

ip dhcp limit lease

To limit the number of leases offered to DHCP clients per interface, use the **ip dhcp limit lease** command in interface configuration mode. To remove the restriction on the number of leases, use the **no** form of this command.

ip dhcp limit lease *lease-limit*

no ip dhcp limit lease *lease-limit*

Syntax Description

<i>lease-limit</i>	Number of leases allowed on the interface. The range is from 1 to 65535.
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Command Default

There is no lease limit on an interface.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.

Usage Guidelines

The lease limit allows you to control the number of subscribers per interface. The interface configuration will override any global setting specified by the **ip dhcp limit lease per interface** command. You can display the number of lease violations by using the **show ip dhcp limit lease** command.

This command is not supported on numbered interfaces. The lease limit can be applied only to an ATM with Routed Bridge Encapsulation (RBE) unnumbered interfaces or serial unnumbered interfaces.

Examples

The following example allows 30 DHCP clients to receive IP addresses. If a 31st DHCP client tries to obtain an IP address, the DHCPDISCOVER messages will not be forwarded to the DHCP server.

```
!
Router(config)# ip dhcp limit lease log
Router(config)# interface Serial10/0
Router(config-if)# ip dhcp limit lease 30
```

Related Commands

Command	Description
ip dhcp limit lease per interface	Limits the number of DHCP leases offered to DHCP clients behind an ATM RBE unnumbered or serial unnumbered interface.
show ip dhcp limit lease	Displays the number of times the lease limit threshold has been violated on an interface.

ip dhcp limit lease log

To enable DHCP lease violation logging when a DHCP lease limit threshold is exceeded, use the **ip dhcp limit lease log** command in global configuration mode. To disable the lease violation logging of DHCP lease violations, use the **no** form of this command.

ip dhcp limit lease log

no ip dhcp limit lease log

Syntax Description This command has no arguments or keywords.

Command Default DHCP lease violation logging is disabled.

Command Modes Global configuration (config)

Command History	Release	Modification
	12.2(33)SRC	This command was introduced.

Usage Guidelines The **ip dhcp limit lease log** command logs violations for global- and interface-level lease violations. If this command is configured, any lease limit violations will display in the output of the **show ip dhcp limit lease** command.

Examples The following example shows how to enable logging of lease violations:

```
Router(config)# ip dhcp limit lease log
```

Related Commands	Command	Description
	ip dhcp limit lease	Limits the number of leases offered to DHCP clients per interface.
	show ip dhcp limit lease	Displays the number of times the lease limit threshold has been violated on an interface.

ip dhcp limit lease per interface

To limit the number of leases offered to Dynamic Host Configuration Protocol (DHCP) clients behind an ATM routed bridge encapsulation (RBE) unnumbered or serial unnumbered interface, use the **ip dhcp limit lease per interface** command in global configuration mode. To remove the restriction on the number of leases, use the **no** form of the command.

ip dhcp limit lease per interface *lease-limit*

no ip dhcp limit lease per interface *lease-limit*

Syntax Description	<i>lease-limit</i>	Number of leases allowed.
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Defaults	This functionality is disabled
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Command Modes	Global configuration
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Command History	Release	Modification
	12.3(2)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.	

Usage Guidelines	This command is not supported on numbered interfaces. The lease limit can be applied only to ATM with RBE unnumbered interfaces or serial unnumbered interfaces.
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Examples	The following example allows three DHCP clients to receive IP addresses. If a fourth DHCP client tries to obtain an IP address, the DHCPDISCOVER messages will not be forwarded to the DHCP server.
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```
ip dhcp limit lease per interface 3
```

ip dhcp limited-broadcast-address

To override a configured network broadcast and have the Dynamic Host Configuration Protocol (DHCP) server and relay agent send an all networks, all nodes broadcast to a DHCP client, use the **ip dhcp limited-broadcast-address** command in global configuration mode. To disable this functionality, use the **no** form of this command.

ip dhcp limited-broadcast-address

no ip dhcp limited-broadcast-address

Syntax Description

This command has no arguments or keywords.

Defaults

Default broadcast address: 255.255.255.255 (all ones)

Command Modes

Global configuration

Command History

Release	Modification
12.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

When a DHCP client sets the broadcast bit in a DHCP packet, the DHCP server and relay agent send DHCP messages to clients using the all ones broadcast address (255.255.255.255). If the **ip broadcast-address** command has been configured to send a network broadcast, the all ones broadcast set by DHCP is overridden. To remedy this situation, use the **ip dhcp limited-broadcast-address** command to ensure that a configured network broadcast does not override the default DHCP behavior.

Some DHCP clients can only accept an all ones broadcast and may not be able to acquire a DHCP address unless this command is configured on the router interface connected to the client.

Examples

The following example configures DHCP to override any network broadcast:

```
ip dhcp limited-broadcast-address
```

Related Commands

Command	Description
ip broadcast-address	Defines a broadcast address for an interface.

ip dhcp ping packets

To specify the number of packets a Dynamic Host Configuration Protocol (DHCP) server sends to a pool address as part of a ping operation, use the **ip dhcp ping packets** command in global configuration mode. To prevent the server from pinging pool addresses, use the **no** form of this command. To return the number of ping packets sent to the default value, use the **default** form of this command.

ip dhcp ping packets *number*

no ip dhcp ping packets

default ip dhcp ping packets

Syntax Description	<i>number</i>	The number of ping packets that are sent before the address is assigned to a requesting client. The default value is two packets.
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Defaults	Two packets
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Command Modes	Global configuration
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Command History	Release	Modification
	12.0(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.	
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.	

Usage Guidelines

The DHCP server pings a pool address before assigning the address to a requesting client. If the ping is unanswered, the DHCP server assumes (with a high probability) that the address is not in use and assigns the address to the requesting client.

Setting the *number* argument to a value of 0 completely turns off DHCP server ping operation .

Examples

The following example specifies five ping attempts by the DHCP server before ceasing any further ping attempts:

```
ip dhcp ping packets 5
```

Related Commands

Command	Description
clear ip dhcp conflict	Clears an address conflict from the Cisco IOS DHCP server database.
ip dhcp ping timeout	Specifies how long a Cisco IOS DHCP Server waits for a ping reply from an address pool.
show ip dhcp conflict	Displays address conflicts found by a Cisco IOS DHCP server when addresses are offered to the client.

ip dhcp ping timeout

To specify how long a Dynamic Host Configuration Protocol (DHCP) server waits for a ping reply from an address pool, use the **ip dhcp ping timeout** command in global configuration mode. To restore the default number of milliseconds (500) of the timeout, use the **no** form of this command.

ip dhcp ping timeout *milliseconds*

no ip dhcp ping timeout

Syntax Description

<i>milliseconds</i>	The amount of time (in milliseconds) that the DHCP server waits for a ping reply before it stops attempting to reach a pool address for client assignment. The maximum timeout is 10000 milliseconds (10 seconds). The default timeout is 500 milliseconds.
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Defaults

500 milliseconds

Command Modes

Global configuration

Command History

Release	Modification
12.0(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command specifies how long to wait for a ping reply (in milliseconds).

Examples

The following example specifies that a DHCP server will wait 800 milliseconds for a ping reply before considering the ping a failure:

```
ip dhcp ping timeout 800
```

Related Commands

Command	Description
clear ip dhcp conflict	Clears an address conflict from the Cisco IOS DHCP Server database.
ip dhcp ping timeout	Specifies the number of packets a Cisco IOS DHCP Server sends to a pool address as part of a ping operation.
show ip dhcp conflict	Displays address conflicts found by a Cisco IOS DHCP Server when addresses are offered to the client.

ip dhcp pool

To configure a Dynamic Host Configuration Protocol (DHCP) address pool on a DHCP server and enter DHCP pool configuration mode, use the **ip dhcp pool** command in global configuration mode. To remove the address pool, use the **no** form of this command.

ip dhcp pool *name*

no ip dhcp pool *name*

Syntax Description

<i>name</i>	Name of the pool. Can either be a symbolic string (such as engineering) or an integer (such as 0).
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Defaults

DHCP address pools are not configured.

Command Modes

Global configuration

Command History

Release	Modification
12.0(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

During execution of this command, the configuration mode changes to DHCP pool configuration mode, which is identified by the (config-dhcp)# prompt. In this mode, the administrator can configure pool parameters, like the IP subnet number and default router list.

Examples

The following example configures pool1 as the DHCP address pool:

```
ip dhcp pool pool1
```

Related Commands

Command	Description
host	Specifies the IP address and network mask for a manual binding to a DHCP client.
ip dhcp excluded-address	Specifies IP addresses that a Cisco IOS DHCP server should not assign to DHCP clients.
network (DHCP)	Configures the subnet number and mask for a DHCP address pool on a Cisco IOS DHCP server.

ip dhcp relay bootp ignore

To configure the Dynamic Host Configuration Protocol (DHCP) relay agent stop forwarding Bootstrap Protocol (BOOTP) packets between the clients and servers, use the **ip dhcp relay bootp ignore** command in global configuration mode. To disable the configuration, use the **no** form of this command.

ip dhcp relay bootp ignore

no ip dhcp relay bootp ignore

Syntax Description This command has no arguments or keywords.

Command Default Disabled (Relay agent forwards BOOTP packets from clients and servers).

Command Modes Global configuration (config)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

You can use the **ip dhcp relay agent bootp ignore** command in network deployments, where clients send both BOOTP and DHCP packets. When the client sends both type of packets, sometimes the DHCP server or the relay agent will not be able to differentiate between the two types of packets. You can use this command to configure the relay agent stop forwarding the BOOTP packets.

Examples

The following example shows how to configure the relay agent to stop forwarding BOOTP packets:

```
Router# configure terminal
Router(config)# ip dhcp relay bootp ignore
```

Related Commands

Command	Description
ip dhcp relay information	Configures a DHCP server to validate the relay agent information option.
ip dhcp bootp ignore	Configures the DHCP server to stop processing BOOTP packets from clients.

ip dhcp relay information check

To configure a Dynamic Host Configuration Protocol (DHCP) server to validate the relay agent information option in forwarded BOOTREPLY messages, use the **ip dhcp relay information check** command in global configuration mode. To disable an information check, use the **no** form of this command.

ip dhcp relay information check

no ip dhcp relay information check

Syntax Description

This command has no arguments or keywords.

Defaults

A DHCP server checks relay information. Invalid messages are dropped.

Command Modes

Global configuration

Command History

Release	Modification
12.0(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is used by cable access router termination systems. By default, DHCP checks relay information. Invalid messages are dropped.

Examples

The following example configures the DHCP Server to check that the relay agent information option in forwarded BOOTREPLY messages is valid:

```
ip dhcp relay information check
```

Related Commands

Command	Description
ip dhcp relay information option	Configures a Cisco IOS DHCP Server to insert the DHCP relay agent information option in forwarded BOOTREQUEST messages.
ip dhcp relay information policy	Configures the information reforwarding policy of a DHCP relay agent (what a DHCP relay agent should do if a message already contains relay information).

ip dhcp relay information check-reply

To configure a DHCP server to validate the relay agent information option in forwarded BOOTREPLY messages, use the **ip dhcp relay information check-reply** command in interface or subinterface configuration mode. To disable an information check, use the **no** form of this command.

ip dhcp relay information check-reply [none]

no ip dhcp relay information check-reply [none]

Syntax Description

none (Optional) Disables the command function.

Command Default

A DHCP server checks relay information. Invalid messages are dropped.

Command Modes

Interface configuration
Subinterface configuration

Command History

Release	Modification
12.4(6)T	This command was introduced.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC.

Usage Guidelines

If an **ip dhcp relay information** command is configured in global configuration mode but not configured in interface configuration mode, the global configuration is applied to all interfaces.

If an **ip dhcp relay information** command is configured in both global configuration mode and interface configuration mode, the interface configuration command takes precedence over the global configuration command. However, the global configuration is applied to interfaces without the interface configuration.

If an **ip dhcp relay information** command is not configured in global configuration mode but is configured in interface configuration mode, only the interface with the configuration option applied is affected. All other interfaces are not impacted by the configuration.

The **ip dhcp relay information check-reply none** command option is saved in the running configuration. This command takes precedence over any relay agent information global configuration.

Examples

The following example shows how to configure the DHCP server to check that the relay agent information option in forwarded BOOTREPLY messages received from FastEthernet interface 0 is valid:

```
!
interface FastEthernet 0
 ip dhcp relay information check-reply
```

Related Commands

Command	Description
ip dhcp relay information option-insert	Enables the system to insert a DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server.
ip dhcp relay information check	Configures a DHCP server to validate the relay information option in forwarded BOOTREPLY messages in global configuration mode.
ip dhcp relay information policy-action	Configures the information reforwarding policy for a DHCP relay agent.

ip dhcp relay information option

To enable the system to insert a Dynamic Host Configuration Protocol (DHCP) relay agent information option in forwarded BOOTREQUEST messages to a DHCP server, use the **ip dhcp relay information option** command in global configuration mode. To disable inserting relay information into forwarded BOOTREQUEST messages, use the **no** form of this command.

ip dhcp relay information option [vpn]

no ip dhcp relay information option [vpn]

Syntax Description

vpn (Optional) Virtual private network.

Command Default

The DHCP server does not insert relay information.

Command Modes

Global configuration

Command History

Release	Modification
12.0(1)T	This command was introduced.
12.2(4)B	The vpn keyword was added.
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This functionality enables a DHCP server to identify the user (for example, cable access router) sending a request and initiate appropriate action based on this information. By default, DHCP does not insert relay information.

The **ip dhcp relay information option** command automatically adds the circuit identifier suboption and the remote ID suboption to the DHCP relay agent information option (also called option 82).

The **vpn** optional keyword should be used only when the DHCP server allocates addresses based on VPN identification suboptions.

The **ip dhcp relay information option vpn** command adds the following VPN-related suboptions into the relay agent information option when DHCP broadcasts are forwarded by the relay agent from clients to a DHCP server:

- VPN identifier—Contains the VPN ID if configured or the virtual routing and forwarding (VRF) name if configured on the interface (VPN ID takes precedence over VRF name).
- Subnet selection—Contains the incoming interface subnet address.
- Server identifier override—Contains the incoming interface IP address.

After these suboptions are successfully added, the gateway address is set to the outgoing interface of the router toward the DHCP server IP address that was configured using the **ip helper-address** command.

If only the **ip dhcp relay information option vpn** command is configured, the VPN identifier, subnet selection, and server identifier override suboptions are added to the relay information option. Note that the circuit identifier suboption and the remote ID suboption are not added to the relay information option. However, if both the **ip dhcp relay information option** command and the **ip dhcp relay information option vpn** command are configured, all five suboptions are added to the relay agent information option.

When the packets are returned from the DHCP server, option 82 is removed before the reply is forwarded to the client.

Even if the **vpn** option is specified, the VPN suboptions are added only to those DHCP or BOOTP broadcasts picked up by the interface that was configured with a VRF name or VPN ID.

For clients from unnumbered ATM or serial interfaces, when this command is enabled, the VPN identifier suboption will contain the VRF name of the unnumbered interface.

Subnet selection and server identifier override suboptions are added from the IP address of the interface from which the unnumbered interface is configured to borrow its IP address. The client host route will be added on the applicable VRF routing tables.

If the **ip dhcp smart-relay** global configuration command is enabled, then the server identifier override and subnet selection suboptions will use the secondary IP address of the incoming interface when the same client retransmits more than three DHCP DISCOVER packets (for both numbered and unnumbered interfaces).

Examples

The following example configures a DHCP server to insert the DHCP relay agent information option, including VPN suboptions, in forwarded BOOTREQUEST messages. In this example, the circuit identifier suboption and the remote ID suboption are not included in the relay information option:

```
ip dhcp relay information option vpn
```

The following example configures a DHCP server to insert the DHCP relay agent information option, including VPN suboptions, the circuit identifier suboption, and the remote ID suboption, in forwarded BOOTREQUEST messages:

```
ip dhcp relay information option vpn
ip dhcp relay information option
```

Cisco 10000 Series Router

The following example enables DHCP option 82 support on the DHCP relay agent by using the **ip dhcp relay information option** command. The **rbe nasip** command configures the router to forward the IP address for Loopback0 to the DHCP server. The value (in hexadecimal) of the agent remote ID suboption is 01010000B0101814058320, and the value of each field is the following:

- Port Type: 0x01
- Version: 0x01
- Reserved: undefined
- NAS IP address: 0x0B010181 (hexadecimal value of 11.1.1.129)

- NAS Port
 - Interface (slot/module/port): 0x40 (The slot/module/port values are 01 00/0/000.)
 - VPI: 0x58 (hexadecimal value of 88)
 - VCI: 0x320 (hexadecimal value of 800)

```

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 Ethernet 5/1
  ip address 172.16.1.1 255.255.0.0
!
router eigrp 100
  network 10.0.0.0
  network 172.16.0.0
!
rbe nasip Loopback0

```

In the following example, the DHCP relay receives a DHCP request on Ethernet interface 0/1 and sends the request to the DHCP server located at IP helper address 10.44.23.7, which is associated with the VRF named *red*.

```

ip dhcp relay information option vpn
!
interface ethernet 0/1
  ip helper-address vrf red 10.44.23.7

```

Related Commands

Command	Description
ip dhcp relay information check	Configures a Cisco IOS DHCP server to validate the relay agent information option in forwarded BOOTREPLY messages.
ip dhcp relay information policy	Configures the information reforwarding policy of a DHCP relay agent.
ip dhcp smart-relay	Allows the Cisco IOS DHCP relay agent to switch the gateway address.

ip dhcp relay information option-insert

To enable the system to insert a DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server, use the **ip dhcp relay information option-insert** command in interface configuration mode or subinterface configuration mode. To disable inserting relay information into forwarded BOOTREQUEST messages, use the **no** form of this command.

ip dhcp relay information option-insert [none]

no ip dhcp relay information option-insert [none]

Syntax Description

none (Optional) Disables the command function.

Command Default

The DHCP server does not insert relay information.

Command Modes

Interface configuration
Subinterface configuration

Command History

Release	Modification
12.4(6)T	This command was introduced.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC.

Usage Guidelines

If an **ip dhcp relay information** command is configured in global configuration mode but not configured in interface configuration mode, the global configuration is applied to all interfaces.

If an **ip dhcp relay information** command is configured in both global configuration mode and interface configuration mode, the interface configuration command takes precedence over the global configuration command. However, the global configuration is applied to interfaces without the interface configuration.

If an **ip dhcp relay information** command is not configured in global configuration mode but is configured in interface configuration mode, only the interface with the configuration option applied is affected. All other interfaces are not impacted by the configuration.

The **ip dhcp relay information option-insert none** command option is saved in the running configuration. This command takes precedence over any relay agent information global configuration.

Examples

The following example shows how to configure the DHCP server to insert the relay agent information option in forwarded BOOTREQUEST messages:

```
!
interface FastEthernet 0
 ip dhcp relay information option-insert
```

Related Commands	Command	Description
	ip dhcp relay information check-reply	Configures a DHCP server to validate the relay agent information option in forwarded BOOTREPLY messages.
	ip dhcp relay information option	Enables the system to insert a DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server in global configuration mode.
	ip dhcp relay information policy-action	Configures the information reforwarding policy for a DHCP relay agent.

ip dhcp relay information option server-id-override

To enable the system to insert the server ID override and link selection suboptions on a specific interface into the DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server, use the **ip dhcp relay information option server-id-override** command in interface configuration mode. To disable inserting the server ID override and link selection suboptions into the DHCP relay agent information option, use the no form of this command.

ip dhcp relay information option server-id-override

no ip dhcp relay information option server-id-override

Syntax Description This command has no arguments or keywords.

Command Default The server ID override and link selection suboptions are not inserted into the DHCP relay agent information option.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	Cisco IOS XE Release 2.1	This feature was introduced on Cisco ASR 1000 Series Routers.

Usage Guidelines The **ip dhcp relay information option server-id-override** interface configuration command adds the following suboptions into the relay agent information option when DHCP broadcasts are forwarded by the relay agent from clients to a DHCP server:

- Server ID override suboption
- Link selection suboption

When this command is configured, the gateway address (giaddr) will be set to the IP address of the outgoing interface, which is the interface that is reachable by the DHCP server.

If the **ip dhcp relay information option server-id-override** interface configuration command is configured on an interface, it overrides the **ip dhcp-relay information option server-override** global configuration on that interface only.

Examples In the following example, the DHCP relay will insert the server ID override and link selection suboptions into the relay information option on interface Ethernet interface 0/0.

```
Router(config)# interface Ethernet0/0
Router(config-if)# ip dhcp relay information option server-id-override
```

Related Commands

Command	Description
ip dhcp-relay information option server-override	Enables the system to globally insert the server ID override and link selection suboptions on a specific interface into the DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server.

ip dhcp-relay information option server-override

To enable the system to globally insert the server ID override and link selection suboptions into the DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server, use the **ip dhcp-relay information option server-override** command in global configuration mode. To disable inserting the server ID override and link selection suboptions into the DHCP relay agent information option, use the no form of this command.

ip dhcp-relay information option server-override

no ip dhcp-relay information option server-override

Syntax Description This command has no arguments or keywords.

Command Default The server ID override and link selection suboptions are not inserted into the DHCP relay agent information option.

Command Modes Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Release 2.1	This feature was introduced on Cisco ASR 1000 Series Routers.

Usage Guidelines The **ip dhcp-relay information option server-override** command adds the following suboptions into the relay agent information option when DHCP broadcasts are forwarded by the relay agent from clients to a DHCP server:

- Server ID override suboption
- Link selection suboption

When this command is configured, the gateway address (giaddr) will be set to the IP address of the outgoing interface, which is the interface that is reachable by the DHCP server.

If the **ip dhcp relay information option server-id-override** interface configuration command is configured on an interface, it overrides the global configuration on that interface only.

Examples In the following example, the DHCP relay will insert the server ID override and link selection suboptions into the relay information option of the DHCP packet. The loopback interface IP address is configured to be the source IP address for the relayed messages.

```
!
Router(config)# ip dhcp-relay information option server-override
Router(config)# ip dhcp-relay source-interface loopback0
!
Router(config)# interface Loopback0
Router(config-if)# ip address 10.2.2.1 255.255.255.0
```

Related Commands	Command	Description
	ip dhcp relay information option server-id-override	Enables the system to insert the server ID override and link selection suboptions on a specific interface into the DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server.

ip dhcp relay information option subscriber-id

To specify that a Dynamic Host Configuration Protocol (DHCP) relay agent add a subscriber identifier suboption to option82, use the **ip dhcp relay information option subscriber-id** command in interface configuration mode. To disable the subscriber identifier, use the **no** form of this command.

ip dhcp relay information option subscriber-id *string*

no ip dhcp relay information option subscriber-id *string*

Syntax Description

string

Up to a maximum of 50 characters that can be alphanumeric. The string can be ASCII text only.

Note If more than 50 characters are configured, the string is truncated.

Defaults

Disabled to allow backward capability.

Command Modes

Interface configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

When the unique subscriber identifier is configured on the relay agent and the interface, the identifier is added to option82 in all of the client DHCP packets to the DHCP server. When the server echoes option82 in the reply packets, the relay agent removes option82 before forwarding the reply packet to the client. When an interface is numbered, all renew packets and release packets are unicast to the server, so option82 is not added.

The unique identifier should be configured for each subscriber and when a subscriber moves from one interface to the other, the configuration of the interface should be changed also.

In case of unnumbered interfaces, all the client packets are sent to the relay. Option82 is added in all the client packets before forwarding the packets to the server. If the server does not echo option82 in the packet, the relay agent tries to validate option82 in the reply packet. If the reply packet does not contain option82, then the validation fails and the packet is dropped by the relay agent. The client cannot get any IP address because of the validation failure. In this case, the existing **no ip dhcp relay information check** command can be used to avoid the option82 invalidation.



Note

The configurable string is not an option for network access server (NAS)-IP, because users can move between NAS termination points. When a subscriber moves from one NAS to another, this option does not result in a configuration change on the side of the DHCP server of the ISP.

Examples

The following example shows how to configure an ATM interface for the subscriber identifier suboption.

```
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 helper-address 10.16.1.2
 ip unnumbered Loopback0
 ip dhcp relay information option subscriber-id newperson123
 atm route-bridged ip
 pvc 88/800
 encapsulation aal5snap
```

Related Commands

Command	Description
ip dhcp relay information check	Configures a Cisco IOS DHCP server to validate the relay agent information option in forwarded BOOTREPLY messages.
ip dhcp relay information option	Enables the system to insert the DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server.
ip dhcp relay information policy	Configures the information reforwarding policy of a DHCP relay agent (what a DHCP relay agent should do if a message already contains relay information).
ip dhcp smart-relay	Enables the Cisco IOS DHCP relay agent to switch the gateway address (giaddr field of a DHCP packet) to secondary addresses when there is no DHCPOFFER message from a DHCP server
ip helper-address	Forwards UDP broadcasts, including BOOTP, received on an interface.

ip dhcp relay information option vpn-id

To enable the system to insert VPN suboptions into the DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server and set the gateway address to the outgoing interface toward the DHCP server, use the **ip dhcp relay information option vpn-id** command in interface configuration mode. To remove the configuration, use the **no** form of this command.

ip dhcp relay information option vpn-id [none]

no ip dhcp relay information option vpn-id

Syntax Description	none (Optional) Disables the VPN functionality on the interface.
---------------------------	---

Command Default	The DHCP server does not insert relay information.
------------------------	--

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	12.4(11)T	This command was introduced.

Usage Guidelines

If the **ip dhcp relay information option vpn** global configuration command is configured and the **ip dhcp relay information option vpn-id** interface configuration command is not configured, the global configuration is applied to all interfaces.

If the **ip dhcp relay information option vpn** global configuration command is configured and the **ip dhcp relay information option vpn-id** interface configuration command is also configured, the interface configuration command takes precedence over the global configuration command. However, the global configuration is applied to interfaces without the interface configuration.

If the **ip dhcp relay information option vpn** global configuration command is not configured and the **ip dhcp relay information option vpn-id** interface configuration command is configured, only the interface with the configuration option applied is affected. All other interfaces are not impacted by the configuration.

The **ip dhcp relay information option vpn-id none** option allows you to disable the VPN functionality on the interface. The only time you need to use this option is when the **ip dhcp relay information option vpn** global configuration command is configured and you want to override the global configuration.

The **no ip dhcp relay information option vpn-id** command removes the configuration from the running configuration. In this case, the interface inherits the global configuration, which may or may not be configured to insert VPN suboptions.

Examples

In the following example, the DHCP relay agent receives a DHCP request on Ethernet interface 0/1 and sends the request to the DHCP server located at IP helper address 10.44.23.7, which is associated with the VRF named red. The **ip dhcp relay information option vpn-id** interface configuration command only applies to Ethernet interface 0/1. All other interfaces are not impacted by the configuration:

```
!  
interface ethernet 0/1  
 ip helper-address vrf red 10.44.23.7  
 ip dhcp relay information option vpn-id
```

Related Commands

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

ip dhcp relay information policy

To configure the information reforwarding policy for a Dynamic Host Configuration Protocol (DHCP) relay agent (what a relay agent should do if a message already contains relay information), use the **ip dhcp relay information policy** command in global configuration mode. To restore the default relay information policy, use the **no** form of this command.

```
ip dhcp relay information policy {drop | encapsulate | keep | replace}
```

```
no ip dhcp relay information policy
```

Syntax Description

drop	Directs the DHCP relay agent to discard messages with existing relay information if the relay information option is already present.
encapsulate	Encapsulates prior relay agent information.
keep	Indicates that existing information is left unchanged on the DHCP relay agent.
replace	Indicates that existing information is overwritten on the DHCP relay agent.

Defaults

The DHCP server replaces existing relay information.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.0(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.2(33)SRD	The encapsulate keyword was added.

Usage Guidelines

A DHCP relay agent may receive a message from another DHCP relay agent that already contains relay information. By default, the relay information from the previous relay agent is replaced.

The **ip dhcp relay information policy encapsulate** command option is only needed when the relay agent needs to encapsulate the relay agent information option from a prior relay agent. If this command option is used, the prior option 82 is encapsulated inside the current option 82 and both are forwarded to the DHCP server.

Examples

The following examples show how to configure a DHCP relay agent to drop messages with existing relay information, keep existing information, replace existing information, and encapsulate existing information, respectively:

```
ip dhcp relay information policy drop
```

ip dhcp relay information policy

```
ip dhcp relay information policy keep
```

```
ip dhcp relay information policy replace
```

```
ip dhcp relay information policy encapsulate
```

Related Commands

Command	Description
ip dhcp relay information check	Configures a Cisco IOS DHCP server to validate the relay agent information option in forwarded BOOTREPLY messages.
ip dhcp relay information option	Configures a Cisco IOS DHCP server to insert the DHCP relay agent information option in forwarded BOOTREQUEST messages.
ip dhcp relay information policy-action	Configures the information reforwarding policy for a DHCP relay agent in interface configuration mode.

ip dhcp relay information policy-action

To configure the information reforwarding policy for a DHCP relay agent (what a relay agent should do if a message already contains relay information), use the **ip dhcp relay information policy-action** command in interface configuration mode or subinterface configuration mode. To restore the default relay information policy, use the **no** form of this command.

ip dhcp relay information policy-action { drop | encapsulate | keep | replace }

no ip dhcp relay information policy-action { drop | encapsulate | keep | replace }

Syntax Description	drop	Directs the DHCP relay agent to discard messages with existing relay information if the relay information option is already present.
	encapsulate	Encapsulates prior information.
	keep	Indicates that existing information is left unchanged on the DHCP relay agent.
	replace	Indicates that existing information is overwritten on the DHCP relay agent.

Command Default The DHCP server replaces existing relay information.

Command Modes Interface configuration
Subinterface configuration

Command History	Release	Modification
	12.4(6)T	This command was introduced.
	12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC.
	12.2(33)SRD	The encapsulation keyword was added.

Usage Guidelines If an **ip dhcp relay information** command is configured in global configuration mode but not configured in interface configuration mode, the global configuration is applied to all interfaces.

If an **ip dhcp relay information** command is configured in both global configuration mode and interface configuration mode, the interface configuration command takes precedence over the global configuration command. However, the global configuration is applied to interfaces without the interface configuration.

If an **ip dhcp relay information** command is not configured in global configuration mode but is configured in interface configuration mode, only the interface with the configuration option applied is affected. All other interfaces are not impacted by the configuration.

The **ip dhcp relay information policy-action encapsulate** command is only needed when the relay agent needs to encapsulate the relay agent information option from a prior relay agent. If this command option is used, the prior option 82 is encapsulated inside the current option 82 and both are forwarded to the DHCP server.

Examples

The following example shows how to configure a DHCP relay agent to drop messages with existing relay information:

```
interface FastEthernet 0
 ip dhcp relay information policy-action drop
```

The following example shows how to configure a DHCP relay agent to encapsulate existing relay information:

```
interface Ethernet0/0
 ip dhcp relay information policy-action encapsulate
```

Related Commands

Command	Description
ip dhcp relay information check-reply	Configures a DHCP server to validate the relay agent information option in forwarded BOOTREPLY messages.
ip dhcp relay information option-insert	Enables the system to insert a DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server.
ip dhcp relay information policy	Configures the information reforwarding policy for a DHCP relay agent in global configuration mode.

ip dhcp relay information trust-all

To configure all interfaces on a router as trusted sources of the Dynamic Host Configuration Protocol (DHCP) relay agent information option, use the **ip dhcp relay information trust-all** command in global configuration mode. To restore the interfaces to their default behavior, use the **no** form of the command.

ip dhcp relay information trust-all

no ip dhcp relay information trust-all

Syntax Description

This command has no arguments or keywords.

Defaults

All interfaces on the router are considered untrusted.

Command Modes

Global configuration

Command History

Release	Modification
12.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

By default, if the gateway address is set to all zeros in the DHCP packet and the relay information option is already present in the packet, the Cisco IOS DHCP relay agent will discard the packet. If the **ip dhcp relay information trust-all** command is configured globally, the Cisco IOS DHCP relay agent will not discard the packet even if the gateway address is set to all zeros. Instead, the received DHCPDISCOVER or DHCPREQUEST messages will be forwarded to the addresses configured by the **ip helper-address** command as in normal DHCP relay operation.

Examples

In the following example, all interfaces on the router are configured as a trusted source for relay agent information:

```
ip dhcp relay information trust-all
```

Related Commands

Command	Description
ip helper-address	Enables the forwarding of UDP broadcasts, including BOOTP, received on an interface.
show ip dhcp relay information trusted-sources	Displays all interfaces on the router that are configured as a trusted source for the DHCP relay agent information option.

ip dhcp relay information trusted

To configure an interface as a trusted source of the Dynamic Host Configuration Protocol (DHCP) relay agent information option, use the **ip dhcp relay information trusted** command in interface configuration mode. To restore the interface to the default behavior, use the **no** form of the command.

ip dhcp relay information trusted

no ip dhcp relay information trusted

Syntax Description

This command has no arguments or keywords.

Defaults

All interfaces on the router are considered untrusted.

Command Modes

Interface configuration

Command History

Release	Modification
12.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

By default, if the gateway address is set to all zeros in the DHCP packet and the relay information option is already present in the packet, the Cisco IOS DHCP relay agent will discard the packet. If the **ip dhcp relay information trusted** command is configured on an interface, the Cisco IOS DHCP relay agent will not discard the packet even if the gateway address is set to all zeros. Instead, the received DHCPDISCOVER or DHCPREQUEST messages will be forwarded to the addresses configured by the **ip helper-address** command as in normal DHCP relay operation.

Examples

In the following example, interface Ethernet 1 is configured as a trusted source for the relay agent information:

```
interface ethernet 1
 ip dhcp relay information trusted
```

Related Commands

Command	Description
ip helper-address	Enables the forwarding of UDP broadcasts, including BOOTP, received on an interface.
show ip dhcp relay information trusted-sources	Displays all interfaces on the router that are configured as a trusted source for the DHCP relay agent information option.

ip dhcp relay prefer known-good-server

To configure the Dynamic Host Configuration Protocol (DHCP) relay agent to forward the client requests to the server that handled the previous request, use the **ip dhcp relay prefer known-good-server** command in global configuration mode. To disable the configuration, use the **no** form of this command.

ip dhcp relay prefer known-good-server

no ip dhcp relay prefer known-good-server

Syntax Description This command has no arguments or keywords.

Command Default The relay agent does not forward the requests based on the preference.

Command Modes Global configuration (config)

Command History	Release	Modification
	15.0(1)M	This command was introduced.

Usage Guidelines The DHCP servers send addresses to the DHCP clients. Because the DHCP server that responds first cannot be predicted, the client receives different addressees from the servers. This results in unpredictable changes in the address used by the client. Such address changes result in TCP service interruptions. You can configure the **ip dhcp relay prefer known-good-server** command to reduce the frequency with which the DHCP clients change their address and to forward the client requests to the server that handled the previous request.

If the **ip dhcp relay prefer known-good-server** command is configured, and the DHCP client is attached to an unnumbered interface, then the DHCP relay checks if the DHCP client broadcasts the DHCP packets. If the packets are broadcast, the server unicasts the requests to all configured helper addresses, and not just to the server that handled the previous request. If the packets are unicast, the DHCP relay forwards the unicast packets from the client to the DHCP server that had assigned the IP address to the client.

This functionality impacts the DHCPv4 relay, and not the DHCPv6 relay.

Examples The following example shows how to configure the DHCP relay agent to forward the client requests to the server that handled the previous request:

```
Router# configure terminal
Router(config)# ip dhcp relay prefer known-good-server
```

Related Commands

Command	Description
ip helper-address	Enables the forwarding of UDP broadcasts, including BOOTP, received on an interface.

ip dhcp relay source-interface

To configure the source interface for the relay agent to use as the source IP address for relayed messages, use the **ip dhcp relay source-interface** command in interface configuration mode. To remove the source interface configuration, use the **no** form of the command.

ip dhcp relay source-interface *type number*

no ip dhcp relay source-interface *type number*

Syntax Description

<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>number</i>	Interface or subinterface number. For more information about the numbering system for your networking device, use the question mark (?) online help function.

Command Default

The source interface is not configured.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This feature was introduced on Cisco ASR 1000 Series Routers.

Usage Guidelines

The **ip dhcp relay source-interface** interface configuration command allows the network administrator to specify a stable, hardware-independent IP address (such as a loopback interface) for the relay agent to use as a source IP address for relayed messages.

If the **ip dhcp-relay source-interface** global configuration command is configured and the **ip dhcp relay source-interface** interface configuration command is also configured, the interface configuration command takes precedence over the global configuration command. However, the global configuration is applied to interfaces without the interface configuration.

Examples

In the following example, the loopback interface IP address is configured to be the source IP address for the relayed messages on interface GigabitEthernet interface 0:

```
!  
Router(config)# interface loopback0  
Router(config-if)# ip address 10.2.2.1 255.255.255.0  
!  
Router(config)# interface GigabitEthernet 0  
Router(config-if)# ip dhcp relay source-interface loopback0
```

Related Commands

Command	Description
ip dhcp-relay source-interface	Globally configures the source interface for the relay agent to use as the source IP address for relayed messages.

ip dhcp-relay source-interface

To globally configure the source interface for the relay agent to use as the source IP address for relayed messages, use the **ip dhcp-relay source-interface** command in global configuration mode. To remove the source interface configuration, use the **no** form of the command.

ip dhcp-relay source-interface *type number*

no ip dhcp-relay source-interface *type number*

Syntax Description

<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>number</i>	Interface or subinterface number. For more information about the numbering system for your networking device, use the question mark (?) online help function.

Command Default

The source interface is not configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This feature was introduced on Cisco ASR 1000 Series Routers.

Usage Guidelines

The **ip dhcp-relay source-interface** global configuration command allows the network administrator to specify a stable, hardware-independent IP address (such as a loopback interface) for the relay agent to use as a source IP address for relayed messages.

If the **ip dhcp-relay source-interface** global configuration command is configured and the **ip dhcp relay source-interface** interface configuration command is also configured, the interface configuration command takes precedence over the global configuration command. However, the global configuration is applied to interfaces without the interface configuration.

Examples

In the following example, the loopback interface IP address is configured to be the source IP address for the relayed messages.

```
!
Router(config)# ip dhcp-relay source-interface loopback0
!
Router(config)# interface loopback0
Router(config-if)# ip address 10.2.2.1 255.255.255.0
```

Related Commands

Command	Description
ip dhcp relay source-interface	Configures the source interface for the relay agent to use as the source IP address for relayed messages.

ip dhcp route connected

To specify routes as connected routes, use the **ip dhcp route connected** command in global configuration mode. To return to the default settings, use the **no** form of this command.

ip dhcp route connected

no ip dhcp route connected

Syntax Description This command has no arguments or keywords.

Defaults All interfaces on the router are untrusted.

Command Modes Global configuration

Command History	Release	Modification
	12.2(18)SXF	Support for this command was introduced on the Supervisor Engine 720.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines If you enable the **ip dhcp route connected** command, DHCP downloads the route database from a database agent and adds the routes as connected routes, even though they may have been added as static routes previously.

Examples This example shows how to specify routes as connected routes:

```
Router(config)# ip dhcp route connected
```

ip dhcp-server

To specify which Dynamic Host Configuration Protocol (DHCP) servers to use on your network, or to specify the IP address of one or more DHCP servers available on the network, use the **ip dhcp-server** command in global configuration mode. To remove a DHCP server IP address, use the **no** form of this command.

ip dhcp-server [*ip-address* | *name*]

no ip dhcp-server [*ip-address* | *name*]

Syntax Description

<i>ip-address</i>	(Optional) IP address of a DHCP server.
<i>name</i>	(Optional) Name of a DHCP server.

Defaults

The IP limited broadcast address of 255.255.255.255 is used for transactions if no DHCP server is specified. This default allows automatic detection of DHCP servers.

Command Modes

Global configuration

Command History

Release	Modification
11.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

A DHCP server temporarily allocates network addresses to clients through the access server on an as-needed basis. While the client is active, the address is automatically renewed in a minimum of 20-minute increments. When the user terminates the session, the interface connection is terminated so that network resources can be quickly reused. You can specify up to ten servers on the network.

In normal situations, if a SLIP or PPP session fails (for example, if a modem line disconnects), the allocated address will be reserved temporarily to preserve the same IP address for the client when dialed back into the server. This way, the session that was accidentally terminated can often be resumed.

To use the DHCP proxy-client feature, enable your access server to be a proxy-client on asynchronous interfaces by using the **ip address-pool dhcp-proxy-client** command. If you want to specify which DHCP servers are used on your network, use the **ip dhcp-server** command to define up to ten specific DHCP servers.



Note

To facilitate transmission, configure intermediary routers (or access servers with router functionality) to use an IP helper address whenever the DHCP server is not on the local LAN and the access server is using broadcasts to interact with the DHCP server. Refer to the chapters about configuring IP addressing in the *Cisco IOS IP Addressing Services Configuration Guide*.

The **ip address-pool dhcp-proxy-client** command initializes proxy-client status to all interfaces defined as asynchronous on the access server. To selectively disable proxy-client status on a single asynchronous interface, use the **no peer default ip address** interface command.

Examples

The following command specifies a DHCP server with the IP address of 172.24.13.81:

```
ip dhcp-server 172.24.13.81
```

Related Commands

Command	Description
ip address-pool	Enables an address pooling mechanism used to supply IP addresses to dial-in asynchronous, synchronous, or ISDN point-to-point interfaces.
ip helper-address	Forwards UDP broadcasts, including BOOTP, received on an interface.
peer default ip address	Specifies an IP address, an address from a specific IP address pool, or an address from the DHCP mechanism to be returned to a remote peer connecting to this interface.
show cot dsp	Displays information about the COT DSP configuration or current status.

ip dhcp-server query lease

To change the default global retransmission scheme for Dynamic Host Configuration Protocol (DHCP) lease query packets, use the **ip dhcp-server query lease** command in global configuration mode. To remove this retransmission scheme and return to the default behavior, use the **no** form of this command.

```
ip dhcp-server query lease {retries number | timeout seconds}
```

```
no ip dhcp-server query lease {retries number | timeout seconds}
```

Syntax Description

retries <i>number</i>	The number of times the DHCP lease is transmitted following a timeout for an authoritative reply. The range is from 0 to 5. The default is 2 retries. A value of 0 means no retransmission (a single failure).
timeout <i>seconds</i>	The number of seconds to wait for a reply to a query. The range is from 1 to 60 seconds. The default is 5 seconds

Defaults

```
retries number : 2
timeout seconds : 5
```

Command Modes

Global configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC.

Usage Guidelines

The DHCP Lease Query protocol is a lightweight mechanism to query a DHCP server for certain information related to IP addresses leased from the DHCP server.

You can specify which DHCP servers to query by using the **ip dhcp-server** global configuration command. You can specify up to 10 servers on the network. Use the **ip dhcp-server query lease** global configuration command to change the default global retransmission scheme for lease query packets.

Examples

In the following example, the time to wait for a reply to a lease query is set to 15 seconds:

```
ip dhcp-server query lease timeout 15
```

In the following example, the retry number is set to 0, which means that only a single DHCP lease query will be transmitted for each DHCP server; no retries will be attempted.

```
ip dhcp-server query lease retries 0
```

Related Commands

Command	Description
ip dhcp-server	Specifies which DHCP server to use on your network.

ip dhcp server use subscriber-id client-id

To configure the DHCP server to use the subscriber identifier as the client identifier on all incoming DHCP messages on an interface, use the **ip dhcp server use subscriber-id client-id** command in interface configuration mode. To disable this functionality, use the **no** form of this command.

ip dhcp server use subscriber-id client-id

no ip dhcp server use subscriber-id client-id

Syntax Description

This command has no arguments or keywords.

Command Default

DHCP uses the client identifier option in the DHCP packet to identify clients.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.2(46)SE	This command was introduced.

Usage Guidelines

This command takes precedence on the interface over the **ip dhcp use subscriber-id client-id** global configuration command.

Examples

In the following example, the DHCP server will use the subscriber identifier as the client identifier for all incoming messages received on Ethernet interface 0/0:

```
interface Ethernet0/0
 ip dhcp server use subscriber-id client-id
```

Related Commands

Command	Description
ip dhcp use subscriber-id client-id	Configures the DHCP server to globally use the subscriber identifier as the client identifier on all incoming DHCP messages.

ip dhcp smart-relay

To allow the Cisco IOS Dynamic Host Configuration Protocol (DHCP) relay agent to switch the gateway address (giaddr field of a DHCP packet) to secondary addresses when there is no DHCPOFFER message from a DHCP server, use the **ip dhcp smart-relay** command in global configuration mode. To disable this smart-relay functionality and restore the default behavior, use the **no** form of this command.

ip dhcp smart-relay

no ip dhcp smart-relay

Syntax Description This command has no arguments or keywords.

Defaults Disabled

Command Modes Global configuration

Command History	Release	Modification
	12.1	This command was introduced.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines The DHCP relay agent attempts to forward the primary address as the gateway address three times. After three attempts and no response, the relay agent automatically switches to secondary addresses.

Examples The following example enables the DHCP relay agent to automatically switch to secondary address pools:

```
ip dhcp smart-relay
```

ip dhcp snooping

To globally enable DHCP snooping, use the **ip dhcp snooping** command in global configuration mode. To disable DHCP snooping, use the **no** form of this command.

ip dhcp snooping

no ip dhcp snooping

Syntax Description This command has no arguments or keywords.

Defaults Disabled

Command Modes Global configuration

Command History	Release	Modification
	12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines Wireless clients, or mobile nodes, gain access to an untrusted wireless network only if there is a corresponding entry in the DHCP snooping database. Enable DHCP snooping globally by entering the **ip dhcp snooping** command, and enable DHCP snooping on the tunnel interface by entering the **ip dhcp snooping packets** command. After you enable DHCP snooping, the process snoops DHCP packets to and from the mobile nodes and populates the DHCP snooping database.

Examples This example shows how to enable DHCP snooping:

```
Router(config) # ip dhcp snooping
```

This example shows how to disable DHCP snooping:

```
Router(config) # no ip dhcp snooping
```

Related Commands	Command	Description
	ip dhcp snooping packets	Enables DHCP snooping on the tunnel interface.
	show ip dhcp snooping	Displays the DHCP snooping configuration.
	show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
	show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp snooping binding

To set up and generate a DHCP binding configuration to restore bindings across reboots, use the **ip dhcp snooping binding** command in privileged EXEC mode. To disable the binding configuration, use the **no** form of this command.

ip dhcp snooping binding *mac-address* **vlan** *vlan* *ip-address* **interface** *type* *number* **expiry** *seconds*

no ip dhcp snooping binding *mac-address* **vlan** *vlan* *ip-address* **interface** *type* *number*

Syntax Description		
<i>mac-address</i>		MAC address.
vlan <i>vlan</i>		Specifies a valid VLAN number; valid values are from 1 to 4094.
<i>ip-address</i>		IP address.
interface <i>type</i>		Specifies the interface type; possible valid values are ethernet , fastethernet , gigabitethernet , tengigabitethernet .
<i>number</i>		Module and port number.
expiry <i>seconds</i>		Specifies the interval after which binding is no longer valid; valid values are from 1 to 4294967295 seconds.

Defaults This command has no default settings.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines When you add or remove a binding using this command, the binding database is marked as changed and a write is initiated.

Examples This example shows how to generate a DHCP binding configuration on interface gigabitethernet1/1 in VLAN 1 with an expiration time of 1000 seconds:

```
Router# ip dhcp snooping binding 0001.1234.1234 vlan 1 172.20.50.5 interface gi1/1 expiry 1000
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP snooping configuration.
show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp snooping database

To configure the Dynamic Host Configuration Protocol (DHCP)-snooping database, use the **ip dhcp snooping database** command in global configuration mode. To disable the DHCP-snooping database, use the **no** form of this command.

```
ip dhcp snooping database { bootflash:url | ftp:url | rcp:url | scp:url | sup-bootflash: | tftp:url |
timeout seconds | write-delay seconds }
```

```
no ip dhcp snooping database { timeout seconds | write-delay seconds }
```

Syntax Description

bootflash:url	Specifies the database URL for storing entries using the bootflash.
ftp:url	Specifies the database URL for storing entries using FTP.
rcp:url	Specifies the database URL for storing entries using remote copy (rcp).
scp:url	Specifies the database URL for storing entries using Secure Copy (SCP).
sup-bootflash:	Specifies the database URL for storing entries using the supervisor bootflash.
tftp:url	Specifies the database URL for storing entries using TFTP.
timeout seconds	Specifies the abort timeout interval; valid values are from 0 to 86400 seconds.
write-delay seconds	Specifies the amount of time before writing the DHCP-snooping entries to an external server after a change is seen in the local DHCP-snooping database; valid values are from 15 to 86400 seconds.

Defaults

The DHCP-snooping database is not configured.

Command Modes

Global configuration

Command History

Release	Modification
12.2(18)SXE	This command was introduced on the Supervisor Engine 720.
12.2(18)SXF5	The sup-bootflash: keyword was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

You must enable DHCP snooping on the interface before entering this command. Use the **ip dhcp snooping** command to enable DHCP snooping.

Examples

This example shows how to specify the database URL using TFTP:

```
Router(config)# ip dhcp snooping database tftp://10.90.90.90/snooping-rp2
```

This example shows how to specify the amount of time before writing DHCP snooping entries to an external server:

```
Router(config)# ip dhcp snooping database write-delay 15
```

Related Commands

Command	Description
ip dhcp snooping	Enables DHCP snooping.
show ip dhcp snooping	Displays the DHCP snooping configuration.
show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp snooping information option

To enable Dynamic Host Configuration Protocol (DHCP) option 82 data insertion, use the **ip dhcp snooping information option** command in global configuration mode. To disable DHCP option 82 data insertion, use the **no** form of this command.

ip dhcp snooping information option [allow-untrusted]

no ip dhcp snooping information option

Syntax Description

allow-untrusted	(Optional) Enables the switch to accept incoming DHCP snooping packets with option 82 information from the edge switch.
------------------------	---

Defaults

DHCP option 82 data insertion is enabled by default. Accepting incoming DHCP snooping packets with option 82 information from the edge switch is disabled by default.

Command Modes

Global configuration

Command History

Release	Modification
12.2(18)SXE	This command was introduced on the Supervisor Engine 720.
12.2(18)SXF2	The allow-untrusted keyword was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

DHCP option 82 is part of RFC 3046. DHCP is an application-layer protocol that is used for the dynamic configuration of TCP/IP networks. The protocol allows for a relay agent to pass DHCP messages between the DHCP clients and DHCP servers. By using a relay agent, servers need not be on the same network as the clients. Option 82 (82 is the option's code) addresses the security and scalability issues. Option 82 resides in the relay agent when DHCP packets that originate from the forwarding client are sent to the server. Servers that recognize Option 82 may use the information to implement the IP address or other parameter assignment policies. The DHCP server echoes the option back to the relay agent in its replies. The relay agent strips out the option from the relay agent before forwarding the reply to the client.

When you enter the **ip dhcp snooping information option allow-untrusted** on an aggregation switch that is connected to an edge switch through an untrusted interface, the aggregation switch accepts packets with option 82 information from the edge switch. The aggregation switch learns the bindings for hosts connected through an untrusted switch interface. You can enable the DHCP security features, such as dynamic Address Resolution Protocol (ARP) inspection or IP source guard, on the aggregation switch while the switch receives packets with option 82 information on untrusted input interfaces to which hosts are connected. You must configure the port on the edge switch that connects to the aggregation switch as a trusted interface.

**Caution**

Do not enter the **ip dhcp snooping information option allow-untrusted** command on an aggregation switch that is connected to an untrusted device. If you enter this command, an untrusted device might spoof the option 82 information.

Examples

This example shows how to enable DHCP option 82 data insertion:

```
ip dhcp snooping information option
```

This example shows how to disable DHCP option 82 data insertion:

```
no ip dhcp snooping information option
```

This example shows how to enable the switch to accept incoming DHCP snooping packets with option 82 information from the edge switch:

```
ip dhcp snooping information option allow-trusted
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP snooping configuration.
show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp snooping limit rate

To configure the number of the DHCP messages that an interface can receive per second, use the **ip dhcp snooping limit rate** command in interface configuration mode. To disable the DHCP message rate limiting, use the **no** form of this command.

ip dhcp snooping limit rate *rate*

no ip dhcp snooping limit rate

Syntax Description	<i>rate</i>	Number of DHCP messages that a switch can receive per second; valid values are from 1 to 4294967294 seconds.
---------------------------	-------------	--

Defaults	Disabled
-----------------	----------

Command Modes	Interface configuration
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Command History	Release	Modification
	12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command is supported on Layer 2 switch-port and port-channel interfaces only.

Typically, the rate limit applies to the untrusted interfaces. If you want to set up rate limiting for the trusted interfaces, note that the trusted interfaces aggregate all DHCP traffic in the switch, and you will need to adjust the rate limit of the interfaces to a higher value.

Examples

This example shows how to specify the number of DHCP messages that a switch can receive per second:

```
Router(config-if)# ip dhcp snooping limit rate 150
```

This example shows how to disable the DHCP message rate limiting:

```
Router(config-if)# no ip dhcp snooping limit rate
```

Related Commands	Command	Description
	show ip dhcp snooping	Displays the DHCP snooping configuration.
	show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
	show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp snooping packets

To enable DHCP snooping on the tunnel interface, use the **ip dhcp snooping packets** command in interface configuration mode. To disable DHCP snooping, use the **no** form of this command.

ip dhcp snooping packets

no ip dhcp snooping packets

Syntax Description This command has no arguments or keywords.

Defaults Disabled

Command Modes Interface configuration

Command History	Release	Modification
	12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines This command is supported on Layer 2 switch-port and port-channel interfaces only. This command is supported on Cisco 7600 series routers that are configured with a WLSM only. Wireless clients, or mobile nodes, gain access to an untrusted wireless network only if there is a corresponding entry in the DHCP snooping database. Enable DHCP snooping globally by entering the **ip dhcp snooping** command, and enable DHCP snooping on the tunnel interface by entering the **ip dhcp snooping packets** command. After you enable DHCP snooping, the process snoops DHCP packets to and from the mobile nodes and populates the DHCP snooping database.

Examples This example shows how to enable DHCP snooping:

```
Router(config-if)# ip dhcp snooping packets
```

This example shows how to disable DHCP snooping:

```
Router(config-if)# no ip dhcp snooping packets
```

Related Commands	Command	Description
	ip dhcp snooping	Enables DHCP snooping.
	show ip dhcp snooping	Displays the DHCP snooping configuration.

Command	Description
show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp snooping verify mac-address

To verify that the source MAC address in a DHCP packet matches the client hardware address on an untrusted port, use the **ip dhcp snooping verify mac-address** command in global configuration mode. To disable verification, use the **no** form of this command.

ip dhcp snooping verify mac-address

no ip dhcp snooping verify mac-address

Syntax Description This command has no arguments or keywords.

Defaults Enabled

Command Modes Global configuration

Command History	Release	Modification
	12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines For untrusted DHCP snooping ports, DHCP snooping verifies the MAC address on the client hardware address field to ensure that a client is requesting multiple addresses from a single MAC address. You can use the **ip dhcp snooping verify mac-address** command to trust the ports or you can use the **no ip dhcp snooping verify mac-address** command to leave the ports untrusted by disabling the MAC address verification on the client hardware address field.

Examples This example shows how to verify that the source MAC address in a DHCP packet matches the client hardware address on an untrusted port:

```
Router(config)# ip dhcp snooping verify mac-address
```

This example shows how to turn off the verification of the MAC address on the client hardware address field:

```
Router(config)# no ip dhcp snooping verify mac-address
```

Related Commands	Command	Description
	show ip dhcp snooping	Displays the DHCP snooping configuration.
	show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
	show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp snooping vlan

To enable DHCP snooping on a VLAN or a group of VLANs, use the **ip dhcp snooping vlan** command in global configuration mode. To disable DHCP snooping on a VLAN or a group of VLANs, use the **no** form of this command.

ip dhcp snooping vlan {*number* | *vlan-list*}

no ip dhcp snooping vlan {*number* | *vlan-list*}

Syntax Description

<i>number</i> <i>vlan-list</i>	VLAN number or a group of VLANs; valid values are from 1 to 4094. See the “Usage Guidelines” section for additional information.
-------------------------------------	--

Defaults

Disabled

Command Modes

Global configuration

Command History

Release	Modification
12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

DHCP snooping is enabled on a VLAN only if both the global snooping and the VLAN snooping are enabled.

Enter the range of VLANs using this format: 1,3-5,7,9-11.

Examples

This example shows how to enable DHCP snooping on a VLAN:

```
Router(config)# ip dhcp snooping vlan 10
```

This example shows how to disable DHCP snooping on a VLAN:

```
Router(config)# no ip dhcp snooping vlan 10
```

This example shows how to enable DHCP snooping on a group of VLANs:

```
Router(config)# ip dhcp snooping vlan 10,4-8,55
```

This example shows how to disable DHCP snooping on a group of VLANs:

```
Router(config)# no ip dhcp snooping vlan 10,4-8,55
```

Related Commands

Command	Description
show ip dhcp snooping	Displays the DHCP snooping configuration.
show ip dhcp snooping binding	Displays the DHCP snooping binding entries.
show ip dhcp snooping database	Displays the status of the DHCP snooping database agent.

ip dhcp subscriber-id interface-name

To automatically generate a subscriber ID value based on the short name of the interface, use the **ip dhcp subscriber-id interface-name** command in global configuration mode. To disable this functionality, use the **no** form of this command.

ip dhcp subscriber-id interface-name

no ip dhcp subscriber-id interface-name

Syntax Description This command has no arguments or keywords.

Command Default A subscriber ID value is not automatically generated.

Command Modes Global configuration (config)

Command History	Release	Modification
	12.2(46)SE	This command was introduced.

Usage Guidelines A subscriber ID value configured on a specific interface using the **ip dhcp server use subscriber-id client-id** command takes precedence over the global configuration.

Examples In the following example, a subscriber ID will be automatically generated based on the short name of the interface (port) specified by the **address client-id** command. The DHCP server will ignore any client identifier fields in the DHCP messages and use this subscriber ID as the client identifier. The DHCP client is preassigned IP address 10.1.1.7.

```
ip dhcp use subscriber-id client-id
ip dhcp subscriber-id interface-name
ip dhcp excluded-address 10.1.1.1 10.1.1.3
ip dhcp pool dhcppool
network 10.1.1.0 255.255.255.0
address 10.1.1.7 client-id ethernet 1/0 ascii
```

Related Commands	Command	Description
	ip dhcp server use subscriber-id client-id	Configures the DHCP server to use the subscriber identifier as the client identifier on all incoming DHCP messages on an interface.

ip dhcp use class

To control whether the DHCP server uses DHCP classes during address allocation, use the **ip dhcp use class** command in global configuration mode. To disable the use of DHCP classes during address allocation, use the **no** form of this command.

ip dhcp use class

no ip dhcp use class

Syntax Description

This command has no arguments or keywords.

Defaults

This command is enabled by default.

Command Modes

Global configuration

Command History

Release	Modification
12.2(13)ZH	This command was introduced.
12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

When you use the **no ip dhcp use class** command, the DHCP class configuration is not deleted.

Examples

The following example shows the DHCP server configured to use the relay agent information option during address allocation:

```
ip dhcp use class
```

ip dhcp use subscriber-id client-id

To configure the DHCP server to globally use the subscriber identifier as the client identifier on all incoming DHCP messages, use the **ip dhcp use subscriber-id client-id** command in global configuration mode. To disable this functionality, use the **no** form of this command.

ip dhcp use subscriber-id client-id

no ip dhcp use subscriber-id client-id

Syntax Description This command has no arguments or keywords.

Command Default DHCP uses the client identifier option in the DHCP packet to identify clients.

Command Modes Global configuration (config)

Command History

Release	Modification
12.2(46)SE	This command was introduced.

Usage Guidelines

A subscriber ID value configured on a specific interface using the **ip dhcp server use subscriber-id client-id** command takes precedence over this command.

Examples

In the following example, a subscriber ID will be automatically generated based on the short name of the interface (port) specified by the **address client-id** command. The DHCP server will ignore any client identifier fields in the DHCP messages and use this subscriber ID as the client identifier. The DHCP client is preassigned IP address 10.1.1.7.

```
ip dhcp use subscriber-id client-id
ip dhcp subscriber-id interface-name
ip dhcp excluded-address 10.1.1.1 10.1.1.3
ip dhcp pool dhcppool
network 10.1.1.0 255.255.255.0
address 10.1.1.7 client-id ethernet 1/0 ascii
```

Related Commands

Command	Description
ip dhcp server use subscriber-id client-id	Configures the DHCP server to use the subscriber identifier as the client identifier on all incoming DHCP messages on an interface.

lease

To configure the duration of the lease for an IP address that is assigned from a Cisco IOS Dynamic Host Configuration Protocol (DHCP) server to a DHCP client, use the **lease** command in DHCP pool configuration mode. To restore the default value, use the **no** form of this command.

```
lease { days [hours [minutes]] | infinite }
```

```
no lease
```

Syntax Description

<i>days</i>	Specifies the duration of the lease in numbers of days.
<i>hours</i>	(Optional) Specifies the number of hours in the lease. A <i>days</i> value must be supplied before you can configure an <i>hours</i> value.
<i>minutes</i>	(Optional) Specifies the number of minutes in the lease. A <i>days</i> value and an <i>hours</i> value must be supplied before you can configure a <i>minutes</i> value.
infinite	Specifies that the duration of the lease is unlimited.

Defaults

1 day

Command Modes

DHCP pool configuration

Command History

Release	Modification
12.0(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example shows a 1-day lease:

```
lease 1
```

The following example shows a 1-hour lease:

```
lease 0 1
```

The following example shows a 1-minute lease:

```
lease 0 0 1
```

The following example shows an infinite (unlimited) lease:

```
lease infinite
```

Related Commands	Command	Description
	ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP server and enters DHCP pool configuration mode.