

Network Protocol Configuration Commands

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Chapter 1 IP Address Configuration Commands

1.1 IP Address Configuration Commands

IP address configuration commands include:

- arp static
- arp timeout scan_interval
- arp timeout stale_threshold
- arp timeout pending_timeout
- arp timeout dynamic_arp_mac_check_enable
- arp timeout mac_check_interval
- clear arp
- ip address
- show arp
- show arp statistics
- show arp timeout
- show ip interface

1.1.1 Arp static

Syntax

To configure static ARP mapping, run the following command. The static ARP mapping will not be deleted from the arp table when the interface vlan exists. To delete the configured static ARP mapping, use the no arp static command.

arp static *ip-address hardware-address vlan*

no arp static *ip-address vlan*

Parameter

Parameter	Description
<i>ip-address</i>	IP address corresponding to the local data-link address.
<i>hardware-address</i>	Physical address of local data-link address
<i>vlan</i>	vlan belongs to the static arp (1-4094)

Default

No entries are permanently installed in the ARP cache.

Command Mode

Global configuration mode

Usage Guidelines

The common host all supports dynamic ARP analysis, so user doesn't need to configure static ARP entries for host.

In general, run **no arp staticip_address vlan** to delete static arp. If the interface vlan port to which a static arp belongs is deleted, the static arp will also be deleted.

Example

The following example shows how to configure a static arp with the IP address of 1.1.1.1 and the host's MAC address of 00:12:34:56:78:90 under vlan1.

```
arp static 1.1.1.1 00:12:34:56:78:90 1
```

Related Commands

clear arp

1.1.2 arp timeout scan_interval

Syntax

To configure the interval for active re-probing of the ARP cache, use the **arp timeout scan_interval minutes**. To restore the default value, use the no form of this command

arp timeout scan_interval minutes

no arp timeout scan_interval

Parameter

Parameter	Description
<i>minutes</i>	Configures the interval (minutes) for the active re-probing of the ARP cache. <1-255>

Default

1 minute

Mode

Global configuration

Usage Guidelines

Dynamic arp has an aging time. After the aging time expires, the arp will be deleted. After re-detecting the arp, if it is learned, the time can be reset.

Example

The following example shows how to set the ARP active reprobing interval to 2 minutes.

```
arp timeout scan_interval 2
```

Related Commands

arp timeout stale_threshold
arp timeout pending_timeout

1.1.3 arp timeout stale_threshold

Syntax

To configure the aging detection time of dynamic arp, use the following command. To restore the default setting, use the no form of this command.

arp timeout stale_threshold *minutes*
no arp timeout stale_threshold

Parameter

Parameter	Description
<i>minutes</i>	Configures the aging detection time of dynamic arp (minutes) <1-255>.

Default

4 times of arp timeout scan_interval

Command Mode

Global configuration mode

Usage Guidelines

Run the command to set the dynamic arp aging time, and the setting will be deleted if the arp update is not received during this period. The default time is four times the detection time, and it is modified with the change of the detection time configuration, unless it has its own configuration.

Example

The following example shows how to set the dynamic arp deletion time to 10 minutes.
 arp timeout stale_threshold 10

Related Commands

arp timeout scan_interval

1.1.4 arp timeout pending_timeout

Syntax

To configure the deletion time of incomplete arps, run the following command.

arp timeout pending_timeout minutes
no arp timeout pending_timeout

Parameters

Parameter	Description
<i>minutes</i>	Configures the deletion time of incomplete arps (minutes) <1-255>.

Default Value

2 times of arp timeout scan_interval

Command Mode

Global configuration mode

Usage Guidelines

The first ARP cache resolution will generate an incomplete entry and this command will then be used to set the life-time of this incomplete entry.

Incomplete arp deletion time and other dynamic arp deletion time are separated, the default is twice the detection time. The the deletion time of incomplete arps is modified with the detection time configuration change, unless it has its own configuration.

Example

The following example shows how to the deletion time of incomplete arps to 3 minutes.
 arp timeout pending_timeout 3

Related Command

arp timeout scan_interval
arp timeout stale_threshold

1.1.5 arp timeout dynamic_arp_mac_check_enable

Syntax

To configure whether to enable mac detection for dynamic arp, run the following command. To return to the default setting, use the no form of this command.

arp timeout dynamic_arp_mac_check_enable
no arp timeout dynamic_arp_mac_check_enable

Parameters

None

Command Mode

Global configuration mode

Usage Guidelines

By default, only mac detection is performed for static arp. The physical egress of static arp is updated according to the mac table egress. Whether dynamic arp is enabled for detection needs to be configured, because the detection is long-term polling and occupies a certain amount of cpu resources.

Example

The following example shows how to enable the mac detection of the dynamic arp :

```
arp timeout dynamic_arp_mac_check_enable
```

Related Command

```
arp timeout mac_check_interval
```

1.1.6 arp timeout mac_check_interval

Syntax

To configure the interval for mac checking of arp, run the first one of the following commands. To return to the default setting, use the no form of this command.

```
arp timeout mac_check_interval seconds
```

```
no arp timeout mac_check_interval
```

Parameter

Parameter	Description
<i>seconds</i>	the interval for mac checking of arp (s) <1-255>.

Default

3s

Command Mode

Global configuration mode

Example

The following example shows how to configure the mac check time of arp to 2 seconds.

```
arp timeout mac_check_interval 2
```

Related Commands

```
arp timeout dynamic_arp_mac_check_enable
```

1.1.7 clear arp

Syntax

To clear all dynamic entries from the ARP cache, use the following command.

clear arp [ip-address [mask | vlan vlanid]]

Parameter

Parameter	Description
<i>ip-address</i>	IP or subnets
<i>mask</i>	Subnets mask
<i>vlanid</i>	Vlan number

Command Mode

EXEC

Example

The following example removes all dynamic entries from the ARP cache:

```
clear arp
```

Related Command

arp static

1.1.8 ip address

Syntax

To set an IP address and mask for an interface, use the **ip address** command. Currently, there is no strict regulation to distinguish A.B.C IP address. But multicast address and broadcast address can not be used (all host section is '1'). Other than the Ethernet, multiple interfaces of other types can be connected to the same network. Other than the unnumbered interface, the configured network range to the Ethernet interface can not be the same as the arbitrary interfaces of other types. IP packets generated by the system, if the upper application does not specify the source address, the router will use the IP address configured on the sending interface that on the same network range with the gateway as the source address of the packet. If the IP address is uncertain (like interface route), the router will use the primary address of the sending interface. If the ip address is not configured on an interface, also it is not the unnumbered interface, and then this interface will not deal with any IP packet.

To remove an IP address or disable IP processing, use the no form of this command.

ip address *ip-address mask*

no ip address

Parameter

Parameter	Description
<i>ip-address</i>	IP address
<i>mask</i>	IP mask

Default

No IP address is defined for the interface.

Command Mode

interface configuration mode

Example

In the following example, 202.0.0.1 is the primary address and 255.255.255 is the mask for interface VLAN 10:

```
interface vlan10
ip address 202.0.0.1 255.255.255.0
```

1.1.9 show arp

Syntax

To display the entries in the Address Resolution Protocol (ARP) table, including the ARP mapping of interface IP address, the static ARP mapping that user configures and the dynamic ARP mapping, use the **show arp** command.

show arp

Parameter

This command has no parameters or keywords.

Mode

EXEC

Usage Guidelines

The display includes:

Parameter	Description
Time	Living time, update the ARP entry to the present, unit: minute.
IP4	Displays the network address that maps with the physical address. IP address, for example.
Flags	Arp type, S means static arp, D means dynamic arp, and F means not to join the fib table.

Status	Arp Status. I means incomplete arp, G means next hop as GATEWAY, D means protocol down state, and C means ready to delete.
Ethernet	Displays the physical address that corresponds to the network address. It is empty for the unanalyzed entries.
Others	Ref respectively indicates the number of routing entries and cache entries issued by this arp as the egress, and realstate is the actual state flag of some arps.

Example

The following command displays ARP cache.

```
switch#show arp
Arp total num:1
  Time          IP4      Flags  Status      Ethernet      Interface
  0             1.1.1.1  S      I           12:34:56:78:90:00  vlan1230 phy0 ref=0,0 realstate=1
```

1.1.10 show arp statistics

Syntax

To show ARP related statistical table items, use the following command.

show arp statistic

Command Mode

EXEC

Usage Guidelines

Display description:

Total statistics	Including total number of arp, incomplete arp, complete arp.
Cache statistics	Total number of cache statistics.
Statistics of the hardware table entries	The statistics of the hardware table entries are distributed, including the statistics of the number of entries issued and the number of returned entries.

Example

The following command displays ARP statistics:

```
Switch#show arp statistics
Total ARP:1
Complete ARP:0, Incomplete ARP:1
Total cache:0
HWRT operate wait:29
HWRT operate over:29
```

1.1.11 show ip interface

Syntax

To display the IP configuration on interface, use the **show ip interface** command
show ip interface *brief*

Parameter

Parameter	Description
brief	(Optional) Displays the brief of ip protocols of all vlan ports

Command Mode

EXEC

Usage Guidelines

If the interface link layer is usable, the line protocol is marked "Protocol up." If you configure IP address on this interface, the router will add a direct route to the routing table. If the link layer protocol is marked "Protocol down", the direct route will be deleted. This command displays the specified interface information if specified interface type and number, or IP configuration information of all interfaces will be displayed.

Example

The following example shows how to display IP configuration on all VLAN interfaces.

```
switch#show ip interface brief
Interface      IP-Address      Method Protocol-Status
Vlan1230      1.1.1.1          UP
Vlan1231      2.1.1.1          UP
```