DHCP Options Support

• Restrictions for DHCP Options Support, on page 1
• Information About DHCP Options Support, on page 1
• How to Configure DHCP Options Support, on page 2
• Configuration Examples for DHCP Options Support, on page 5
• Additional References for DHCP Options Support, on page 5
• Feature Information for DHCP Options Support, on page 6

Restrictions for DHCP Options Support

When DHCP snooping is configured on a primary VLAN, you cannot configure snooping with different settings on any of its secondary VLANs. You must configure DHCP snooping for all associated VLANs on the primary VLAN. If DHCP snooping is not configured on the primary VLAN and you try to configure it on the secondary VLAN, for example, VLAN 200, this message appears:

```
2w5d:%DHCP_SNOOPING-4-DHCP_SNOOPING_PVLAN_WARNING:DHCP Snooping configuration may not take effect on secondary vlan 200. DHCP Snooping configuration on secondary vlan is derived from its primary vlan.
```

You can use the `show ip dhcp snooping` command to display all VLANs, both primary and secondary, that have DHCP snooping enabled.

Information About DHCP Options Support

DHCP Option 82 Configurable Circuit ID and Remote ID Overview

The DHCP Option 82 Configurable Circuit ID and Remote ID feature enhances validation security by allowing you to determine what information is provided in the Option 82 Remote ID and Option 82 Circuit ID suboptions. You can enable DHCP snooping on private VLANs. When DHCP snooping is enabled, the configuration is propagated to both a primary VLAN and its associated secondary VLANs. When DHCP snooping is enabled on a primary VLAN, it is also enabled on its secondary VLANs.

The figure below shows the packet format used when DHCP snooping is globally enabled and the `ip dhcp snooping information option` global configuration command is entered with the Circuit ID suboption.
DHCP Client Option 12

The DHCP Client Option12 feature specifies the hostname of the client. While acquiring an IP address for an interface from the Dynamic Host Configuration Protocol (DHCP) server, if the client device receives the DHCP Hostname option inside the response, the hostname from that option is set. DHCP is used by DHCP clients to obtain configuration information for operation in an IP network.

Configuration parameters and other control information are carried in tagged data items that are stored in the options field of a DHCP message. The DHCP client provides flexibility by allowing Option 12 to be configured for a DHCP client.

Option 12 specifies the name of the client. The name might or might not be qualified with the local domain.

How to Configure DHCP Options Support

Configuring DHCP Snooping on Private VLANs

Perform these tasks to configure DHCP snooping on private primary and secondary VLANs:

- Configure a private, primary VLAN.
- Associate with it an isolated VLAN.
- Create an SVI interface for the primary VLAN, and associate it with the appropriate loopback IP and helper address.
- Enable DHCP snooping on the primary VLAN, which also enables it on the associated VLAN.
You must also configure a server to assign the IP address, a DHCP pool, and a relay route so that snooping can be effective.

### Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1** | `enable` | Enables privileged EXEC mode.  
Example:  
Device> enable | |
| **Step 2** | `configure terminal` | Enters global configuration mode.  
Example:  
Device# configure terminal | |
| **Step 3** | `vlan vlan-id` | Enters VLAN configuration mode for the named private VLAN.  
Example:  
Device(config)# vlan 70 | |
| **Step 4** | `private-vlan primary` | Designates the VLAN as the primary private VLAN.  
Example:  
Device(config-vlan)# private-vlan primary | |
| **Step 5** | `private-vlan association secondary-vlan-list` | Configures private VLANs (PVLANs) and the association between a PVLAN and a secondary VLAN.  
Example:  
Device(config-vlan)# private-vlan association 7 | |
| **Step 6** | `exit` | Exits VLAN configuration mode and returns to global configuration mode.  
Example:  
Device(config-vlan)# exit | |
| **Step 7** | `vlan vlan_ID` | Enters VLAN configuration mode for the named private VLAN.  
Example:  
Device(config)# vlan 7  
*In this example, the associated secondary VLAN is vlan 7.* | |
| **Step 8** | `private-vlan isolated` | Designates the VLAN as an isolated private VLAN.  
Example:  
Device(config)# private-vlan isolated | |
### Command or Action

<table>
<thead>
<tr>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exits VLAN configuration mode and returns to global configuration mode.</td>
</tr>
<tr>
<td>Creates a dynamic Switch Virtual Interface (SVI) on the primary VLAN, and enters interface configuration mode.</td>
</tr>
<tr>
<td>Specifies IP unnumbered loopback.</td>
</tr>
<tr>
<td>Creates a mapping between the primary and the secondary VLANs so that they share the same primary VLAN SVI.</td>
</tr>
<tr>
<td>Exits interface configuration mode and returns to global configuration mode.</td>
</tr>
<tr>
<td>Enables DHCP snooping on the primary and associated VLANs.</td>
</tr>
<tr>
<td>Exits global configuration mode and returns to privileged EXEC mode.</td>
</tr>
</tbody>
</table>

### Examples

**Step 9**

```plaintext
Device(config-vlan)# exit
```

**Step 10**

```plaintext
Device(config)# interface vlan 70
```

**Step 11**

```plaintext
Device(config-if)# ip unnumbered loopback1
```

**Step 12**

```plaintext
Device(config-if)# private-vlan mapping 7
```

**Step 13**

```plaintext
Device(config-if)# exit
```

**Step 14**

```plaintext
Device(config)# ip dhcp snooping vlan 70
```

**Step 15**

```plaintext
Device(config)# end
```
Configuration Examples for DHCP Options Support

Example: Mapping Private-VLAN Associations

The following interface configuration example shows how to map the private-VLAN associations. The user-configurable circuit ID “aabb11” is inserted on the secondary VLAN, vlan 7.

```
Device> enable
Device# configure terminal
Device(config-if)# interface GigabitEthernet 9/0/1
Device(config-if)# switchport
Device(config-if)# switchport private-vlan host-association 70 7
Device(config-if)# switchport mode private-vlan host
Device(config-if)# no mls qos trust
Device(config-if)# exit
Device(config)# ip dhcp snooping vlan 7 information option format-type circuit-id string aabb11
Device(config)# end
```

The following example shows how to define a DHCP class “C1” and specify the hex string of the corresponding class at the server by using the hex string that matches the circuit-ID value entered in the interface configuration example. That is, the hex string 00000000000000000000000000000006616162623131 mask fffffffffffffffffffffffffffffff0000000000000 matches the circuit ID aabb11.

```
Device> enable
Device# configure terminal
Device(config)# ip dhcp class C1
Device(config-dhcp-class)# relay agent information
Device(config-dhcp-class-relayinfo)# relay-information hex 00000000000000000000000000000006616162623131 mask fffffffffffffffffffffffffffffff0000000000000
Device(config-dhcp-class-relayinfo)# end
```

Additional References for DHCP Options Support

<table>
<thead>
<tr>
<th>Related Topic</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco IOS commands</td>
<td>Cisco IOS Master Command List, All Releases</td>
</tr>
</tbody>
</table>
Technical Assistance

<table>
<thead>
<tr>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Cisco Support website provides extensive online resources, including</td>
<td><a href="http://www.cisco.com/cisco/support">http://www.cisco.com/cisco/support</a></td>
</tr>
<tr>
<td>documentation and tools for troubleshooting and resolving technical</td>
<td></td>
</tr>
<tr>
<td>issues with Cisco products and technologies.</td>
<td></td>
</tr>
<tr>
<td>To receive security and technical information about your products, you</td>
<td></td>
</tr>
<tr>
<td>can subscribe to various services, such as the Product Alert Tool</td>
<td></td>
</tr>
<tr>
<td>(accessed from Field Notices), the Cisco Technical Services Newsletter,</td>
<td></td>
</tr>
<tr>
<td>and Really Simple Syndication (RSS) Feeds.</td>
<td></td>
</tr>
<tr>
<td>Access to most tools on the Cisco Support website requires a Cisco.com</td>
<td></td>
</tr>
<tr>
<td>user ID and password.</td>
<td></td>
</tr>
</tbody>
</table>

Feature Information for DHCP Options Support

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for DHCP Options Support

<table>
<thead>
<tr>
<th>Feature Name</th>
<th>Releases</th>
<th>Feature Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP Client Option 12</td>
<td>Cisco IOS XE Fuji</td>
<td>The DHCP Client Option 12 feature specifies the hostname of the client. While</td>
</tr>
<tr>
<td></td>
<td>16.8.1a</td>
<td>acquiring an IP address for an interface from the Dynamic Host Configuration Protocol (DHCP) server, if the client device receives the DHCP Hostname option inside the response, the hostname from that option is set. DHCP is used by DHCP clients to obtain configuration information for operation in an IP network.</td>
</tr>
<tr>
<td>DHCP Option 82</td>
<td>Cisco IOS XE Fuji</td>
<td>Provides naming choices in the Option 82 Remote ID and Option 82 Circuit ID suboptions.</td>
</tr>
<tr>
<td>Configurable Circuit ID</td>
<td>16.8.1a</td>
<td></td>
</tr>
<tr>
<td>and Remote ID</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>