

# 配置MS Windows服务器2012提供在eVPN方案(VXLAN、思科一个结构等等)的DHCP服务

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## 简介

从虚拟可扩展LAN (VXLAN)和思科的介绍一个结构(以前动态结构自动化(DFA))提供DHCP服务开始依靠DHCP选项82通知服务器适当地址提供给客户端。本文在选项82字段显示如何配置MS Windows服务器2012识别信息提供对客户端的适当地址

## 先决条件

### 要求

思科推荐您有以下概念的基本的了解在阅读此条款前：

- VXLAN以太网VPN (EVPN)配置
- DHCP中继配置
- DHCP服务基本的了解
- 配置在MS Windows服务器2012的DHCP服务

### 使用的组件

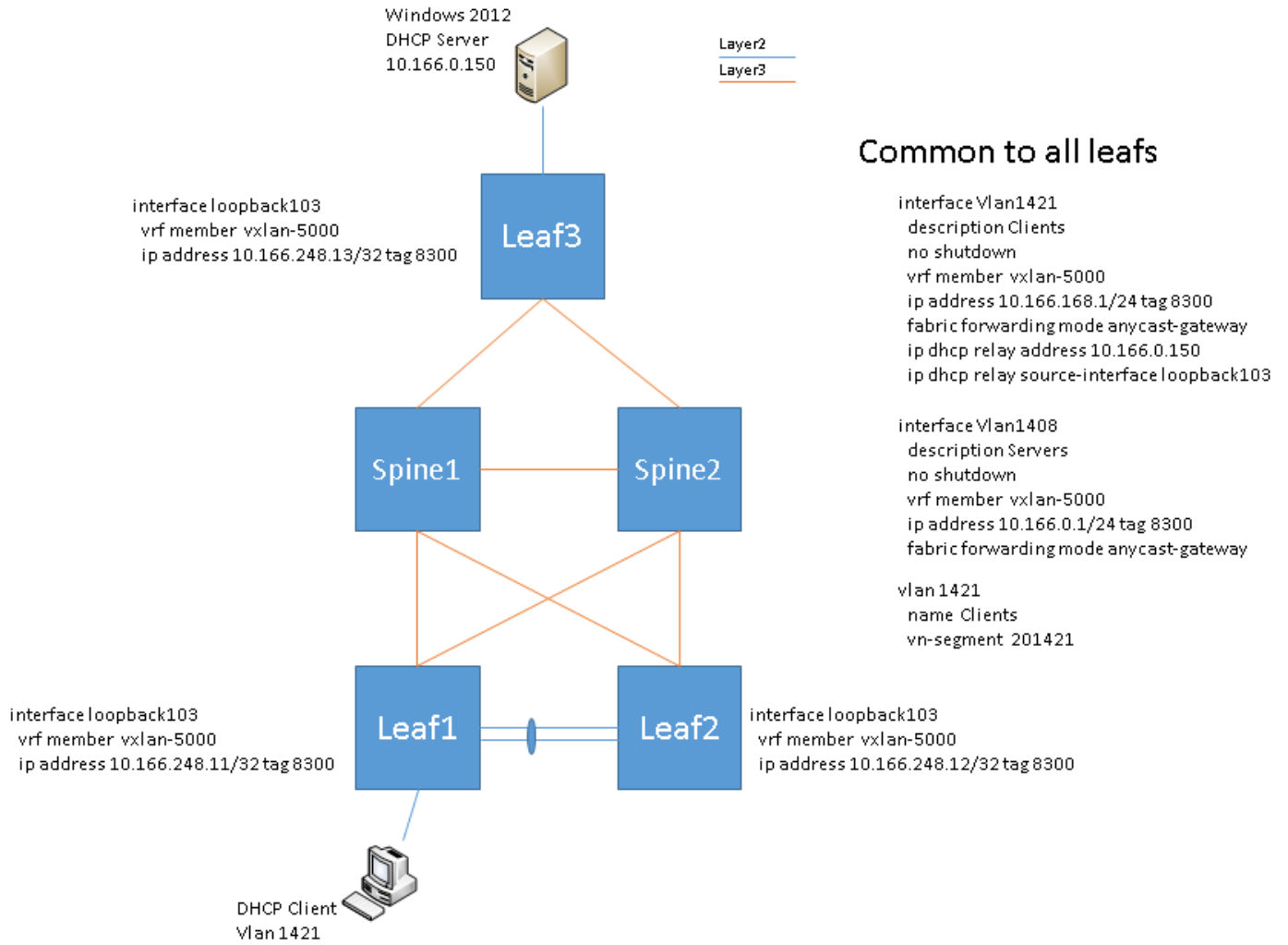
本文档中的信息基于以下软件和硬件版本：

- 连结9300和9500交换机运行7.0(3)I1(2)
- MS Windows服务器2012个R2

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

## 配置

# 网络图



此处挑战是那，因为每分支交换机共享在唯一IP地址是需要的用于源包DHCP信息包从的客户端 VLAN的同一个VLAN接口地址。 因此我们使用环回地址(103在这种情况下)来源DHCP中继帧从。

从此镜像您能看到两个字段突出显示，帧的源和目的地IP地址和中继代理IP地址(亦称网关地址或giaddress)。 这是MS Windows服务器使用识别范围/地址池分配对客户端的一个地址的字段。 因为每VLAN从此环回其他将来源需要执行区分分子网。

```

1084 362.051393 10.166.248.11 10.166.0.150 DHCP 390 DHCP Discover - Transaction ID 0x9290d377
1163 366.046936 10.166.0.150 10.166.248.11 DHCP 375 DHCP Offer - Transaction ID 0x9290d377
1165 366.048158 10.166.248.11 10.166.0.150 DHCP 416 DHCP Request - Transaction ID 0x9290d377
1166 366.048471 10.166.0.150 10.166.248.11 DHCP 380 DHCP ACK - Transaction ID 0x9290d377

```

---

```

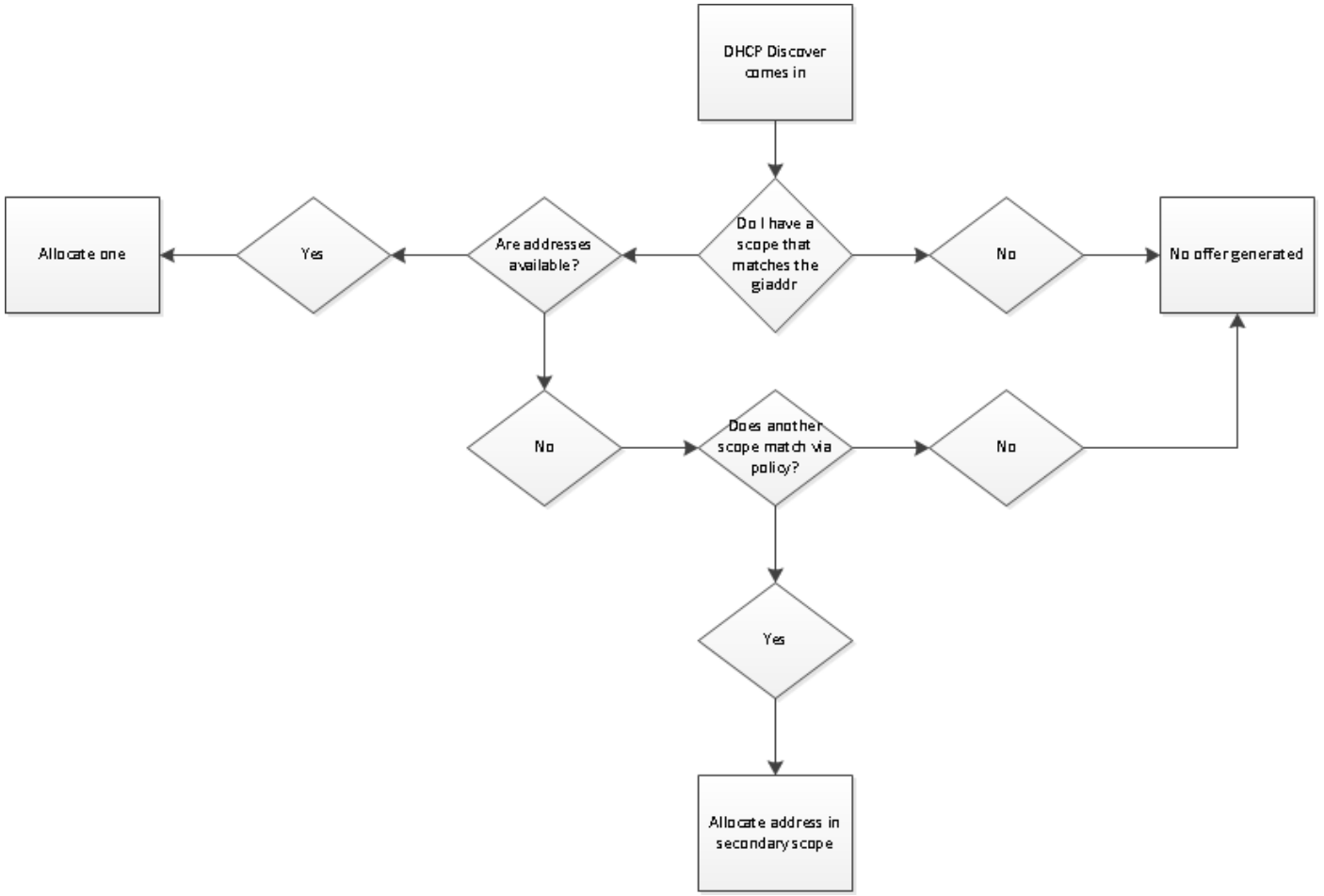
[+] Frame 1084: 390 bytes on wire (3120 bits), 390 bytes captured (3120 bits) on interface 0
[+] Ethernet II, Src: Cisco_ca:f1:77 (7c:0e:ce:ca:f1:77), Dst: vmware_bc:51:a3 (00:50:56:bc:51:a3)
[+] Internet Protocol Version 4, Src: 10.166.248.11 (10.166.248.11), Dst: 10.166.0.150 (10.166.0.150)
[+] User Datagram Protocol, Src Port: 67 (67), Dst Port: 67 (67)
[+] Bootstrap Protocol (Discover)
    Message type: Boot Request (1)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 1
    Transaction ID: 0x9290d377
    Seconds elapsed: 0
    Bootp flags: 0x0000 (Unicast)
    Client IP address: 0.0.0.0 (0.0.0.0)
    Your (client) IP address: 0.0.0.0 (0.0.0.0)
    Next server IP address: 0.0.0.0 (0.0.0.0)
    Relay agent IP address: 10.166.248.11 (10.166.248.11)
    Client MAC address: vmware_bc:33:66 (00:50:56:bc:33:66)
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
    Option: (53) DHCP Message Type (Discover)
    Option: (61) Client identifier
    Option: (50) Requested IP Address
    Option: (12) Host Name
    Option: (60) Vendor class identifier
    Option: (55) Parameter Request List
    Option: (82) Agent Information Option
    Option: (255) End

```

Source/Destination IP

Loopback address of leaf

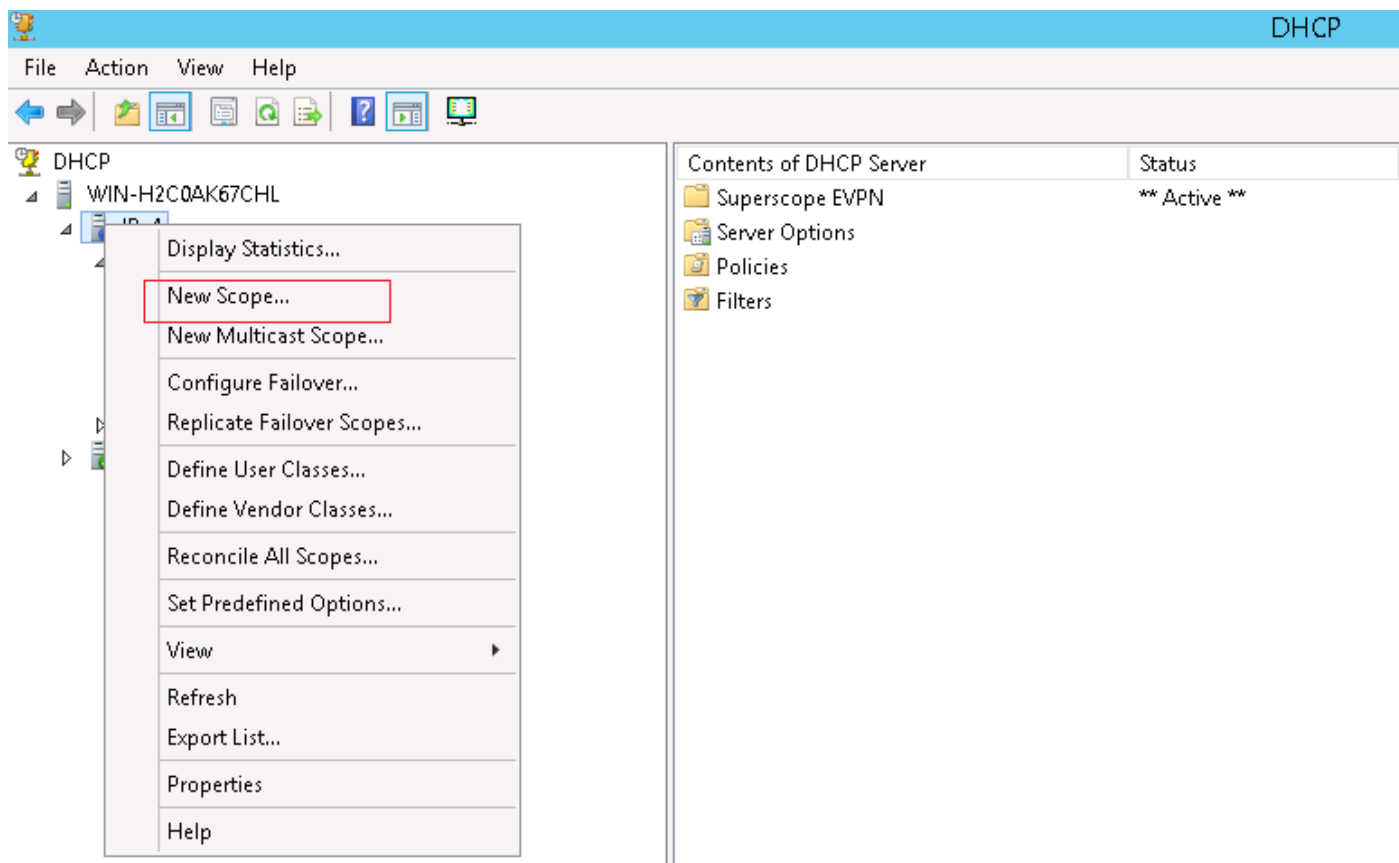
这是Microsoft Windows 2012使用确定的逻辑是否分配地址。



### 配置

在MS Windows服务器2012您首先需要定义包括中继代理地址的范围。这是服务器使用确定的唯一

的方法是否能服务此DHCP发现数据包。如果没有匹配中继代理地址然后服务器的地址池不会响应。您那么首先需要创建以下范围：



开始创建范围

## New Scope Wizard



### Welcome to the New Scope Wizard

This wizard helps you set up a scope for distributing IP addresses to computers on your network.

To continue, click Next.

< Back

Next >

Cancel

给出它适当地

## New Scope Wizard

### Scope Name

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



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

Name:

Description:

< Back

Next >

Cancel

选择将包括交换机环回将是执行的DHCP中继的地址范围。

## New Scope Wizard

### IP Address Range

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



#### Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

#### Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back

Next >

Cancel

其次请务必排除在此范围的地址。重要的是没有地址可用为了服务器能给在此范围。如果没有地址可用在此范围这允许服务器查看其他范围和规则服务此DHCP请求。这是做此工作的其中一个最重要的步骤。

## New Scope Wizard

### Add Exclusions and Delay

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



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

Start IP address:

End IP address:

Add

Excluded address range:

10.166.248.11 to 10.166.248.13

Remove

Subnet delay in milli second:

< Back

Next >

Cancel

其次请单击，直到您获得此屏幕。我们需要配置一个选项为了启动范围。



## New Scope Wizard

### Configure DHCP Options

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



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

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

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

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

< Back

Next >

Cancel

添加在所有地址在子网里面是路由器。 没有默认网关服务器不会让您启动范围。

## New Scope Wizard

### Router (Default Gateway)

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



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

IP address:

Add

Remove

Up

Down

< Back

Next >

Cancel

其次单击，直到您达到此屏幕并且选择是并且其次单击。

## New Scope Wizard

### Activate Scope

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



Do you want to activate this scope now?

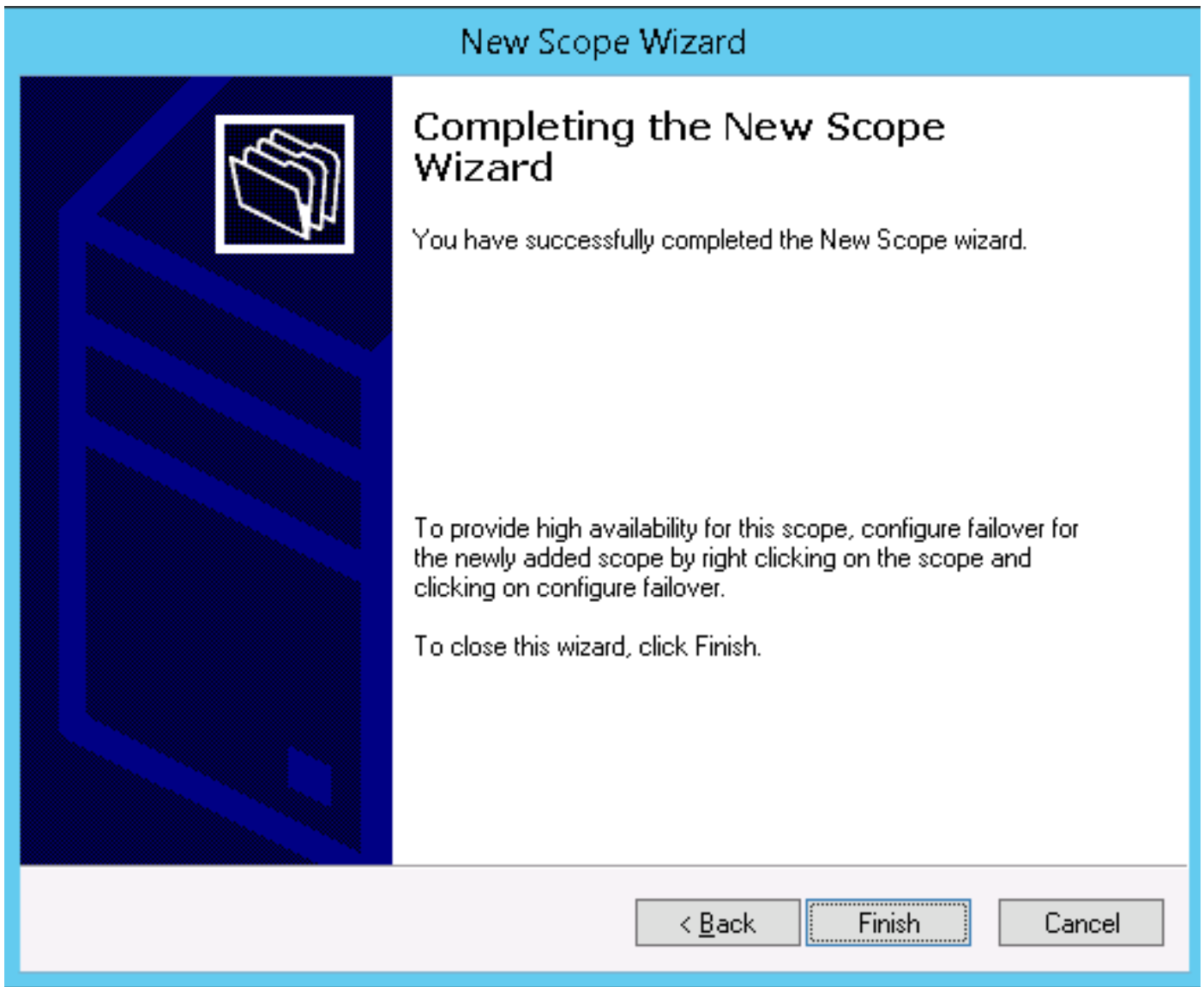
- Yes, I want to activate this scope now
- No, I will activate this scope later

< Back

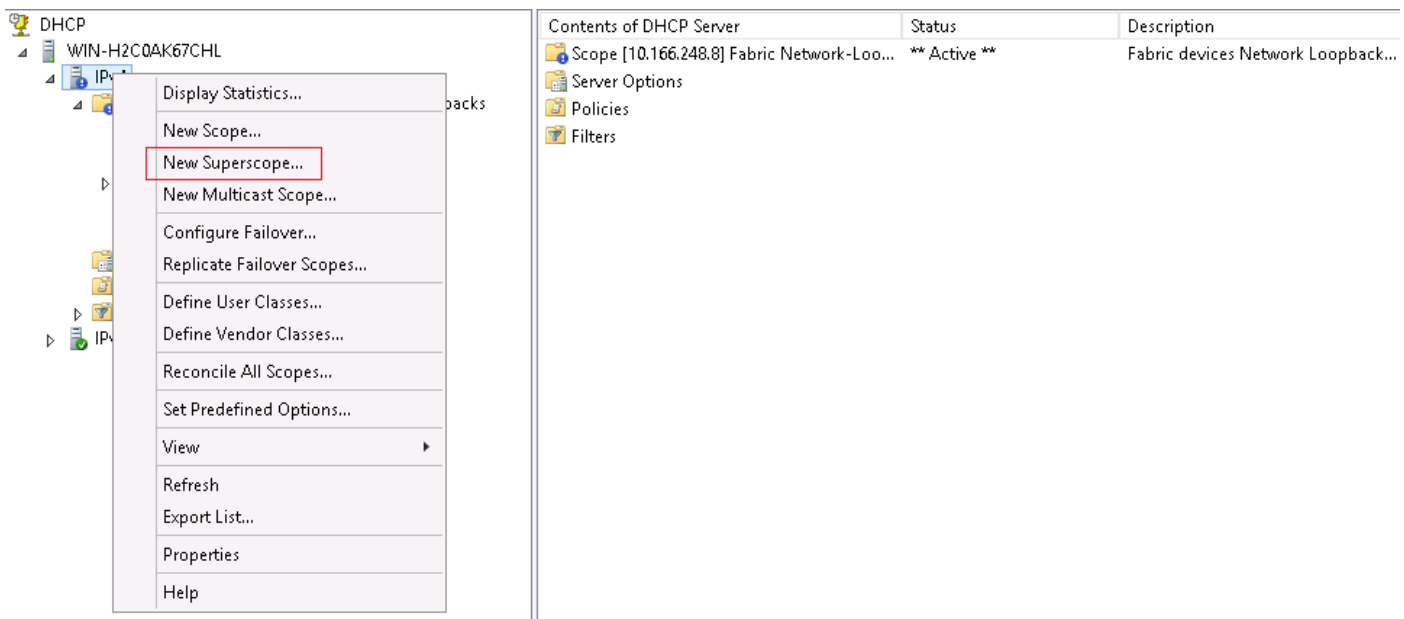
Next >

Cancel

所有完成! 点击完成。



现在您需要创建超级作用域和添加此范围到它。



单击在旁边开始

## New Superscope Wizard



### Welcome to the New Superscope Wizard

This wizard helps you create a superscope, which expands the number of IP network addresses that you can use in a network.

A superscope allows several distinct scopes to be logically grouped under a single name.

To continue, click Next.

< Back

Next >

Cancel

给出它适当地

## New Superscope Wizard

### Superscope Name

You have to provide an identifying superscope name.



Name:

< Back

Next >

Cancel

选择您新建立的环回范围包括在新的超级作用域。

## New Superscope Wizard

### Select Scopes

You create a superscope by building a collection of scopes.



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

Available scopes:

[10.166.248.8] Fabric Network-Loopbacks

< Back

Next >

Cancel

您已完成此过程。单击 完成。

## New Superscope Wizard



### Completing the New Superscope Wizard

You have successfully completed the New Superscope wizard.

The following superscope will be created:

Name: **VXLAN-Fabric-Scopes**

Scopes included in this superscope:

[10.166.248.8] Fabric Network-Loopbacks

To close this wizard, click Finish.

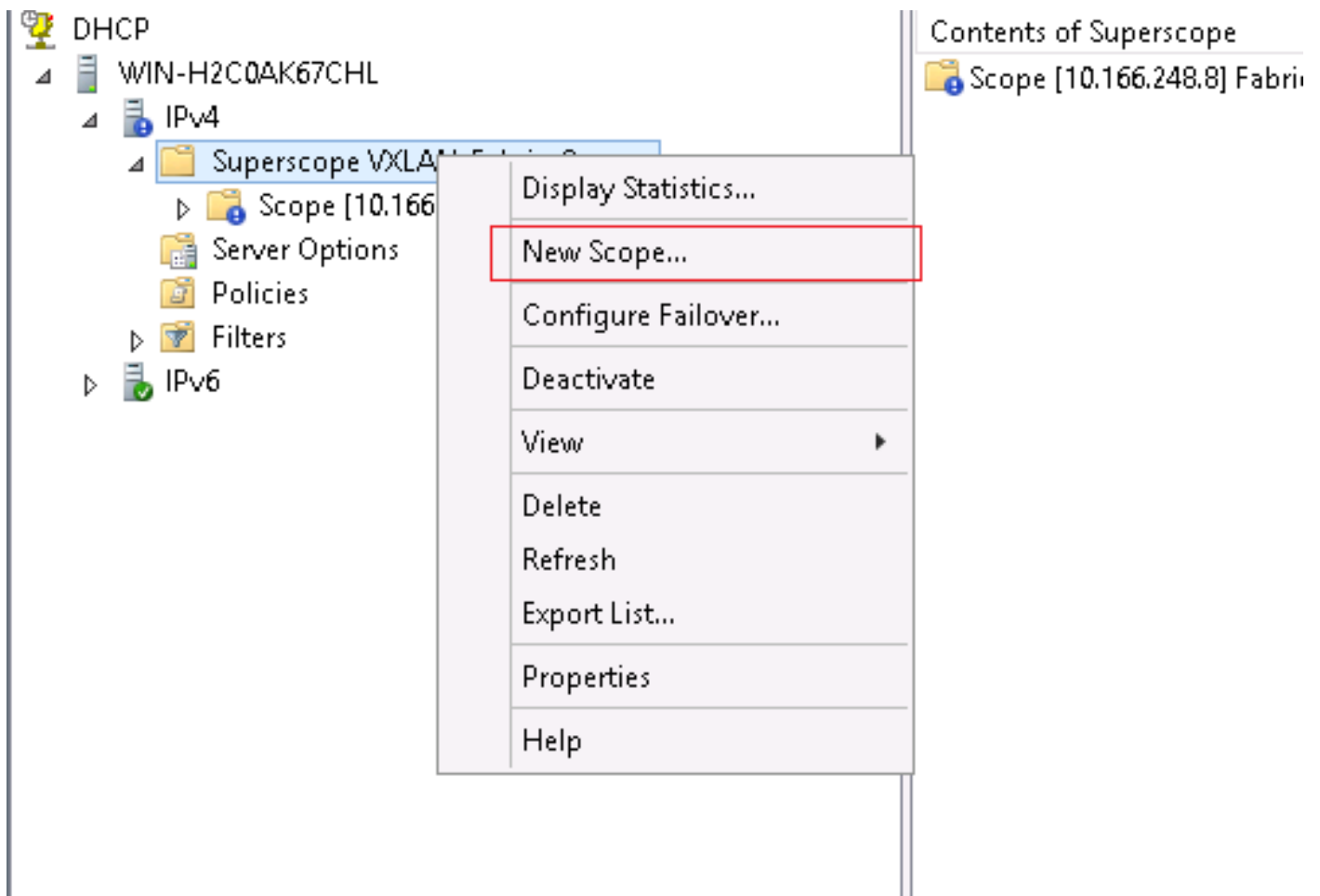
< Back

Finish

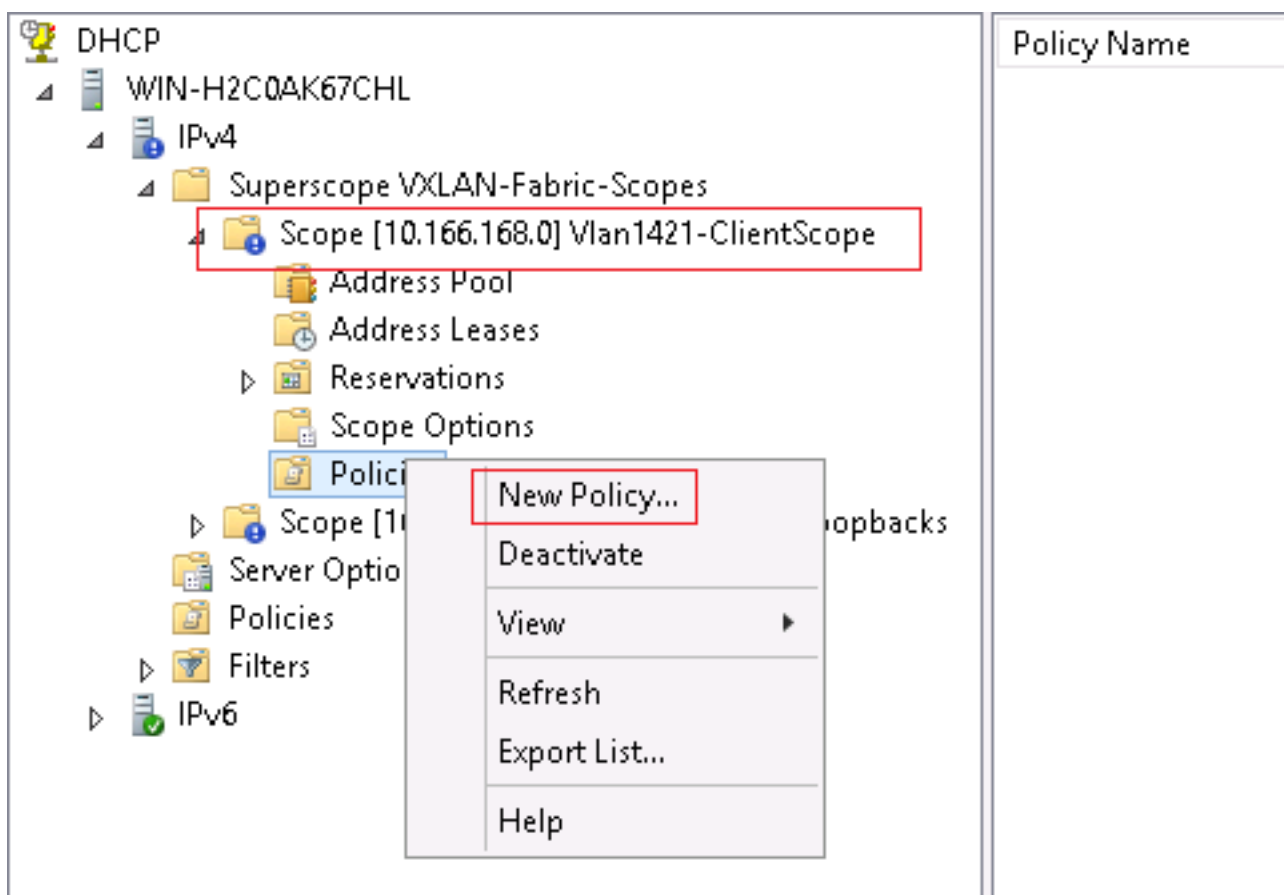
Cancel

其次您需要创建客户端范围。通常请创建此范围，因为您会创建范围除了是肯定包括它在象这样的超级作用域的所有客户端：





在您的范围当前后创建请添加允许服务器识别正确范围的选项82信息。 展开您的范围并且去策略并且创建一项新的策略。



给出它适当地。

## DHCP Policy Configuration Wizard

### Policy based IP Address and Option Assignment

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

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

Policy Name:

Description:

单击添加创建您的策略

## DHCP Policy Configuration Wizard

### Configure Conditions for the policy



A policy consists of one or more conditions and a set of configuration settings (options, IP Address) that are distributed to the client. The DHCP server delivers these specific settings to clients that match these conditions.

- ! A policy with conditions based on fully qualified domain name can have configuration settings for DNS but not for options or IP address ranges.

Conditions	Operator	Value

AND

OR

Add...

Edit...

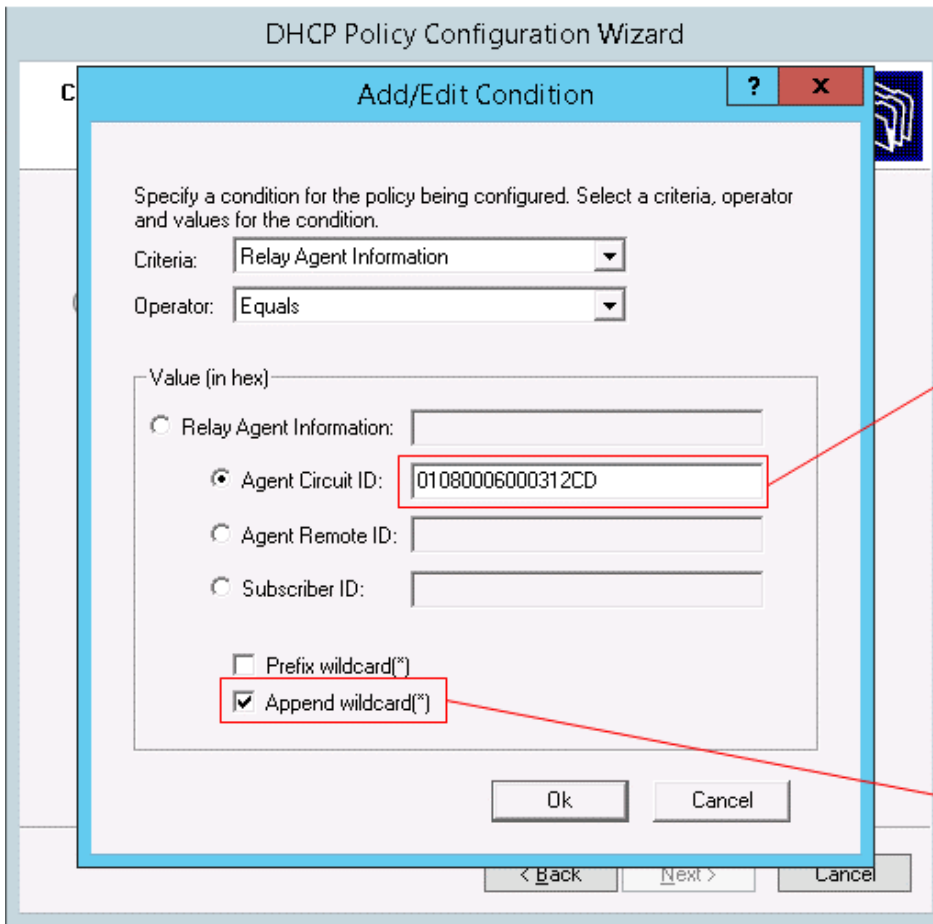
Remove

< Back

Next >

Cancel

选择Relay agent information和等于。然后如下所述请添加电路ID。这是服务器如何将确定正确VLAN给IP地址对客户端。每VLAN将有一唯一电路ID如从VN分段ID派生点击OK键，当完成。



## Leaf Configuration

vlan 1421  
name Clients  
vn-segment 201421

The Agent Circuit ID is derived from "0108000600" plus XXXXXX where XXXXXX is the six digit VN segment ID converted to hex.

201421 = 312CD. Since the number needs to always be six digits it becomes 0312CD for a total circuit ID of 01080006000312CD

Be sure to check the append wildcard box

单击在旁边移动向前向自定义选项。

## DHCP Policy Configuration Wizard

### Configure Conditions for the policy



A policy consists of one or more conditions and a set of configuration settings (options, IP Address) that are distributed to the client. The DHCP server delivers these specific settings to clients that match these conditions.

- ! A policy with conditions based on fully qualified domain name can have configuration settings for DNS but not for options or IP address ranges.

Conditions	Operator	Value
Relay Agent Information - A...	Equals	01080006000312CD*

AND

OR

Add...

Edit...

Remove

< Back

Next >

Cancel

您能通过检查是配置自定义IP范围，并且选择没有的地址范围或选择和让它提供在范围的任何合格地址。对于此范围我选择不让它提供客户端在范围的所有地址。

## DHCP Policy Configuration Wizard

### Configure settings for the policy

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



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

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

The current scope IP address range is 10.166.168.1 - 10.166.168.254

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

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

Start IP address:

End IP address:

Percentage of IP address range: No valid range specified

< Back

Next >

Cancel

如果希望，您能也选择改写在主要范围的选项此策略的。对于此示例没有自定义选项。

## DHCP Policy Configuration Wizard

### Configure settings for the policy

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



Vendor class:

DHCP Standard Options

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

Data entry

Long:

0x0

< Back

Next >

Cancel

验证并且点击完成创建策略。

## DHCP Policy Configuration Wizard

### Summary



A new policy will be created with the following properties. To configure DNS settings, view properties of the policy and click the DNS tab.

Name: Vlan1421 - Option 82 Policy

Description: Vlan1421 - Option 82 Policy

Conditions: OR of

Conditions	Operator	Value
Relay Agent Information - A...	Equals	01080006000312CD*

Settings:

Option Name	Vendor Class	Value
-------------	--------------	-------

< Back

Finish

Cancel

现在您应该看到客户端开始接收在新建立的范围的IP地址。

如果多个DHCP范围为多个子网要求，您需要创建每子网/VLAN一LoopbackX在所有分支和创建一个loopbackX范围范围和实际客户端IP子网范围的一超级作用域每VLAN。

这归结于该MSFT DHCP服务器只分配从附属SUB范围的IP，在DHCP服务器发现后没有在环回scoper的联机IP在超级作用域下。

因此，如果有有VLAX x，并且VLAN Y和您需要两超级域，一个与与子网Y的子网x和环回x和另一个与环回Y。

例如，有两子网、VLAN 1601和VLAN 1602。

您需要创建两与另外地址的环回在同样VRF和通告到BGP。

接口loopback601

VRF成员evpn-tenant-kk1



IP地址192.168.0.43/32  
ip router ospf 1个区域0.0.0.4

接口loopback602  
VRF成员evpn-tenant-kk1  
IP地址192.168.10.43/32  
ip router ospf 1个区域0.0.0.41

router bgp 2  
VRF evpn-tenant-kk1  
address-family ipv4单播  
网络192.168.0.43/32  
网络192.168.10.43/32  
通告l2vpn evpn

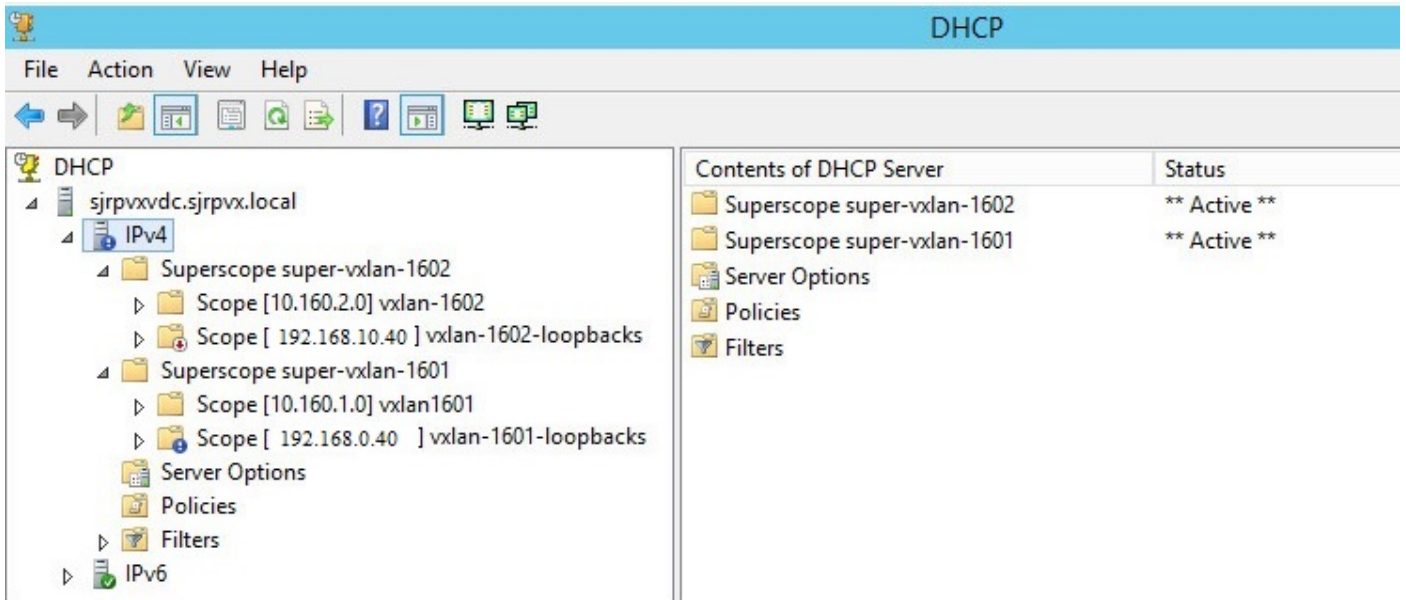
**每个VLAN使用另外环回作为DHCP中继来源。**

**接口Vlan1601**  
no shutdown  
VRF成员evpn-tenant-kk1  
no ip redirects  
IP地址10.160.1.254/24  
没有IPv6重定向  
结构转发模式任播网关  
ip dhcp relay address 10.160.2.253  
ip dhcp relay source-interface loopback601

**接口Vlan1602**  
no shutdown  
VRF成员evpn-tenant-kk1  
no ip redirects  
IP地址10.160.2.254/24  
没有IPv6重定向  
结构转发模式任播网关  
ip dhcp relay address 10.160.2.253  
ip dhcp relay source-interface loopback602

**然后，我必须创建VLAN 1601和VLAN的1602两超级作用域用不同的环回IP范围。**

**没有这些设置，在VLAN 1601和1602的主机从一个范围总是获得IP。**



## 验证

运行在我们的服务器的Wireshark我们能看到提供在正确子网给。

1779	5180.63275	10.166.248.11	10.166.0.150	DHCP	390	DHCP Discover	- Transaction ID 0x9cf43ca7
1780	5182.07221	10.166.0.150	10.166.248.11	DHCP	375	DHCP offer	- Transaction ID 0x9cf43ca7
1781	5182.07375	10.166.248.11	10.166.0.150	DHCP	416	DHCP Request	- Transaction ID 0x9cf43ca7
1783	5182.07485	10.166.0.150	10.166.248.11	DHCP	380	DHCP ACK	- Transaction ID 0x9cf43ca7

```

# Frame 1780: 375 bytes on wire (3000 bits), 375 bytes captured (3000 bits) on interface 0
# Ethernet II, Src: Vmware_bc:51:a3 (00:50:56:bc:51:a3), Dst: 02:00:69:69:96:96 (02:00:69:69:96:96)
# Internet Protocol Version 4, Src: 10.166.0.150 (10.166.0.150), Dst: 10.166.248.11 (10.166.248.11)
# User Datagram Protocol, Src Port: 67 (67), Dst Port: 67 (67)
# Bootstrap Protocol (offer)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0x9cf43ca7
  Seconds elapsed: 0
  # Bootp flags: 0x0000 (Unicast)
  Client IP address: 0.0.0.0 (0.0.0.0)
  Your (client) IP address: 10.166.168.3 (10.166.168.3)
  Next server IP address: 10.166.0.150 (10.166.0.150)
  Relay agent IP address: 10.166.248.11 (10.166.248.11)
  Client MAC address: Vmware_bc:33:66 (00:50:56:bc:33:66)
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  # Option: (53) DHCP Message Type (offer)
  # Option: (1) Subnet Mask
  # Option: (58) Renewal Time Value
  # Option: (59) Rebinding Time value
  # Option: (51) IP Address Lease Time
  # Option: (54) DHCP Server Identifier
  # Option: (3) Router
  # Option: (6) Domain Name Server
  # Option: (82) Agent Information option
    Length: 45
    # Option 82 Suboption: (1) Agent Circuit ID
      Length: 10
      Agent Circuit ID: 01080006000312cd000b
    # Option 82 Suboption: (2) Agent Remote ID
      Length: 6
      Agent Remote ID: 7c0ecec177
    # Option 82 Suboption: (151) VRF name/VPN ID
      Length: 11
      VRF name:
    # Option 82 Suboption: (11) Server ID override
      Length: 4
      Server ID override: 10.166.168.1 (10.166.168.1)
    # Option 82 Suboption: (5) Link selection
      Length: 4
      Link selection: 10.166.168.0 (10.166.168.0)
  # Option: (255) End

```

Client's IP address  
from client subnet

Agent Circuit ID