



DHCP Option 82 Support for Routed Bridge Encapsulation

This document describes the DHCP Option 82 Support for Routed Bridge Encapsulation feature and includes the following sections:

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Feature History for the DHCP Option 82 Support for Routed Bridge Encapsulation Feature

Release	Modification
12.2(2)T	This feature was introduced.
12.2(28)SB	This feature was integrated into Cisco IOS Release 12.2(28)SB.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Feature Overview

The DHCP relay agent information option (option 82) enables a Dynamic Host Configuration Protocol (DHCP) relay agent to include information about itself when forwarding client-originated DHCP packets to a DHCP server. The DHCP server can use this information to implement IP address or other parameter-assignment policies.

The DHCP Option 82 Support for Routed Bridge Encapsulation feature provides support for the DHCP relay agent information option when ATM routed bridge encapsulation (RBE) is used. Figure 1 shows a typical network topology in which ATM RBE and DHCP are used. The aggregation router that is using ATM RBE is also serving as the DHCP relay agent.

Figure 1 Network Topology Using ATM RBE and DHCP



This feature communicates information to the DHCP server using a suboption of the DHCP relay agent information option called *agent remote ID*. The information sent in the agent remote ID includes an IP address identifying the relay agent and information about the ATM interface and the PVC over which the DHCP request came in. The DHCP server can use this information to make IP address assignments and security policy decisions.

Figure 2 shows the format of the agent remote ID suboption.

Figure 2 Format of the Agent Remote ID Suboption

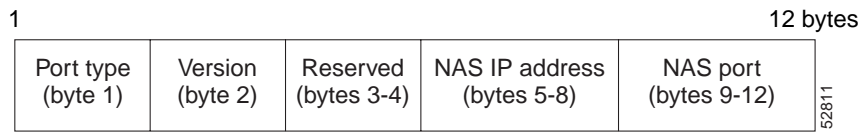


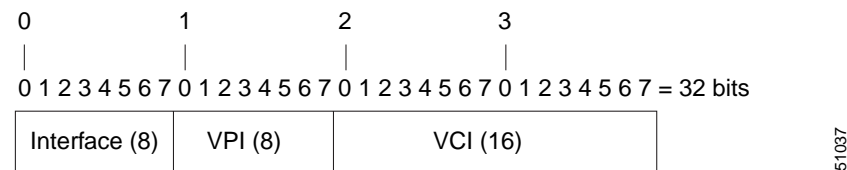
Table 1 describes the agent remote ID suboption fields displayed in Figure 2.

Table 1 Agent Remote ID Suboption Field Descriptions

Field	Description
Port Type	Port type. The value 0x01 indicates RBE. (1 byte)
Version	Option 82 version. The value 0x01 specifies the RBE version of Option 82. (1 byte)
Reserved	Reserved. (2 bytes)
NAS IP Address	IP address of one of the interfaces on the DHCP relay agent. The rbe nasip command can be used to specify which IP address will be used. (4 bytes)
NAS Port	RBE-enabled virtual circuit on which the DHCP request has come in. See Figure 3 for the format of this field. (4 bytes)

Figure 3 shows the format of the network access server (NAS) port field in the agent remote ID suboption.

Figure 3 Format of the NAS Port Field



Prerequisites

DHCP option 82 support must be configured on the DHCP relay agent using the **ip dhcp relay information option** command before you can use the DHCP Option 82 Support for Routed Bridge Encapsulation feature.

Configuration Tasks

See the following sections for configuration tasks for the DHCP Option 82 Support for Routed Bridge Encapsulation feature. Each task in the list is identified as either optional or required.

- Configuring DHCP Option 82 for RBE (required)
- Verifying DHCP Option 82 for RBE Configuration (optional)

Configuring DHCP Option 82 for RBE

To configure DHCP option 82 support for RBE, use the following commands in global configuration mode:

	Command	Purpose
Step 1	<code>Router(config)# ip dhcp relay information option</code>	Enables the system to insert the DHCP relay agent information option in forwarded BOOT REQUEST messages to a Cisco IOS DHCP server.
Step 2	<code>Router(config)# rbe nasip source-interface</code>	Specifies the IP address of an interface on the DHCP relay agent that will be sent to the DHCP server via the Agent Remote ID suboption.

Verifying DHCP Option 82 for RBE Configuration

To verify that the DHCP Option 82 Support for Routed Bridge Encapsulation feature is configured correctly, use the following command in privileged EXEC mode:

Command	Purpose
<code>Router# more system:running-config</code>	Displays the running configuration.

Configuration Examples

This section provides the following configuration example:

- DHCP Option 82 for RBE Configuration Example

DHCP Option 82 for RBE Configuration Example

In the following example, DHCP option 82 support is enabled on the DHCP relay agent using the **ip dhcp relay agent information option** command. The **rbe nasip** command configures the router to forward the IP address for Loopback0 to the DHCP server.

```
ip dhcp-server 172.16.1.2
!
ip dhcp relay information option
!
interface Loopback0
 ip address 10.1.1.129 255.255.255.192
!
interface ATM4/0
 no ip address
!
interface ATM4/0.1 point-to-point
 ip unnumbered Loopback0
 ip helper-address 172.16.1.2
 atm route-bridged ip
 pvc 88/800
  encapsulation aal5snap
!
!
interface Ethernet5/1
 ip address 172.16.1.1 255.255.0.0
!
router eigrp 100
 network 10.1.0.0
 network 172.16.0.0
!
rbe nasip Loopback0
```

For the configuration example above, the value (in hexadecimal) of the agent remote ID suboption would be 010100000B01018140580320. Table 2 shows the value of each field within the agent remote ID suboption.

Table 2 Agent Remote ID Suboption Field Values

Agent Remote ID Suboption Field	Value
Port Type	0x01
Version	0x01
Reserved	undefined
NAS IP Address	0x0B010181 (hexadecimal value of 11.1.1.129)
NAS Port	
<ul style="list-style-type: none"> • Interface (slot/module/port) • VPI • VCI 	0x40 (The slot/module/port values are 0100/0/000.) 0x58 (hexadecimal value of 88) 0x320 (hexadecimal value of 800)

Command Reference

This section documents the new command that configures the DHCP Option 82 Support for Routed Bridge Encapsulation feature.

- **rbe nasip**

rbe nasip

To specify the IP address of an interface on the Dynamic Host Configuration Protocol (DHCP) relay agent that will be sent to the DHCP server via the agent remote ID option, use the **rbe nasip** command in global configuration mode. To remove this specification, use the **no** form of this command.

rbe nasip *source-interface*

no rbe nasip *source-interface*

Syntax Description	<i>source-interface</i>	The type and number of one of the interfaces on the router. The IP address for this interface will be forwarded in the agent remote ID option and can be used by the DHCP server to uniquely identify the DHCP relay agent.
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Defaults	No IP address is specified.
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Command Modes	Global configuration
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Command History	Release	Modification
	12.2(2)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.	

Usage Guidelines	<p>The rbe nasip command is used to configure support for the DHCP relay agent information option (option 82) for ATM routed bridge encapsulation (RBE).</p> <p>Support for the DHCP relay agent information option must be configured on the DHCP relay agent using the ip dhcp relay information option command in order for the rbe nasip command to be effective.</p>
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Examples	<p>In the following example, support for DHCP option 82 is enabled on the DHCP relay agent by the use of the ip dhcp relay agent information option command. The rbe nasip command configures the router to forward the IP address for Loopback0 to the DHCP server. ATM routed bridge encapsulation is configured on ATM subinterface 4/0.1.</p>
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```
ip dhcp-server 10.1.1.1
!
ip dhcp relay information option
!
interface Loopback0
 ip address 10.5.1.1 255.255.255.0
!
interface ATM4/0
 no ip address
!
interface ATM4/0.1 point-to-point
 ip unnumbered Loopback0
 ip helper-address 10.1.1.1
```

```
atm route-bridged ip
pvc 88/800
  encapsulation aal5snap
!
router eigrp 100
  network 10.0.0.0
!
rbe nasip loopback0
```

Related Commands

Command	Description
ip dhcp relay information option	Enables the system to insert the DHCP relay agent information option in forwarded BOOT REQUEST messages to a Cisco IOS DHCP server.

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