

# DHCP Configuration Commands

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# Chapter 1 DHCP Client Configuration Commands

## 1.1 DHCP Client Configuration Commands

The dhcp client configuration commands include:

- ip address dhcp
- ip dhcp client
- ip dhcp-server
- show dhcp lease
- show dhcp server
- debug dhcp

### 1.1.1 ip address dhcp

To obtain an IP address for an interface through DHCP (Dynamic Host Configuration Protocol), run **ip address dhcp**. To delete the obtained IP address, run **no ip address dhcp**.

**ip address dhcp**

**no ip address dhcp**

#### Parameter

None

#### Default value

None

#### Command mode

Interface configuration mode

#### Instruction

The **ip address dhcp** command allows an interface to obtain an IP address through DHCP, which is very useful to dynamically connecting ISP through the Ethernet interface. Once a dynamic IP address is obtained, this Ethernet interface can realize NAT through PAT.

If the **ip address dhcp** command is set on EOLT, EOLT will transmit the DHCP Discover message to the DHCP server.

If the **no ip address dhcp** command is set on EOLT, EOLT will transmit the DHCP Release message.

### Example

The following example shows how to enable the vlan1 interface to obtain an IP address through DHCP.

```
!
interface vlan 1
ip address dhcp
!
```

### Related command

**ip dhcp client**

**ip dhcp-server**

**show dhcp lease**

**show dhcp server**

#### 1. 1. 2 ip dhcp client

To configure the parameters of the local EOLT DHCP client, run the following command:

```
ip dhcp client { minlease seconds | retransmit count | retry_interval | select seconds }
```

```
no ip dhcp client { minlease | retransmit | retry_interval | select }
```

### Parameter

Parameter	Description
<i>minlease seconds</i>	Stands for the acceptable minimum lease time, which ranges from 60 to 86400 seconds and an optional parameter.
<i>retransmit count</i>	Stands for the retransmission times of the protocol packets, which ranges from 1 to 10 and is an optional parameter.
<i>retry_interval</i>	Stands for the interval of retransmitting DHCP requests, which ranges from 1 to 1440 minutes and is an optional parameter.
<i>select seconds</i>	Stands for the interval of SELECT, which ranges from 0 to 30 and is an optional parameter.

### Default value

The default value of the **minlease** parameter is 60 seconds.

The default value of the **retransmit** parameter is 4.

The default value of the **retry\_interval** parameter is 5 minutes.

The default value of the **select** parameter is 0 second.

### Command mode

Global configuration mode.

### Instruction

You can adjust these parameters according the requirements of the network structure and the DHCP server.

If the negative forms of these commands are set, these parameter will resume their default values.

### Example

The following example shows how to set on the DHCP client of EOLT the acceptable minimum lease time to 100 seconds:

```
ip dhcp client minlease 100
```

The following example shows how to set the retransmission times of the protocol packets on the DHCP client of EOLT to 3:

```
ip dhcp client retransmit 3
```

The following example shows, on the DHCP client of EOLT, how to set the interval of retransmitting the DHCP request to 10 minutes:

```
ip dhcp client retry_interval 10
```

The following example shows, on the DHCP client of EOLT, how to set the interval of SELECT to 10 seconds:

```
ip dhcp client select 10
```

### Related command

**ip address dhcp**

**ip dhcp-server**

**show dhcp lease**

**show dhcp server**

### 1. 1. 3 ip dhcp-server

To specify a familiar DHCP server, you can use **ip dhcp-server** to designate the IP address of the DHCP server.

**ip dhcp-server** *ip-address*

**no ip dhcp-server** *ip-address*

#### Parameter

Parameter	Description
<i>ip-address</i>	IP address of the DHCP server

#### Default value

There is no default IP address of the DHCP server.

#### Command mode

Global configuration mode.

#### Instruction

You can designate an IP address for a DHCP server by using this command, which will not replace the previously designated IP address of the DHCP server.

But the previously designated IP address of the DHCP server can be removed by the negative form of this command.

#### Example

The following example shows how to specify on EOLT a server, whose IP address is 192.168.20.1, to be the DHCP server:

```
ip dhcp-server 192.168.20.1
```

#### Related command

**ip address dhcp**

**ip dhcp client**

**show dhcp lease**

**show dhcp server**

### 1. 1. 4 show dhcp lease

To browse the distribution information of the DHCP server, which is used by the current EOLT, run **show dhcp lease**.

Show dhcp lease

#### Parameter

None

#### Default value

None

#### Command mode

EXEC

#### Instruction

You can use this command to browse the distribution information of the DHCP server of the current EOLT.

#### Example

The following example shows how to display the DHCP distribution information of EOLT:

```
Switch#show dhcp lease
```

```
Temp IP addr: 192.168.20.3 for peer on Interface: vlan1
```

```
Temp sub net mask: 255.255.255.0
```

```
    DHCP Lease server: 192.168.1.3, state: 4 Rebinding
```

```
    DHCP transaction id: 2049
```

```
    Lease: 86400 secs, Renewal: 43200 secs, Rebind: 75600 secs
```

```
Temp default-gateway addr: 192.168.1.2
```

```
    Next timer fires after: 02:34:26
```

```
    Retry count: 1 Client-ID: bdc0m-00e00fa20bcd-v1
```

#### Related command

**ip address dhcp**

**ip dhcp client**



**ip dhcp-server**

**show dhcp server**

**debug dhcp**

#### 1. 1. 5 show dhcp server

To display the known information of the DHCP server, run **show dhcp server**.

**show dhcp server**

#### Parameter

None

#### Default value

None

#### Command mode

EXEC

#### Instruction

This command is used to display the known information of the DHCP server.

#### Example

The following example shows how to display the already known information about the DHCP server.

```
Switch#show dhcp sever
DHCP server: 255.255.255.255
Leases: 0
Discovers: 62 Requests: 0 Declines: 0 Releases: 0
Offers: 0 Acks: 0 Naks: 0 Bad: 0
Subnet: 0.0.0.0, Domain name:
```

#### Related command

**ip address dhcp**

**ip dhcp client**

**ip dhcp-server**

**show dhcp lease**1. 1. 6 **debug dhcp**

When DHCP is run on EOLT and you want to browse the processing of DHCP, you can run **debug dhcp**.

**debug dhcp <detail>**

**no debug dhcp <detail>**

**Parameter**

Parameter	Description
<b>detail</b>	Means to display the content of the DHCP packet.

**Default value**

Relative information is not shown.

**Command mode**

EXEC

**Instruction**

The following example shows some key information about DHCP processing:

```
Switch#debug dhcp
Mar  2 13:19:03 DHCP: Move to INIT state, xid: 0x568D0BCD
Mar  2 13:19:03 DHCP: SDISCOVER attempt # 1, sending 283 byte DHCP packet
Mar  2 13:19:03 DHCP:   B'cast on VLAN1 interface from 0.0.0.0
Mar  2 13:19:03 DHCP: Move to SELECTING state, xid: 0x568D0BCD
Mar  2 13:19:07 DHCP: restart dhcp request!
Mar  2 13:19:07 DHCP: Move to INIT state, xid: 0x568D0BCD
Mar  2 13:19:07 DHCP: SDISCOVER attempt # 1, sending 283 byte DHCP packet
Mar  2 13:19:07 DHCP:   B'cast on VLAN1 interface from 0.0.0.0
Mar  2 13:19:11 DHCP: SDISCOVER attempt # 2, sending 283 byte DHCP packet
Mar  2 13:19:11 DHCP:   B'cast on VLAN1 interface from 0.0.0.0
Mar  2 13:19:20 DHCP: SDISCOVER attempt # 3, sending 283 byte DHCP packet
Mar  2 13:19:20 DHCP:   B'cast on VLAN1 interface from 0.0.0.0
```

**Related command**

**show dhcp lease**

## Chapter 2 DHCP Server Configuration Commands

### 2.1 DHCPD Configuration Commands

DHCPD configuration commands include:

- ip dhcpd ping packet
- ip dhcpd ping timeout
- ip dhcpd write-time
- ip dhcpd database-agent
- ip dhcpd pool
- ip dhcpd enable
- ip dhcpd disable

#### 2.1.1 ip dhcpd ping packet

**ip dhcpd ping packet** *pkgs*

##### Parameter

Parameter	Description
<i>pkgs</i>	DHCP server is used to check whether the address has distributed the number of transmitted ICMP packets.

##### Default value

2

##### Command mode

Global configuration mode

##### Instruction

You can use the following command to configure *n* ICMP packets when the DHCP server is checking whether the address is distributed.

ip dhcpd ping packets *n*

**Example**

The following example shows that the DHCP server transmits one ICMP packet when it is checking whether the address is distributed.

```
ip dhcpd ping packets 1
```

**2.1.2 ip dhcpd ping timeout****Parameter**

Parameter	Description
timeout	Stands for the timeout time of waiting for the response of the ICMP packet when the DHCP server checks address distribution.

**Default value**

5

**Command mode**

Global configuration mode

**Instruction**

This command is used to set to  $n*100$ ms the timeout time of waiting for the response of ICMP packets when the DHCP server is checking whether the address is distributed.

```
ip dhcpd ping timeout n
```

**Example**

The following example shows how to set to 300ms the timeout time of waiting for the response of ICMP packets when the DHCP server is checking whether the address is distributed.

```
ip dhcpd ping timeout 3
```

**2.1.3 ip dhcpd write-time****Parameter**

Parameter	Description
time	Stands for the interval for the DHCP server to save the address distribution information to the database (minute).

**Default value**

0

**Command mode**

Global configuration mode

**Instruction**

You can use the following command to make the DHCP server write the address distribution information to the database every *n* minutes.

```
ip dhcpd write-time n
```

**Example**

The following example shows that the DHCP server writes the address distribution information to the database every other day.

```
ip dhcpd write-time 1440
```

**2.1.4 ip dhcpd database-agent****Parameter**

Parameter	Description
ip address	Stands for the address of the PC, to which the DHCP server will save the address distribution information in the file format.

**Default value**

None

**Command mode**

Global configuration mode

**Instruction**

You can use the following command to set the address of PC on which the DHCP server saves the address distribution information:

```
ip dhcpd database-agent X. X. X. X
```

If this address is not set, the address distribution information will be saved to the flash.

Note: Before the address distribution information is saved, PC should enable the TFTP server and also PC and the DHCP server should connect correctly.

**Example**

```
ip dhcpd database-agent 192.168.1.1
```

**2.1.5 ip dhcp snooping arp****Parameter**

None

**Default value**

None

**Command mode**

Global configuration mode

**Instruction**

This command can be used to enable the ARP map protection. When this command is set, the DHCP server will establish an ARP map between the MAC address and distributed IP address of the DHCP client, and then protect this ARP map.

**Example**

```
ip dhcp snooping arp
```

**2.1.6 ip dhcp snooping information option [ format snmp-ifindex ]**

To enable DHCP relay to transmit DHCP option82, run this command. To cancel this configuration, run the negative form of this command. Option82 includes the information about the DHCP relay and the DHCP client. DHCP relay will transmit the interface's information to the DHCP server through option82, and the DHCP server will distinguish and treat the client through the interface's information.

**Parameter**

None

**Default value**

None

**Command mode**

Global configuration mode

**Instruction**

The command, `ip dhcp snooping information option`, is used to set the DHCP relay to transmit in option82 the interface's information, which is in the standard format.

The command, `ip dhcp snooping information option format snmp-ifindex`, is used to set the DHCP relay to transmit in option82 the interface's information, which is in the SNMP-index format.

**Example**

```
ip dhcp snooping information option
```

```
ip dhcp snooping information option format snmp-ifindex
```

**2.1.7 ip dhcpd pool****Parameter**

Parameter	Description
<i>name</i>	Stands for the name of the DHCP address pool.

**Default value**

None

**Command mode**

Global configuration mode

**Instruction**

You can use the following command to add a DHCP address pool, whose name is *name*, and to enter the DHCP address pool configuration mode.

```
ip dhcpd pool name
```

### Example

The following example shows how to add the **test** DHCP address pool and enter the DHCP address pool configuration mode.

```
ip dhcpd pool test
```

### 2.1.8 ip dhcpd enable

#### Parameter

None

#### Default value

The DHCP service is disabled by default.

#### Command mode

Global configuration mode

#### Instruction

You can use the following command to enable the DHCP service. In this instance, the DHCP server also supports the relay operation, and as to those address requests that the DHCP server cannot distribute, its interface, on which the **ip helper-address** command is set, will forward the DHCP requests.

```
ip dhcpd pool name
```

### Example

The following example shows how to enable the DHCP service.

```
ip dhcpd enable
```

## 2.2 Configuring the DHCPD Address Pool

The DHCPD address pool configuration commands include:

- network
- range
- default-router
- dns-server
- domain-name



- lease
- netbios-name-server
- ip-bind

### 2.2.1 network

**network** *ip-addr netmask*

Parameter

Parameter	Description
<i>ip-addr</i>	Stands for the network address of an address pool, which is used for automatic distribution.
<i>netmask</i>	Stands for the subnet mask.

#### Default value

None

#### Command mode

DHCP address pool configuration mode

#### Instruction

This command is used to set the network address of the address pool of automatic distribution.

When this command is set, you must make sure that the network ID in an IP address of a port, on which the DHCP packets are received, is same as the network.

#### Example

The following example shows how to set the network address of the DHCP address pool to 192.168.20.0 and its subnet mask to 255.255.255.0.

```
network 192.168.20.0 255.255.255.0
```

### 2.2.2 range

**range** *low-addr high-addr*

Parameter

Parameter	Description
<i>low-addr</i>	Stands for the start address of the automatic address distribution area.

<i>high-addr</i>	Stands for the end address of the automatic address distribution area.
------------------	--

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

This command is set to set the address range of automatic distribution. Each address pool can be divided into 8 ranges at the maximum, and each range must be in the network. This command is used only in automatic distribution mode.

**Example**

The following example shows how to set the address distribution area of the DHCP address pool to be from 192.168.20.210 to 192.168.20.219.

```
range 192.168.20.210 192.168.20.219
```

**2.2.3 default-router**

**default-router** *ip-addr*

**Parameter**

Parameter	Description
<i>ip-addr</i>	Sets the default route that is distributed to the client.

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

You can use this command to set the default route that is distributed to the client. Up to 4 default routes can be configured, which are separated by the space.

**Example**

The following example shows how to set the default route, which will be distributed to the DHCP client, to 192.168.20.1.

```
default-router 192.168.20.1
```

**2.2.4 dns-server**

```
dns-server ip-addr ...
```

**Parameter**

Parameter	Description
<i>ip-addr</i>	Sets the address of the DNS server, which is distributed to the client.

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

You can use this command to set the address of the DNS server that is distributed to the client. Up to 4 DNS servers can be configured, which are separated by the space.

**Example**

The following example shows how to set the address of DNS server, which is distributed to the client, to 192.168.1.3.

```
dns-server 192.168.1.3
```

**2.2.5 domain-name**

```
domain-name name
```

**Parameter**

Parameter	Description
<i>name</i>	Stands for the domain name which is distributed to the client.

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

This command is used to set a domain name, which is distributed to the client.

**Example**

The following example shows how to set the domain name, which is distributed to the client, to **test.domain**.

```
domain-name test.domain
```

**2.2.6 lease**

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

**Parameter**

Parameter	Description
<i>days</i>	Stands for the days of address distribution.
<i>hours</i>	Stands for the hours of address distribution.
<i>minutes</i>	Stands for the minutes of address distribution.
<b>infinite</b>	Means that the addresses will be distributed forever.

**Default value**

One day

**Command mode**

DHCP address pool configuration mode

**Instruction**

This command is used to set the time limitation of the address, which is distributed to the client.

**Example**

The following example shows how to set the time limitation of address distribution to 2 days and 12 hours.

```
Lease 2 12
```

**2.2.7 netbios-name-server**

```
netbios-name-server ip-addr
```

## Parameter

Parameter	Description
<i>ip-addr</i>	Sets the address of the netbios name server, which is distributed to the client.

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

You can use this command to set the address of the Netbios name server that is distributed to the client. Up to 4 Netbios name servers can be configured, which are separated by the space.

**Example**

The following example shows how to set the address of netbios name server, which is distributed to the client, to 192.168.1.10.

```
netbios-name-server 192.168.1.10
```

**2.2.8 ip-bind**

```
ip-bind ip-addr [hardware-address] [identifier] [host-name]
```

## Parameter

Parameter	Description
<i>ip-addr</i>	Stands for the address of a host of manual distribution.
<b>hardware-address</b>	Binds the IP address and the hardware address of the host, the later being in the hex format, 00-12-3F-28-AE-35.

<b>identifier</b>	Binds the IP address and the identifier of the host, the later being in the hex format, or in the inverted-comma character string format.
<b>host-name</b>	Binds the IP address and the host name, the later being in the character string format.

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

This command is used to set the address of the host whose address pool is used for manual distribution.

**Example**

The following example shows how to bind the manually distributed address, 192.168.20.200, and the hardware address, 00-12-3F-28-AE-35.

```
ip-bind 192.168.20.200 hardware-address 00-12-3F-28-AE-35
```

The following example shows how to bind the manually distributed address, 192.168.20.200, and the host's name, bdc0m-315.

```
ip-bind 192.168.20.200 host-name bdc0m-315
```

## 2.2.9 hardware-address

**hardware-address** *hardware-address*{ **type**}

## Parameter

Parameter	Description
<i>hardware-address</i>	Matches the hardware address of the client.
<b>type</b>	Means the type of the hardware address.

**Default value**

The default value of the “type” parameter is 1, standing for Ethernet.

**Command mode**

DHCP address pool configuration mode

**Instruction**

This command can be used to configure the hardware address, which is used to match the hardware address. The format of the hardware address is like **ab:cd:ef:gh**. This command is used only in manual distribution mode.

**Example**

The following example shows how to set the hardware address of the manual-DHCP-distribution address pool to **10:a0:0c:13:64:7d**.

```
hardware-address 10:a0:0c:13:64:7d
```

2.2.10 **client-identifier**

**client-identifier** *unique-identifier*

**Parameter**

Parameter	Description
unique-identifier	Matches the ID of the client.

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

This command is used to configure the client ID which is used to match the client. The format of the client ID is like **ab.cd.ef.gh**. This command is used only in manual distribution mode.

**Example**

The following example shows how to set the client ID of the manual-DHCP-distribution address pool to **10:a0:0c:13:64:7d**.

```
client-identifier 01.10.a0.0c.13.64.7d
```

### 2.2.11 client-name

**client-name** *name*

Parameter

Parameter	Description
<i>name</i>	Means the name of the client.

**Default value**

None

**Command mode**

DHCP address pool configuration mode

**Instruction**

This command is used to configure the host name which is distributed to the client. This command is used only in manual distribution mode.

**Example**

The following example shows how to set the name of the client to **test**.

```
client-name test
```

## 2.3 DHCPD Debugging

The commands for DHCPD debugging include:

- debug ip dhcpd packet
- debug ip dhcpd event

### 2.3.1 debug ip dhcpd packet

**debug ip dhcpd packet**

**Parameter**

None



**Default value**

None

**Command mode**

EXEC

**Instruction**

You can use this command to enable the debug switch of the DHCPD packet's information.

**Example**

The following example shows how to enable the output switch of the debugging information about the DHCPD packets.

```
debug ip dhcpd packet
```

**2.3.2 debug ip dhcpd event****debug ip dhcpd event****Parameter**

None

**Default value**

None

**Command mode**

EXEC

**Instruction**

You can use this command to enable the debug switch of the DHCPD event's information.

**Example**

The following example shows how to enable the output switch of the debugging information about the DHCPD events.

```
debug ip dhcpd event
```

## 2.4 DHCPD Management Commands

The DHCPD management commands include:

- show ip dhcpd statistic
- show ip dhcpd binding
- clear ip dhcpd statistic
- clear ip dhcpd binding

### 2.4.1 show ip dhcpd statistic

#### Parameter

None

#### Default value

None

#### Command mode

All modes except the user mode

#### Instruction

You can use this command to display the DHCPD statistics information, including the quantity of all kinds of packets, and the number of manually or automatically distributed addresses.

#### Example

The following example shows how to display the DHCPD statistics information.

```
Show ip dhcpd statistic
```

### 2.4.2 show ip dhcpd binding

```
show ip dhcpd binding {ip-addr}
```

#### Parameter

Parameter	Description
<i>ip-addr</i>	Stands for the address of the to-be-displayed binding information.

**Default value**

All address binding information is displayed.

**Command mode**

All modes except the user mode

**Instruction**

You can use this command to display the address binding information, IP address, hardware address, bind-type and timeout time of DHCPD.

**Example**

The following example shows how to display the DHCPD binding information.

```
Show ip dhcpd binding
```

**2. 4. 3 show ip dhcpd pool****Parameter**

None

**Default value**

None

**Command mode**

All modes except the user mode

**Instruction**

This command is used to display the address pool, including the network ID, the address range, the number of the distributed addresses and the temporarily deserted addresses, addresses available for distribution, the manually distributed IP address and the hardware address.

**Example**

The following example shows how to display the statistics information about DHCPD address pool.

```
show ip dhcpd pool
```

## 2.4.4 clear ip dhcpd statistic

### Parameter

None

### Default value

None

### Command mode

EXEC

### Instruction

This command can be used to delete the statistics information about the quantity of packets.

### Example

The following example shows how to delete the statistics information about the quantity of packets.

```
Clear ip dhcpd statistic
```

## 2.4.5 clear ip dhcpd binding

```
clear ip dhcpd binding {ip-addr|*}
```

### Parameter

Parameter	Description
<i>ip-addr</i>	Stands for the address of the to-be-deleted binding information.
*	Means to delete all binding information.

### Default value

The designated binding information will be deleted by default.

### Command mode

EXEC

**Instruction**

This command can be used to delete the binding information of a designated address.

**Example**

The following example shows how to delete the binding information of 192.168.20.210.

```
clear ip dhcpd binding 192.168.20.210
```

The following example shows how to delete the binding information of 192.168.20.210 and 192.168.20.211.

```
clear ip dhcpd binding 192.168.20.210 192.168.20.211
```

The following example shows how to delete all binding information.

```
clear ip dhcpd binding *
```

**2. 4. 6 clear ip dhcpd abandoned****Parameter**

None

**Default value**

None

**Command mode**

EXEC

**Instruction**

This command can be used to clear the **abandon** mark.

**Example**

The following command shows how to clear the **abandon** mark.

```
Clear ip dhcpd abandoned
```



## Chapter 3 DHCP-Relay Configuration Commands

### 3.1 DHCP-Relay Configuration Commands

#### 3.1.1 ip dhcp-relay snooping information option [ format snmp-ifindex]

To enable DHCP relay to transmit DHCP option82, run this command. To cancel this command, run the negative form of this command. Option82 includes the information about the DHCP relay and the DHCP client. DHCP relay will transmit the interface's information to the DHCP server through option82, and the DHCP server will distinguish and treat the client through the interface's information.

#### Parameter

None

#### Default value

None

#### Command mode

Global configuration mode

#### Instruction

The command, ip dhcp snooping information option, is used to set the DHCP relay to transmit in option82 the interface's information, which is in the standard format.

The command, ip dhcp snooping information option format snmp-ifindex, is used to set the DHCP relay to transmit in option82 the interface's information, which is in the SNMP-index format.

#### Example

```
ip dhcp snooping information option
ip dhcp snooping information option format snmp-ifindex
```

#### 3.1.2 ip dhcp-relay snooping information option vrn

To make DHCP relay support VRF, run this command. To cancel this settings, run the negative form of this command.

**Parameter**

None

**Default value**

None

**Command mode**

Global configuration mode

**Instruction**

ip dhcp-relay snooping information option vpn

**Example**