lease through renew dhcp

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

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

Command Default

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.

Command 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.

local-ip (IPC transport-SCTP local)

To define at least one local IP address that is used to communicate with the local peer, use the **local-ip** command in IPC transport-SCTP local configuration mode. To remove one or all IP addresses from your configuration, use the **no** form of this command.

local-ip *device-real-ip-address* [*device-real-ip-address2*]

no local-ip *device-real-ip-address* [*device-real-ip-address2*]

Syntax Description

device-real-ip-address	IP address of the local device.
	The local IP addresses must match the remote IP addresses on the peer router. There can be either one or two IP addresses, which must be in global Virtual Private Network (VPN) routing and forwarding (VRF). A virtual IP (VIP) address cannot be used.
device-real-ip-address2	(Optional) IP address of the local device.

Command Default

No IP addresses are defined; thus, peers cannot communicate with the local peer.

Command Modes

IPC transport-SCTP local configuration

Command History

Release	Modification
12.3(8)T	This command was introduced.

Usage Guidelines

Use the **local-ip** command to help associate Stream Control Transmission Protocol (SCTP) as the transport protocol between the local and remote peer.

This command is part of a suite of commands used to configure the Stateful Switchover (SSO) protocol. SSO is necessary for IP Security (IPSec) and Internet Key Exchange (IKE) to learn about the redundancy state of the network and to synchronize their internal application state with their redundant peers.

Command Examples

The following example shows how to enable SSO:

```
!
redundancy inter-device
 scheme standby HA-in
```

```
!
!
ipc zone default
 association 1
  no shutdown
  protocol sctp
   local-port 5000
     local-ip 10.0.0.1
    remote-port 5000
      remote-ip 10.0.0.2
```

Related Commands

Command	Description
local-port	Defines the local SCTP port number that is used to communicate with the redundant peer.
remote-ip	Defines at least one remote IP address that is used to communicate with the redundant peer.

local-port

To define the local Stream Control Transmission Protocol (SCTP) port that is used to communicate with the redundant peer, use the **local-port**command in SCTP protocol configuration mode.

local-port *local-port-number*

Syntax Description

local-port-number	Local port number, which should be the same as the remote port number on the peer router (which is specified via the **remote-port** command).

Command Default

A local SCTP port is not defined.

Command Modes

SCTP protocol configuration

Command History

Release	Modification
12.3(8)T	This command was introduced.

Usage Guidelines

The **local-port** command enters IPC transport-SCTP local configuration mode, which allows you to specify at least one local IP address (via the **local-ip** command) that is used to communicate with the redundant peer.

Command Examples

The following example shows how to enable Stateful Switchover (SSO):

```
!
redundancy inter-device
 scheme standby HA-in
!
!
ipc zone default
 association 1
  no shutdown
  protocol sctp
   local-port 5000
    local-ip 10.0.0.1
   remote-port 5000
    remote-ip 10.0.0.2
```

Related Commands

Command	Description
local-ip	Defines at least one local IP address that is used to communicate with the local peer.
remote-port	Defines the remote SCTP that is used to communicate with the redundant peer.

logging (cfg-dns-view)

To enable logging of a system message logging (syslog) message each time the Domain Name System (DNS) view is used, use the **logging** command in DNS view configuration mode. To disable logging of a syslog message each time the DNS view is used, use the **no** form of this command.

> **logging**
>
> **no logging**

Syntax Description   This command has no arguments or keywords.

Command Default   No syslog message is logged when the DNS view is used.

Command Modes   DNS view configuration

Command History

Release	Modification
12.4(9)T	This command was introduced.

Usage Guidelines   This command enables the logging of syslog messages for the DNS view.

To display the logging setting for a DNS view, use the **show ip dns view** command.

Command Examples   The following example shows how to enable logging of a syslog message each time the DNS view named user3 that is associated with the VRF vpn32 is used:

```
Router(config)# ip dns view vrf vpn32 user3

Router(cfg-dns-view)# logging
```

Related Commands

Command	Description
ip dns view	Enters DNS view configuration mode for the specified DNS view so that the logging setting, forwarding parameters, and resolving parameters can be configured for the view.

Command	Description
show ip dns view	Displays information about a particular DNS view or about all configured DNS views, including the number of times the DNS view was used.

logging (DNS)

To enable logging of a system message logging (syslog) message each time the Domain Name System (DNS) view is used, use the **logging** command in DNS view configuration mode. To disable logging of a syslog message each time the DNS view is used, use the **no** form of this command.

logging

no logging

Syntax Description   This command has no arguments or keywords.

Command Default   No syslog message is logged when the DNS view is used.

Command Modes   DNS view configuration

Command History

Release	Modification
12.4(9)T	This command was introduced.

Usage Guidelines   This command enables the logging of syslog messages for the DNS view.

To display the logging setting for a DNS view, use the **show ip dns view** command.

Command Examples   The following example shows how to enable logging of a syslog message each time the DNS view named user3 that is associated with the VRF vpn32 is used:

```
Router(config)# ip dns view vrf vpn32 user3

Router(cfg-dns-view)# logging
```

Related Commands

Command	Description
ip dns view	Enters DNS view configuration mode for the specified DNS view so that the logging setting, forwarding parameters, and resolving parameters can be configured for the view.

Command	Description
show ip dns view	Displays information about a particular DNS view or about all configured DNS views, including the number of times the DNS view was used.

logging server-arp

To enable the sending of Address Resolution Protocol (ARP) requests for syslog server address during system initialization bootup, use the **logging server-arp** command in global configuration mode. To disable the sending of ARP requests for syslog server addresses, use the **no** form of this command.

logging server-arp

no logging server-arp

Syntax Description   This command has no arguments or keywords.

Command Default   This command is disabled by default.

Command Modes   Global configuration.

Command History

Release	Modification
12.3	This command was introduced.
12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T.
12.3(5)B	This command was integrated into Cisco IOS Release 12.3(5)B.

Usage Guidelines   The **logging server-arp** global configuration command allows the sending of ARP requests for syslog server addresses during system initialization bootup.

When this CLI command is configured and saved to the startup configuration file, the system will send an ARP request for remote syslog server address before sending out the first syslog message.

The command should only be used when the remote syslog server is in the same subnet as the system router sending the ARP request.

Note   Use this command even if a static ARP has been configured with the remote syslog server address.

Command Examples   The following example shows how to enable an ARP request for syslog server addresses:

```
Router# configure terminal
Router(config)# logging server-arp
Router(config)# exit
```

The following example shows how to disable an ARP request for syslog server addresses:

```
Router# configure terminal
Router(config)# no
 logging server-arp
Router(config)# exit
```

Related Commands

Command	Description
arp (global)	Adds a permanent entry in the Address Resolution Protocol (ARP) cache, use the **arp** command in global configuration mode.

mac packet-classify

To classify Layer 3 packets as Layer 2 packets, use the **mac packet-classify** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

> **mac packet-classify [bpdu]**
>
> **no mac packet-classify [bpdu]**

Syntax Description

bpdu	(Optional) Specifies Layer 2 policy enforcement for BPDU packets.

Command Default

Layer 3 packets are not classified as Layer 2 packets.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.2(18)SXD	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.
12.2(50)SY	Added support for MAC ACLs on BPDU packets.

Usage Guidelines

This command is not supported on Cisco 7600 series routers that are configured with a Supervisor Engine 2.

You can configure these interface types for multilayer MAC access control list (ACL) quality of service (QoS) filtering:

- VLAN interfaces without Layer 3 addresses
- Physical LAN ports that are configured to support Ethernet over Multiprotocol Label Switching (EoMPLS)
- Logical LAN subinterfaces that are configured to support EoMPLS

The ingress traffic that is permitted or denied by a MAC ACL on an interface configured for multilayer MAC ACL QoS filtering is processed by egress interfaces as MAC-layer traffic. You cannot apply egress IP ACLs to traffic that was permitted or denied by a MAC ACL on an interface configured for multilayer MAC ACL QoS filtering.

Microflow policing does not work on interfaces that have the **mac packet-classify** command enabled.

The **mac packet-classify** command causes the Layer 3 packets to be classified as Layer 2 packets and disables IP classification.

Traffic is classified based on 802.1Q class of service (CoS), trunk VLAN, EtherType, and MAC addresses.

Command Examples

This example shows how to classify incoming and outgoing Layer 3 packets as Layer 2 packets:

```
Router(config-if)# mac packet-classify
Router(config-if)#
```

This example shows how to disable the classification of incoming and outgoing Layer 3 packets as Layer 2 packets:

```
Router(config-if)# no mac packet-classify
Router(config-if)#
```

This example shows how to enforce Layer 2 policies on BPDU packets:

```
Router(config-if)# mac packet-classify bpdu
Router(config-if)#
```

This example shows how to disable Layer 2 policies on BPDU packets:

```
Router(config-if)# no mac packet-classify bpdu
Router(config-if)#
```

Related Commands

Command	Description
mac packet-classify use vlan	Enables VLAN-based QoS filtering in the MAC ACLs.

mac packet-classify use vlan

To enable VLAN-based quality of service (QoS) filtering in the MAC access control lists (ACLs), use the **mac packet-classify use vlan** command in global configuration mode. To return to the default settings, use the **no** form of this command.

mac packet-classify use vlan

no mac packet-classify use vlan

Syntax Description   This command has no arguments or keywords.

Command Default   VLAN-based QoS filtering in the MAC ACLs is disabled.

Command Modes   Global configuration (config)

Command History

Release	Modification
12.2(18)SXD	Support for this command was introduced on the Supervisor Engine 720 and the Supervisor Engine 2.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines   This command is supported in PFC3BXL or PFC3B mode only.

This command is not supported on Cisco 7600 series routers that are configured with a Supervisor Engine 2.

You must use the **no mac packet-classify use vlan** command to disable the VLAN field in the Layer 2 key if you want to apply QoS to the Layer 2 Service Advertising Protocol (SAP)-encoded packets (for example, Intermediate System-to-Intermediate System [IS-IS] and Internet Packet Exchange [IPX]).

QoS does not allow policing of non-Advanced Research Protocol Agency (ARPA) Layer 2 packets (for example, IS-IS and IPX) if the VLAN field is enabled.

Command Examples   This example shows how to enable Layer 2 classification of IP packets:

```
Router(config)# mac packet-classify use vlan
Router(config)
```

This example shows how to disable Layer 2 classification of IP packets:

```
Router(config)# no mac packet-classify use vlan
Router(config)
```

Related Commands

Command	Description
mac packet-classify	Classifies Layer 3 packets as Layer 2 packets.

name

name

To configure the redundancy group with a name, use the **name**command in redundancy application group configuration mode. To remove the name of a redundancy group, use the **no** form of this command.

name *group-name*

no name *group-name*

Syntax Description

group-name	Name of the redundancy group.

Command Default

The redundancy group is not configured with a name.

Command Modes

Redundancy application group configuration (config-red-app-grp)

Command History

Release	Modification
Cisco IOS XE Release 3.1S	This command was introduced.

Command Examples

The following example shows how to configure the redundancy group name as group1:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# application redundancy
Router(config-red-app)# group 1
Router(config-red-app-grp)# name group1
```

Related Commands

Command	Description
application redundancy	Enters redundancy application configuration mode.
group(firewall)	Enters redundancy application group configuration mode.
shutdown	Shuts down a group manually.

nat64 enable

To enable stateless Network Address Translation 64 (NAT64) on an interface, use the **nat64 enable** command in interface configuration mode. To disable the NAT64 configuration on an interface, use the **no** form of this command.

nat64 enable

no nat64 enable

Syntax Description   This command has no arguments or keywords.

Command Default   NAT64 is not enabled on an interface.

Command Modes   Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Release 3.2S	This command was introduced.

Command Examples   The following example shows how to enable stateless NAT64 on a Gigabit Ethernet interface:

```
Router# configure terminal
Router(config)# interface gigabitethernet0/0/0
Router(config-if)# nat64 enable
Router(config-if)# end
```

Related Commands

Command	Description
show nat64 adjacency	Displays information about the NAT64-managed adjacencies.
show nat64 ha status	Displays information about the NAT64 HA status.
show nat64 statistics	Displays statistics about a NAT64 interface and the transmitted and dropped packet count.

nat64 prefix

To assign a global or interface-specific Network Address Translation 64 (NAT64) stateless prefix, use the **nat64 prefix** command in global configuration or interface configuration mode. To disable the configuration, use the **no** form of this command.

> **nat64 prefix stateless** *ipv6-prefix* /*prefix-length*
>
> **no nat64 prefix stateless**

Syntax Description

stateless	Specifies the stateless prefix.
ipv6-prefix	IPv6 network number to include in router advertisements. This argument must be in the form documented in RFC 2373 where the address is specified in hexadecimal using 16-bit values between colons.
/ *prefix-length*	Length of the IPv6 prefix. A decimal value that indicates how many of the high-order contiguous bits of the address comprise the prefix (the network portion of the address). A slash mark must precede the decimal value.

Command Default

No NAT64 translation is performed.

Command Modes

Global configuration (config) Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Release 3.2S	This command was introduced.

Usage Guidelines

The **nat64 prefix stateless** command uses a prefix and prefix length for IPv4-translatable IPv6 addresses. Use the **nat64 prefix stateless** command in global configuration mode to assign a global NAT64 stateless prefix or in interface configuration mode to assign an unique NAT64 stateless prefix for each interface. In interface configuration mode, a stateless prefix should be configured on an IPv6-facing interface.

All packets coming to an IPv6 interface are matched against the configured prefix, and the matched packets are translated to IPv4. Similarly, the packets that the IPv6 interface sends use the stateless prefix to construct the source and destination IPv6 address.

> **Note** A maximum of one global stateless prefix and one stateless prefix per interface is supported.

If NAT64 is enabled on an interface that does not have a stateless prefix configured, then the global stateless prefix is used. However, if a global prefix and an interface prefix are configured, then the interface prefix is used for stateless NAT64 translation. The use of a stateless prefix on an interface has priority over the configured global stateless prefix.

Command Examples The following example shows how to configure a global NAT64 stateless prefix:

```
Router# configure terminal
Router(config)# nat64 prefix stateless 2001::7001:10A/96
Router(config)# end
```

The following example shows how to assign a NAT64 stateless prefix for a Gigabit Ethernet interface:

```
Router# configure terminal
Router(config)# interface gigabitethernet0/0/0
Router(config-if)# nat64 prefix stateless 2001:0DB8:0:1::/96
Router(config-if# end
```

Related Commands

Command	Description
nat64 route	Specifies the NAT64 stateless prefix to which an IPv4 prefix should be translated.
show nat64 prefix stateless	Displays information about the configured NAT64 stateless prefixes.

nat64 route

To specify the Network Address Translation 64 (NAT64) stateless prefix to which an IPv4 prefix should be translated, use the **nat64 route** command in global configuration mode. To disable the configuration, use the **no** form of this command.

> **nat64 route** *ipv4-prefix /mask interface-type interface-number*
>
> **no nat64 route** *ipv4-prefix /mask*

Syntax Description

ipv4-prefix / mask	Length of the IPv4 prefix and the mask.
interface-type	Interface type. For more information, use the question mark (?) online help function.
interface-number	Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.

Command Default

No NAT64 routing is performed.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Release 3.2S	This command was introduced.

Usage Guidelines

A prefix that is configured on an interface is used as the stateless prefix on that interface. If no interface-specific prefix is configured, the configured global prefix is used for NAT64 translation.

Command Examples

The following example shows how to assign an IPv4 prefix and mask to an interface:

```
Router# configure terminal
Router(config)# nat64 route 192.168.0.0/24 gigabitethernet0/0/1
Router(config)# exit
```

Related Commands

Command	Description
nat64 prefix stateless	Assigns a global or interface-specific NAT64 stateless prefix.
show nat64 routes	Displays information about the configured NAT64 routes.

netbios-name-server

To configure NetBIOS Windows Internet Naming Service (WINS) name servers that are available to Microsoft Dynamic Host Configuration Protocol (DHCP) clients, use the **netbios-name-server** command in DHCP pool configuration. To remove the NetBIOS name server list, use the no form of this command.

netbios-name-server *address* [*address2 ... address8*]

no netbios-name-server

Syntax Description

address	Specifies the IP address of the NetBIOS WINS name server. One IP address is required, although you can specify up to eight addresses in one command line.
address2 ...address8	(Optional) Specifies up to eight addresses in the command line.

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.

Usage Guidelines

One IP address is required, although you can specify up to eight addresses in one command line. Servers are listed in order of preference (address1 is the most preferred server, address2 is the next most preferred server, and so on).

Command Examples

The following example specifies the IP address of a NetBIOS name server available to the client:

```
netbios-name-server 10.12.1.90
```

Related Commands

Command	Description
dns-server	Specifies the DNS IP servers available to a DHCP client.
domain-name (DHCP)	Specifies the domain name for a DHCP client.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.
netbios-node-type	Configures the NetBIOS node type for Microsoft DHCP clients.

netbios-node-type

To configure the NetBIOS node type for Microsoft Dynamic Host Configuration Protocol (DHCP) clients, use the **netbios-node-type** command in DHCP pool configuration mode. To remove the NetBIOS node type, use the no form of this command.

netbios-node-type *type*

no netbios-node-type

Syntax Description

type	Specifies the NetBIOS node type. Valid types are: • **b-node** --Broadcast • **p-node** --Peer-to-peer • **m-node** --Mixed • **h-node** --Hybrid (recommended)

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.

Usage Guidelines

The recommended type is h-node (hybrid).

Command Examples

The following example specifies the client's NetBIOS type as hybrid:

```
netbios node-type h-node
```

Related Commands

Command	Description
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.
netbios name-server	Configures NetBIOS WINS name servers that are available to Microsoft DHCP clients.

network (DHCP)

To configure the network number and mask for a Dynamic Host Configuration Protocol (DHCP) address pool primary or secondary subnet on a Cisco IOS DHCP server, use the **network** command in DHCP pool configuration mode. To remove the subnet number and mask, use the **no** form of this command.

[1]

[2]

Syntax Description

network-number	The IP address of the primary DHCP address pool.
mask	(Optional) The bit combination that renders which portion of the address of the DHCP address pool refers to the network or subnet and which part refers to the host.
/ prefix-length	(Optional) The number of bits that comprise the address prefix. The prefix is an alternative way of specifying the network mask of the client. The prefix length must be preceded by a forward slash (/).
secondary	(Optional) The network address specifies a secondary subnet in the DHCP address pool, and the router enters DHCP pool secondary subnet configuration mode. **Note** To configure a secondary subnet, you must also specify the *mask* argument or the p*refix-length* argument.

Command Default

This command is disabled by default.

Command Modes

DHCP pool configuration (dhcp-config)

Command History

Release	Modification
12.0(1)T	This command was introduced.

1

2

Release	Modification
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SRB	This command was modified. The **secondary** keyword was added.
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.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S and implemented on the Cisco ASR 1000 Series Aggregation Services Routers.
15.0(1)S	This command was integrated into Cisco IOS Release 15.0(1)S.

Usage Guidelines

This command is valid for DHCP subnetwork address pools only.

The DHCP server assumes that all host addresses are available. The system administrator can exclude subsets of the address space by using the **ip dhcp excluded-address** global configuration command. However, the **ip dhcp excluded-address** command cannot be used to exclude addresses from virtual routing and forwarding (VRF)-associated pools.

You cannot configure manual bindings within the same pool that is configured with the **network** command.

If a default router list is configured for the pool or subnet from which the address was allocated, the DHCP server selects an IP address from that default router list and provides it to the client. The DHCP client uses that router as the first hop for forwarding messages.

Removing a secondary subnet also removes the default router list for that subnet. Removing the primary subnet removes only the primary subnet definition but not the network-wide default router list.

To display the DHCP address pool information configured by the **network** command, use the **show ip dhcp pool** command.

Command Examples

The following example shows how to configure 172.16.0.0/12 as the subnetwork number and mask of the DHCP pool named pool1. The IP addresses in pool1 range from 172.16.0.0 to 172.31.255.255.

```
Router(config)#
ip dhcp pool pool1

Router(dhcp-config)#
network 172.16.0.0 255.240.0.0
```

The following example shows how to configure 192.0.2.0/24 as the subnetwork number and mask of the DHCP pool named pool2 and then add the DHCP pool secondary subnet specified by the subnet number

and mask 192.0.4.0/30. The IP addresses in pool2 consist of two unconnected subnets: the addresses from 192.0.2.1 to 192.0.2.254 and the addresses from 192.0.4.1 to 192.0.4.2.

```
Router(config)#
ip dhcp pool pool2

Router(dhcp-config)#
network 192.0.2.0 255.255.255.0

Router(dhcp-config)#
network 192.0.4.0 255.255.255.252 secondary
```

Related Commands

Command	Description
default-router	Specifies the IP address of the default router for a DHCP client.
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.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP server and enters DHCP pool configuration mode.
override default-router	Configures a subnet-specific default router list for the DHCP pool secondary subnet.
show ip dhcp pool	Displays information about the DHCP address pools.

next-server

To configure the next server in the boot process of a Dynamic Host Configuration Protocol (DHCP) client, use the **next-server** command in DHCP pool configuration. To remove the boot server list, use the **no** form of this command.

> **next-server** *address* [*address2 ... address8*]

> **no next-server** *address*

Syntax Description

address	Specifies the IP address of the next server in the boot process, which is typically a Trivial File Transfer Protocol (TFTP) server. One IP address is required, but up to eight addresses can be specified in one command line.
address2 ...address8	(Optional) Specifies up to seven additional addresses in the command line.

Command Default

If the **next-server** command is not used to configure a boot server list, the DHCP Server uses inbound interface helper addresses as boot servers.

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.

Usage Guidelines

You can specify up to eight servers in the list. Servers are listed in order of preference (address1 is the most preferred server, address2 is the next most preferred server, and so on).

Command Examples The following example specifies 10.12.1.99 as the IP address of the next server in the boot process:

```
next-server 10.12.1.99
```

Related Commands

Command	Description
accounting (DHCP)	Specifies the name of the default boot image for a DHCP client.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP server and enters DHCP pool configuration mode.
ip helper-address	Forwards UDP broadcasts, including BOOTP, received on an interface.
option	Configures Cisco IOS DHCP server options.

option

To configure Dynamic Host Configuration Protocol (DHCP) server options, use the **option** command in DHCP pool configuration mode. To remove the options, use the **no** form of this command.

option *code* [**instance** *number*] {**ascii** *string* | **hex** {*string* | **none**} | **ip** *address*}

no option *code* [**instance** *number*]

Syntax Description

code	Specifies the DHCP option code. The range is from 0 to 254.
instance *number*	(Optional) Specifies an instance number. The range is from 0 to 255. The default is 0.
ascii *string*	Specifies a network virtual terminal (NVT) ASCII character string. ASCII character strings that contain white space must be delimited by quotation marks.
hex	Specifies dotted hexadecimal data.
string	Hexadecimal value. Each byte in hexadecimal character strings is two hexadecimal digits--each byte can be separated by a period, colon, or white space.
none	Specifies the zero length hexadecimal string.
ip *address*	Specifies the hostname or an IP address. More than one hostname or IP address can be specified with one CLI.

Command Default   The default instance number is 0.

Command Modes   DHCP pool configuration (dhcp-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.

Release	Modification
12.2SX	This command was 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.
12.4(24)T	This command was modified. The **none** keyword was added.

Usage Guidelines

DHCP provides a framework for passing configuration information to hosts on a TCP/IP network. Configuration parameters and other control information are carried in tagged data items that are stored in the options field of the DHCP message. The data items themselves are also called options. The current set of DHCP options are documented in RFC 2131, *Dynamic Host Configuration Protocol*.

Command Examples

The following example configures DHCP option 19, which specifies whether the client should configure its IP layer for packet forwarding. A value of 0 means disable IP forwarding; a value of 1 means enable IP forwarding. IP forwarding is enabled in the following example:

```
Router(config)# ip dhcp pool red
Router(dhcp-config)# option 19 hex 01
```

The following example configures DHCP option 72, which specifies the World Wide Web servers for DHCP clients. World Wide Web servers 172.16.3.252 and 172.16.3.253 are configured in the following example:

```
Router(config)# ip dhcp pool red
Router(dhcp-config)# option 72 ip 172.16.3.252 172.16.3.253
```

Related Commands

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

option hex

To enable the Cisco IOS relay agent to make forwarding decisions based on DHCP options inserted in the client-generated DHCP message, use the **option hex**command in DHCP class configuration mode. To disable this functionality, use the **no** form of this command.

option *code* **hex** *hex-pattern* **[*]** [**bit** *bit-mask-pattern*]

no option *code* **hex** *hex-pattern* **[*]** [**mask** *bit-mask-pattern*]

Syntax Description

code	Specifies the DHCP option code. Valid values are 60, 77, 124, and 125. All other values will be rejected with the appropriate error message.
hex-pattern	String of hexadecimal values. This string creates a pattern that is matched against the named DHCP class. The *hex-pattern* argument represents the data portion of the DHCP option format. See "Usage Guidelines" below for more information.
*	(Optional) Wildcard character.
mask *bit-mask-pattern*	(Optional) String of hexadecimal values. Specifies the bit mask to be applied to the *hex-pattern* argument.

Command Default

This command is disabled by default.

Command Modes

DHCP class configuration

Command History

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

Usage Guidelines

The **option hex** command enhances DHCP class support to allow the relay agent to relay client-generated messages to different DHCP servers based on the content of the following four options:

- Option 60: vendor class identifier
- Option 77: user class
- Option 124: vendor-identifying vendor class
- Option 125: vendor-identifying vendor-specific information

Each option identifies the type of client sending the DHCP message.

The table below describes the CLI variations possible for the **hex** *hex-pattern* keyword and argument combination.

Table 1: option hex CLI Variations

Hex string format variations	CLI example	Description
Full option value as raw hex	`option 60 hex 010203`	This option has 3 bytes of data with 0x010203 hex as the content.
Bit-masked hex string	`option 60 hex 010203 mask 0000FF`	This option is the same as above except that only the first 2 bytes of data should be 0x0102.
Wild-carded hex string	`option 60 hex 010203*`	This option should have at least 3 bytes, with the first 3 bytes matching the specified hex pattern.

You must know the hexadecimal value of each byte location in the options to be able to configure the **option hex** command. The format may vary from product to product. Contact the relay agent vendor for this information.

Command Examples   In the following example, client-generated DHCP messages containing option 60 and belonging to class VOIP will be forwarded to the DHCP server located at 10.30.5.1:

```
!
ip dhcp class VOIP
 option 60 hex 010203
!
! The following is the relay pool
ip dhcp pool red
 relay source 10.2.2.0 255.255.255.0
 class VOIP
  relay target 10.30.5.1
```

Related Commands

Command	Description
ip dhcp class	Defines a DHCP class and enters DHCP class configuration mode.

origin

To configure an address pool as an on-demand address pool (ODAP) or static mapping pool, use the **origin** command in DHCP pool configuration mode. To disable the ODAP, use the **no** form of this command.

origin {**dhcp** | **aaa** | **ipcp** | **file** *url*} [**subnet size initial** *size* [**autogrow** *size*]]

no origin {**dhcp** | **aaa** | **ipcp** | **file** *url*} [**subnet size initial** *size* [**autogrow** *size*]]

Syntax Description

dhcp	Specifies the Dynamic Host Configuration Protocol (DHCP) as the subnet allocation protocol.
aaa	Specifies authentication, authorization, and accounting (AAA) as the subnet allocation protocol.
ipcp	Specifies the IP Control Protocol (IPCP) as the subnet allocation protocol.
file *url*	Specifies the external database file that contains the static bindings assigned by the DHCP server. The *url* argument specifies the location of the external database file.
subnet size initial *size*	(Optional) Specifies the initial size of the first requested subnet. You can enter *size* as either the subnet mask (nnnn.nnnn.nnnn.nnnn) or prefix size (/nn). The valid values are /0 and /4 to /30.
autogrow *size*	(Optional) Specifies that the pool can grow incrementally. The *size* argument is the size of the requested subnets when the pool requests additional subnets (upon detection of high utilization). You can enter *size* as either the subnet mask (nnnn.nnnn.nnnn.nnnn) or prefix size (/nn). The valid values are /0 and /4 to /30.

Command Default   The default size value is /0.

Command Modes   DHCP pool configuration

Command History

Release	Modification
12.2(8)T	This command was introduced.
12.3(11)T	The **file** keyword was added.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

If you do not configure the pool as an autogrow pool, the pool will not request additional subnets if one subnet is already in the pool.

Use the **dhcp** keyword to obtain subnets from DHCP, the **aaa** keyword to obtain subnets from the AAA server, and the **ipcp** keyword to obtain subnets from IPCP negotiation. If you expect that the utilization of the pool may grow over time, use the **autogrow** *size* option.

If a pool has been configured with the **autogrow** *size* option, ensure that the source server is capable of providing more than one subnet to the same pool. Even though the Cisco IOS software specifies the requested subnet size, it can accept any offered subnet size from the source server.

Command Examples

The following example shows how to configure an address pool named green to use DHCP as the subnet allocation protocol with an initial subnet size of 24 and an autogrow subnet size of 24:

```
ip dhcp pool pool1
  vrf pool1
  origin dhcp subnet size initial /24 autogrow /24
  utilization mark high 80
  utilization mark low 20
```

The following example shows how to configure the location of the external text file:

```
ip dhcp pool abcpool
 origin file tftp://10.1.0.1/staticbindingfile
```

Related Commands

Command	Description
show ip dhcp pool	Displays information about the DHCP address pools.

override default-router

To define a default router list for the DHCP pool secondary subnet, use the **override default-router** command in DHCP pool secondary subnet configuration mode. To remove the default router list for this secondary subnet, use the **no** form of this command.

override default-router *address* [*address2 ... address8*]

no override default-router

Syntax Description

address	IP address of the default router for the DHCP pool secondary subnet, preferably on the same subnet as the DHCP pool secondary client subnet.
address2 ... address8	(Optional) IP addresses of up to seven additional default routers, delimited by a single space.
	Note The ellipses in the syntax description are used to indicate a range of values. Do not use ellipses when entering IP addresses.

Command Default

No default router list is defined for the DHCP pool secondary subnet.

Command Modes

DHCP pool secondary subnet configuration

Command History

Release	Modification
12.2(33)SRB	This command was introduced.
12.4(15)T	This command was integrated into Cisco IOS Release 12.4(15)T.

Usage Guidelines

When an IP address is assigned to the DHCP client from a secondary subnet for which no subnet-specific default router list is defined, the default router list (configured by using the **default-router** command in DHCP pool configuration mode) will be used.

The IP address of every router in the list should be on the same subnet as the client subnet. You can specify up to eight routers in the list. Routers are listed in order of preference (*address* is the most preferred router, *address2* is the next most preferred router, and so on).

To display the default router lists, use the **show running-config** command. If default router lists are configured for a DHCP pool, the commands used to configure those lists are displayed following the **ip dhcp pool** command that configures the DHCP pool.

Command Examples   The following example configures 10.1.1.1/29 as the subnetwork number and mask of the DHCP pool named pool1, adds the DHCP pool secondary subnet specified by the subnet number and mask 10.1.1.17/29, then configures a subnet-specific default router list for that subnet:

```
Router(config)# dhcp pool pool1

Router(config-dhcp)# network 10.1.1.1 255.255.255.248

Router(config-dhcp)# network 10.1.1.17 255.255.255.248 secondary

Router(config-dhcp-secondary-subnet)# override default-router 10.1.1.100 10.1.1.200
```

Related Commands

Command	Description
default-router	Specifies the default router list for a DHCP client.
network (DHCP)	Configures the subnet number and mask for a DHCP address pool primary or secondary subnet on a Cisco IOS DHCP server.

override utilization high

To configure the high utilization mark of the current secondary subnet size, use the **override utilization high** command in DHCP pool secondary subnet configuration mode. To remove the high utilization mark, use the **no** form of this command.

> **override utilization high** *percentage-number*
>
> **no override utilization high** *percentage-number*

Syntax Description

percentage-number	Percentage of the current subnet size. The range is from 1 to 100 percent.

Command Default

The default high utilization mark is 100 percent of the current subnet size.

Command Modes

DHCP pool secondary subnet configuration (config-dhcp-subnet-secondary)

Command History

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

Usage Guidelines

If you use the **utilization mark** {**high** | **low**} **log** command, a system message can be generated for a DHCP secondary subnet when the subnet utilization exceeds the configured high utilization threshold. A system message can also be generated when the subnet's utilization is detected to be below the configured low utilization threshold.

The **override utilization high** command overrides the value specified by the **utilization mark high** global configuration command.

Command Examples

The following example shows how to set the high utilization mark of the secondary subnet to 40 percent of the current subnet size:

```
Router(config)# ip dhcp pool pool2

Router(dhcp-config)# utilization mark high 80 log

Router(dhcp-config)# utilization mark low 70 log

Router(dhcp-config)# network 192.0.2.0 255.255.255.0

Router(dhcp-config)# network 192.0.4.0 255.255.255.252 secondary
```

override utilization high

```
Router(config-dhcp-subnet-secondary)# override utilization high 40

Router(config-dhcp-subnet-secondary)# override utilization low 30
```

Related Commands

Command	Descriptions
override utilization low	Configures the low utilization mark of the current subnet size.
utilization mark high	Configures the high utilization mark of the current address pool size.

override utilization low

To configure the low utilization mark of the current secondary subnet size, use the **override utilization low** command in DHCP pool secondary subnet configuration mode. To remove the low utilization mark, use the **no** form of this command.

>**override utilization low** *percentage-number*
>
>**no override utilization low** *percentage-number*

Syntax Description

percentage-number	Percentage of the current subnet size. The range is from 1 to 100.

Command Default

The default low utilization mark is 0 percent of the current subnet size.

Command Modes

DHCP pool secondary subnet configuration (config-dhcp-subnet-secondary)

Command History

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

Usage Guidelines

If you use the **utilization mark**{**high**| **low**} **log** command, a system message can be generated for a DHCP secondary subnet when the subnet utilization falls below the configured low utilization threshold. A system message can also be generated when the subnet's utilization exceeds the configured high utilization threshold.

The **override utilization low** command overrides the value specified by the **utilization mark low** global configuration command.

Command Examples

The following example shows how to set the low utilization mark of the secondary subnet to 30 percent of the current subnet size:

```
Router(config)# ip dhcp pool pool2

Router(dhcp-config)# utilization mark high 80 log

Router(dhcp-config)# utilization mark low 70 log

Router(dhcp-config)# network 192.0.2.0 255.255.255.0

Router(dhcp-config)# network 192.0.4.0 255.255.255.252 secondary
```

```
Router(config-dhcp-subnet-secondary)# override utilization high 40

Router(config-dhcp-subnet-secondary)# override utilization low 30
```

Related Commands

Command	Description
override utilization high	Configures the high utilization mark of the current subnet size.
utilization mark low	Configures the low utilization mark of the current address pool size.

priority (firewall)

To specify a group priority and failover threshold value in a redundancy group, use the **priority** command in redundancy application group configuration mode. To disable the priority value of a group, use the **no** form of this command.

priority *value* [**failover-threshold** *value*]

no priority *value* [**failover-threshold** *value*]

Syntax Description

value	The priority value. The range is from 1 to 255.
failover-threshold *value*	(Optional) Specifies the failover threshold value. The range is from 1 to 255.

Command Default   The default priority value is 100.

Command Modes   Redundancy application group configuration (config-red-app-grp)

Command History

Release	Modification
Cisco IOS XE Release 3.1S	This command was introduced.

Usage Guidelines   The priority of the redundancy group is used to determine a redundancy group's active or standby role on the configured node. The failover threshold is used to determine when a switchover must occur. After the priority is set under threshold, the active redundancy group gives up its role.

Command Examples   The following example shows how to configure the priority value and threshold value for the redundancy group named group1:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# application redundancy
Router(config-red-app)# group 1
Router(config-red-app-grp) priority 100 failover-threshold 90
```

Related Commands

Command	Description
application redundancy	Enters redundancy application configuration mode.
group(firewall)	Enters redundancy application group configuration mode.
name	Configures the redundancy group with a name.

protocol

To define a protocol instance in a redundancy group, use the **protocol**command in redundancy application configuration mode. To remove the protocol instance from the redundancy group, use the **no** form of this command.

> **protocol** *id*
>
> **no protocol** *id*

Syntax Description

id	Redundancy group protocol ID. The range is from 1 to 8.

Command Default

Protocol instance is not defined in a redundancy group.

Command Modes

Redundancy application configuration (config-red-app)

Command History

Release	Modification
Cisco IOS XE Release 3.1S	This command was introduced.

Usage Guidelines

Protocol configuration is used to configure timers and authentication method for a control interface. Thus, a protocol instance is attached to the control interface.

Command Examples

The following example shows how to configure a protocol named protocol 1 to a redundancy group:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# application redundancy
Router(config-red-app)# protocol 1
Router(config-red-app-prtcl)#
```

Related Commands

Command	Description
application redundancy	Enters redundancy application configuration mode.

protocol

Command	Description
authentication	Configures clear text authentication and MD5 authentication for a redundancy group.
group	Enters redundancy application group configuration mode.
name	Configures the redundancy group with a name.
preempt	Enables preemption on the redundancy group.
timers hellotime	Configures timers for hellotime and holdtime messages for a redundancy group.

rbe nasip

To specify the IP address of an interface on the 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 the specification, use the **no** form of this command.

> **rbe nasip** *interface-type number*
>
> **no rbe nasip**

Syntax Description

interface-type	Interface type. For more information, use the question mark (?) online help function.
number	Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.

Command Default

No IP address is specified.

Command Modes

Global configuration (config)

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.
15.1(1)S	This command was integrated into Cisco IOS Release 15.1(1)S.

Usage Guidelines

The **rbe nasip** command is used to configure support for the DHCP relay agent information option (option 82) for an ATM routed bridge encapsulation (RBE).

Support for the DHCP relay agent information option must be configured on the DHCP relay agent using the **ip dhcp relay information option** command for the **rbe nasip** command to be effective.

Command Examples   The following example shows how to enable support for DHCP option 82 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. ATM RBE is configured on ATM subinterface 4/0.1.

```
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 ATM 4/0
 no ip address
!
interface ATM 4/0.1 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 loopback 0
```

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.

redundancy

To enter redundancy configuration mode, use the **redundancy**command in global configuration mode. This command does not have a **no** form.

redundancy

Syntax Description   This command has no arguments or keywords.

Command Default   None

Command Modes   Global configuration (config)

Command History

Release	Modification
12.1(5)XV1	This command was introduced on the Cisco AS5800 universal access server.
12.2(4)XF	This command was introduced for the Cisco uBR10012 router.
12.2(11)T	This command was integrated into Cisco IOS Release 12.2(11)T.
12.0(9)SL	This command was integrated into Cisco IOS Release 12.0(9)SL.
12.0(16)ST	This command was implemented on the Cisco 7500 series Internet routers.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(14)SX	Support for this command was added for the Supervisor Engine 720.
12.2(18)S	This command was implemented on the Cisco 7500 series Internet routers.
12.2(20)S	This command was implemented on the Cisco 7304 router.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.

Release	Modification
12.3(7)T	This command was implemented on the Cisco 7500 series Internet routers.
12.2(8)MC2	This command was implemented on the MWR 1900 Mobile Wireless Edge Router (MWR).
12.3(11)T	This command was implemented on the MWR 1900 MWR.
12.3BC	This command was integrated into Cisco IOS Release 12.3BC.
12.0(22)S	This command was implemented on the Cisco 10000 series Internet routers.
12.2(18)SXE2	This command was integrated into Cisco IOS Release 12.2(18)SXE2.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.
12.2(33) SRE	This command was modified. The interchassis subconfiguration mode was added.

Usage Guidelines   Use the **redundancy** command to enter redundancy configuration mode, where you can define aspects of redundancy such as shelf redundancy for the Cisco AS5800 universal access server.

Cisco 10000 Series Router

Before configuring line card redundancy, install the Y-cables. Before deconfiguring redundancy, remove the Y-cables.

The following restrictions apply to line card redundancy on the Cisco 10000 series router:

- Port-level redundancy is not supported.
- Redundant cards must occupy the two subslots within the same physical line card slot.
- The line card that will act as the primary line card must be the first line card configured, and it must occupy subslot 1.

Cisco 7600 Series Router

From redundancy configuration mode, you can enter the main CPU submode to manually synchronize the configurations that are used by the two supervisor engines.

From the main CPU submode, you can use the **auto-sync** command to use all the redundancy commands that are applicable to the main CPU.

To select the type of redundancy mode, use the **mode** command.

Nonstop forwarding (NSF) with stateful switchover (SSO) redundancy mode supports IPv4. NSF with SSO redundancy mode does not support IPv6, Internetwork Packet Exchange (IPX), and Multiprotocol Label Switching (MPLS).

After you enter redundancy configuration mode, you can use the **interchassis** command to specify the redundancy group number and enter interchassis redundancy mode. In the interchassis redundancy configuration mode, you can do the following:

- Specify a backbone interface for the redundancy group using the **backbone** command.
- Exit from interchassis configuration mode using the **exit** command.
- Specify the IP address of the remote redundancy group member using the **member ip** command.
- Specify the multichassis LACP (mLACP) node ID, system MAC address, and system priority using the **node-id**, **system-mac**, and **system-priority** commands.
- Define the peer monitoring method using the **monitor** command.

Cisco uBR10012 Universal Broadband Router

After you enter redundancy configuration mode, you can use the **main-cpu** command to enter main-CPU redundancy configuration mode, which allows you to specify which files are synchronized between the active and standby Performance Routing Engine (PRE) modules.

Cisco RF Gateway 10

At the redundancy configuration mode, you can do the following:

- Set a command to its default mode using the **default** command.
- Exit from a redundancy configuration using the **exit** command.
- Enter the line card group redundancy configuration using the **linecard-group** command.
- Enter main-CPU redundancy configuration mode using the **main-cpu** command, which allows you to specify which files are synchronized between the active and standby Supervisor cards.
- Configure the redundancy mode for the chassis using the **mode** command.
- Enforce a redundancy policy using the **policy** command.

Command Examples

The following example shows how to enable redundancy mode:

```
Router(config)# redundancy
Router(config-red)#
```

The following example shows how to assign the configured router shelf to the redundancy pair designated as 25. This command must be issued on both router shelves in the redundant router-shelf pair:

```
Router(config)# redundancy
Router(config-red)# failover group-number 25
```

Examples

The following example shows how to configure two 4-port channelized T3 half eight line cards that are installed in line card slot 2 for one-to-one redundancy:

```
Router(config)# redundancy
Router(config-r)# linecard-group 1 y-cable
Router(config-r-lc)# member subslot 2/1 primary
Router(config-r-lc)# member subslot 2/0 secondary
```

Examples

The following example shows how to enter the main CPU submode:

```
Router(config)#
redundancy
Router(config-r)#
main-cpu
Router(config-r-mc)#
```

Examples

The following example shows how to enter redundancy configuration mode and display the commands that are available in that mode on the Cisco uBR10012 router:

```
Router# configure terminal

Router(config)# redundancy

Router(config-r)# ?

Redundancy configuration commands:
  associate  Associate redundant slots
  exit       Exit from redundancy configuration mode
  main-cpu   Enter main-cpu mode
  no         Negate a command or set its defaults
```

The following example shows how to enter redundancy configuration mode and displays its associated commands on the Cisco RFGW-10 chassis:

```
Router# configure terminal
Router(config)# redundancy
Router(config-r)#?
Redundancy configuration commands:
  default         Set a command to its defaults
  exit            Exit from redundancy configuration mode
  linecard-group  Enter linecard redundancy submode
  main-cpu        Enter main-cpu mode
  mode            redundancy mode for this chassis
  no              Negate a command or set its defaults
  policy          redundancy policy enforcement
```

The following example shows how to enter redundancy configuration mode and its associated commands in the interchassis mode:

```
Router# configure terminal
Router(config)# redundancy
```

Router(config-r)#?

```
Redundancy configuration commands:
  exit         Exit from redundancy configuration mode
  interchassis Enter interchassis mode
  no           Negate a command or set its defaults
Router(config-r)# interchassis group 100

R1(config-r-ic)# ?
Interchassis redundancy configuration commands:
  backbone  specify a backbone interface for the redundancy group
  exit      Exit from interchassis configuration mode
  member    specify a redundancy group member
  mlacp     mLACP interchassis redundancy group subcommands
  monitor   define the peer monitoring method
  no        Negate a command or set its defaults
```

Related Commands

Command	Description
associate slot	Logically associates slots for APS processor redundancy.
auto-sync	Enables automatic synchronization of the configuration files in NVRAM.
clear redundancy history	Clears the redundancy event history log.
linecard-group y-cable	Creates a line card group for one-to-one line card redundancy.
main-cpu	Enters main-CPU redundancy configuration mode for synchronization of the active and standby PRE modules or Supervisor cards.
member subslot	Configures the redundancy role of a line card.
mode (redundancy)	Configures the redundancy mode of operation.
redundancy force-switchover	Switches control of a router from the active RP to the standby RP.
show redundancy	Displays information about the current redundant configuration and recent changes in states or displays current or historical status and related information on planned or logged handovers.

redundancy group

To configure fault tolerance for the mobile router, use the **redundancy group** command in mobile router configuration mode. To disable this functionality, use the **no** form of this command.

redundancy group *name*

no redundancy group *name*

Syntax Description

name	Name of the mobile router group.

Command Default

No default behavior or values.

Command Modes

Mobile router configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.

Usage Guidelines

The **redundancy group** command provides f ault tolerance by selecting one mobile router in the redundancy group *name* argument to provide connectivity for the mobile networks. This mobile router is in the active state. The other mobile routers are passive and wait until the active mobile router fails before a new active mobile router is selected. Only the active mobile router registers and sets up proper routing for the mobile networks. The redundancy state is either active or passive.

Command Examples

The following example selects the mobile router in the sanjose group, to provide fault tolerance:

```
ip mobile router
 redundancy group sanjose
 address 10.1.1.10 255.255.255.0
 home-agent 10.1.1.20
 register lifetime 600
```

Related Commands

Command	Description
standby name	Configures the name of the standby group, which is associated with the mobile router.

relay agent information

To enter relay agent information option configuration mode, use the **relay agent information**command in DHCP class configuration mode. To disable this functionality, use the **no** form of this command.

relay agent information

no relay agent information

Syntax Description   This command has no arguments or keywords.

Command Default   No default behavior or values

Command Modes   DHCP class 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   If this command is omitted for Dynamic Host Configuration Protocol (DHCP) class-based address allocation, then the DHCP class matches to any relay agent information option, whether it is present or not.

Using the **no relay agent information** command removes all patterns in the DHCP class configured by the **relay-information hex** command.

Command Examples   The following example shows the relay information patterns configured for DHCP class 1.

```
ip dhcp class CLASS1
 relay agent information
  relay-information hex 01030a0b0c02050000000123
  relay-information hex 01030a0b0c02*
  relay-information hex 01030a0b0c02050000000000 bitmask 000000000000000000000000FF
```

```
ip dhcp class CLASS2
 relay agent information
```

Related Commands

Command	Description
relay-information hex	Specifies a hexadecimal string for the full relay agent information option.

relay destination

To configure an IP address for a relay destination to which packets are forwarded by a Dynamic Host Configuration Protocol (DHCP) relay agent functioning as a DHCP server, use the **relay destination** command in DHCP pool configuration mode. To disable the IP address, use the **no** form of this command.

relay destination [**vrf** *vrf-name* | **global**] *ip-address*

no relay destination [**vrf** *vrf-name* | **global**] *ip-address*

Syntax Description

vrf	(Optional) Virtual routing and forwarding (VRF) instance that is associated with the relay destination address. The *vrf-name* argument specifies the name of the VRF table.
global	(Optional) IP address selected from the global address space. If the pool does not have any VRF configuration, then the relay destination address defaults to the global address space.
ip-address	IPv4 address of the remote DHCP server to which the DHCP client packets are relayed.

Command Default

No destination IP address to which packets are forwarded is configured.

Command Modes

DHCP pool 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.

Usage Guidelines

The **relay destination** command serves the same function as the **relay target** command, except that the **relay target** command specifies the DHCP server to which packets should be forwarded only for the class under which it is configured, and the **relay destination** command specifies the DHCP server to which packets should be forwarded for the pool itself. The **relay target** command overrides the **relay destination** command in cases in which the configured class name has been specified by the service gateway (SG).

When using the **relay destination** command, the *ip-address* argument is assumed to be in the same VRF as the address pool under which the command was configured. If the relay destination IP address is in a

different VRF, or in the global address space, then the **vrf** *vrf-name* or **global** keywords need to be specified.

relay source

To configure an IP address for a relay source from which packets are forwarded by a Dynamic Host Configuration Protocol (DHCP) server, use the **relay source** command in DHCP-pool configuration mode. To disable the IP address, use the **no** form of this command.

relay source *ip-address subnet-mask*

no relay source *ip-address subnet-mask*

Syntax Description

ip-address	IPv4 address of DHCP server from which the DHCP client packets are relayed.
subnet-mask	Subnet mask that matches the subnet of the incoming interface of the DHCP client packet.

Command Default

No IP address from which IP packets are forwarded is configured.

Command Modes

DHCP pool 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.

Command Examples

The following example shows how to configure a source IP address from which DHCP client packets are relayed:

```
ip dhcp pool abc1
 relay source 10.0.0.0 255.255.0.0
 relay destination 10.5.1.1
```

Related Commands

Command	Description
relay destination	Configures an IP address for a relay destination to which packets are forwarded by a DHCP server.

Command	Description
relay target	Configures an IP address for a relay target to which packets are forward by a DHCP server.

relay target

To configure an IP address for a relay target to which packets are forwarded by a Dynamic Host Configuration Protocol (DHCP) server, use the **relay target**command in DHCP pool class configuration mode. To disable the IP address, use the **no** form of this command.

> **relay target** [**vrf** *vrf-name* | **global**] *ip-address*
>
> **no relay target** [**vrf** *vrf-name* | **global**] *ip-address*

Syntax Description

vrf	(Optional) Configured virtual routing and forwarding (VRF) that is associated with the relay destination address. The *vrf-name* argument specifies the name of the VRF table.
	Note If the **vrf** keyword is not specified, the target address is assumed to be in the same address space as the DHCP pool. If the **vrf** keyword is specified, the same VRF is assumed to apply here. However, if the target IP address is actually in the global address space, the **global** keyword should be specified.
global	(Optional) IP address selected from the global address space. If the pool does not have any VRF configuration, then the relay destination address defaults to the global address space.
ip-address	IPv4 address of the remote DHCP server to which the DHCP client packets are relayed.

Command Default   No target IP address is configured.

Command Modes   DHCP pool class 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.

Usage Guidelines   The **relay target** command serves the same function as the **relay destination** command, except that the **relay target** command specifies the DHCP server to which packets should be forwarded only for the class under which it is configured, and the **relay destination** command specifies the DHCP server to which packets should be forwarded for the pool itself. The **relay target** command overrides the **relay destination** command in cases in which the configured class name has been specified by the SG.

Command Examples   The following example shows how to configure a relay target if a service gateway (SG)-supplied class name is used to select a DHCP server to which packets are relayed:

```
ip dhcp pool abc1
 relay source 10.0.0. 255.255.0.0.
 relay destination 10.5.1.1
 class classname1
  relay target 10.1.1.1
 class classname2
  relay target 10.2.2.2
 class classname3
```

In the above example, classname1 relays the DHCP DISCOVER packet to the server at 10.1.1.1, while classname2 relays the DHCP DISCOVER packet to the server at 10.2.2.2.

If the SG returned classname3, then the default pool at 10.5.1.1 is used. If the SG returns any other class name other than classname1, classname2, or classname3, then no relay action is taken.

The relay target configuration with respect to any configured DHCP pool works in the exact same way as a relay destination configuration works.

Related Commands

Command	Description
relay destination	Configures an IP address for a relay destination to which packets are forwarded by a DHCP server.
relay source	Configures an IP address for a relay source from which packets are forward by a DHCP server.

relay-information hex

To specify a hexadecimal string for the full relay agent information option, use the **relay-information hex** command in relay agent information option configuration mode. To remove the configuration, use the **no** form of this command.

relay-information hex *pattern* [*] [**bitmask** *mask*]

no relay-information hex *pattern* [*] [**bitmask** *mask*]

Syntax Description

pattern	String of hexadecimal values. This string creates a pattern that is matched against the named DHCP class.
*	(Optional) Wildcard character.
bitmask *mask*	(Optional) Hexadecimal bitmask.

Command Default   No default behavior or values

Command Modes   Relay agent information option 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   The **relay-information hex** command sets a pattern that is used to match against defined DHCP classes. You can configure multiple **relay-information hex** commands for a DHCP class. This is useful to specify a set of relay information options that can not be summarized with a wildcard or a bitmask.

The pattern itself, excluding the wildcard, must contain a whole number of bytes (a byte is two hexadecimal numbers). For example, 010203 is 3 bytes (accepted) and 01020 is 2.5 bytes (not accepted).

If you omit this command, no pattern is configured and it is considered a match to any relay agent information value, but the relay information option must be present in the DHCP packet.

You must know the hexadecimal value of each byte location in option 82 to be able to configure the **relay-information hex** command. The option 82 format may vary from product to product. Contact the relay agent vendor for this information.

Command Examples The following example shows the configured relay agent information patterns. Note that CLASS 2 has no pattern configured and will "match to any" class.

```
ip dhcp class CLASS1
 relay agent information
  relay-information hex 01030a0b0c02050000000123
  relay-information hex 01030a0b0c02*
  relay-information hex 01030a0b0c02050000000000 bitmask 000000000000000000000000FF
ip dhcp class CLASS2
 relay agent information
```

release dhcp

To perform an immediate release of a Dynamic Host Configuration Protocol (DHCP) lease for an interface, use the **release dhcp** command in user EXEC or privileged EXEC mode.

release dhcp *interface-type interface-number*

Syntax Description

interface-type	Interface type. For more information, use the question mark (?) online help function.
interface-number	Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.

Command Modes

User EXEC Privileged EXEC

Command History

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

Usage Guidelines

The **release dhcp** command immediately releases the DHCP lease on the interface specified by the *interface-type* and *interface-number* arguments. If the router interface was not assigned a DHCP IP address by the DHCP server, the **release dhcp** command fails and displays the following error message:

```
Interface does not have a DHCP originated address
```

This command does not have a **no** form.

Command Examples

The following example shows how to release a DHCP lease for an interface.

```
release dhcp ethernet 3/1
```

Related Commands

Command	Description
ip address dhcp	Specifies that the Ethernet interface acquires an IP address through DHCP.
lease	Configures the duration of the lease for an IP address that is assigned from a Cisco IOS DHCP server to a DHCP client.
renew dhcp	Forces the renewal of the DHCP lease for the specified interface.
show dhcp lease	Displays the DHCP addresses leased from a server.
show interface	Displays statistics for all interfaces configured on the router or access server.
show ip dhcp binding	Displays address bindings on the Cisco IOS DHCP server.
show ip interface	Displays a summary of an interface's IP information and status.
show running-config	Displays the contents of the currently running configuration file or the configuration for a specific interface.
show startup-config	Displays the contents of the configuration file that will be used at the next system startup.

remote command

To execute a Cisco 7600 series router command directly on the switch console or a specified module without having to log into the Cisco 7600 series router first, use the **remote command** command in privileged EXEC mode.

remote command {**module** *num* | **standby-rp** | **switch**} *command*

Syntax Description

module *num*	Specifies the module to access; see the "Usage Guidelines" section for valid values.
standby-rp	Specifies the standby route processor.
switch	Specifies the active switch processor.
command	Command to be executed.

Command Default

This command has no default settings.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(18)SXD	The **standby-rp** keyword was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **module** *num* keyword and argument designate the module number. Valid values depend on the chassis that is used. For example, if you have a 13-slot chassis, valid values are from 1 to 13. The **module** *num* keyword and argument are supported on DFC-equipped modules and the standby supervisor engine only.

When you execute the **remote command switch** command, the prompt changes to Switch-sp#.

This command is supported on DFC-equipped modules and the supervisor engine only.

This command does not support command completion, but you can use shortened forms of the command (for example, entering **sh** for **show**).

Command Examples   This example shows how to execute the **show calendar** command from the standby route processor:

```
Router#
remote command standby-rp show calendar
Switch-sp#
09:52:50 UTC Mon Nov 12 2001
Router#
```

Related Commands

Command	Description
remote login	Accesses the Cisco 7600 series router console or a specific module.

remote login

To access the Cisco 7600 router console or a specific module, use the **remote login** command in privileged EXEC mode.

remote login {**module** *num* | **standby-rp** | **switch**}

Syntax Description

module *num*	Specifies the module to access; see the "Usage Guidelines" section for valid values.
standby-rp	Specifies the standby route processor.
switch	Specifies the active switch processor.

Command Default   This command has no default settings.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.2(140SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(18)SXD	This command was changed to include the **standby-rp** keyword.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

⚠

Caution   When you enter the **attach** or **remote login** command to access another console from your switch, if you enter global or interface configuration mode commands, the switch might reset.

The **module** *num* keyword and argument designate the module number. Valid values depend on the chassis that is used. For example, if you have a 13-slot chassis, valid values are from 1 to 13. The **module** *num* keyword and argument are supported on DFC-equipped modules and the standby supervisor engine only.

When you execute the **remote login module** *num* command, the prompt changes to Router-dfcx# or Switch-sp#, depending on the type of module to which you are connecting.

When you execute the **remote login standby-rp** command, the prompt changes to Router-sdby#.

When you execute the **remote login switch** command, the prompt changes to Switch-sp#.

The **remote login module** *num* command is identical to the **attach** command.

There are two ways to end the session:

- You can enter the **exit** command as follows:

```
Switch-sp# exit
[Connection to Switch closed by foreign host]
Router#
```

- You can press **Ctrl-C** three times as follows:

```
Switch-sp# ^C
Switch-sp# ^C
Switch-sp# ^C
Terminate remote login session? [confirm] y
[Connection to Switch closed by local host]
Router#
```

Command Examples   This example shows how to perform a remote login to a specific module:

```
Router# remote login module 1
Trying Switch ...
Entering CONSOLE for Switch
Type "^C^C^C" to end this session
Switch-sp#
```

This example shows how to perform a remote login to the Cisco 7600 series router processor:

```
Router# remote login switch
Trying Switch ...
Entering CONSOLE for Switch
Type "^C^C^C" to end this session
Switch-sp#
```

This example shows how to perform a remote login to the standby route processor:

```
Router# remote login standby-rp
Trying Switch ...
Entering CONSOLE for Switch
Type "^C^C^C" to end this session
Router-sdby#
```

Related Commands

Command	Description
attach	Connects to a specific module from a remote location.

remote-ip (IPC transport-SCTP remote)

To define at least one IP address of the redundant peer that is used to communicate with the local device, use the **remote-ip**command in IPC transport-SCTP remote configuration mode. To remove one or all IP addresses from your configuration, use the **no** form of this command.

remote-ip *peer-real-ip-address* [*peer-real-ip-address2*]

no remote-ip *peer-real-ip-address* [*peer-real-ip-address2*]

Syntax Description

peer-real-ip-address	IP address of the remote peer.
	The remote IP addresses must match the local IP addresses on the peer router. There can be either one or two IP addresses, which must be in the global Virtual Private Network (VPN) routing and forwarding (VRF). A virtual IP (VIP) address cannot be used.
peer-real-ip-address2	(Optional) IP address of the remote peer.

Command Default No IP addresses are defined.

Command Modes IPC transport-SCTP remote configuration

Command History

Release	Modification
12.3(8)T	This command was introduced.

Usage Guidelines Use the **remote-ip** command to help associate Stream Control Transmission Protocol (SCTP) as the transport protocol between the local and remote peer.

This command is part of a suite of commands used to configure the Stateful Switch Over (SSO) protocol. SSO is necessary for IP Security (IPSec) and Internet Key Exchange (IKE) to learn about the redundancy state of the network and to synchronize their internal application state with their redundant peers.

Command Examples The following example shows how to enable SSO:

```
redundancy inter-device
 scheme standby HA-in
 !
```

```
ipc zone default
 association 1
  no shutdown
  protocol sctp
   local-port 5000
     local-ip 10.0.0.1
    remote-port 5000
     remote-ip 10.0.0.2
```

Related Commands

Command	Description
local-ip	Defines at least one local IP address that is used to communicate with the local peer.
remote-port	Defines the remote SCTP that is used to communicate with the redundant peer.

remote-port

To define the remote Stream Control Transmission Protocol (SCTP) port that is used to communicate with the redundant peer, use the **remote-port** command in SCTP protocol configuration mode.

remote-port *remote-port-number*

Syntax Description

remote-port-number	Remote port number, which should be the same as the local port number on the peer router (which is specified via the **local-port** command).

Command Default   A remote SCTP port is not defined.

Command Modes   SCTP protocol configuration

Command History

Release	Modification
12.3(8)T	This command was introduced.

Usage Guidelines   The **remote-port** command enters IPC transport-SCTP remote configuration mode, which allows you to specify at least one remote IP address (via the **remote-ip** command) that is used to communicate with the redundant peer.

Command Examples   The following example shows how to enable Stateful Switchover (SSO):

```
redundancy inter-device
 scheme standby HA-in
!
ipc zone default
 association 1
  no shutdown
  protocol sctp
   local-port 5000
    local-ip 10.0.0.1
   remote-port 5000
    remote-ip 10.0.0.2
```

Related Commands

Command	Description
local-port	Defines the local SCTP port that is used to communicate with the redundant peer.
remote-ip	Defines at least one IP address of the redundant peer that is used to communicate with the local device.

remote-span

To configure a virtual local area network (VLAN) as a remote switched port analyzer (RSPAN) VLAN, use the **remote-span** command in config-VLAN mode. To remove the RSPAN designation, use the **no** form of this command.

> **remote-span**
>
> **no remote-span**

Syntax Description   This command has no arguments or keywords.

Command Default   This command has no default settings.

Command Modes   Config-VLAN mode

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines   This command is not supported in the VLAN database mode.

You can enter the **show vlan remote-span** command to display the RSPAN VLANs in the Cisco 7600 series router.

Command Examples   This example shows how to configure a VLAN as an RSPAN VLAN:

```
Router(config-vlan)# remote-span
Router(config-vlan)
```

This example shows how to remove the RSPAN designation:

```
Router(config-vlan)# no remote-span
Router(config-vlan)
```

Related Commands

Connect	Description
show vlan remote-span	Displays a list of RSPAN VLANs.

renew deny unknown

To configure the renewal policy for unknown DHCP clients, use the **renew deny unknown**command in DHCP pool configuration mode. To disable the renewal policy, use the no form of this command.

renew deny unknown

no renew deny unknown

Syntax Description

This command has no arguments or keywords.

Command Default

The DHCP server ignores a client request for an IP address that is not leased to the client.

Command Modes

DHCP pool configuration (dhcp-config)

Command History

Release	Modification
12.4(15)T	This command was introduced.
12.2 SXH	This command was integrated into Cisco IOS Release 12.2SXH

Usage Guidelines

In some usage scenarios, such as a wireless hotspot, where both DHCP and secure ARP are configured, a connected client device might go to sleep or suspend for a period of time. If the suspended time period is greater than the secure ARP timeout (default of 91 seconds), but less than the DHCP lease time, the client can awake with a valid lease, but the secure ARP timeout has caused the lease binding to be removed because the client has been inactive. When the client awakes, the client still has a lease on the client side but is blocked from sending traffic. The client will try to renew its IP address but the DHCP server will ignore the request because the DHCP server has no lease for the client. The client must wait for the lease to expire before being able to recover and send traffic again.

To remedy this situation, use the **renew deny unknown** command in DHCP pool configuration mode. This command forces the DHCP server to reject renewal requests from clients if the requested address is present at the server but is not leased. The DHCP server sends a DHCPNAK denial message to the client, which forces the client back to its initial state. The client can then negotiate for a new lease immediately, instead of waiting for its old lease to expire.

Command Examples   The following example shows how to secure ARP table entries to DHCP leases. The **renew deny unknown** command allows the DHCP server to renew the lease of a DHCP client whose lease has been cleared because of a secure ARP timeout.

```
Router# configure
 terminal

Router(config)# ip dhcp pool red
Router(dhcp-config)# update arp
Router(dhcp-config)# renew deny unknown
```

Related Commands

Command	Description
update arp	Secures dynamic ARP entries in the ARP table to their corresponding DHCP bindings.

renew dhcp

To perform an immediate renewal of a Dynamic Host Configuration Protocol (DHCP) lease for an interface, use the **renew dhcp** command in user EXEC or privileged EXEC mode.

renew dhcp *interface-type interface-number*

Syntax Description

interface-type	Interface type. For more information, use the question mark (?) online help function.
interface-number	Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.

Command Modes   User EXEC Privileged EXEC

Command History

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

Usage Guidelines   The **renew dhcp** command immediately renews the DHCP lease for the interface specified by the *interface-type* and *interface-number* arguments. If the router interface was not assigned an IP address by the DHCP server, the **renew dhcp** command fails and displays the following error message:

```
Interface does not have a DHCP originated address
```

This command does not have a **no** form.

Command Examples   The following example shows how to renew a DHCP lease for an interface:

```
renew dhcp Ethernet 3/1
```

Related Commands

Command	Description
ip address dhcp	Specifies that the Ethernet interface acquires an IP address through DHCP.
lease	Configures the duration of the lease for an IP address that is assigned from a Cisco IOS DHCP server to a DHCP client.
release dhcp	Releases the DHCP lease on the specified interface.
show dhcp lease	Displays the DHCP addresses leased from a server.
show interface	Displays statistics for all interfaces configured on the router or access server.
show ip dhcp binding	Displays address bindings on the Cisco IOS DHCP server.
show ip interface	Displays a summary of an interface's IP information and status.
show running-config	Displays the contents of the currently running configuration file or the configuration for a specific interface.
show startup-config	Displays the contents of the configuration file that will be used at the next system startup.