DHCP Options Support

The Cisco DHCP Options Support module describes the Option 82 Remote ID, Option 82 Circuit ID suboptions, and Option 12.

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.

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.

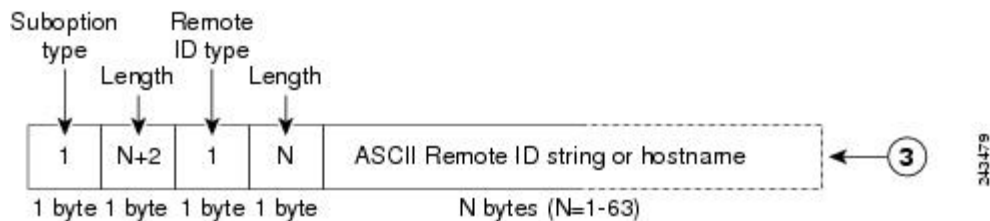*Figure 1: Suboption Packet Formats, Circuit ID Specified*

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 Remote ID suboption.

Figure 2: Suboption Packet Formats, Remote ID Specified

How to Configure DHCP Option 82 Configurable Circuit ID and Remote ID

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.

Note   You must also configure a server to assign the IP address, a DHCP pool, and a relay route so that snooping can be effective.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **vlan**   *vlan-id*
4. **private-vlan primary**

5. **private-vlan association** *secondary-vlan-list*
6. **exit**
7. **vlan** *vlan_ID*
8. **private-vlan isolated**
9. **exit**
10. **interface vlan** *primary-vlan_id*
11. **ip unnumbered loopback**
12. **private-vlan mapping** [*secondary-vlan-list* | **add** *secondary-vlan-list*| **remove** *secondary-vlan-list*]
13. **exit**
14. **ip dhcp snooping vlan** *primary-vlan_id*
15. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** Device# configure terminal	Enters global configuration mode.
Step 3	**vlan** *vlan-id* **Example:** Device(config)# vlan 70	Enters VLAN configuration mode for the named private VLAN.
Step 4	**private-vlan primary** **Example:** Device(config-vlan)# private-vlan primary	Designates the VLAN as the primary private VLAN.
Step 5	**private-vlan association** *secondary-vlan-list* **Example:** Device(config-vlan)# private-vlan association 7	Configures private VLANs (PVLANs) and the association between a PVLAN and a secondary VLAN.
Step 6	**exit** **Example:** Device(ocnfig-vlan)# exit	Exits VLAN configuration mode and returns to global configuration mode.
Step 7	**vlan** *vlan_ID* **Example:**	Enters VLAN configuration mode for the named private VLAN.

	Command or Action	Purpose
	Device(config)# vlan 7	• In this example, the associated secondary VLAN is vlan 7.
Step 8	**private-vlan isolated** **Example:** Device(config-vlan)# private-vlan isolated	Designates the VLAN as an isolated private VLAN.
Step 9	**exit** **Example:** Device(config-vlan)# exit	Exits VLAN configuration mode and returns to global configuration mode.
Step 10	**interface vlan** *primary-vlan_id* **Example:** Device(config)# interface vlan 70	Creates a dynamic Switch Virtual Interface (SVI) on the primary VLAN, and enters interface configuration mode.
Step 11	**ip unnumbered loopback** **Example:** Device(config-if)# ip unnumbered loopback1	Specifies IP unnumbered loopback.
Step 12	**private-vlan mapping** [*secondary-vlan-list* | **add** *secondary-vlan-list*| **remove** *secondary-vlan-list*] **Example:** Device(config-if)# private-vlan mapping 7	Creates a mapping between the primary and the secondary VLANs so that they share the same primary VLAN SVI.
Step 13	**exit** **Example:** Device(config-if)# exit	Exits interface configuration mode and returns to global configuration mode.
Step 14	**ip dhcp snooping vlan** *primary-vlan_id* **Example:** Device(config)# ip dhcp snooping vlan 70	Enables DHCP snooping on the primary and associated VLANs.
Step 15	**end** **Example:** Device(config)# end	Exits global configuration mode and returns to privileged EXEC mode.

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)# spanning-tree portfast
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 000000000000000000000000000066616162623131 mask ffffffffffffffffffffffffffffffff0000000000000 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
000000000000000000000000000066616162623131
mask ffffffffffffffffffffffffffffffff0000000000000
Device(config-dhcp-class-relayinfo)# end
```

Additional References for DHCP Options Support

Technical Assistance

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

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

Feature Name	Releases	Feature Information
DHCP Client Option 12	Cisco IOS XE Fuji 16.8.1a	The DHCP Client Option 12 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.
DHCP Option 82 Configurable Circuit ID and Remote ID	Cisco IOS XE Fuji 16.8.1a	Provides naming choices in the Option 82 Remote ID and Option 82 Circuit ID suboptions.