



# DHCP Client

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The Cisco Dynamic Host Configuration Protocol (DHCP) Client feature allows a Cisco device to act as a host requesting configuration parameters, such as an IP address, from a DHCP server.

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## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Restrictions for the DHCP Client

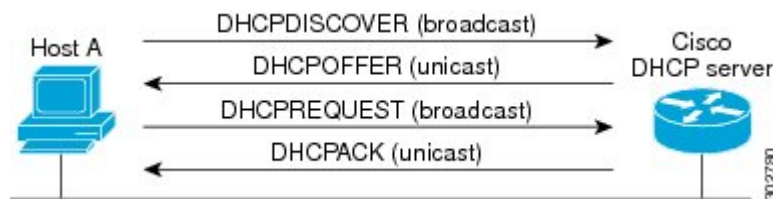
The DHCP client can be configured on Ethernet interfaces.

# Information About the DHCP Client

## DHCP Client Operation

The Dynamic Host Configuration Protocol (DHCP) provides a framework for passing configuration information to hosts on a TCP/IP network. A DHCP client is an Internet host using DHCP to obtain configuration parameters such as an IP address. The figure below shows the basic steps that occur when a DHCP client requests an IP address from a DHCP server. The client, Host A, sends a DHCPDISCOVER broadcast message to locate a DHCP server. A DHCP server offers configuration parameters (such as an IP address, a MAC address, a domain name, and a lease for the IP address) to the client in a DHCPOFFER unicast message. The client then sends a DHCPREQUEST broadcast message to the server to request the offer. Finally, the server sends a DHCPACK unicast message to the client to confirm the allocation.

*Figure 1: DHCP Request for an IP Address from a DHCP Server*



A DHCP client may receive offers from multiple DHCP servers and can accept any one of the offers; however, the client usually accepts the first offer it receives. The offer from the DHCP server is not a guarantee that the IP address will be allocated to the client; however, the server usually reserves the address until the client has had a chance to formally request the address.

The client returns a formal request for the offered IP address to the DHCP server in a DHCPREQUEST broadcast message. The DHCP server confirms that the IP address has been allocated to the client by returning a DHCPACK unicast message to the client.

## DHCP Client Overview

The configurable dynamic host configuration protocol client functionality allows a DHCP client to use a user-specified client identifier, class identifier, or suggested lease time when requesting an address from a DHCP server.

Configuration parameters and other control information are carried in tagged data items that are stored in the options field of the DHCP message. The DHCP client provides flexibility by allowing the following options to be configured for a DHCP client:

- Option 12—This option specifies the name of the client. The name may or may not be qualified with the local domain.
- Option 51—This option is used in a client request (DHCPDISCOVER or DHCPREQUEST) to allow the client to request a lease time for the IP address.
- Option 55—This option allows the DHCP client to request certain options from the DHCP server. The **ip dhcp client request** command allows the system administrator to turn off some of the requested options, thus removing them from the request list.

- Option 60—This option allows the user to configure the vendor class identifier string to use in the DHCP interaction.
- Option 61—This option is used by DHCP clients to specify their unique identifier. DHCP servers use this value to index their database of address bindings. This value is expected to be unique for all clients in an administrative domain.
- Option 120—This option is used to specify a 32-bit (binary) IPv4 address to be used by the Session Initiation Protocol (SIP) client to locate a SIP server.
- Option 121—This option is used to configure classless static routes by specifying classless network destinations; that is, each routing table entry includes a subnet mask. Upto ten classless static routes are supported using option 121 on the DHCP client.



**Note** If a request includes both static routes and classless static routes, the client uses only the classless static routes. If the DHCP server returns both a classless static route option and a router option, the DHCP client ignores the router option.

- Option 125—This option is used by DHCP clients and servers to exchange vendor-specific information.

# How to Configure the DHCP Client

## Configuring the DHCP Client

Cisco devices running Cisco software include the Dynamic Host Configuration Protocol (DHCP) server and relay agent software, which are enabled by default. Your device can act as both the DHCP client and the DHCP server. Use the **ip address dhcp** command to obtain IP address information for the configured interface.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **ip address dhcp**
5. **end**
6. **debug dhcp detail**
7. **debug ip dhcp server packets**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>	Enables privileged EXEC mode.

	Command or Action	Purpose
	<b>Example:</b> Device> enable	<ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>interface <i>type number</i></b>  <b>Example:</b> Device(config)# interface GigabitEthernet 0/0/1	Configures an interface type and enters interface configuration mode.
<b>Step 4</b>	<b>ip address dhcp</b>  <b>Example:</b> Device(config-if)# ip address dhcp	Acquires an IP address on an interface from DHCP.
<b>Step 5</b>	<b>end</b>  <b>Example:</b> Device(config-if)# end	Returns to privileged EXEC mode.
<b>Step 6</b>	<b>debug dhcp detail</b>  <b>Example:</b> Device# debug dhcp detail	Displays the DHCP packets that were sent and received.
<b>Step 7</b>	<b>debug ip dhcp server packets</b>  <b>Example:</b> Device# debug ip dhcp server packets	Displays the server side of the DHCP interaction.

# Configuration Examples for the DHCP Client

## Example: Configuring the DHCP Client

The figure below shows a simple network diagram of a Dynamic Host Configuration Protocol (DHCP) client on an Ethernet LAN.

**Figure 2: Topology Showing a DHCP Client with a Gigabit Ethernet Interface**



On the DHCP server, the configuration is as follows:

```
ip dhcp pool 1
 network 10.1.1.0 255.255.255.0
 lease 1 6
```

On the DHCP client, the configuration is as follows on interface E2:

```
interface GigabitEthernet 0/0/0
 ip address dhcp
```

This configuration allows the DHCP client to acquire an IP address from the DHCP server through Gigabit Ethernet interface 0/0/0.

## Additional References

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Command List, All Releases</a>
DHCP commands	<a href="#">Cisco IOS IP Addressing Services Command Reference</a>
DHCP conceptual information	“DHCP Overview” module in the <i>IP Addressing: DHCP Configuration Guide</i>

**RFCs**

RFCs	Title
RFC 2131	<i>Dynamic Host Configuration Protocol</i>
RFC 2132	<i>DHCP Options and BOOTP Vendor Extensions</i>

**Technical Assistance**

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for the DHCP Client

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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**Table 1: Feature Information for the DHCP Client**

Feature Name	Releases	Feature Information
DHCP Client	Cisco IOS XE Release 3.2SE	The DHCP client is defined as an Internet host using DHCP to obtain configuration parameters such as an IP address.