



DHCP Commands

Use the commands in this chapter to configure and monitor Dynamic Host Configuration Protocol (DHCP). For DHCP configuration information and examples, refer to the “Configuring DHCP” chapter of the *Cisco IOS IP Configuration Guide*.

bootfile

To specify the name of the default boot image for a Dynamic Host Configuration Protocol (DHCP) client, use the **bootfile** DHCP pool configuration command. To delete the boot image name, use the **no** form of this command.

bootfile *filename*

no bootfile

Syntax Description

<i>filename</i>	Specifies the name of the file that is used as a boot image.
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Defaults

No default behavior or values.

Command Modes

DHCP pool configuration

Command History

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

Examples

The following example specifies xllboot as the name of the boot file:

```
bootfile xllboot
```

Related Commands

Command	Description
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.
next-server	Configures the next server in the boot process of a DHCP client.

clear ip dhcp binding

To delete an automatic address binding from the Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server database, use the **clear ip dhcp binding** privileged EXEC command.

```
clear ip dhcp binding {address | * }
```

Syntax Description

<i>address</i>	The address of the binding you want to clear.
*	Clears all automatic bindings.

Command Modes

Privileged EXEC

Command History

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

Usage Guidelines

Typically, the address denotes the IP address of the client. If the asterisk (*) character is used as the address parameter, DHCP clears all automatic bindings.

Use the **no ip dhcp pool** global configuration command to delete a manual binding.

Examples

The following example deletes the address binding 10.12.1.99 from a DHCP server database:

```
Router# clear ip dhcp binding 10.12.1.99
```

Related Commands

Command	Description
show ip dhcp binding	Displays address bindings on the Cisco IOS DHCP Server.

clear ip dhcp conflict

To clear an address conflict from the Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server database, use the **clear ip dhcp conflict** privileged EXEC command.

```
clear ip dhcp conflict {address | *}
```

Syntax Description		
	<i>address</i>	The IP address of the host that contains the conflicting address you want to clear.
	*	Clears all address conflicts.

Command Modes	
	Privileged EXEC

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

Usage Guidelines	
	The server detects conflicts using a ping session. The client detects conflicts using gratuitous Address Resolution Protocol (ARP). If the asterisk (*) character is used as the address parameter, DHCP clears all conflicts.

Examples	
	The following example shows an address conflict of 10.12.1.99 being deleted from the DHCP server database:

```
Router# clear ip dhcp conflict 10.12.1.99
```

Related Commands	Command	Description
	show ip dhcp conflict	Displays address conflicts found by a Cisco IOS DHCP Server when addresses are offered to the client.

clear ip dhcp server statistics

To reset all Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server counters, use the **clear ip dhcp server statistics** privileged EXEC command.

clear ip dhcp server statistics

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

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

Usage Guidelines The **show ip dhcp server statistics** command displays DHCP counters. All counters are cumulative. The counters will be initialized, or set to zero, with the **clear ip dhcp server statistics** command.

Examples The following example resets all DHCP counters to zero:

```
Router# clear ip dhcp server statistics
```

Related Commands	Command	Description
	show ip dhcp server statistics	Displays Cisco IOS DHCP Server statistics.

clear ip route dhcp

To remove routes from the routing table added by the Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server and Relay Agent for the DHCP clients on unnumbered interfaces, use the **clear ip route dhcp** command in EXEC configuration mode.

```
clear ip route [vrf vrf-name] dhcp [ip-address]
```

Syntax Description

vrf	(Optional) VPN routing and forwarding instance.
<i>vrf-name</i>	(Optional) Name of the VRF.
<i>ip-address</i>	(Optional) Address about which routing information should be removed.

Defaults

No default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
12.2	This command was introduced.

Usage Guidelines

To remove information about global routes in the routing table, use the **clear ip route dhcp** command. To remove routes in the VRF routing table, use the **clear ip route vrf *vrf-name* dhcp** command.

Examples

The following example removes a route to network 55.5.5.217 from the routing table:

```
Router# clear ip route dhcp 55.5.5.217
```

Related Commands

Command	Description
show ip route dhcp	Displays the routes added to the routing table by the Cisco IOS DHCP Server and Relay Agent.

client-identifier

To specify the unique identifier (in dotted hexadecimal notation) for a Dynamic Host Configuration Protocol (DHCP) client, use the **client-identifier** DHCP pool configuration command. It is valid for manual bindings only. To delete the client identifier, use the **no** form of this command.

client-identifier *unique-identifier*

no client-identifier

Syntax Description

<i>unique-identifier</i>	The distinct identification of the client in dotted-hexadecimal notation, for example, 01b7.0813.8811.66.
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Command Modes

DHCP pool configuration

Command History

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

Usage Guidelines

DHCP clients require client identifiers instead of hardware addresses. The client identifier is formed by concatenating the media type and the MAC address. For example, the Microsoft client identifier for Ethernet address b708.1388.f166 is 01b7.0813.88f1.66, where 01 represents the Ethernet media type. For a list of media type codes, refer to the “Address Resolution Protocol Parameters” section of RFC 1700, *Assigned Numbers*.

You can determine the client identifier by using the **debug ip dhcp server packet** command.

Examples

The following example specifies the client identifier for MAC address b7.0813.8811.66 in dotted hexadecimal notation:

```
client-identifier 01b7.0813.8811.66
```

Related Commands

Command	Description
hardware-address	Specifies the hardware address of a BOOTP client.
host	Specifies the IP address and network mask for a manual binding to a DHCP client.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.

client-name

To specify the name of a DHCP client, use the **client-name** DHCP pool configuration command. The client name should not include the domain name. To remove the client name, use the **no** form of this command.

client-name *name*

no client-name

Syntax Description

<i>name</i>	Specifies the name of the client, using any standard ASCII character. The client name should not include the domain name. For example, the name mars should not be specified as mars.cisco.com.
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Command Modes

DHCP pool configuration

Command History

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

Examples

The following example specifies a string client1 that will be the name of the client:

```
client-name client1
```

Related Commands

Command	Description
host	Specifies the IP address and network mask for a manual binding to a DHCP client.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.

default-router

To specify the default router list for a Dynamic Host Configuration Protocol (DHCP) client, use the **default-router** DHCP pool configuration command. To remove the default router list, use the **no** form of this command.

```
default-router address [address2...address8]
```

```
no default-router
```

Syntax Description

<i>address</i>	Specifies the IP address of a router. One IP address is required, although you can specify up to eight addresses in one command line.
<i>address2...address8</i>	(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.

Usage Guidelines

The IP address of the router 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 (address1 is the most preferred router, address2 is the next most preferred router, and so on).

Examples

The following example specifies 10.12.1.99 as the IP address of the default router:

```
default-router 10.12.1.99
```

Related Commands

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

dns-server

To specify the Domain Name System (DNS) IP servers available to a Dynamic Host Configuration Protocol (DHCP) client, use the **dns-server** DHCP pool configuration command. To remove the DNS server list, use the **no** form of this command.

dns-server *address* [*address2...address8*]

no dns-server

Syntax Description

<i>address</i>	Specifies the IP address of a DNS server. One IP address is required, although you can specify up to eight addresses in one command line.
<i>address2...address8</i>	(Optional) Specifies up to eight addresses in the command line.

Defaults

If DNS IP servers are not configured for a DHCP client, the client cannot correlate host names to IP addresses.

Command Modes

DHCP pool configuration

Command History

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

Usage Guidelines

Servers are listed in order of preference (address1 is the most preferred server, address2 is the next most preferred server, and so on).

Examples

The following example specifies 10.12.1.99 as the IP address of the domain name server of the client:

```
dns-server 10.12.1.99
```

Related Commands

Command	Description
domain-name	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.

domain-name

To specify the domain name for a Dynamic Host Configuration Protocol (DHCP) client, use the **domain-name** DHCP pool configuration command. To remove the domain name, use the **no** form of this command.

domain-name *domain*

no domain-name

Syntax Description

<i>domain</i>	Specifies the domain name string of the client.
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Command Modes

DHCP pool configuration

Command History

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

Examples

The following example specifies cisco.com as the domain name of the client:

```
domain-name cisco.com
```

Related Commands

Command	Description
dns-server	Specifies the DNS IP servers available to a DHCP client.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.

hardware-address

To specify the hardware address of a BOOTP client, use the **hardware-address** DHCP pool configuration command. It is valid for manual bindings only. To remove the hardware address, use the **no** form of this command.

hardware-address *hardware-address type*

no hardware-address

Syntax Description

<i>hardware-address</i>	Specifies the MAC address of the hardware platform of the client.
<i>type</i>	Indicates the protocol of the hardware platform. Strings and values are acceptable. The string options are: <ul style="list-style-type: none"> • ethernet • ieee802 The value options are: <ul style="list-style-type: none"> • 1 10Mb Ethernet • 6 IEEE 802 If no type is specified, the default protocol is Ethernet.

Defaults

Ethernet is the default type if none is specified.

Command Modes

DHCP pool configuration

Command History

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

Examples

The following example specifies b708.1388.f166 as the MAC address of the client:

```
hardware-address b708.1388.f166
```

Related Commands

Command	Description
client-identifier	Specifies the unique identifier of a DHCP client in dotted hexadecimal notation.
host	Specifies the IP address and network mask for a manual binding to a DHCP client.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.

host

To specify the IP address and network mask for a manual binding to a Dynamic Host Configuration Protocol (DHCP) client, use the **host** DHCP pool configuration command. To remove the IP address of the client, use the **no** form of this command.

```
host address [mask | prefix-length]
```

```
no host
```

Syntax Description

<i>address</i>	Specifies the IP address of the client.
<i>mask</i>	(Optional) Specifies the network mask of the client.
<i>prefix-length</i>	(Optional) Specifies 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 (/).

Command Modes

DHCP pool configuration

Command History

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

Usage Guidelines

If the mask and prefix length are unspecified, DHCP examines its address pools. If no mask is found in the pool database, the Class A, B, or C natural mask is used. This command is valid for manual bindings only.

There is no limit on the number of manual bindings but you can only configure one manual binding per host pool.

Examples

The following example specifies 10.12.1.99 as the IP address of the client and 255.255.248.0 as the subnet mask:

```
host 10.12.1.99 255.255.248.0
```

Related Commands

Command	Description
client-identifier	Specifies the unique identifier of a Microsoft DHCP client in dotted hexadecimal notation.
hardware-address	Specifies the hardware address of a DHCP client.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.
network (DHCP)	Configures the subnet number and mask for a DHCP address pool on a Cisco IOS DHCP Server.

import all

To import Dynamic Host Configuration Protocol (DHCP) option parameters into the DHCP Server database, use the **import all** DHCP pool configuration command. To disable this feature, use the **no** form of this command.

import all

no import all

Syntax Description This command has no arguments or keywords.

Defaults Disabled

Command Modes DHCP pool configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

When the **no import all** command is used, the Cisco IOS DHCP Server deletes all “imported” option parameters that were added to the specified pool in the server database. Manually configured DHCP option parameters override imported DHCP option parameters.

Imported option parameters are not part of the router configuration and are not saved in NVRAM.

Examples

The following example allows the importing of all DHCP options for a pool named pool1:

```
ip dhcp pool pool1
 network 172.16.0.0 /16
 import all
```

Related Commands

Command	Description
ip dhcp database	Configures a Cisco IOS DHCP Server to save automatic bindings on a remote host called a database agent.
show ip dhcp import	Displays the option parameters that were imported into the DHCP Server database.

ip address dhcp

To acquire an IP address on an Ethernet interface from the Dynamic Host Configuration Protocol (DHCP), use the **ip address dhcp** interface configuration command. To deconfigure any address that was acquired, use the **no** form of this command.

```
ip address dhcp [client-id interface-name] [hostname host-name]
```

```
no ip address dhcp [client-id interface-name] [hostname host-name]
```

Syntax Description

client-id	(Optional) Specifies the client identifier. By default, the client identifier is an ASCII value. The client-id <i>interface-name</i> option sets the client identifier to the hexadecimal MAC address of the named interface.
<i>interface-name</i>	(Optional) The interface name from which the MAC address is taken.
hostname	(Optional) Specifies the host name.
<i>host-name</i>	(Optional) Name of the host to be placed in the DHCP option 12 field. This name need not be the same as the host name entered in global configuration mode.

Defaults

The host name is the globally configured host name of the router.

The client identifier is an ASCII value.

Command Modes

Interface configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.
12.1(3)T	The following keyword and argument were added: <ul style="list-style-type: none"> client-id <i>interface-name</i>
12.2(3)	The following keyword and argument were added: <ul style="list-style-type: none"> hostname <i>host-name</i> <p>The behavior of the client-id <i>interface-name</i> option changed. See the “Usage Guidelines” section for details.</p>

Usage Guidelines

The **ip address dhcp** command allows any interface to dynamically learn its IP address by using the DHCP protocol. It is especially useful on Ethernet interfaces that dynamically connect to an Internet Service Provider (ISP). Once assigned a dynamic address, the interface can be used with the Port Address Translation (PAT) of Cisco IOS Network Address Translation (NAT) to provide Internet access to a privately addressed network attached to the router.

Some ISPs require that the DHCPDISCOVER message have a specific host name and client identifier that is the MAC address of the interface. The most typical usage of the **ip address dhcp client-id interface-name hostname host-name** command is when *interface-name* is the Ethernet interface where the command is configured and *host-name* is the host name provided by the ISP.

A client identifier (DHCP option 61) can be a hexadecimal or an ASCII value. By default, the client identifier is an ASCII value. The **client-id interface** option overrides the default and forces the use of the hexadecimal MAC address of the named interface.



Note Between 12.1(3)T and 12.2(3), the **client-id** optional keyword allowed the change of the fixed ASCII value for the client identifier. After 12.2(3), the optional **client-id** keyword forced the use of the hexadecimal MAC address of the named interface as the client identifier.

If a Cisco router is configured to obtain its IP address from a DHCP server, it sends a DHCPDISCOVER message to provide information about itself to the DHCP server on the network.

If you use the **ip address dhcp** command with or without any of the optional keywords, the DHCP option 12 field (host name option) is included in the DISCOVER message. By default, the host name specified in option 12 will be the globally configured host name of the router. However, you can use the **ip address dhcp hostname host-name** command to place a different name in the DHCP option 12 field than the globally configured host name of the router.

The **no ip address dhcp** command deconfigures any IP address that was acquired, thus sending a DHCPRELEASE message.

You might need to experiment with different configurations to determine the one required by your DHCP server. [Table 12](#) shows the possible configuration methods and the information placed in the DISCOVER message for each method.

Table 12 Configuration Method and Resulting Contents of the DISCOVER Message

Configuration Method	Contents of DISCOVER Messages
ip address dhcp	The DISCOVER message contains “cisco- <i>mac-address</i> -Eth1” in the client ID field. The <i>mac-address</i> is the media access control (MAC) address of the Ethernet 1 interface and contains the default host name of the router in the option 12 field.
ip address dhcp hostname host-name	The DISCOVER message contains “cisco- <i>mac-address</i> -Eth1” in the client ID field. The <i>mac-address</i> is the MAC address of the Ethernet 1 interface, and contains <i>host-name</i> in the option 12 field.
ip address dhcp client-id ethernet 1	The DISCOVER message contains the MAC address of the Ethernet 1 interface in the client ID field and contains the default host name of the router in the option 12 field.
ip address dhcp client-id ethernet 1 hostname host-name	The DISCOVER message contains the MAC address of the Ethernet 1 interface in the client ID field and contains <i>host-name</i> in the option 12 field.

Examples

In the examples that follow, the command **ip address dhcp** is entered for the Ethernet 1 interface. The DISCOVER message sent by a router configured as shown in the following example would contain “cisco-*mac-address* -Eth1” in the client-ID field, and the value fresno in the option 12 field.

```
hostname fresno
!
interface Ethernet 1
 ip address dhcp
```

The DISCOVER message sent by a router configured as shown in the following example would contain “cisco-*mac-address* -Eth1” in the client-ID field, and the value sanfran in the option 12 field.

```
hostname fresno
!
interface Ethernet 1
 ip address dhcp hostname sanfran
```

The DISCOVER message sent by a router configured as shown in the following example would contain the MAC address of the Ethernet 1 interface in the client-id field, and the value fresno in the option 12 field.

```
hostname fresno
!
interface Ethernet 1
 ip address dhcp client-id Ethernet 1
```

The DISCOVER message sent by a router configured as shown in the following example would contain the MAC address of the Ethernet 1 interface in the client-id field, and the value sanfran in the option 12 field.

```
hostname fresno
!
interface Ethernet 1
 ip address dhcp client-id Ethernet 1 hostname sanfran
```

Related Commands

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

ip dhcp-client broadcast-flag

To configure the Cisco IOS Dynamic Host Configuration (DHCP) client to set the broadcast flag, use the **ip dhcp-client broadcast-flag** command in global configuration mode. To disable this feature, use the **no** form of this command.

ip dhcp-client broadcast-flag

no dhcp-client broadcast-flag

Syntax Description This command has no arguments or keywords.

Defaults The broadcast flag is on.

Command Modes Global configuration

Command History	Release	Modification
	12.2	This command was introduced.

Usage Guidelines Use this command to set the broadcast flag to 1 or 0 in the DHCP header when the DHCP client sends a discover requesting an IP address. The DHCP Server listens to this broadcast flag and broadcasts the reply packet if the flag is set to 1.

If you enter **no ip dhcp-client broadcast-flag**, the broadcast flag is set to 0 and the DHCP Server unicasts the reply packets to the client with the offered IP address.

The Cisco IOS DHCP client can receive both broadcast and unicast offers from the DHCP Server.

Examples The following example sets the broadcast flag on:

```
Router(config)# ip dhcp-client broadcast-flag
```

Related Commands	Command	Description
	ip address dhcp	Acquires an IP address on an interface via DHCP.
	service dhcp	Enables DHCP server and relay functions.

ip dhcp-client default-router distance

To configure a default DHCP administrative distance for clients, use the **ip dhcp-client default-router distance** command in global configuration mode. To return to the default of 254, use the **no** form of this command.

ip dhcp-client default-router distance *value*

no ip dhcp-client default-router distance *value*

Syntax Description	distance	DHCP administrative distance. The <i>value</i> argument sets the default distance. The range is from 1 to 255.
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Defaults	254
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Command Modes	Global configuration
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Command History	Release	Modification
	12.2	This command was introduced.

Examples	The following example shows how to configure the default administrative distance to be 25: <pre>ip dhcp-client default-router distance 25</pre>
----------	--

Related Commands	Command	Description
	debug dhcp client	Displays debugging information about the DHCP client activities and monitors the status of DHCP packets.
show ip route dhcp	Displays the routes added to the routing table by the DHCP server and relay agent.	

ip dhcp conflict logging

To enable conflict logging on a Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server, use the **ip dhcp conflict logging** global configuration command. To disable conflict logging, use the **no** form of this command.

ip dhcp conflict logging

no ip dhcp conflict logging

Syntax Description This command has no arguments or keywords.

Defaults Conflict logging is enabled.

Command Modes Global configuration

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

Usage Guidelines We recommend using a DHCP server database agent to store automatic bindings. If you decide not to use a DHCP Server database agent to store automatic bindings, use the **no ip dhcp conflict logging** command to disable the recording of address conflicts. By default, the Cisco IOS DHCP Server records DHCP address conflicts in a log file.

Examples The following example disables the recording of DHCP address conflicts:

```
no ip dhcp conflict logging
```

Related Commands	Command	Description
	clear ip dhcp conflict	Clears an address conflict from the Cisco IOS DHCP Server database.
	ip dhcp database	Configures a Cisco IOS DHCP Server to save automatic bindings on a remote host called a database agent.
	show ip dhcp conflict	Displays address conflicts found by a Cisco IOS DHCP Server when addresses are offered to the client.

ip dhcp database

To configure a Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server and relay agent to save automatic bindings on a remote host called a database agent, use the **ip dhcp database** global configuration command. To remove the database agent, use the **no** form of this command.

```
ip dhcp database url [timeout seconds | write-delay seconds]
```

```
no ip dhcp database url
```

Syntax Description

<i>url</i>	Specifies the remote file used to store the automatic bindings. Following are the acceptable URL file formats: <ul style="list-style-type: none"> • tftp://host/filename • ftp://user:password@host/filename • rcp://user@host/filename
timeout <i>seconds</i>	(Optional) Specifies how long (in seconds) the DHCP Server should wait before aborting a database transfer. Transfers that exceed the timeout period are aborted. By default, DHCP waits 300 seconds (5 minutes) before aborting a database transfer. Infinity is defined as 0 seconds.
write-delay <i>seconds</i>	(Optional) Specifies how soon the DHCP server should send database updates. By default, DHCP waits 300 seconds (5 minutes) before sending database changes. The minimum delay is 60 seconds.

Defaults

DHCP waits 300 seconds for both a write delay and a timeout.

Command Modes

Global configuration

Command History

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

Usage Guidelines

The administrator may configure multiple database agents. Bindings are transferred by using FTP, Trivial File Transport Protocol (TFTP), or remote copy protocol (rcp).

The DHCP relay agent can save route information to the same database agents to ensure recovery after reloads.

Examples

The following example specifies the DHCP database transfer timeout value at 80 seconds:

```
ip dhcp database ftp://user:password@172.16.1.1/router-dhcp timeout 80
```

The following example specifies the DHCP database update delay value at 100 seconds:

```
ip dhcp database tftp://172.16.1.1/router-dhcp write-delay 100
```

Related Commands

Command	Description
show ip dhcp database	Displays Cisco IOS DHCP Server database agent information.

ip dhcp excluded-address

To specify IP addresses that a Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server should not assign to DHCP clients, use the **ip dhcp excluded-address** global configuration command. To remove the excluded IP addresses, use the **no** form of this command.

```
ip dhcp excluded-address low-address [high-address]
```

```
no ip dhcp excluded-address low-address [high-address]
```

Syntax Description

<i>low-address</i>	The excluded IP address, or first IP address in an excluded address range.
<i>high-address</i>	(Optional) The last IP address in the excluded address range.

Defaults

All IP pool addresses are assignable.

Command Modes

Global configuration

Command History

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

Usage Guidelines

The DHCP Server assumes that all pool addresses may be assigned to clients. Use this command to exclude a single IP address or a range of IP addresses.

Examples

The following example configures an excluded IP address range from 172.16.1.100 through 172.16.1.199:

```
ip dhcp excluded-address 172.16.1.100 172.16.1.199
```

Related Commands

Command	Description
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.
network (DHCP)	Configures the subnet number and mask for a DHCP address pool on a Cisco IOS DHCP Server.

ip dhcp limited-broadcast-address

To override a configured network broadcast and have the DHCP server and relay agent send an all networks, all nodes broadcast to a DHCP client, use the **ip dhcp limited-broadcast-address** global configuration command. 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.

Usage Guidelines

When a DHCP client sets the broadcast bit in the 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** interface configuration 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 Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server sends to a pool address as part of a ping operation, use the **ip dhcp ping packets** global configuration command. 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>	Indicates the number of ping packets that are sent before assigning the address to a requesting client. The default value is two packets.
---------------	---

Defaults

Two packets

Command Modes

Global configuration

Command History

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

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 turns off DHCP Server ping operation completely.

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 Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server waits for a ping reply from an address pool, use the **ip dhcp ping timeout** global configuration command. 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.
---------------------------	---------------------	---

Defaults	500 milliseconds
-----------------	------------------

Command Modes	Global configuration
----------------------	----------------------

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

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

Examples	The following example specifies that the 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 packets	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 Cisco IOS DHCP Server and enter DHCP pool configuration mode, use the **ip dhcp pool** global configuration command. 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>	Can either be a symbolic string (such as engineering) or an integer (such as 0).
-------------	--

Defaults

DHCP address pools are not configured.

Command Modes

Global configuration

Command History

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

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 information check

To configure a Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server to validate the relay agent information option in forwarded BOOTREPLY messages, use the **ip dhcp relay information check** global configuration command. 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 The 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.

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 option

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

ip dhcp relay information option

no ip dhcp relay information option

Syntax Description

This command has no arguments or keywords.

Defaults

The DHCP Server does not insert relay information.

Command Modes

Global configuration

Command History

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

Usage Guidelines

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

Examples

The following example configures a DHCP Server to insert the DHCP relay agent information option in forwarded BOOTREQUEST messages:

```
ip dhcp relay information option
```

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 (what a DHCP relay agent should do if a message already contains relay information).

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** global configuration command. To restore the default relay information policy, use the **no** form of this command.

```
ip dhcp relay information policy {drop | 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.
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

Command History

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

Usage Guidelines

This command is used by cable access router termination systems. When a DHCP relay agent receives a message from a another DHCP relay agent, relay information might already be present in the message. By default, the relay information from the previous relay agent is replaced.

Examples

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

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

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

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

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 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.

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 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.

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 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** global configuration command. 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.

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
```

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** DHCP pool configuration command. 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

One day

Command Modes

DHCP pool configuration

Command History

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

Examples

The following example shows a one-day lease:

```
lease 1
```

The following example shows a one-hour lease:

```
lease 0 1
```

The following example shows a one-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.

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** DHCP pool configuration command. 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

<i>address</i>	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.
<i>address2...address8</i>	(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.

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).

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	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** DHCP pool configuration command. To remove the NetBIOS node type, use the **no** form of this command.

netbios-node-type *type*

no netbios-node-type

Syntax Description	<i>type</i>	Specifies the NetBIOS node type. Valid types are: <ul style="list-style-type: none"> • 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.

Usage Guidelines	The recommended type is h-node (hybrid).
-------------------------	--

Examples	The following example specifies the client's NetBIOS type as hybrid: <pre>netbios node-type h-node</pre>
-----------------	---

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

```
network network-number [mask | prefix-length]
```

```
no network
```

Syntax Description

<i>network-number</i>	The IP address of the DHCP address pool.
<i>mask</i>	(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.
<i>prefix-length</i>	(Optional) Specifies 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 (/).

Command Modes

DHCP pool configuration

Command History

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

Usage Guidelines

This command is valid for DHCP subnetwork address pools only. If the mask or prefix length is not specified, the class A, B, or C natural mask is used. 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** command.

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

Examples

The following example configures 172.16.0.0/16 as the subnetwork number and mask of the DHCP pool:

```
network 172.16.0.0/16
```

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.
ip dhcp pool	Configures a DHCP address pool on a Cisco IOS DHCP Server and enters DHCP pool configuration mode.

next-server

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

```
next-server address [address2...address8]
```

```
no next-server address
```

Syntax Description

<i>address</i>	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, although you can specify up to eight addresses in one command line.
<i>address2...address8</i>	(Optional) Specifies up to eight addresses in the command line.

Defaults

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.

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).

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
bootfile	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 Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server options, use the **option** DHCP pool configuration command. To remove the options, use the **no** form of this command.

```
option code [instance number] {ascii string | hex string | ip address}
```

```
no option code [instance number]
```

Syntax Description

<i>code</i>	Specifies the DHCP option code.
<i>instance number</i>	(Optional) Specifies a number from 0 to 255.
<i>ascii string</i>	Specifies an NVT ASCII character string. ASCII character strings that contain white space must be delimited by quotation marks.
<i>hex string</i>	Specifies dotted hexadecimal data. Each byte in hexadecimal character strings is two hexadecimal digits—each byte can be separated by a period, colon, or white space.
<i>ip address</i>	Specifies an IP address.

Defaults

The default instance number is 0.

Command Modes

DHCP pool configuration

Command History

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

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*.

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:

```
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:

```
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 DHCP pool configuration mode.

service dhcp

To enable the Cisco IOS Dynamic Host Configuration Protocol (DHCP) server and relay agent features on your router, use the **service dhcp** global configuration command. To disable the Cisco IOS DHCP server and relay agent features, use the **no** form of this command.

service dhcp

no service dhcp

Syntax Description This command has no arguments or keywords.

Defaults Enabled

Command Modes Global configuration

Command History

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

Usage Guidelines

The BOOTP and DHCP servers in Cisco IOS software both use the ICMP port (port 67) by default. ICMP “port unreachable messages” will only be returned to the sender if both the BOOTP server and DHCP server are disabled. Disabling only one of the servers will not result in ICMP port unreachable messages.

Examples

The following example enables DHCP services on the DHCP Server:

```
service dhcp
```

show ip dhcp binding

To display address bindings on the Cisco IOS Dynamic Host Configuration Protocol (DHCP) server, use the **show ip dhcp binding** EXEC command.

```
show ip dhcp binding [ip-address]
```

Syntax Description	<i>ip-address</i>	(Optional) Specifies the IP address of the DHCP client for which bindings will be displayed.
---------------------------	-------------------	--

Command Modes	EXEC
----------------------	------

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

Usage Guidelines	If the address is not specified, all address bindings are shown. Otherwise, only the binding for the specified client is displayed.
-------------------------	---

Examples The following examples show the DHCP binding address parameters, including an IP address, an associated MAC address, a lease expiration date, and the type of address assignment that have occurred. [Table 13](#) lists descriptions of the fields in each example.

```
Router> show ip dhcp binding 172.16.1.11
```

```
IP address      Hardware address  Lease expiration  Type
172.16.1.11    00a0.9802.32de    Feb 01 1998 12:00 AM  Automatic
```

```
Router> show ip dhcp binding 172.16.3.254
```

```
IP address      Hardware address  Lease expiration  Type
172.16.3.254    02c7.f800.0422    Infinite          Manual
```

Table 13 *show ip dhcp binding* Field Descriptions

Field	Description
IP address	The IP address of the host as recorded on the DHCP Server.
Hardware address	The MAC address or client identifier of the host as recorded on the DHCP Server.
Lease expiration	The lease expiration date of the IP address of the host.
Type	The manner in which the IP address was assigned to the host.

■ show ip dhcp binding**Related Commands**

Command	Description
clear ip dhcp binding	Deletes an automatic address binding from the Cisco IOS DHCP Server database.

show ip dhcp conflict

To display address conflicts found by a Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server when addresses are offered to the client, use the **show ip dhcp conflict** EXEC command.

```
show ip dhcp conflict [ip-address]
```

Syntax Description	<i>ip-address</i> (Optional) Specifies the IP address of the conflict found.
---------------------------	--

Command Modes	EXEC
----------------------	------

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

Usage Guidelines	The server detects conflicts using ping. The client detects conflicts using gratuitous Address Resolution Protocol (ARP). If an address conflict is detected, the address is removed from the pool and the address will not be assigned until an administrator resolves the conflict.
-------------------------	---

Examples	The following example displays the detection method and detection time for all IP addresses the DHCP Server has offered that have conflicts with other devices. Table 14 lists descriptions of the fields in the example.
-----------------	---

```
Router> show ip dhcp conflict
```

```
IP address      Detection Method  Detection time
172.16.1.32     Ping              Feb 16 1998 12:28 PM
172.16.1.64     Gratuitous ARP    Feb 23 1998 08:12 AM
```

Table 14 show ip dhcp conflict Field Descriptions

Field	Description
IP address	The IP address of the host as recorded on the DHCP server.
Detection Method	The manner in which the IP address of the hosts were found on the DHCP Server. Can be a ping or a gratuitous ARP.
Detection time	The time when the conflict was found.

Related Commands	Command	Description
	clear ip dhcp conflict	Clears an address conflict from the Cisco IOS DHCP Server database.
	ip dhcp ping packets	Specifies the number of packets a Cisco IOS DHCP Server sends to a pool address as part of a ping operation.
	ip dhcp ping timeout	Specifies how long a Cisco IOS DHCP Server waits for a ping reply from an address pool.

show ip dhcp database

To display Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server database agent information, use the **show ip dhcp database** privileged EXEC command.

```
show ip dhcp database [url]
```

Syntax Description

<i>url</i>	(Optional) Specifies the remote file used to store automatic DHCP bindings. Following are the acceptable URL file formats: <ul style="list-style-type: none"> • tftp://host/filename • ftp://user:password@host/filename • rcp://user@host/filename
------------	--

Defaults

If a URL is not specified, all database agent records are shown. Otherwise, only information about the specified agent is displayed.

Command Modes

Privileged EXEC

Command History

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

Examples

The following example shows all DHCP Server database agent information. [Table 15](#) lists descriptions for each field in the example.

```
Router# show ip dhcp database

URL       : ftp://user:password@172.16.4.253/router-dhcp
Read      : Dec 01 1997 12:01 AM
Written   : Never
Status    : Last read succeeded. Bindings have been loaded in RAM.
Delay     : 300 seconds
Timeout   : 300 seconds
Failures  : 0
Successes : 1
```

Table 15 *show ip dhcp database Field Descriptions*

Field	Description
URL	Specifies the remote file used to store automatic DHCP bindings. Following are the acceptable URL file formats: <ul style="list-style-type: none"> • tftp://host/filename • ftp://user:password@host/filename • rcp://user@host/filename
Read	The last time bindings were read from the file server.
Written	The last time bindings were written to the file server.
Status	Indication of whether the last read or write of host bindings was successful.
Delay	The amount of time to wait before updating the database.
Timeout	The amount of time before the file transfer is aborted.
Failures	The number of failed file transfers.
Successes	The number of successful file transfers.

Related Commands

Command	Description
ip dhcp database	Configures a Cisco IOS DHCP Server to save automatic bindings on a remote host called a database agent.

show ip dhcp import

To display the option parameters that were imported into the Dynamic Host Configuration Protocol (DHCP) Server database, use the **show ip dhcp import** EXEC command.

show ip dhcp import

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	12.1(2)T	This command was introduced.

Usage Guidelines Imported option parameters are not part of the router configuration and are not saved in NVRAM. Thus, the **show ip dhcp import** command is necessary to display the imported option parameters.

Examples The following is sample output from the **show ip dhcp import** command:

```
Router# show ip dhcp import

Address Pool Name:2
Domain Name Server(s): 1.1.1.1
NetBIOS Name Server(s): 3.3.3.3
```

The following example indicates the address pool name:

```
Address Pool Name:2
```

The following example indicates the imported values, which are domain name and NetBIOS name information:

```
Domain Name Server(s): 1.1.1.1
NetBIOS Name Server(s): 3.3.3.3
```

Related Commands	Command	Description
	import all	Imports option parameters into the DHCP database.
	show ip dhcp database	Displays Cisco IOS server database information.

show ip dhcp relay information trusted-sources

To display all interfaces configured to be a trusted source for the Dynamic Host Configuration Protocol (DHCP) relay information option, use the **show ip dhcp relay information trusted-sources** command in EXEC mode.

show ip dhcp relay information trusted-sources

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
12.2	This command was introduced.

Examples

The following is sample output when the **ip dhcp relay information trusted** interface configuration command is configured. Note that the display output lists the interfaces that are configured to be trusted sources.

```
Router# show ip dhcp relay information trusted-sources
```

```
List of trusted sources of relay agent information option:
Ethernet1/1      Ethernet1/2      Ethernet1/3      Serial4/1.1
Serial4/1.2      Serial4/1.3
```

The following is sample output when the **ip dhcp relay information trust-all** global configuration command is configured. Note that the display output does not list the individual interfaces.

```
Router# show ip dhcp relay information trusted-sources
```

```
All interfaces are trusted source of relay agent information option
```

Related Commands

Command	Description
ip dhcp relay information trusted	Configures an interface as a trusted source of the DHCP relay agent information option.
ip dhcp relay information trust-all	Configures all interfaces on a router as trusted sources of the DHCP relay agent information option.

show ip dhcp server statistics

To display Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server statistics, use the **show ip dhcp server statistics** EXEC command.

show ip dhcp server statistics

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

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

Examples The following example displays DHCP Server statistics. [Table 16](#) lists descriptions for each field in the example.

```
Router> show ip dhcp server statistics
```

```
Memory usage          40392
Address pools         3
Database agents      1
Automatic bindings   190
Manual bindings      1
Expired bindings     3
Malformed messages   0

Message              Received
BOOTREQUEST          12
DHCPDISCOVER         200
DHCPRREQUEST         178
DHCPCDECLINE         0
DHCPCRELEASE         0
DHCPCINFORM          0

Message              Sent
BOOTREPLY            12
DHCPCOFFER           190
DHCPCPACK            172
DHCPCNAK              6
```

Table 16 *show ip dhcp server statistics Field Descriptions*

Field	Description
Memory usage	The number of bytes of RAM allocated by the DHCP Server.
Address pools	The number of configured address pools in the DHCP database.
Database agents	The number of database agents configured in the DHCP database.

Table 16 *show ip dhcp server statistics Field Descriptions (continued)*

Field	Description
Automatic bindings	The number of IP addresses that have been automatically mapped to the MAC addresses of hosts that are found in the DHCP database.
Manual bindings	The number of IP addresses that have been manually mapped to the MAC addresses of hosts that are found in the DHCP database.
Expired bindings	The number of expired leases.
Malformed messages	The number of truncated or corrupted messages that were received by the DHCP Server.
Message	The DHCP message type that was received by the DHCP Server.
Received	The number of DHCP messages that were received by the DHCP Server.
Sent	The number of DHCP messages that were sent by the DHCP Server.

Related Commands

Command	Description
clear ip dhcp server statistics	Resets all Cisco IOS DHCP Server counters.

show ip route dhcp

To display the routes added to the routing table by the Cisco IOS Dynamic Host Configuration Protocol (DHCP) Server and Relay Agent, use the **show ip route dhcp** command in EXEC configuration mode.

```
show ip route [vrf vrf-name] dhcp [ip-address]
```

Syntax Description		
vrf	(Optional) VPN routing and forwarding instance.	
<i>vrf-name</i>	(Optional) Name of the VRF.	
<i>ip-address</i>	(Optional) Address about which routing information should be displayed.	

Defaults No default behavior or values.

Command Modes EXEC

Command History	Release	Modification
	12.2	This command was introduced.

Usage Guidelines To display information about global routes, use the **show ip route dhcp** command. To display routes in the VRF routing table, use the **show ip route vrf vrf-name dhcp** command.

Examples The following is sample output from the **show ip route dhcp** command when entered without an address. This command gives the list of all routes added by the Cisco IOS DHCP Server and Relay Agent.

```
Router# show ip route dhcp
 55.5.5.56/32 is directly connected, ATM0.2
 55.5.5.217/32 is directly connected, ATM0.2
```

The following is sample output from the **show ip route dhcp** command when an address is specified. This command gives the details of the address with the server address (who assigned it) and the lease expiration time.

```
Router# show ip route dhcp 55.5.5.217
 55.5.5.217 is directly connected, ATM0.2
   DHCP Server: 49.9.9.10   Lease expires at Nov 08 2001 01:19 PM
```

The following is sample output from the **show ip route vrf vrf-name dhcp** command when entered without an address:

```
Router# show ip route vrf red dhcp
 55.5.5.218/32 is directly connected, ATM0.2
```

The following is sample output from the **show ip route vrf *vrf-name* dhcp** command when an address is specified. This command gives the details of the address with the server address (who assigned it) and the lease expiration time.

```
Router# show ip route vrf red dhcp 55.5.5.218
 55.5.5.218/32 is directly connected, ATM0.2
   DHCP Server: 49.9.9.10   Lease expires at Nov 08 2001 03:15PM
```

Related Commands

Command	Description
clear ip route dhcp	Removes routes from the routing table added by the DHCP Server and Relay Agent for the DHCP clients on unnumbered interfaces.

■ show ip route dhcp