

## **FSOS**

### **IP Service Command Line Reference**

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# 1

## ARP Commands

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### 1.1 arp

To add a permanent entry in the Address Resolution Protocol (ARP) cache, use the `arp` command in global configuration mode. To remove an entry from the ARP cache, use the `no` form of this command.

#### Command Syntax

**arp** ( **vrf** *VRF-NAME* | ) *IP-ADDRESS* *HARDWARE-ADDRESS*

**no arp** ( **vrf** *VRF-NAME* | ) *IP-ADDRESS*

|                            |                                                                                                          |
|----------------------------|----------------------------------------------------------------------------------------------------------|
| <b>vrf</b> <i>VRF-NAME</i> | IP address in four-part dotted decimal format corresponding to the local data-link address               |
| <i>IP-ADDRESS</i>          | Virtual Routing and Forwarding (VRF) instance. The <i>vrf-name</i> argument is the name of the VRF table |
| <i>HARDWARE-ADDRESS</i>    | Local data-link address (a 48-bit address)                                                               |

#### Command Mode

Global Configuration

#### Default

No entries are permanently installed in the ARP cache.

## Usage

Because most hosts support dynamic resolution, you generally need not specify static ARP cache entries.

To remove all none static entries from the ARP cache, use the clear arp-cache privileged EXEC command.

## Examples

The following is an example of a static ARP entry for a typical Ethernet host:

```
Switch(config)# arp 10.31.7.19 0800.0900.1834
```

## Related Commands

**clear arp-cache**

## 1.2 arp retry-interval

When an interface requests a mapping for an address not in the cache, system will send ARP request message on the associated network requesting the address mapping. Usually, 3 request messages will be sent until the system got a response. To configure the ARP request delay interval between 2 messages, use arp retry-interval command in interface configuration mode. To restore the default value, use the no form of this command

## Command Syntax

**arp retry-interval** *SECONDS*

**no arp retry-interval**

|         |                                                                              |
|---------|------------------------------------------------------------------------------|
| SECONDS | Time (in seconds) that an ARP request delay to interface, the range is <0,3> |
|---------|------------------------------------------------------------------------------|

## Command Mode

Interface Configuration

## Default

1 second

## Usage

This command is ignored when issued on interfaces that do not use ARP. The show interface EXEC command displays the ARP retry interval value. The value as seen in the following example from the show interface command:

ARP timeout 01:00:00, ARP retry interval 1s

## Examples

The following example sets the ARP retry interval to 3 seconds:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# no switchport
```

```
Switch(config-if)# arp retry-interval 3
```

## Related Commands

**show interface**

## 1.3 arp timeout

To configure how long a dynamically learned IP address and its corresponding Media Control Access (MAC) address remain in the Address Resolution Protocol (ARP) cache, use the arp timeout command in interface configuration mode. To restore the default value, use the no form of this command.

## Command Syntax

**arp timeout** *SECONDS*

**no arp timeout**

|         |                                                                                       |
|---------|---------------------------------------------------------------------------------------|
| SECONDS | Time (in seconds) that an entry remains in the ARP cache, range is form 1 to 2147483. |
|---------|---------------------------------------------------------------------------------------|

## Command Mode

Interface Configuration

## Default

3600 seconds (1 hour)

## Usage

This command is ignored when issued on interfaces that do not use ARP. The show interface EXEC command displays the ARP timeout value. The value as seen in the following example from the show interface command:

ARP timeout 01:00:00, ARP retry interval 1s

## Examples

The following example sets the ARP timeout to 1200 seconds to allow entries to time out more quickly than the default:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# no switchport
```

```
Switch(config-if)# arp timeout 1200
```

## Related Commands

**show interface**

## 1.4 clear arp-cache

To refresh dynamically created entries from the Address Resolution Protocol (ARP) cache, use the clear arp-cache command in privileged EXEC mode.

### Command Syntax

**clear arp-cache** ( **vrf** *VRF-NAME* | ) **interface** *INTERFACE-NAME* | )

|                            |                                                                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>vrf</b> <i>VRF-NAME</i> | (Optional) Refreshes only the ARP table entries for the specified Virtual Private Network (VPN) routing and forwarding (VRF) instance |
| <i>INTERFACE-NAME</i>      | (Optional) Refreshes only the ARP table entries associated with this interface                                                        |

### Command Mode

Privileged EXEC

### Default

No default behavior or values.

### Usage

This command updates the dynamically learned IP address and MAC address mapping information in the ARP table to ensure the validity of those entries. If the refresh operation encounters any stale entries (dynamic ARP entries that have expired but have not yet been aged out by an internal, timer-driven process), those entries are aged out of the ARP table immediately as opposed to at the next refresh interval.

Use this command without any arguments or keywords to refresh all ARP cache entries for all enabled interfaces.

## Examples

The following example shows how to refresh all dynamically learned ARP cache entries for all enabled interfaces:

```
Switch# clear arp-cache
```

## Related Commands

**show ip arp**

## 1.5 clear ip arp

To refresh the specific dynamically created entry from the Address Resolution Protocol (ARP) cache, use the clear ip arp command in privileged EXEC mode.

## Command Syntax

**clear ip arp** (**vrf** *VRF-NAME* |) *IP-ADDRESS*

|                            |                                                                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>vrf</b> <i>VRF-NAME</i> | (Optional) Refreshes only the ARP table entries for the specified Virtual Private Network (VPN) routing and forwarding (VRF) instance |
| <i>VRF-NAME</i>            | (Optional) Refreshes only the ARP table entries associated with this IP address                                                       |

## Command Mode

Privileged EXEC

## Default

No default behavior or values.

## Usage

This command updates the specific dynamically learned IP address and MAC address mapping information in the ARP table. If the refresh operation encounters any stale entries (dynamic ARP entries that have expired but have not yet been aged out by an internal, timer-driven process), the entry is aged out of the ARP table immediately as opposed to at the next refresh interval.

## Examples

The following example shows how to refresh the dynamically learned ARP entries 10.10.10.10.

```
Switch# clear ip arp 10.10.10.10
```

## Related Commands

**show ip arp**

## 1.6 clear ip arp statistics

To clear ARP packets statistics processed by system, use the clear ip arp statistics command in privileged EXEC mode.

## Command Syntax

**clear ip arp (vrf *VRF-NAME* |) statistics**

|                            |                                                                                                                       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>vrf</b> <i>VRF-NAME</i> | (Optional) Clear ARP statistics for the specified Virtual Private Network (VPN) routing and forwarding (VRF) instance |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------|

## Command Mode

Privileged EXEC

## Default

No default behavior or values.

## Usage

This command ARP packets statistics.

## Examples

The following example shows how to clear ARP packets statistics.

```
Switch# clear ip arp statistics
```

## Related Commands

**show ip arp summary**

# 1.7 show ip arp

To display the entries in the Address Resolution Protocol (ARP) table, use the `show ip arp` command in privileged EXEC mode.

## Command Syntax

**show ip arp** ((**vrf** *VRF-NAME*||) **interface** *INTERFACE-NAME* |)

|                            |                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>vrf</b> <i>VRF-NAME</i> | (Optional) Displays the entries under the Virtual Private Network (VPN) routing and forwarding (VRF) instance specified by the <i>vrf-name</i> argument |
| <i>INTERFACE-NAME</i>      | (Optional) Refreshes only the ARP table entries associated with this interface                                                                          |

## Command Mode

Privileged EXEC

## Default

None

## Usage

To display all entries in the ARP cache, use this command without any arguments or keywords.

## Examples

The following is sample output from the **show ip arp** command:

Switch# show ip arp

| Protocol | Address     | Age (min) | Hardware Addr  | Interface |
|----------|-------------|-----------|----------------|-----------|
| Internet | 1.1.1.1     | -         | 7cb5.0157.0c00 | eth-0-1   |
| Internet | 2.2.2.1     | -         | 7cb5.0157.0c00 | eth-0-2   |
| Internet | 3.3.3.1     | -         | 7cb5.0157.0c00 | eth-0-3   |
| Internet | 10.0.20.1   | -         | 7cb5.0157.0c00 | eth-0-10  |
| Internet | 10.0.20.254 | -         | 0000.5e00.0101 | eth-0-10  |

## Related Commands

**arp**

## 1.8 show ip arp summary

To display the total number of Address Resolution Protocol (ARP) table entries, the number of ARP table entries for each ARP entry mode, and the number of ARP table entries for each interface on the router, use the show ip arp summary command in privileged EXEC mode.

## Command Syntax

**show ip arp ( vrf *VRF-NAME* | ) summary**

|                     |                                                                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>vrf</b> VRF-NAME | (Optional) Displays the entries under the Virtual Private Network (VPN) routing and forwarding (VRF) instance specified by the <i>vrf-name</i> argument |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

## Command Mode

Privileged EXEC

## Default

None

## Usage

Use this command to display high-level statistics about the ARP table entries:

## Examples

The following is sample output from the show ip arp summary command:

Switch# show ip arp summary

```
Gratuitous ARP learning is disabled
2 IP ARP entries, with 0 of them incomplete
(Static:1, Dyamic:0, Interface:1)
ARP Pkt Received is: 0
ARP Pkt Send number is: 1
ARP Pkt Dicard number is: 0
```

## Related Commands

**arp**

## 1.9 debug arp

To turn on the ARP debug, use debugs arp command in EXEC mode. To turn off the ARP debug, use the no form of this command.

## Command Syntax

**debug arp** (**vrf** *VRF-NAME* |)

|                            |                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>vrf</b> <i>VRF-NAME</i> | (Optional) Displays the entries under the Virtual Private Network (VPN) routing and forwarding (VRF) instance specified by the <i>vrf-name</i> argument |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

## Command Mode

Privileged EXEC

## Usage

Use this command to debug ARP packets received and send; also for debug ARP entry creating, updating and deleting.

## Examples

The following is sample output from the debug arp command:

Switch# debug arp

```
Sep  7 03:34:08 SWITCH ARP-7: IP ARP: creating entry for IP address: 7.7.7.7, hw: e64d.0445.df00
Sep  7 03:34:08 SWITCH ARP-7: IP ARP: send req src 7.7.7.7 e64d.0445.df00, dst 7.7.7.7 eth-0-1
```

## Related Commands

**show debugging arp**

## 1.10 show debugging arp

To display the debugging status of ARP, use the show debugging arp command in EXEC mode.

## Command Syntax

**show debugging arp** (**vrf** *VRF-NAME* |)

|                            |                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>vrf</b> <i>VRF-NAME</i> | (Optional) Displays the entries under the Virtual Private Network (VPN) routing and forwarding (VRF) instance specified by the <i>vrf-name</i> argument |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

## Command Mode

Privileged EXEC

## Default

None

## Usage

Use this command to display the debugging status of ARP.

## Examples

The following is sample output from the show debugging arp command:

```
Switch# show debugging arp
```

```
ARP debugging status:
ARP packet debugging is on
```

## Related Commands

**debug arp**

## 1.11 proxy-arp enable

The switch uses proxy ARP to help hosts determine MAC addresses of hosts on other networks or subnets. To enable proxy Address Resolution Protocol (ARP) on an interface,

use the proxy-arp enable command in interface configuration mode. To disable proxy ARP on the interface, use the no form of this command.

## Command Syntax

**proxy-arp enable**

**no proxy-arp enable**

## Command Mode

Interface Configuration

## Default

Proxy ARP is disabled by default.

## Usage

When proxy ARP is disabled, a device will respond to ARP requests received on its interface only if the target IP address is the same as its IP address.

## Examples

The following example enables proxy ARP on interface eth-0-1:

```
Switch(config)#interface eth-0-1
```

```
Switch(config-if)#no switchport
```

```
Switch(config-if)#no shutdown
```

```
Switch(config-if)#ip address 1.1.1.1/24
```

```
Switch(config-if)# proxy-arp enable
```

## Related Commands

**local-proxy-arp enable**

## 1.12 local-proxy-arp enable

The local proxy ARP feature allow the L3 Device to response ARP request which's ARP Target address is in the same subnet the ARP request comes from(No Routing is required). To enable local proxy Address Resolution Protocol (ARP) on an interface, use the local-proxy-arp enable command in interface configuration mode. To disable proxy ARP on the interface, use the no form of this command.

### Command Syntax

**local-proxy-arp enable**

**no local-proxy-arp enable**

### Command Mode

Interface Configuration

### Default

Local proxy ARP is disabled by default.

### Usage

Internet Control Message Protocol (ICMP) redirects are disabled on interfaces where the local proxy ARP feature is enabled. The main condition we need to enable local ARP proxy is that the switch enables port isolate.

### Examples

The following example enables local proxy ARP on interface eth-0-1:

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# no switchport
```

```
Switch(config-if)# no shutdown
```

```
Switch(config-if)# ip address 1.1.1.1/24
```

Switch(config-if)# local-proxy-arp enable

## Related Commands

**proxy-arp enable**

## 1.13 gratuitous-arp-learning enable

To enable the gratuitous Address Resolution Protocol (ARP) control on the router, use the `gratuitous-arp-learning enable` command in global configuration mode. To disable the ARP control, use the `no` form of this command.

### Command Syntax

**gratuitous-arp-learning enable**

**no gratuitous-arp-learning enable**

### Command Mode

Global Configuration

### Default

Gratuitous ARP learning is disabled by default.

### Usage

None

### Examples

The following example enables gratuitous ARP learning on interface eth-0-1:

Switch(config)# gratuitous-arp-learning enable

### Related Commands

**gratuitous-arp-sending enable**

# 2

## DHCP Client Commands

---

### 2.1 ip address dhcp

To acquire an IP address from Dynamic Host Configuration Protocol(DHCP), use the `ip address dhcp` command in interface configuration mode. To disable the function, use the `no ip address dhcp` form of this command.

#### Command Syntax

**ip address dhcp**

**no ip address dhcp**

#### Command Mode

Interface Configuration

#### Default

DHCP Client is not enabled on interface.

#### Usage

Once this command was enabled on an UP interface, it will acquire IP address immediately, otherwise the DHCP function of the interface will be in SUSPEND status. The `no ip address dhcp` command will send a DHCPRELEASE message to server and remove any IP address.

#### Examples

The following example shows how to enable dhcp client function:

```
Switch(config-if)# ip address dhcp
```

The following example shows how to disable dhcp client function:

```
Switch(config-if)# no ip address dhcp
```

### **Related Commands**

**dhcp client request**

**dhcp client client-id**

**dhcp client class-id**

**dhcp client lease**

**dhcp client hostname**

**management ip address dhcp**

**show dhcp client**

## **2.2 management ip address dhcp**

To acquire an IP address for management interface from by DHCP, use the management IP address dhcp command in global configuration mode. To disable the function, use the no form of this command.

### **Command Syntax**

**management ip address dhcp**

**no management ip address dhcp**

### **Command Mode**

Global Configuration

### **Default**

DHCP Client is not enabled on management interface.

## Usage

Use this command like IP address dhcp.

## Examples

The following example shows how to enable dhcp client function on management interface:

```
Switch(config-if)# management ip address dhcp
```

The following example shows how to disable dhcp client function on management interface:

```
Switch(config-if)# no management ip address dhcp
```

## Related Commands

**show dhcp client**

## 2.3 dhcp client request

To request configuration parameters by DHCP, use the dhcp client request command in interface configuration mode. To cancel the request, use the no form of this command.

## Command Syntax

**dhcp client request ( router | static-route | classless-static-route |  
classless-static-route-ms | tftp-server-address | dns-nameserver | domain-name |  
netbios-nameserver | vendor-specific )**

**no dhcp client request ( router | static-route | classless-static-route |  
classless-static-route-ms | tftp-server-address | dns-nameserver | domain-name |  
netbios-nameserver | vendor-specific )**

|                        |                                     |
|------------------------|-------------------------------------|
| router                 | Default router option (3)           |
| static-route           | Static route option (33)            |
| classless-static-route | Classless static route option (121) |

|                           |                                               |
|---------------------------|-----------------------------------------------|
| classless-static-route-ms | Microsoft classless static route option (249) |
| tftp-server-address       | TFTP server ip address option (150)           |
| dns-nameserver            | DNS name server option (6)                    |
| domain-name               | Domain name option (15)                       |
| netbios-nameserver        | NetBIOS name server option (44)               |
| vendor-specific           | Vendor specific option (43)                   |

## Command Mode

Interface Configuration

## Default

static-route, classless-static-route, classless-static-route-ms, tftp-server-address and router is requested as default.

## Usage

Use this command to request configuration from DHCP server. It can be typed many times with each option or one time with all options wanted. Note that when Option 249 coexist with option 121 then the option 121 should have high priority and option 249 should be ignored. when option 121 or option 249 coexist with option 33 then the option 33 should be ignored. This command should be issued before ip address dhcp command. If you issued ip address dhcp before, this command will take effect after next ip address dhcp command.

## Examples

The following example shows how to request dhcp option static-route and tftp-server-address:

```
Switch(config-if)# dhcp client request static-route tftp-server-address
```

The following example shows how to request dhcp option router:

```
Switch(config-if)# dhcp client request router
```

The following example shows how to cancel request of dhcp option router:

```
Switch(config-if)# no dhcp client request router
```

## Related Commands

**ip address dhcp**

## 2.4 dhcp client client-id

To specify a client-id used by DHCP server and client for identifying a client, use the `dhcp client client-id` command in interface configuration mode. To remove this configuration, use the `no` form of this command.

### Command Syntax

**dhcp client client-id** ( **ascii** *WORD* | **hex** *HEX-STRING* | *IFVLAN* | *IFAGG* | *IFPHYSICAL* )

**no dhcp client client-id**

|            |                              |
|------------|------------------------------|
| ascii      | ASCII type                   |
| WORD       | Client-ID as ascii string    |
| hex        | Hex type                     |
| HEX-STRING | Class-ID in hex string       |
| IFVLAN     | Vlan interface's name        |
| IFAGG      | Aggregation interface's name |
| IFPHYSICAL | Physical interface's name    |

### Command Mode

Interface Configuration

## Default

The default client-id, format of which is like "switch-HWADDR-IFNAME", will be used.

## Usage

This command should be issued before IP address dhcp command. If you issued IP address dhcp before, this command will take effect after next IP address dhcp command.

## Examples

The following example shows how to specify a client-id for an interface:

```
Switch(config-if)# dhcp client client-id ascii switch-client
```

The following example shows how to delete client-id set before:

```
Switch(config-if)# no dhcp client client-id
```

## Related Commands

**ip address dhcp**

## 2.5 dhcp client class-id

To specify a class-id for DHCP server and client, use the dhcp client class-id command in interface configuration mode. To remove this configuration, use the no form of this command.

## Command Syntax

**dhcp client class-id** ( *WORD* | **hex** *HEX-STRING* )

**no dhcp client class-id**

|      |                           |
|------|---------------------------|
| WORD | Client-ID as ascii string |
| hex  | Hex type                  |

|            |                        |
|------------|------------------------|
| HEX-STRING | Class-ID in hex string |
|------------|------------------------|

## Command Mode

Interface Configuration

## Default

No class-id is set.

## Usage

Class-id used by DHCP clients to optionally identify the type and configuration of a DHCP client. Vendors and sites may choose to define specific class identifiers to convey particular configuration or other identification information about a client. This command should be issued before ip address dhcp command. If you issued ip address dhcp before, this command will take effect after next ip address dhcp command.

## Examples

The following example shows how to specify class-id for an interface:

```
Switch(config-if)# dhcp client class-id switch
```

The following example shows how to delete class-id set before::

```
Switch(config-if)# no dhcp client class-id
```

## Related Commands

**ip address dhcp**

## 2.6 dhcp client lease

To configure the duration of the lease for an IP address request by DHCP client, use the `dhcp client lease` command in interface configuration mode. To remove the configuration, use the `no` form of this command.

### Command Syntax

**dhcp client lease** *DAYS* (*HOURS* (*MINUTES*) |)

|         |                                    |
|---------|------------------------------------|
| DAYS    | The number of days in lease        |
| HOURS   | The number of hours in the lease.  |
| MINUTES | The number of minutes in the lease |

### Command Mode

Interface Configuration

### Default

No lease is requested by client.

### Usage

Use this command to specify the lease wanted by client, DHCP server may accept this request or ignore it. This command should be issued before ip address dhcp command. If you issued ip address dhcp before, this command will take effect after next ip address dhcp command.

### Examples

The following example shows how to specify lease 20 minutes for dhcp client:

```
Switch(config-if)# dhcp client lease 0 0 20
```

The following example shows how to remove the lease set before:

```
Switch(config-if)# no dhcp client lease
```

## Related Commands

**ip address dhcp**

## 2.7 dhcp client hostname

To specify or modify the hostname sent in the DHCP message; use the `dhcp client hostname` command in interface configuration mode. To remove the hostname, use the `no` form of this command.

### Command Syntax

**dhcp client hostname** *WORD*

**no dhcp client hostname**

|      |           |
|------|-----------|
| WORD | Host name |
|------|-----------|

### Command Mode

Interface Configuration

### Default

The host name in system will be used.

### Usage

This command should be issued before `ip address dhcp` command. If you issued `IP address dhcp` before, this command will take effect after next `IP address dhcp` command.

## Examples

The following example shows how to specify name of the host:

```
Switch(config-if)# dhcp client hostname switch
```

The following example shows how to remove the last set:

```
Switch(config-if)# no dhcp client hostname
```

## Related Commands

**ip address dhcp**

## 2.8 dhcp client default-router distance

To specify the default router distance for the routes leased from DHCP server, use the `dhcp client default-router distance` command in global configuration mode. To remove the configuration, use the `no` form of this command.

### Command Syntax

**dhcp client default-router distance** *METRIC*

**no dhcp client default-router distance**

|        |                                                   |
|--------|---------------------------------------------------|
| METRIC | The default metric of routes , the range is 1~255 |
|--------|---------------------------------------------------|

### Command Mode

Global Configuration

### Default

The default value for the default metric is 254.

## Usage

None

## Examples

The following example shows how to enable dhcp client function on management interface:

```
Switch(config)# dhcp client default-router distance 233
```

The following example shows how to use the default value of default route metric:

```
Switch(config)# no dhcp client default-router distance
```

## Related Commands

**ip address dhcp**

## 2.9 dhcp client broadcast-flag

To specify the broadcast-flag in the DHCP message, use the **dhcp client broadcast-flag** command in global configuration mode. To remove this configuration, use the **no** form of this command.

## Command Syntax

**dhcp client broadcast-flag**

**no dhcp client broadcast-flag**

## Command Mode

Global Configuration

## Default

Broadcast-flag will be set in DHCP message sent by client for request IP address.

## Usage

This flag tell DHCP server that client can't receive unicast IP datagrams until been configured with an IP address. Thus server or relay agent will broadcast any messages to the client on the client's subnet.

## Examples

The following example shows how to set broadcast-flag:

```
Switch(config)# dhcp client broadcast-flag
```

The following example shows how to delete broadcast-flag:

```
Switch(config)# no dhcp client broadcast-flag
```

## Related Commands

**ip address dhcp**

## 2.10 debug dhcp client

Use this command to turn on the debug switches of dhcp client module.

To restore the default, use the **no** form of this command

## Command Syntax

**debug dhcp client ( events | error | dump | packet | all )**

**no debug dhcp client ( events | error | dump | packet | all )**

|        |                            |
|--------|----------------------------|
| events | Client events              |
| error  | Error DHCP message         |
| packet | DHCP message fields        |
| dump   | Dump message in hex format |

|     |                       |
|-----|-----------------------|
| all | Turn all debugging on |
|-----|-----------------------|

## Command Mode

Privileged EXEC

## Default

None

## Usage

Use command “terminal monitor ” to make debug messages print on the VTY immediately.

Use command “show logging buffer” to check the debug messages in the logging buffer.

## Examples

The following is sample to open dhcp client debug switches:

```
Switch# debug dhcp client all
```

## Related Commands

**terminal monitor**

**show logging buffer**

## 2.11 show dhcp client

To show information of dhcp client on one or all interfaces, use the show dhcp client command in privileged EXEC mode.

## Command Syntax

**show dhcp client (management | IFVLAN | IFAGG | IFPHYSICAL |) (verbose|)**

|            |                                 |
|------------|---------------------------------|
| management | Management interface            |
| IFVLAN     | Vlan interface's name           |
| IFAGG      | Aggregation interface's name    |
| IFPHYSICAL | Physical interface's name       |
| verbose    | DHCP client verbose information |

## Command Mode

Privileged EXEC

## Default

None

## Usage

To see more detail information, add verbose at the last of command

## Examples

The following example shows how to display DHCP client information on all interfaces:

Switch(config-if)# show dhcp client verbose

```
DHCP client informations:
=====
vlan1 DHCP client information:
  Current state: SELECT
  Transaction ID: 0x3ac1c1c7
=====
eth-0-1 DHCP client information:
  Current state: SELECT
  Transaction ID: 0x2fd3f55b
```

## Related Commands

**ip address dhcp**

## 2.12 show dhcp client statistics

To show statistics of DHCP client, use the `show dhcp client statistics` command in privileged EXEC mode.

### Command Syntax

**show dhcp client statistics**

### Command Mode

Privileged EXEC

### Default

None

### Usage

Use this command to show the status of DHCP client, like DHCP packets counter.

### Examples

The following example shows how to display DHCP packets statistics:

Switch# show dhcp client statistics

```
DHCP client packet statistics:
```

```
=====
DHCP OFFERS      received: 0
DHCP ACKs        received: 0
DHCP NAKs        received: 0
DHCP Others      received: 0
DHCP DISCOVER    sent: 0
DHCP DECLINE     sent: 0
DHCP RELEASE     sent: 0
DHCP REQUEST     sent: 0
DHCP packet send failed: 0
```

### Related Commands

**ip address dhcp**

## 2.13 clear dhcp client statistics

To clear statistics of dhcp client, use the clear dhcp client statistics command in privileged EXEC mode.

### Command Syntax

**clear dhcp client statistics**

### Command Mode

Privileged EXEC

### Default

None

### Usage

This command will clear DHCP packet counter.

### Examples

The following example shows how to clear statistics:

```
Switch# clear dhcp client statistics
```

### Related Commands

**ip address dhcp**

**show dhcp client statistics**

# 3

## DHCP Relay Commands

---

### 3.1 dhcp relay

To enable the DHCP relay service, use the `dhcp relay` command in global configuration mode. To disable this function, use the `no` form of this command.

#### Command Syntax

**`dhcp relay`**

**`no dhcp relay`**

#### Command Mode

Global Configuration

#### Default

DHCP relay is disabled.

#### Usage

The DHCP service must be enabled with the `dhcp service` command before DHCP relay service can be used.

#### Examples

The following example shows how to enable DHCP relay agent:

```
Switch(config)# dhcp relay
```

## Related Commands

**service dhcp**

## 3.2 dhcp-server (global)

To create a DHCP server group, use the `dhcp-server` command in global configuration mode.

To remove a DHCP server group, use the `no` form of this command.

### Command Syntax

**dhcp-server** *NUMBER SERVER-LIST*

**no dhcp-server** *NUMBER (SERVER-LIST|)*

|             |                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------|
| NUMBER      | Number of the DHCP server group. The range is from 1 to 16                                      |
| SERVER-LIST | The IP address list of the DHCP server. The range in number of the servers in a list is 1 to 16 |

### Command Mode

Global Configuration

### Default

No DHCP server group is defined.

### Usage

This command is used to specify the remote DHCP server.

### Examples

The following example shows how to configure `dhcp-server` group globally:

```
Switch(config)# dhcp-server 1 1.1.1.1 2.2.2.2 3.3.3.3
```

## Related Commands

**service dhcp**

**dhcp-server (interface)**

## 3.3 dhcp-server (interface)

To add an interface into a DHCP server group, use the `dhcp-server` command in interface configuration mode. To remove this interface from the DHCP server group, use the `no` form of this command.

### Command Syntax

**dhcp-server** *NUMBER*

**no dhcp-server**

|        |                                                            |
|--------|------------------------------------------------------------|
| NUMBER | Number of the DHCP server group. The range is from 1 to 16 |
|--------|------------------------------------------------------------|

### Command Mode

Interface Configuration

### Default

No DHCP server group is configured for the interface.

### Usage

This command is used to specify DHCP server group which is configured by the command `dhcp-server` in global mode.

## Examples

The following example shows how to configure dhcp-server group for interface:

```
Switch(config-if)# dhcp-server 1
```

## Related Commands

**service dhcp**

## 3.4 dhcp relay information check

To enable validation of relay agent information option in forwarded reply messages, use the dhcp relay information check command in global configuration mode. To disable an information check, use the no form of this command.

### Command Syntax

**dhcp relay information check**

**no dhcp relay information check**

### Command Mode

Global Configuration

### Default

The validation of relay agent information is enabled. Invalid messages are dropped.

### Usage

None

## Examples

The following example shows how to enable validation of relay agent information:

```
Switch(config)# dhcp relay information check
```

## Related Commands

**dhcp relay information option**

### 3.5 dhcp relay information option

To enable the system to insert a DHCP relay agent information option in forwarded request messages to a DHCP server, use the **dhcp relay information option** command in global configuration mode. To disable inserting relay information, use the **no** form of this command.

#### Command Syntax

**dhcp relay information option**

**no dhcp relay information option**

#### Command Mode

Global Configuration

#### Default

No relay agent information is inserted.

#### Usage

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

#### Examples

The following example shows how to enable inserting of dhcp relay information option.

```
Switch(config)# dhcp relay information option
```

## Related Commands

**dhcp relay information check**

**dhcp relay information policy**

## 3.6 dhcp relay information policy

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

### Command Syntax

**dhcp relay information policy (drop | keep | replace)**

**no dhcp relay information policy**

|         |                                                                                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|
| 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                                                          |

### Command Mode

Global Configuration

### Default

The DHCP relay won't change existing relay information.

## Usage

A DHCP relay agent may receive a message from another DHCP relay agent that already contains relay information. By default, this message will be forwarded with the relay information from the previous relay agent untouched.

## Examples

The following example shows how to configure policy of dhcp relay information

```
Switch(config)# dhcp relay information policy drop
```

## Related Commands

**dhcp relay information option**

**dhcp relay information policy**

## 3.7 dhcp relay information trust-all

To configure all interfaces as trusted sources of the DHCP relay agent information option, use the dhcp relay information trust-all command in global configuration mode. To restore these interfaces to their default behavior, use the no form of this command.

## Command Syntax

**dhcp relay information trust-all**

**no dhcp relay information trust-all**

## Command Mode

Global Configuration

## Default

All interfaces on the switch are considered untrusted.

## Usage

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 DHCP relay agent will discard the packet. If the `dhcp relay information trust-all` command is configured globally, the 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 `dhcp-server` command as in normal DHCP relay operation.

## Examples

The following example shows how to configure dhcp relay information trust globally:

```
Switch(config)# dhcp relay information trust-all
```

## Related Commands

**dhcp relay information trusted**

## 3.8 dhcp relay information trusted

To configure an interface as a trusted source of DHCP relay agent information option, use the `dhcp relay information trusted` command in interface configuration mode. To restore the interface to the default behavior, use the `no` form of the command.

## Command Syntax

**dhcp relay information trusted**

**no dhcp relay information trusted**

## Command Mode

Interface Configuration

## Default

All interfaces on the router are considered untrusted.

## Usage

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 DHCP relay agent will discard the packet. If the dhcp relay information trusted command is configured globally, the 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 dhcp-server command as in normal DHCP relay operation.

## Examples

The following example shows how to configure an interface as trusted source of dhcp relay information:

```
Switch(config-if)# dhcp relay information trusted
```

## Related Commands

**dhcp relay information trust-all**

## 3.9 service dhcp

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

## Command Syntax

**service dhcp enable**

**service dhcp disable**

## Command Mode

Global Configuration

## Default

DHCP service is disabled globally.

## Usage

Only the main DHCP service is enabled by the service dhcp command, can other DHCP services be used, such as dhcp relay or dhcp snooping.

## Examples

The following example shows how to enable DHCP service globally:

```
Switch(config)# service dhcp enable
```

## Related Commands

**dhcp relay**

**dhcp snooping**

## 3.10 debug dhcp relay

Use this command to turn on the debug switches of dhcp relay module.

To restore the default, use the **no** form of this command

## Command Syntax

**debug dhcp relay ( events | error | dump | packet | all )**

**no debug dhcp relay ( events | error | dump | packet | all )**

|        |                            |
|--------|----------------------------|
| events | Relay events               |
| error  | Error DHCP message         |
| packet | DHCP message fields        |
| dump   | Dump message in hex format |

|     |                       |
|-----|-----------------------|
| all | Turn all debugging on |
|-----|-----------------------|

## Command Mode

Privileged EXEC

## Default

None

## Usage

Use command “terminal monitor ” to make debug messages print on the VTY immediately.

Use command “show logging buffer” to check the debug messages in the logging buffer.

## Examples

The following is sample to open dhcp relay debug switches:

```
Switch# debug dhcp relay all
```

## Related Commands

**terminal monitor**

**show logging buffer**

## 3.11 show dhcp-server

To display the DHCP server groups, use the show dhcp-server command in privileged EXEC mode.

## Command Syntax

**show dhcp-server**

## Command Mode

Privileged EXEC

## Default

None

## Usage

This command is used to display all the DHCP server groups configured with command `dhcp-server` in global mode.

## Examples

The following example shows how to display dhcp-server group information:

Switch# show dhcp-server

```
DHCP server group information:
```

```
=====
```

```
group 1 ip address list:
```

```
[1] 1.1.1.1
```

```
[2] 2.2.2.2
```

```
[3] 3.3.3.3
```

```
[4] 4.4.4.4
```

```
[5] 5.5.5.5
```

```
[6] 6.6.6.6
```

```
[7] 7.7.7.7
```

```
[8] 8.8.8.8
```

## Related Commands

**dhcp-server (global)**

## 3.12 show dhcp relay interfaces

To display to which dhcp-server group the interface belongs, use the `show dhcp relay interfaces` command in privileged EXEC mode.

## Command Syntax

**show dhcp relay interfaces**

## Command Mode

Privileged EXEC

## Default

None

## Usage

This command is used to display the interface which is configured DHCP relay.

## Examples

The following example shows how to display dhcp relay interfaces information:

Switch# show dhcp relay interfaces

```
List of DHCP relay enabled interface(s):
```

```
DHCP relay service status: enabled
```

```
Interface Name      DHCP server group
```

```
=====
```

```
eth-0-1             1
```

## Related Commands

**show dhcp-server**

## 3.13 show dhcp relay information config

To display the DHCP relay information configurations, use the show dhcp relay information config command in privileged EXEC mode.

## Command Syntax

**show dhcp relay information config**

## Command Mode

Privileged EXEC

## Default

None

## Usage

This command is used to display the configuration of DHCP relay.

## Examples

The following example shows how to display dhcp relay configuration :

Switch# show dhcp relay information config

```
DHCP relay agent information configuration:
=====
no dhcp relay information option
dhcp relay information check
dhcp relay information policy keep
```

## Related Commands

**dhcp relay information option**

## 3.14 show dhcp relay information trusted-sources

To display all interfaces configured to be a trusted source for the DHCP relay information option, use the show dhcp relay information trusted-sources command in privileged EXEC mode.

## Command Syntax

**show dhcp relay information trusted-sources**

## Command Mode

Privileged EXEC

**Default**

None

**Usage**

This command is used to display all interfaces configured to be a trusted source for DHCP relay.

**Examples**

The following example shows how to display dhcp relay information trusted-sources:

Switch# show dhcp relay information trusted-sources

```
List of trusted sources of relay agent information option:
=====
All interfaces are trusted source of relay agent information option
```

**Related Commands**

**dhcp relay information trusted**

## 3.15 show dhcp relay statistics

To display the statistics of DHCP packets relayed by the switch, use the show dhcp relay statistics command in privileged EXEC mode.

**Command Syntax**

**show dhcp relay statistics**

**Command Mode**

Privileged EXEC

**Default**

None

## Usage

This command is used to display detail DHCP statistics which dealt by the switch.

## Examples

The following example shows how to display dhcp relay statistics:

Switch# show dhcp relay statistics

```
DHCP relay packet statistics:
```

```
=====
```

```
Client relayed packets: 101
```

```
Server relayed packets: 88
```

```
Client error packets: 0
```

```
Server error packets: 0
```

```
Bogus GIADDR drops: 15
```

```
Bad circuit ID packets: 0
```

```
Corrupted agent options: 0
```

```
Missing agent options: 0
```

```
Missing circuit IDs: 0
```

## Related Commands

**clear dhcp relay statistics**

## 3.16 clear dhcp relay statistics

To clear the statistics of DHCP packets relayed by the switch, use the clear dhcp relay statistics command in privileged EXEC mode.

## Command Syntax

**clear dhcp relay statistics**

## Command Mode

Privileged EXEC

## Default

None

## Usage

This command is used to clear detail DHCP statistics which dealt by the switch.

## Examples

The following example shows how to clear dhcp relay statistics:

```
Switch# clear dhcp relay statistics
```

## Related Commands

**show dhcp relay statistics**

# 4 DHCP Server Commands

---

## 4.1 service dhcp

To enable or disable the DHCP snooping, server and relay agent features on your router, use the service dhcp command in global configuration mode.

### Command Syntax

**service dhcp enable**

**service dhcp disable**

### Command Mode

Global Configuration

### Default

DHCP service is disabled.

### Usage

Only the main DHCP service is enabled by the service dhcp command, can other DHCP services be used, such as dhcp relay, dhcp server and dhcp snooping.

### Examples

The following is sample output from the service dhcp command:

```
Switch(config)# service dhcp enable
```

## Related Commands

**dhcp server**

**dhcp relay**

**dhcp snooping**

## 4.2 dhcp-server (global)

To enable the DHCP server service, use the **dhcp server** command in global configuration mode. To disable this function, use the **no** form of this command.

### Command Syntax

**dhcp server**

**no dhcp server**

### Command Mode

Global Configuration

### Default

DHCP server is disabled.

### Usage

The DHCP service must be enabled with the **dhcp server** command before DHCP server service can be used.

### Examples

The following is sample output from the **dhcp server** command:

```
Switch(config)# dhcp server
```

## Related Commands

**service dhcp**

**dhcp-server (interface)**

## 4.3 dhcp-server (interface)

To specify a L3 interface to act as a DHCP Server, use the `dhcp server` command in interface configuration mode. To remove the specification, use the `no` form of this command.

### Command Syntax

**dhcp server [enable | disable]**

|         |                                                |
|---------|------------------------------------------------|
| enable  | Specify a L3 interface to act as a DHCP server |
| disable | Remove DHCP server on a L3 interface           |

### Command Mode

Interface Configuration

### Default

Neither DHCP server nor DHCP relay is specified.

### Usage

This command is used to specify a L3 interface to act as a DHCP Server.

### Examples

The following is sample output from the `dhcp server` command:

```
Switch(config-if)# dhcp server enable
```

## Related Commands

**service dhcp**

**dhcp server(global)**

## 4.4 dhcp ping packets

To configure how many ping packets that are sent before assigning the address to a requesting client, use the **dhcp ping packets** command in interface configuration mode. To restore the default value, use the **no** form of this command.

### Command Syntax

**dhcp ping packets** number

**no dhcp ping packets** number

|        |                                                                                                             |
|--------|-------------------------------------------------------------------------------------------------------------|
| NUMBER | <0-10> Specify the number of ping packets that are sent before assigning the address to a requesting client |
|--------|-------------------------------------------------------------------------------------------------------------|

### Command Mode

Global Configuration

### Default

The default value is one packet.

### Usage

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.

## Examples

The following is sample output from the dhcp ping packets command:

```
Switch(config)# dhcp ping packets 10
```

## Related Commands

**service dhcp**

**dhcp ping timeout**

## 4.5 dhcp ping timeout

To configure how long a DHCP server waits for a ping reply from an address pool; use the dhcp ping timeout command in interface configuration mode. To restore the default value, use the no form of this command.

## Command Syntax

**dhcp ping timeout** number

**no dhcp ping timeout** number

|        |                                                                |
|--------|----------------------------------------------------------------|
| NUMBER | <1-10> Specifies how long to wait for a ping reply in seconds. |
|--------|----------------------------------------------------------------|

## Command Mode

Global Configuration

## Default

The default value is waiting for one second.

## Usage

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.

## Examples

The following is sample output from the dhcp ping timeout command:

```
Switch(config)# dhcp ping timeout 3
```

## Related Commands

**service dhcp**

**dhcp ping packets**

## 4.6 dhcp pool

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

## Command Syntax

**dhcp pool WORD**

**no dhcp pool WORD**

|      |                                                                                                                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WORD | WORD: The name of a DHCP pool:<br>1) the length range should be [1, 32)<br>2) The characters can only include [0-9a-zA-Z.-_],<br>3) The string must starting with alphabetic, ending with alphanumeric or digit |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Command Mode

Global Configuration

## Default

The default value is DHCP address pools are not configured.

## Usage

During execution, the configuration mode changes to DHCP pool configuration mode, 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 is sample output from the dhcp pool command:

```
Switch(config)# dhcp pool pool1
```

## Related Commands

**service dhcp**

**dhcp select**

**static-bind**

**dhcp excluded-address**

**network (DHCP)**

## 4.7 static-bind

To specify an address binding mapping between the IP address and MAC address of a client, use the static-bind pool configuration command. To remove the address binding mapping, use the no form of this command.

## Command Syntax

**static-bind ip-address** {[ip-address wildcard-mask | ip-address/prefix-length]  
[mac-address HHHH.HHHH.HHHH | client-identifier (ascii WORD | hex hex-string)]}

**no static-bind ip-address** A.B.C.D

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| ip-address                    | IP address.                                           |
| wildcard-mask                 | IP-address-type mask that includes “don’t care” bits. |
| prefix-length                 | Prefix length for the ip address.                     |
| mac-address<br>HHHH.HHHH.HHHH | the hardware address of a DHCP client.                |
| ascii WORD                    | the client id as ascii string                         |
| hex hex-string                | the client id as hex string                           |

## Command Mode

DHCP poll Configuration

## Default

The default value is none address binding mapping specified..

## Usage

You can only configure one manual binding per host pool.

## Examples

The following is sample output from the static-bind command:

Switch(dhcp-config)# static-bind ip-address 10.10.10.10/24 mac-address 0012.2222.2222

## Related Commands

**dhcp pool**

## 4.8 dns-server address

To specify the DNS IP servers available to a DHCP client, use the `dns-server` DHCP pool configuration command. To remove the DNS server list, use the `no` form of this command.

### Command Syntax

**dns-server** A.B.C.D (A.B.C.D... A.B.C.D)

**no dns-server**

|                                  |                                                                                                                                           |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| A.B.C.D                          | 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. |
| A.B.C.D... A.B.C.D<br>(Optional) | Specifies up to eight addresses in the command line.                                                                                      |

### Default

The default value is none DNS IP servers specified.

### Command Mode

DHCP pool configuration

### Usage

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 is sample output from the `dns-server` command:

```
Switch(dhcp-config)# dns-server 1.1.1.1 2.2.2.2
```

## Related Commands

**dhcp pool**

## 4.9 domain-name

To specify the domain name for a DHCP client, use the domain-name DHCP pool configuration command. To remove the domain name, use the no form of this command.

### Command Syntax

**domain-name WORD**

**no domain-name**

|      |                                                                                                                                                                                                                                                                                                                                           |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WORD | <p>specify a domain name suffix in each DHCP address pool on the DHCP server for the clients.</p> <ol style="list-style-type: none"><li>1) The length range should be [1, 64)</li><li>2) The characters can only include [0-9a-zA-Z.-_],</li><li>3) The string must starting with alphabetic, ending with alphanumeric or digit</li></ol> |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Default

The default value is none domain-name specified.

### Command Mode

DHCP pool configuration

### Usage

You can specify a domain name suffix in each DHCP address pool on the DHCP server for the clients. With this suffix assigned, the client needs only input part of a domainname, and the system will add the domain name suffix for name resolution.

## Examples

The following is sample output from the domain-name command:

```
Switch(dhcp-config)# domain-name FS.org
```

## Related Commands

**dhcp pool**

## 4.10 bootfile-name

To specify the name of the default boot image for a DHCP client, use the bootfile-name DHCP pool configuration command. To delete the boot image name, use the no form of this command.

## Command Syntax

**bootfile-name WORD**

**no bootfile-name**

|      |                                                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WORD | Specifies the name of the file that is used as a boot image.<br>1) The length range should be [1, 64)<br>2) The characters can only include [0-9a-zA-Z.-_],<br>3) The string must starting with alphabetic, ending with alphanumeric or digit |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Default

The default value is none boot file specified.

## Command Mode

DHCP pool configuration

## Usage

This task is to specify the IP address and name of a TFTP server and the bootfile name in the DHCP address pool. The DHCP clients use these parameters to contact the TFTP server, requesting the configuration file used for system initialization, which is called autoconfiguration.

## Examples

The following example specifies `dhclient_startup_config` as the name of the boot file:

```
Switch(dhcp-config)# bootfile dhclient_startup_config
```

## Related Commands

**dhcp pool**

**tftp-server-address**

## 4.11 tftp-server-address

To configure the tftp server in the boot process of a DHCP client, use the `tftp-server-address` DHCP pool configuration command. To remove the boot server list, use the `no` form of this command.

## Command Syntax

**tftp-server-address** A.B.C.D (A.B.C.D... A.B.C.D)

**no tftp-server-address**

|                         |                                                                                                                                                                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A.B.C.D                 | Specifies the address of the tftp server address in the boot process, which is typically a Trivial File Transfer Protocol (TFTP) server. One address is required, although you can specify up to eight addresses in one command line. |
| address-list (Optional) | Specifies up to eight address in the command line.                                                                                                                                                                                    |

## Default

The default value is none tftp-server-address specified.

## Command Mode

DHCP pool configuration

## Usage

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 is sample output from the tftp-server-address command:

```
Switch(dhcp-config)# tftp-server-address 1.1.1.1 2.2.2.2
```

## Related Commands

**dhcp pool**

**bootfile-name**

## 4.12 gateway address

To specify the default router list for a DHCP client, use the gateway DHCP pool configuration command. To remove the default router list, use the no form of this command.

## Command Syntax

**gateway** A.B.C.D (A.B.C.D... A.B.C.D)

**no gateway**

|         |                                                                                                                                           |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------|
| A.B.C.D | 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. |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------|

|                                  |                                                      |
|----------------------------------|------------------------------------------------------|
| A.B.C.D... A.B.C.D<br>(Optional) | Specifies up to eight addresses in the command line. |
|----------------------------------|------------------------------------------------------|

## Default

The default value is none gateway servers specified.

## Command Mode

DHCP pool configuration

## Usage

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 is sample output from the gateway command:

```
Switch(dhcp-config)# gateway 1.1.1.1 2.2.2.2
```

## Related Commands

**dhcp pool**

## 4.13 netbios-name-server

To specify the default router list for a DHCP client, use the netbios-name-server DHCP pool configuration command. To remove the default router list, use the no form of this command.

## Command Syntax

**netbios-name-server** A.B.C.D (A.B.C.D... A.B.C.D)

**no netbios-name-server**

|                                  |                                                                                                                                           |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| A.B.C.D                          | 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. |
| A.B.C.D... A.B.C.D<br>(Optional) | Specifies up to eight addresses in the command line.                                                                                      |

## Default

The default value is none NetBIOS WINS name servers specified.

## Command Mode

DHCP pool configuration

## Usage

You can specify up to eight NetBIOS WINS name servers in the list. NetBIOS WINS name 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 is sample output from the netbios-name-server command:

```
Switch(dhcp-config)# netbios-name-server 1.1.1.1 2.2.2.2
```

## Related Commands

**dhcp pool**

## 4.14 netbios-node-type

To configure the NetBIOS node type for DHCP clients, use the netbios-node-type DHCP pool configuration command. To remove the NetBIOS node type, use the no form of this command.

## Command Syntax

**netbios-node-type [b-node|p-node|m-node|h-node]**

**no netbios-node-type**

type Specifies the NetBIOS node type. Valid types are:

|        |                      |
|--------|----------------------|
| b-node | Broadcast            |
| p-node | Peer-to-peer         |
| m-node | Mixed                |
| h-node | Hybrid (recommended) |

## Default

The default value is none NetBIOS node type specified.

## Command Mode

DHCP pool configuration

## Usage

You can specify the NetBIOS node type for a DHCP address pool which is used to specify the NetBIOS node type for a DHCP Client.

## Examples

The following is sample output from the netbios-node-type command:

```
Switch(dhcp-config)# netbios-node-type h-node
```

## Related Commands

**dhcp pool**

## 4.15 network

To configure the subnet number and mask for a DHCP address pool on a DHCP Server, use the network DHCP pool configuration command. To remove the subnet number and mask, use the no form of this command.

### Command Syntax

**network [ip-address wildcard-mask | ip-address/prefix-length]**

**no network**

|               |                                                       |
|---------------|-------------------------------------------------------|
| ip-address    | IP address.                                           |
| wildcard-mask | IP-address-type mask that includes “don’t care” bits. |
| prefix-length | Prefix length for the network.                        |

### Default

The default value is none subnet number and mask specified.

### Command Mode

DHCP pool configuration

### Usage

This command is valid for DHCP subnetwork address pools only. The DHCP server assumes that all host addresses are available. The system administrator can exclude subsets of the address space by using the ip dhcp excluded-address command. Network for one pool can’t the same with other pool’s network and can’t configure manual bindings within the same pool that is configured with the network command.

### Examples

The following is sample output from the netbios-node-type command:

```
Switch(dhcp-config)# network 1.1.1.0/24
```

## Related Commands

**dhcp pool**

### 4.16 lease

To configure the duration of the lease for an IP address that is assigned from a 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.

## Command Syntax

**lease** days [ hours ][ minutes]

**no lease**

|                    |                                                                                                                                                                                                                                                                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| days               | Specifies the duration of the lease in numbers of days.<br>1) The range for day's value should be [0, 365].                                                                                                                                                                                                                                    |
| hours (Optional)   | Specifies the number of hours in the lease. A days value must be supplied before you can configure an hours value.<br>1) The range for hour's value should be [0, 23].<br>2) A day's value must be supplied before configure an hour's value                                                                                                   |
| minutes (Optional) | Specifies the number of minutes in the lease. A day's value and an hours value must be supplied before you can configure a minute's value.<br>1) The range for minute's value should be [0, 59].<br>2) A day's value and an hour's value must be supplied before configure a minute's value.<br>3) 0 day, 0 hour and 0 minute must be invalid. |

## Default

The default value is one day.

## Command Mode

DHCP pool configuration

## Usage

N/A

## Examples

The following example shows a two-day lease:

```
Switch(dhcp-config)# lease 2
```

The following example shows a one-day and two-hour lease:

```
Switch(dhcp-config)# lease 1 2
```

The following example shows a thirty-minute lease:

```
Switch(dhcp-config)# lease 0 0 30
```

## Related Commands

**dhcp pool**

## 4.17 option

To configure DHCP Server options, use the option DHCP pool configuration command. To remove the options, use the no form of this command.

## Command Syntax

**option** {code [ascii ascii-string | hex hex-string | ip-address ip-address]}

**no option** [ code ]

|              |                                                                                                                                 |
|--------------|---------------------------------------------------------------------------------------------------------------------------------|
| code         | Specifies the DHCP option code.                                                                                                 |
| ascii-string | Specifies an NVT ASCII character string. ASCII character strings that contain white space must be delimited by quotation marks. |

|            |                                                                                                           |
|------------|-----------------------------------------------------------------------------------------------------------|
| hex-string | Specifies dotted-hexadecimal data. Each byte in hexadecimal character strings is two hexadecimal digitse. |
| ip-address | Specifies an IP address.                                                                                  |

## Default

The default value is none DHCP option specified.

## Command Mode

DHCP pool configuration

## Usage

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 is sample output from the option command:

```
Switch(dhcp-config)# option 72 ip-address 10.10.10.10 11.11.11.11
```

## Related Commands

**dhcp pool**

## 4.18 dhcp excluded-address

To specify a single IP address or a range of IP addresses which the DHCP Server is not assign to DHCP clients, use the excluded-address DHCP pool configuration command. To remove the IP addresses, use the no form of this command.

## Command Syntax

**dhcp excluded-address** A.B.C.D [A.B.C.D]

**no dhcp excluded-address** A.B.C.D [A.B.C.D]

|                   |                                                                          |
|-------------------|--------------------------------------------------------------------------|
| A.B.C.D           | The excluded IP address, or low IP address in an excluded address range. |
| A.B.C.D(Optional) | The high IP address in the excluded address range.                       |

## Default

All IP pool addresses are assignable..

## Command Mode

Globe configuration

## Usage

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 shows a two-day lease:

```
Switch(dhcp-config)# ip dhcp excluded-address 10.10.1.100 10.10.1.199
```

## Related Commands

**dhcp pool**

## 4.19 show dhcp server conflict

To display address conflicts found by a DHCP Server when addresses are offered to the client, use the `show dhcp server conflict` in privileged EXEC command.

## Command Syntax

**show dhcp server conflict [ip A.B.C.D | all]**

|            |                                                 |
|------------|-------------------------------------------------|
| ip A.B.C.D | Specifies the IP address of the conflict found. |
| all        | Specifies all IP address of the conflict found. |

## Command Mode

Privileged EXEC

## Usage

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:

```
Switch# show ip dhcp conflict all
```

## Related Commands

**clear dhcp server conflict**

**dhcp ping packets**

**dhcp ping timeout**

## 4.20 show dhcp server binding

To display address bindings on a DHCP Server, use the show dhcp server binding in privileged EXEC command.

## Command Syntax

**show dhcp server binding [ip A.B.C.D | pool WORD | all]**

|            |                                                                     |
|------------|---------------------------------------------------------------------|
| ip A.B.C.D | Specifies the IP address of the conflict found.                     |
| pool WORD  | Specifies the pool name where the IP address of the conflict found. |
| all        | Specifies all conflict IP address.                                  |

## Command Mode

Privileged EXEC

## Usage

The binding address parameters including an IP address, an associated MAC address, a lease expiration date, and the type of address assignment that have occurred.

## Examples

The following examples show the DHCP binding address parameters:

Switch# show ip dhcp binding 1.1.1.1

## Related Commands

**clear dhcp server binding**

## 4.21 show dhcp server statistics

To display DHCP Server statistics, use the show dhcp server statistics in privileged EXEC command.

## Command Syntax

**show dhcp server statistics**

## Command Mode

Privileged EXEC

## Usage

N/A

## Examples

The following example displays DHCP server statistics:

Switch#show dhcp server statistics

```
DHCP server packet statistics:
```

```
=====
```

```
Message Received
```

```
BOOTREQUEST      12
```

```
DHCPDISCOVER    200
```

```
DHCPREQUEST     178
```

```
DHCPDECLINE      0
```

```
DHCPRELEASE      0
```

```
DHCPINFORM       0
```

```
Message Sent
```

```
BOOTREPLY        12
```

```
DHCPOFFER       190
```

```
DHCPACK          172
```

```
DHCPNAK          6
```

## Related Commands

**clear dhcp server statistics**

## 4.22 show dhcp server config

To display the DHCP server configurations, use the show dhcp server config privileged EXEC command .

## Command Syntax

**show dhcp server config**

## Command Mode

Privileged EXEC

## Usage

This command is used to display the configuration of DHCP server.

## Examples

The following is sample output from the show dhcp server config command:

Switch# show dhcp server config

```
DHCP server configuration:
=====
Pool name: pool10
network 10.1.1.0 mask 255.255.255.0
gateway 10.1.1.1
```

## Related Commands

N/A

## 4.23 clear dhcp server conflict

To clear an address conflict from the DHCP server database, use the clear dhcp server conflict privileged EXEC command.

## Command Syntax

**clear dhcp server conflict [ip A.B.C.D | all]**

|            |                                                                                     |
|------------|-------------------------------------------------------------------------------------|
| ip A.B.C.D | The IP address of the host that contains the conflicting address you want to clear. |
| all        | Clear all conflicting address.                                                      |

## Command Mode

Privileged EXEC

## Usage

N/A

## Examples

The following example shows an address conflict of 1.1.1.99 being deleted from the DHCP server database::

```
Switch# clear ip dhcp conflict 1.1.1.99
```

## Related Commands

**show dhcp server conflict**

## 4.24 clear dhcp server binding

To delete an automatic address binding from the DHCP Server database, use the clear dhcp server binding in privileged EXEC command.

## Command Syntax

**clear dhcp server binding [ip A.B.C.D | pool WORD | all]**

|            |                                                                     |
|------------|---------------------------------------------------------------------|
| ip A.B.C.D | The address of the binding you want to clear.                       |
| pool WORD  | Specifies the pool name where the IP address of the conflict found. |
| all        | Clears all automatic bindings.                                      |

## Command Mode

Privileged EXEC

**Usage**

N/A

**Examples**

The following example deletes the address binding 1.1.1.99 from a DHCP server database:

```
Switch# clear ip dhcp binding 1.1.1.99
```

**Related Commands**

**show dhcp server binding**

## 4.25 clear dhcp server statistics

To reset all DHCP server counters, use the clear dhcp server statistics privileged EXEC command.

**Command Syntax**

**clear dhcp server statistics**

**Command Mode**

Privileged EXEC

**Usage**

N/A

**Examples**

The following example resets all DHCP counters to zero:

```
Switch# clear dhcp server statistics
```

## Related Commands

**clear dhcp server statistics**

# 5

## DNS Commands

---

### 5.1 ip host

To define static hostname-to-address mappings in the Domain Name System (DNS) hostname cache for a DNS view, use the `ip host` command in global configuration mode. If the hostname cache does not exist yet, it is automatically created. To remove a hostname-to-address mapping, use the `no` form of this command.

#### Command Syntax

**ip host** *hostname ip-address*

**no ip host** *hostname*

|            |                            |
|------------|----------------------------|
| hostname   | Name of the host           |
| ip-address | Associated host IP address |

#### Command Mode

Global Configuration

#### Default

No static hostname-to-address mapping is added to the DNS hostname cache for a DNS view.

## Usage

None

## Examples

The following example shows how to add a mapping entry to the global hostname cache and then remove one of those entries from the global hostname cache:

```
Switch(config)# ip host www.example1.com 192.0.2.141
```

## Related Commands

**show ip host**

## 5.2 dns domain

To specify the default domain for a Domain Name System (DNS) view to use to complete unqualified hostnames (names without a dotted-decimal domain name), use the **dns domain** command in global configuration mode. To remove the specification of the default domain name for a DNS view, use the **no** form of this command.

### Command Syntax

**dns domain** *domain-name*

**no dns domain** *domain-name*

|             |                    |
|-------------|--------------------|
| domain-name | Name of the domain |
|-------------|--------------------|

### Command Mode

Global Configuration

## Default

No default domain name is defined for the DNS view.

## Usage

None

## Examples

The following example shows how to specify the default domain for DNS:

```
Switch(config)# dns domain www.example1.com
```

## Related Commands

**show dns domain**

## 5.3 dns server

To add a name server to the list of Domain Name System (DNS) name servers, use the `dns server` command in global configuration mode. To remove a DNS name server from the list, use the `no` form of this command.

### Command Syntax

**dns server** *ip-address*

**no dns server** *ip-address*

|            |                                 |
|------------|---------------------------------|
| ip-address | IP address of a DNS name server |
|------------|---------------------------------|

### Command Mode

Global Configuration

## Default

No IP address is explicitly added to the list of resolving name servers for this view.

## Usage

This command can be entered multiple times to specify a maximum of three resolving name servers. After three resolving name servers have been specified, additional resolving name servers cannot be specified unless an existing entry is removed.

## Examples

The following example shows how to specify the DNS server list:

```
Switch(config)# dns server 10.10.1.1
```

```
Switch(config)# dns server 20.20.2.2
```

## Related Commands

**show dns server**

## 5.4 show dns

To display configuration information about a Domain Name System (DNS) view, use the show dns command in privileged EXEC mode.

## Command Syntax

**show dns {domain | server}**

|        |                         |
|--------|-------------------------|
| domain | Display DNS domain list |
| server | Display DNS server list |

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

The following is sample output from the show dns domain command:

Switch# show dns domain

Current DNS domain configuration:

|       | Domain | Suffix     |
|-------|--------|------------|
| ----- |        |            |
| 1     | domain | domain.com |
| 2     | domain | aa.com     |

## Related Commands

**dns server**

**dns domain**

## 5.5 show ip host

To display configuration information about an ip host view, use the show ip host command in privileged EXEC mode.

## Command Syntax

**show ip host**

## Command Mode

Privileged EXEC

## Default

None

## Usage

None

## Examples

The following is sample output from the show ip host command:

Switch# show ip host

Current IP host configuration:

|   | Host                 | Address |
|---|----------------------|---------|
|   | -----                |         |
| 1 | www.sampledomain.com | 1.1.1.1 |

## Related Commands

**ip host**