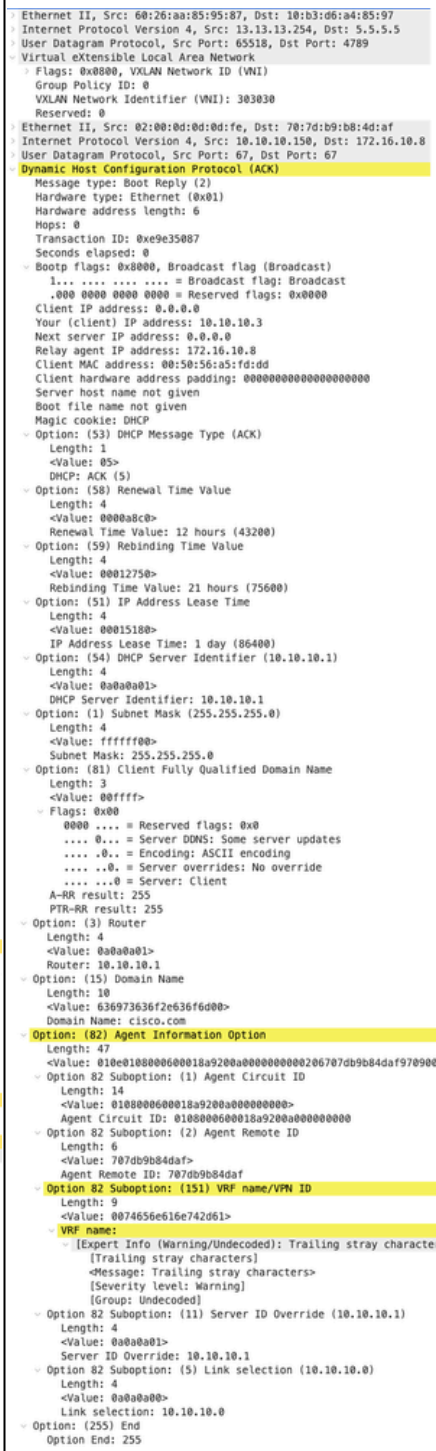
Requête reçue sur le serveur DHCP


Ethernet II, Src: 60:26:aa:85:95:87, Dst: 00:50:56:a5:dc:ca
Internet Protocol Version 4, Src: 172.16.10.8, Dst: 10.10.10.150
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (Request)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 1
Transaction ID: 0xe9e35087
Seconds elapsed: 0
Bootp flags: 0x8000, Broadcast flag (Broadcast)
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Request)
Length: 1
<Value: 03>
DHCP: Request (3)
Option: (61) Client identifier
Length: 7
<Value: 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: 010e0108000600018a9200a00000000000206707db9b84daf97090074656e616e742d610b040a0a0a0105040a0a0a00>
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

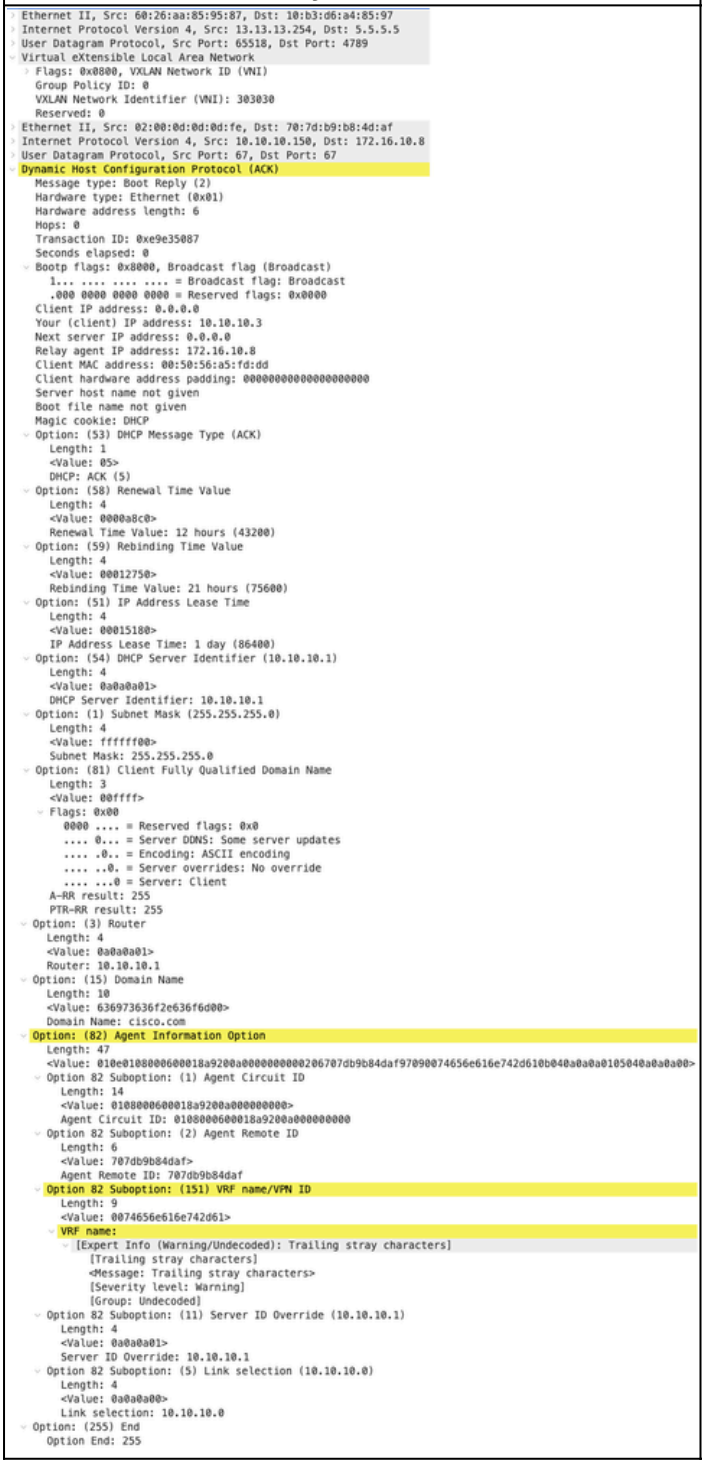
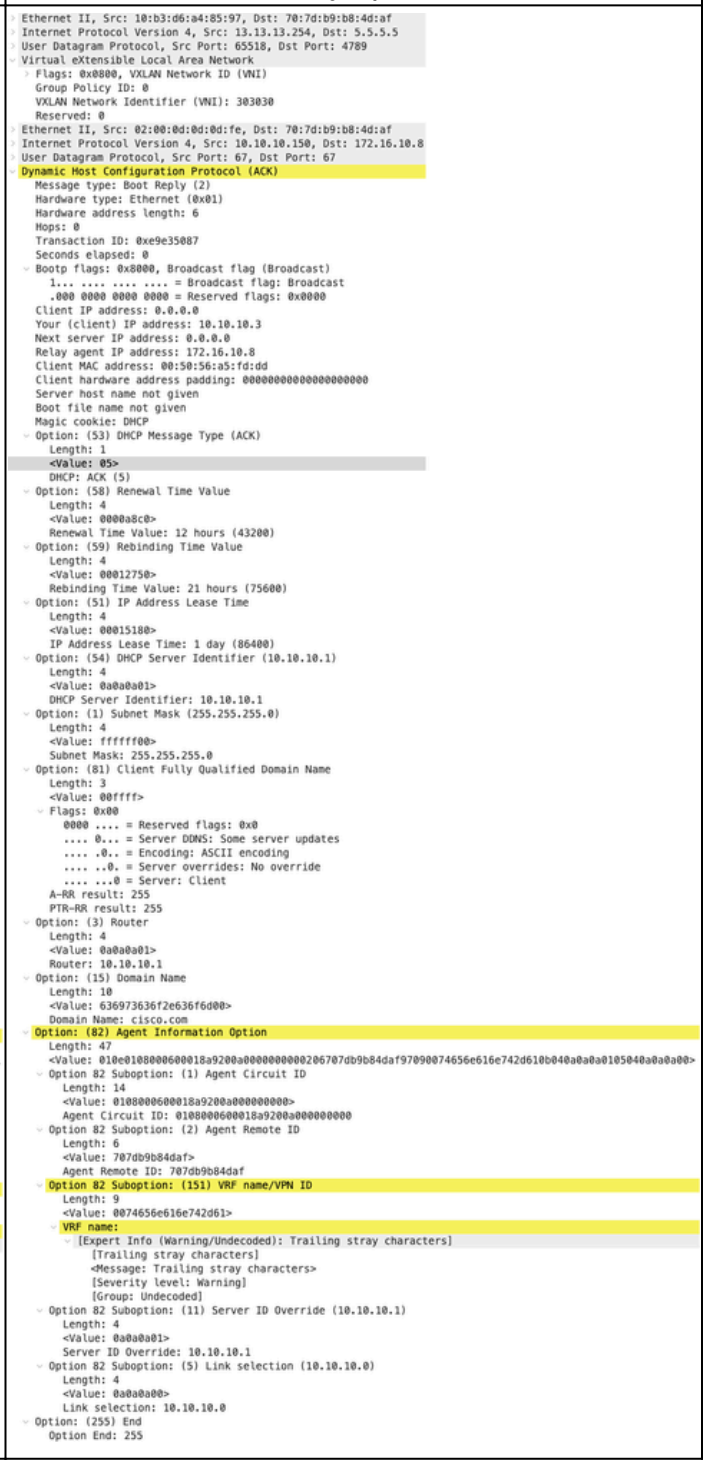
Envoi ACK par le serveur DHCP


Ethernet II, Src: 00:50:56:a5:dc:ca, Dst: 00:00:0a:0a:0a:0a
Internet Protocol Version 4, Src: 10.10.10.150, Dst: 172.16.10.8
User Datagram Protocol, Src Port: 67, Dst Port: 67
Dynamic Host Configuration Protocol (ACK)
Message type: Boot Reply (2)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0xe9e35087
Seconds elapsed: 0
Bootp flags: 0x8000, Broadcast flag (Broadcast)
1... .... = Broadcast flag: Broadcast
.000 0000 0000 0000 = Reserved flags: 0x0000
Client IP address: 0.0.0.0
Your (client) IP address: 10.10.10.3
Next server IP address: 0.0.0.0
Relay agent IP address: 172.16.10.8
Client MAC address: 00:50:56:a5:fd:dd
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (ACK)
Length: 1
<Value: 05>
DHCP: ACK (5)
Option: (58) Renewal Time Value
Length: 4
<Value: 0000a8c0>
Renewal Time Value: 12 hours (43200)
Option: (59) Rebinding Time Value
Length: 4
<Value: 00012750>
Rebinding Time Value: 21 hours (75600)
Option: (51) IP Address Lease Time
Length: 4
<Value: 00015180>
IP Address Lease Time: 1 day (86400)
Option: (54) DHCP Server Identifier (10.10.10.1)
Length: 4
<Value: 0a0a0a01>
DHCP Server Identifier: 10.10.10.1
Option: (1) Subnet Mask (255.255.255.0)
Length: 4
<Value: ffffff00>
Subnet Mask: 255.255.255.0
Option: (81) Client Fully Qualified Domain Name
Length: 3
<Value: 00ffff>
Flags: 0x00
A-RR result: 255
PTR-RR result: 255
Option: (3) Router
Length: 4
<Value: 0a0a0a01>
Router: 10.10.10.1
Option: (15) Domain Name
Length: 10
<Value: 636973636f2e636f6d00>
Domain Name: cisco.com
Option: (82) Agent Information Option
Length: 47
<Value: 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:
[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 sur LEAF-2-vPC

ACK reçu sur LEAF-2-vPC	ACK envoyé par LEAF-2-vPC
	

ACK sur SPINE

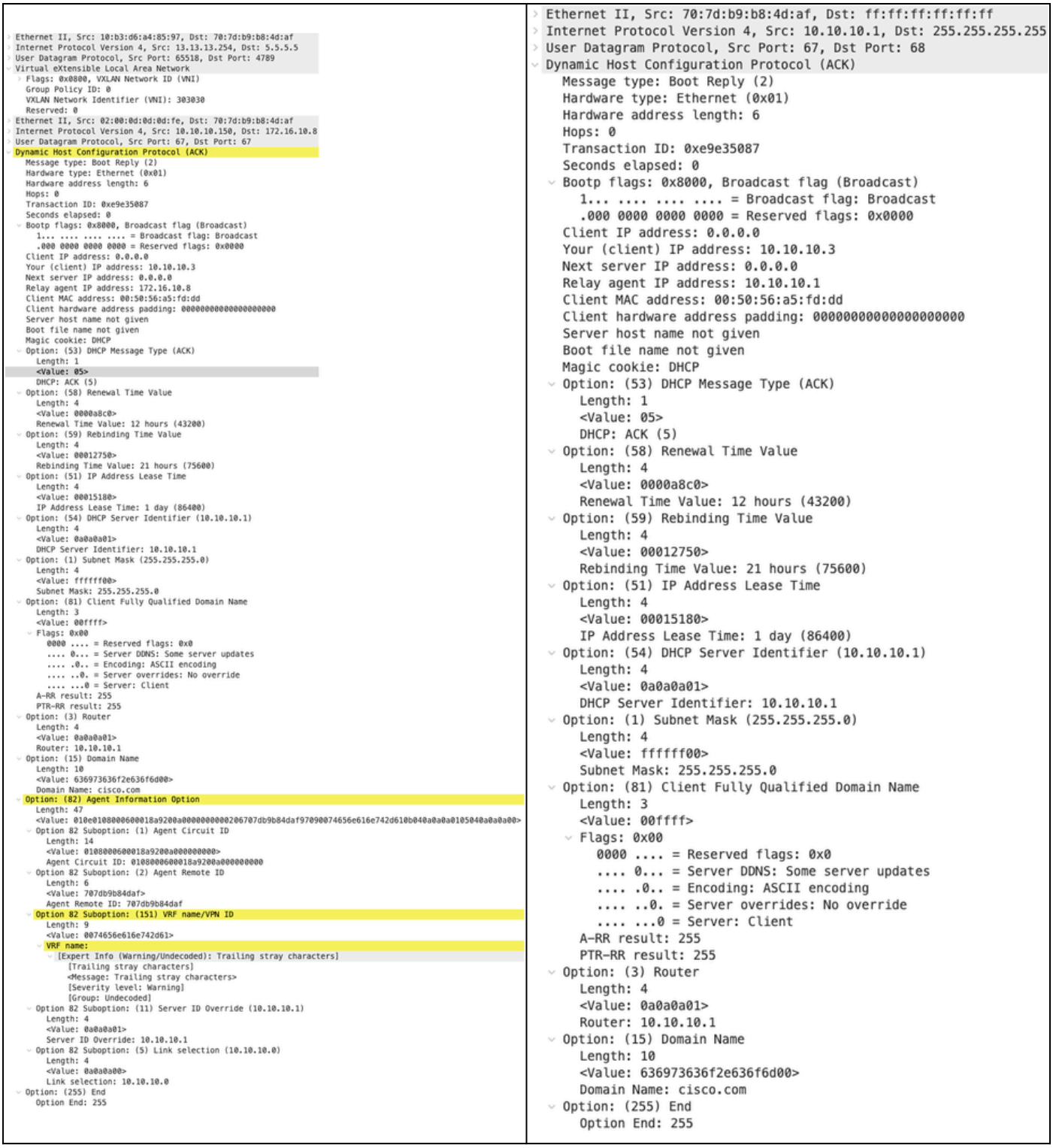
ACK reçu sur SPINE	ACK envoyé par SPINE
	

```
Ethernet II, Src: 60:26:aa:85:95:87, Dst: 10:b3:d6:a4:85:97
Internet Protocol Version 4, Src: 13.13.13.254, Dst: 5.5.5.5
User Datagram Protocol, Src Port: 65518, Dst Port: 4789
Virtual eXtensible Local Area Network
  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 (ACK)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... .... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 10.10.10.3
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (ACK)
    Length: 1
    <Value: 05>
    DHCP: ACK (5)
  Option: (58) Renewal Time Value
    Length: 4
    <Value: 0000a8c0>
    Renewal Time Value: 12 hours (43200)
  Option: (59) Rebinding Time Value
    Length: 4
    <Value: 00012750>
    Rebinding Time Value: 21 hours (75600)
  Option: (51) IP Address Lease Time
    Length: 4
    <Value: 00015180>
    IP Address Lease Time: 1 day (86400)
  Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  Option: (1) Subnet Mask (255.255.255.0)
    Length: 4
    <Value: ffffff00>
    Subnet Mask: 255.255.255.0
  Option: (81) Client Fully Qualified Domain Name
    Length: 3
    <Value: 00ffff>
    Flags: 0x00
      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: 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:
        [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
```

```
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 (ACK)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0xe9e35087
  Seconds elapsed: 0
  Bootp flags: 0x8000, Broadcast flag (Broadcast)
    1... .... .... .... = Broadcast flag: Broadcast
    .000 0000 0000 0000 = Reserved flags: 0x0000
  Client IP address: 0.0.0.0
  Your (client) IP address: 10.10.10.3
  Next server IP address: 0.0.0.0
  Relay agent IP address: 172.16.10.8
  Client MAC address: 00:50:56:a5:fd:dd
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (ACK)
    Length: 1
    <Value: 05>
    DHCP: ACK (5)
  Option: (58) Renewal Time Value
    Length: 4
    <Value: 0000a8c0>
    Renewal Time Value: 12 hours (43200)
  Option: (59) Rebinding Time Value
    Length: 4
    <Value: 00012750>
    Rebinding Time Value: 21 hours (75600)
  Option: (51) IP Address Lease Time
    Length: 4
    <Value: 00015180>
    IP Address Lease Time: 1 day (86400)
  Option: (54) DHCP Server Identifier (10.10.10.1)
    Length: 4
    <Value: 0a0a0a01>
    DHCP Server Identifier: 10.10.10.1
  Option: (1) Subnet Mask (255.255.255.0)
    Length: 4
    <Value: ffffff00>
    Subnet Mask: 255.255.255.0
  Option: (81) Client Fully Qualified Domain Name
    Length: 3
    <Value: 00ffff>
    Flags: 0x00
      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: 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:
        [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 sur LEAF-1

ACK reçu sur LEAF-1	ACK envoyé par LEAF-1



ACK sur 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
v 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
  v Bootp flags: 0x8000, Broadcast flag (Broadcast)
      1... .... .... .... = Broadcast flag: Broadcast
      .000 0000 0000 0000 = Reserved flags: 0x0000
    Client IP address: 0.0.0.0
    Your (client) IP address: 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
  v Option: (53) DHCP Message Type (ACK)
      Length: 1
      <Value: 05>
      DHCP: ACK (5)
  v Option: (58) Renewal Time Value
      Length: 4
      <Value: 0000a8c0>
      Renewal Time Value: 12 hours (43200)
  v Option: (59) Rebinding Time Value
      Length: 4
      <Value: 00012750>
      Rebinding Time Value: 21 hours (75600)
  v Option: (51) IP Address Lease Time
      Length: 4
      <Value: 00015180>
      IP Address Lease Time: 1 day (86400)
  v Option: (54) DHCP Server Identifier (10.10.10.1)
      Length: 4
      <Value: 0a0a0a01>
      DHCP Server Identifier: 10.10.10.1
  v Option: (1) Subnet Mask (255.255.255.0)
      Length: 4
      <Value: ffffff00>
      Subnet Mask: 255.255.255.0
  v Option: (81) Client Fully Qualified Domain Name
      Length: 3
      <Value: 00ffff>
    v 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
  v Option: (3) Router
      Length: 4
      <Value: 0a0a0a01>
      Router: 10.10.10.1
  v Option: (15) Domain Name
      Length: 10
      <Value: 636973636f2e636f6d00>
      Domain Name: cisco.com
  v Option: (255) End
      Option End: 255
```

Informations connexes

Configuration de VXLAN BGP EVPN

Configuration de VXLAN

Résolution des problèmes liés à DHCP sur Nexus 9000

Guide de configuration VXLAN de la gamme Cisco Nexus 9000 NX-OS, version 10.4(x)

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