Contents

MAC address table commands

This document covers the configuration of unicast MAC address entries, including static, dynamic, blackhole, and multiport unicast MAC address entries. For more information about configuring static multicast MAC address entries, see *IP Multicast Configuration Guide*. For more information about MAC address table configuration in VPLS, see *MPLS Configuration Guide*.

display mac-address

Use **display mac-address** to display MAC address entries.

Syntax

display mac-address [*mac-address* [**vlan** *vlan-id*] | [[**dynamic** | **static**] [**interface** *interface-type interface-number*] | **blackhole** | **multiport**] [**vlan** *vlan-id*] [**count**] | **nickname** *nickname*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

mac-address: Specifies a MAC address in the format of H-H-H. When entering a MAC address, you can omit the leading zeros in each H section. For example, enter f-e2-1 for 000f-00e2-0001.

vlan *vlan-id*: Specifies a VLAN by its ID in the range of 1 to 4094.

dynamic: Displays dynamic MAC address entries.

static: Displays static MAC address entries.

interface *interface-type interface-number*: Specifies an interface by its type and number.

blackhole: Displays blackhole MAC address entries.

multiport: Displays multiport unicast MAC address entries.

count: Displays only the number of MAC address entries that match all entry attributes you specify in the command. Detailed information about MAC address entries is not displayed. For example, you can use the **display mac-address vlan 20 dynamic count** command to display the number of dynamic entries for VLAN 20. If you do not specify an entry attribute, the command displays the number of entries in the MAC address table. If you do not specify this keyword, the command displays detailed information about the specified MAC address entries.

nickname *nickname*: Specifies an egress RB by its nickname. The value range for the *nickname* argument is 1 to fffe in hexadecimal format.

Usage guidelines

A MAC address entry includes a destination MAC address, an outgoing interface, and a VLAN ID.

If you do not specify any parameters, the command displays all MAC address entries.

This command displays dynamic MAC address entries for an aggregate interface only when the aggregate interface has a minimum of one Selected member port.

Multiport unicast MAC address entries have no impact on the MAC address learning. When receiving a frame whose source MAC address matches a multiport unicast entry, the device can still learn the MAC address of the frame and generate a dynamic entry. However, the generated dynamic

entry has lower priority. The device prefers to use the multiport unicast entry to forward frames destined for the MAC address in the entry.

Examples

Display MAC address entries for VLAN 100.

```
<Sysname> display mac-address vlan 100
MAC Address       VLAN ID    State          Port/Nickname          Aging
0001-0101-0101    100        Multiport      XGE1/0/1               N
                                            XGE1/0/2
0033-0033-0033    100        Blackhole      N/A                    N
0000-0000-0002    100        Static         XGE1/0/3               N
00e0-fc00-5829    100        Learned        XGE1/0/4               Y
```

Display the number of MAC address entries.

```
<Sysname> display mac-address count
1 mac address(es) found.
```

Display the MAC address entries of the egress RB with the nickname 0x8c81.

```
<Sysname> display mac-address nickname 8c81
MAC Address       VLAN ID    State          Port/Nickname          Aging
0000-3300-0001    10         Learned        0x8c81                 Y
0000-3300-0002    10         Learned        0x8c81                 Y
0000-3300-0003    10         Learned        0x8c81                 Y
```

Table 1 Command output

Field	Description
VLAN ID	ID of the VLAN to which the outgoing interface of the MAC address entry belongs.
State	MAC address entry state: • **Static**—Static MAC address entry. • **Learned**—Dynamic MAC address entry. Dynamic entries can be learned or manually configured. • **Blackhole**—Blackhole MAC address entry. • **Multiport**—Multiport unicast MAC address entry. • **OpenFlow**—MAC address entry for an OpenFlow instance.
Port/Nickname	When the field displays an interface name, the field indicates the outgoing interface for packets that are destined for the MAC address. This field displays **N/A** for a blackhole MAC address entry. When the field displays a 16-bit number in hexadecimal format (for example, 0x12ab), it indicates the RB through which the packets leave the TRILL network. For information about RBs and TRILL, see *TRILL Configuration Guide.*
Aging	Whether the entry can age out: • **Y**—The entry can age out. • **N**—The entry never ages out.
mac address(es) found	Number of matching MAC address entries.

Related commands

mac-address

mac-address timer

display mac-address aging-time

Use **display mac-address aging-time** to display the aging timer for dynamic MAC address entries.

Syntax

display mac-address aging-time

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

Display the aging timer for dynamic MAC address entries.

```
<Sysname> display mac-address aging-time
MAC address aging time: 300s.
```

Related commands

mac-address timer

display mac-address mac-learning

Use **display mac-address mac-learning** to display the global MAC address learning status and the MAC learning status of the specified interface or all interfaces.

Syntax

display mac-address mac-learning [**interface** *interface-type interface-number*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

interface *interface-type interface-number*: Specifies an interface by its type and number. If you do not specify an interface, the command displays the global MAC address learning status and the MAC address learning status of all interfaces.

Examples

Display the global MAC address learning status and the MAC learning status of all interfaces.

```
<Sysname> display mac-address mac-learning
Global MAC address learning status: Enabled.

Port                    Learning Status
XGE1/0/1                Enabled
XGE1/0/2                Enabled
```

Table 2 Command output

Field	Description
Global MAC address learning status	Global MAC address learning status: • Enabled. • Disabled.
Learning Status	MAC address learning status of an interface: • Enabled. • Disabled.

Related commands

mac-address mac-learning enable

display mac-address mac-move

Use **display mac-address mac-move** to display the MAC address move records after the device is started.

Syntax

display mac-address mac-move [**slot** *slot-number*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

slot *slot-number*: Specifies an IRF member device by its member ID. If you do not specify a member device, the command displays MAC address move records for all IRF member devices.

Usage guidelines

When a MAC address frequently moves between the specified two interfaces, Layer 2 loops might occur in the network. To discover and locate loops, you can view the MAC address move records.

In the MAC address move records, records with the same MAC address, VLAN, source port, and current port are considered to be one record.

An IRF member device can generate a maximum of 200 MAC address move records.

Examples

Display the MAC address move records for a slot.

```
<Sysname> display mac-address mac-move slot 1
MAC address     VLAN Current port   Source port    Last time           Times
0000-0001-002c 1    XGE1/0/1       XGE1/0/2       2013-05-20 13:40:52 1
0000-0001-002c 1    XGE1/0/2       XGE1/0/1       2013-05-20 13:41:30 1
---  2 MAC address moving records found  ---
```

Display the MAC address move records for all slots.

```
<Sysname> display mac-address mac-move
MAC address     VLAN Current port   Source port    Last time           Times
0000-0001-002c 1    XGE1/0/1       XGE1/0/2       2013-05-20 13:40:52 20
0000-0001-002c 1    XGE1/0/2       XGE1/0/1       2013-05-20 13:41:32 20
```

```
0000-0094-0001 1    XGE1/0/3       XGE1/0/4      2013-05-20 13:42:22 13
0000-0094-0001 1    XGE1/0/4       XGE1/0/3      2013-05-20 13:42:21 12
---  4 MAC address moving records found  ---
```

Table 3 Command output

Field	Description
VLAN	VLAN to which the outgoing interface of the MAC address entry belongs.
Current port	Interface to which the MAC address was moved.
Source port	Interface from which the MAC address was moved.
Last time	Last time when the MAC address was moved.
Times	Number of MAC address moves after the device is started. For a MAC address record, the number of MAC address moves is increased by 1 when a new MAC address move has the same **MAC address**, **VLAN**, **Current Port**, and **Source Port** fields as the MAC address record.

Related commands

mac-address notification mac-move

display mac-address statistics

Use **display mac-address statistics** to display MAC address table statistics.

Syntax

display mac-address statistics

Views

Any view

Predefined user roles

network-admin

network-operator

Usage guidelines

This command displays the number of MAC address entries per type and the maximum number of MAC address entries allowed for each type.

Examples

Display MAC address table statistics.
```
<Sysname> display mac-address statistics
MAC Address Count:
Dynamic Unicast Address (Learned) Count:                3
Dynamic Unicast Address (Security-service-defined) Count:  4
Static Unicast Address (User-defined) Count:            0
Static Unicast Address (System-defined) Count:          3
Total Unicast MAC Addresses In Use:                     10
Total Unicast MAC Addresses Available:                  294912
Multicast and Multiport MAC Address Count:              1
Static Multicast and Multiport MAC Address (User-defined) Count: 1
Total Multicast and Multiport MAC Addresses Available:  256
```

Table 4 Command output

Field	Description
Dynamic Unicast Address (Learned) Count	Number of dynamic unicast MAC address entries triggered by packets.
Dynamic Unicast Address (Security-service-defined) Count	Number of dynamic unicast MAC address entries triggered by the security service.
Static Unicast Address (User-defined) Count	Number of static unicast MAC address entries added by users.
Static Unicast Address (System-defined) Count	Number of static unicast MAC address entries added by the system.
Total Unicast MAC Addresses In Use	Number of unicast MAC address entries.
Total Unicast MAC Addresses Available	Maximum number of unicast MAC address entries allowed.
Multicast and Multiport MAC Address Count	Number of multicast and multiport unicast MAC address entries.
Static Multicast and Multiport MAC Address (User-defined) Count	Number of static multicast and multiport unicast MAC address entries added by users.
Total Multicast and Multiport MAC Addresses Available	Maximum number of multicast and multiport unicast MAC address entries allowed.

mac-address (interface view)

Use **mac-address** to add or modify a MAC address entry on an interface.

Use **undo mac-address** to delete a MAC address entry on an interface.

Syntax

Layer 2 Ethernet interface view and Layer 2 aggregate interface view:

mac-address { **dynamic** | **multiport** | **static** } *mac-address* **vlan** *vlan-id*

undo mac-address { **dynamic** | **multiport** | **static** } *mac-address* **vlan** *vlan-id*

S-channel interface view, S-channel aggregate interface view, and S-channel bundle interface view:

mac-address { **dynamic** | **static** } *mac-address* **vlan** *vlan-id*

undo mac-address { **dynamic** | **static** } *mac-address* **vlan** *vlan-id*

Default

An interface is not configured with MAC address entries.

Views

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

S-channel interface view

S-channel aggregate interface view

S-channel bundle interface view

Predefined user roles

network-admin

Parameters

dynamic: Specifies dynamic MAC address entries.

static: Specifies static MAC address entries.

multiport: Specifies multiport unicast MAC address entries. A frame whose destination MAC address matches a multiport unicast MAC address entry is sent out of multiple ports.

mac-address: Specifies a MAC address in the format of H-H-H, excluding multicast, all-zero, and all-F MAC addresses. When entering a MAC address, you can omit the leading zeros in each H section. For example, enter f-e2-1 for 000f-00e2-0001.

vlan *vlan-id*: Specifies an existing VLAN to which the specified interface belongs. The value range for the *vlan-id* argument is 1 to 4094.

Usage guidelines

Typically, the device automatically builds the MAC address table by learning the source MAC addresses of incoming frames on each interface. However, you can manually configure static MAC address entries. For a MAC address, a manually configured static entry takes precedence over a dynamically learned entry. To improve the security for the user device connected to an interface, manually configure a static entry to bind the user device to the interface. Then, the frames destined for the user device (for example, Host A) are always sent out of the interface. Other hosts using the forged MAC address of Host A cannot obtain the frames destined for Host A.

When you configure a multiport unicast MAC address entry on a member port of an aggregation group, configure the same entry on the other member ports to avoid possible traffic loss.

The MAC address entry configuration cannot survive a reboot unless you save it. The dynamic MAC address entries, however, are lost upon reboot whether or not you save the configuration.

Examples

Add a static entry for MAC address 000f-e201-0101 on Ten-GigabitEthernet 1/0/1 that belongs to VLAN 2.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] mac-address static 000f-e201-0101 vlan 2
```

Add a static entry for MAC address 000f-e201-0101 on Bridge-Aggregation 1 that belongs to VLAN 1.

```
<Sysname> system-view
[Sysname] interface bridge-aggregation 1
[Sysname-Bridge-Aggregation1] mac-address static 000f-e201-0102 vlan 1
```

Add a static entry for MAC address 000f-e201-0102 on S-Channel 1/0/1:10 that belongs to VLAN 1.

```
<Sysname> system-view
[Sysname] interface s-channel 1/0/1:10
[Sysname-S-Channel1/0/1:10] mac-address static 000f-e201-0102 vlan 1
```

Add a static entry for MAC address 000f-e201-0102 on Schannel-Aggregation 1:2 that belongs to VLAN 1.

```
<Sysname> system-view
[Sysname] interface schannel-aggregation 1:2
[Sysname-Schannel-Aggregation1:2] mac-address static 000f-e201-0102 vlan 1
```

Add a multiport unicast MAC address entry for MAC address 0001-0001-0101 on Ten-GigabitEthernet 1/0/1 and Ten-GigabitEthernet 1/0/2 that belong to VLAN 2.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] mac-address multiport 0001-0001-0101 vlan 2
```

```
[Sysname-Ten-GigabitEthernet1/0/1] quit
[Sysname] interface ten-gigabitethernet 1/0/2
[Sysname-Ten-GigabitEthernet1/0/2] mac-address multiport 0001-0001-0101 vlan 2
```

Related commands

> **display mac-address**
>
> **mac-address** (system view)

mac-address (system view)

Use **mac-address** to add or modify a MAC address entry.

Use **undo mac-address** to delete one or all MAC address entries.

Syntax

> **mac-address** { **dynamic** | **static** } *mac-address* **interface** *interface-type interface-number* **vlan** *vlan-id*
>
> **mac-address blackhole** *mac-address* **vlan** *vlan-id*
>
> **mac-address multiport** *mac-address* **interface** *interface-list* **vlan** *vlan-id*
>
> **undo mac-address** [[**dynamic** | **static**] *mac-address* **interface** *interface-type interface-number* **vlan** *vlan-id*]
>
> **undo mac-address** [**blackhole** | **dynamic** | **static**] [*mac-address*] **vlan** *vlan-id*
>
> **undo mac-address** [**dynamic** | **static**] **interface** *interface-type interface-number*
>
> **undo mac-address multiport** *mac-address* **interface** *interface-list* **vlan** *vlan-id*
>
> **undo mac-address** [**multiport**] [[*mac-address*] **vlan** *vlan-id*]
>
> **undo mac-address nickname** *nickname*
>
> **undo mac-address** *mac-address* **nickname** *nickname* **vlan** *vlan-id*

Default

The system is not configured with MAC address entries.

Views

System view

Predefined user roles

network-admin

Parameters

dynamic: Specifies dynamic MAC address entries.

static: Specifies static MAC address entries.

blackhole: Specifies blackhole MAC address entries. Packets whose source or destination MAC addresses match blackhole MAC address entries are dropped.

multiport: Specifies multiport unicast MAC address entries. A frame whose destination MAC address matches a multiport unicast MAC address entry is sent out of multiple ports.

mac-address: Specifies a MAC address in the format of H-H-H, excluding multicast, all-zero, and all-F MAC addresses. When entering a MAC address, you can omit the leading zeros in each H section. For example, enter f-e2-1 for 000f-00e2-0001.

vlan *vlan-id*: Specifies an existing VLAN to which the interface belongs. The value range for the *vlan-id* argument is 1 to 4094.

interface *interface-type interface-number*: Specifies an outgoing interface by its type and number.

interface *interface-list*: Specifies interfaces in the format of { *interface-type interface-number1* [**to** *interface-type interface-number2*] } &<1-4>. The interface can only be a Layer 2 Ethernet interface or Layer 2 aggregate interface. The value for the *interface-number2* argument cannot be lower than the value for the *interface-number1* argument. &<1-4> specifies that you can configure a maximum of 4 interfaces or interface ranges.

nickname *nickname*: Specifies an RB (through which the packets leave the TRILL network) by its nickname. The nickname is a hexadecimal number in the range of 1 to fffe.

Usage guidelines

You can use this command to configure the following types of MAC address entries:

- Dynamic entries.

  Dynamic entries include manually configured dynamic entries and automatically learned dynamic entries.

- Static entries.

  For a MAC address, a manually configured static entry takes precedence over a dynamic entry. To improve the security for the user device connected to an interface, manually configure a static entry to bind the user device to the interface. Then, the frames destined for the user device (for example, Host A) are always sent out of the interface. Other hosts using the forged MAC address of Host A cannot obtain the frames destined for Host A.

- Blackhole entries.

  To drop frames with the specified source MAC addresses or destination MAC addresses, you can configure blackhole entries.

- Multiport unicast entries.

  To send frames with a specific destination MAC address out of multiple ports, configure a multiport unicast entry. When you execute this command for the first time, the command adds an entry. When you execute the command again with the same MAC address and VLAN but with different interfaces, this command adds the specified interfaces for this entry.

  When you configure a multiport unicast entry on a member port of an aggregation group, configure the same entry on the other member ports to avoid possible traffic loss.

A static or blackhole entry can overwrite a dynamic entry, but not vice versa.

If you execute the **undo mac-address** command without specifying any parameters, this command deletes all unicast MAC address entries and static multicast MAC address entries.

You can delete all the MAC address entries (including unicast MAC address entries and static multicast MAC address entries) of the specified VLAN. You can also delete only one type (dynamic, static, blackhole, or multiport unicast) of MAC address entries. You can single out an interface and delete the corresponding unicast MAC address entries, but not the corresponding static multicast MAC address entries. You can single out an RB through which the packets leave the TRILL network and delete the corresponding unicast MAC address entries.

The MAC address entry configuration cannot survive a reboot unless you save it. The dynamic MAC address entries, however, are lost upon reboot whether or not you save the configuration.

Examples

Add a static entry for MAC address 000f-e201-0101. Then, all frames that are destined for this MAC address are sent out of Ten-GigabitEthernet 1/0/1, which belongs to VLAN 2.

```
<Sysname> system-view
[Sysname] mac-address static 000f-e201-0101 interface ten-gigabitethernet 1/0/1 vlan 2
```

Add a multiport unicast MAC address entry for MAC address 000f-e201-0101. Then, all frames that are destined for this MAC address are sent out of Ten-GigabitEthernet 1/0/1 through Ten-GigabitEthernet 1/0/3, which belong to VLAN 2.

```
<Sysname> system-view
```

```
[Sysname] mac-address multiport 000f-e201-0101 interface ten-gigabitethernet 1/0/1 to
ten-gigabitethernet 1/0/3 vlan 2
```

Related commands

display mac-address

mac-address (interface view)

mac-address mac-learning enable

Use **mac-address mac-learning enable** to enable MAC address learning globally, on an interface, or on a VLAN.

Use **undo mac-address mac-learning enable** to disable MAC address learning globally, on an interface, or on a VLAN.

Syntax

mac-address mac-learning enable

undo mac-address mac-learning enable

Default

MAC address learning is enabled.

Views

System view

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

S-channel interface view

S-channel aggregate interface view

S-channel bundle interface view

VLAN view

Predefined user roles

network-admin

Usage guidelines

To prevent the MAC address table from becoming saturated, you can disable MAC address learning.

For example, a number of packets with different source MAC addresses reaching a device can affect the MAC address table update. To avoid such attacks, you can disable MAC address learning by following these guidelines:

- You can disable MAC address learning on a per-interface basis. If you disable MAC address learning globally, MAC address learning is disabled for all interfaces. The device then stops learning MAC addresses and cannot dynamically update the MAC address table.

- Because disabling MAC address learning can result in broadcast storms, enable broadcast storm suppression after you disable MAC address learning on an interface. For more information about broadcast storm suppression, see *Interface Configuration Guide*.

- With MAC address learning enabled globally, you can disable MAC address learning for an interface or VLAN.

- After MAC address learning is disabled, the device immediately deletes existing dynamic MAC address entries.

This command does not take effect on a TRILL network, S-channel, VPLS VSI, EVB VSI, or VXLAN VSI. For information about TRILL, see *TRILL Configuration Guide*. For information about VPLS VSIs,

see *MPLS Configuration Guide.* For information about S-channels and EVB VSIs, see *EVB Configuration Guide.* For information about VXLAN VSIs, see *VXLAN Configuration Guide.*

Examples

Disable MAC address learning globally.

```
<Sysname> system-view
[Sysname] undo mac-address mac-learning enable
```

Disable MAC address learning for VLAN 10.

```
<Sysname> system-view
[Sysname] vlan 10
[Sysname-vlan10] undo mac-address mac-learning enable
```

Disable MAC address learning on Ten-GigabitEthernet 1/0/1.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] undo mac-address mac-learning enable
```

Disable MAC address learning on Bridge-Aggregation 1.

```
<Sysname> system-view
[Sysname] interface bridge-aggregation 1
[Sysname-Bridge-Aggregation1] undo mac-address mac-learning enable
```

Disable MAC address learning on S-Channel 1/0/1:10.

```
<Sysname> system-view
[Sysname] interface s-channel 1/0/1:10
[Sysname-S-Channel1/0/1:10] undo mac-address mac-learning enable
```

Disable MAC address learning on Schannel-Aggregation 1:2.

```
<Sysname> system-view
[Sysname] interface schannel-aggregation 1:2
[Sysname-Schannel-Aggregation1:2] undo mac-address mac-learning enable
```

Related commands

display mac-address mac-learning

mac-address mac-learning priority

Use **mac-address mac-learning priority** to assign MAC learning priority to an interface.

Use **undo mac-address mac-learning priority** to restore the default.

Syntax

mac-address mac-learning priority { **high** | **low** }

undo mac-address mac-learning priority

Default

Low MAC address learning priority is used.

Views

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

S-channel interface view

S-channel aggregate interface view

S-channel bundle interface view

Predefined user roles

network-admin

Parameters

high: Assigns high MAC learning priority.

low: Assigns low MAC learning priority.

Usage guidelines

The MAC address learning priority values can be high and low. An interface with high MAC address learning priority can learn any MAC address. An interface with low MAC address learning priority can learn only the MAC addresses that have not been learned by high-priority interfaces.

The MAC learning priority mechanism can help defend your network against MAC address spoofing attacks. To prevent the downlink interface from learning the MAC address of an upper layer device (for example, the gateway), you can perform the following tasks:

- Assign high MAC learning priority to an uplink interface.
- Assign low MAC learning priority to a downlink interface.

Examples

Assign high MAC learning priority to Ten-GigabitEthernet 1/0/1.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] mac-address mac-learning priority high
```

Assign high MAC learning priority to Bridge-Aggregation 1.

```
<Sysname> system-view
[Sysname] interface bridge-aggregation 1
[Sysname-Bridge-Aggregation1] mac-address mac-learning priority high
```

Assign high MAC learning priority to S-Channel 1/0/1:10.

```
<Sysname> system-view
[Sysname] interface s-channel 1/0/1:10
[Sysname-S-Channel1/0/1:10] mac-address mac-learning priority high
```

Assign high MAC learning priority to Schannel-Aggregation 1:2.

```
<Sysname> system-view
[Sysname] interface schannel-aggregation 1:2
[Sysname-Schannel-Aggregation1:2] mac-address mac-learning priority high
```

mac-address mac-move fast-update

Use **mac-address mac-move fast-update** to enable ARP fast update for MAC address moves.

Use **undo mac-address mac-move fast-update** to disable ARP fast update for MAC address moves.

Syntax

mac-address mac-move fast-update

undo mac-address mac-move fast-update

Default

ARP fast update is disabled for MAC address moves.

Views

System view

Predefined user roles

network-admin

Examples

Enable ARP fast update for MAC address moves.

```
<Sysname> system-view
[Sysname] mac-address mac-move fast-update
```

mac-address mac-roaming enable

Use **mac-address mac-roaming enable** to enable MAC address synchronization.

Use **undo mac-address mac-roaming enable** to disable MAC address synchronization.

Syntax

mac-address mac-roaming enable

undo mac-address mac-roaming enable

Default

MAC address synchronization is disabled.

Views

System view

Predefined user roles

network-admin

Usage guidelines

On an IRF fabric, if ports on different IRF member devices are Selected ports from the same aggregation group, MAC address entries are synchronized among these IRF member devices. They are synchronized whether or not MAC address synchronization is enabled for the IRF fabric. For more information about aggregation groups, see *Layer 2—LAN Switching Configuration Guide*.

The MAC address table size might vary by IRF member device. With MAC address synchronization enabled, MAC address entries exceeding the table size of an IRF member device cannot be synchronized to the MAC address table.

Examples

Enable MAC address synchronization.

```
<Sysname> system-view
[Sysname] mac-address mac-roaming enable
```

mac-address max-mac-count

Use **mac-address max-mac-count** to set the MAC learning limit on an interface.

Use **undo mac-address max-mac-count** to restore the default.

Syntax

mac-address max-mac-count *count*

undo mac-address max-mac-count

Default

The number of MAC addresses that can be learned on an interface is not limited.

Views

Layer 2 Ethernet interface view

Predefined user roles

network-admin

Parameters

count: Specifies the maximum number of MAC addresses that can be learned on an interface. When the argument is set to 0, the interface is not allowed to learn MAC addresses. The value range for this argument is 0 to 4096.

Usage guidelines

This command limits the number of MAC address entries to limit the MAC address table size. A large MAC address table will degrade forwarding performance. When the number of MAC address entries learned by an interface reaches the limit, the interface stops learning MAC address entries.

Examples

Configure Ten-GigabitEthernet 1/0/1 to learn a maximum of 600 MAC address entries.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] mac-address max-mac-count 600
```

Related commands

mac-address

mac-address max-mac-count enable-forwarding

mac-address max-mac-count enable-forwarding

Use **mac-address max-mac-count enable-forwarding** to enable the device to forward unknown frames received on an interface after the MAC learning limit on the interface is reached. Unknown frames refer to frames whose source MAC addresses are not in the MAC address table.

Use **undo mac-address max-mac-count enable-forwarding** to disable the device from forwarding unknown frames received on an interface after the MAC learning limit on the interface is reached.

Syntax

mac-address max-mac-count enable-forwarding

undo mac-address max-mac-count enable-forwarding

Default

When the MAC learning limit on an interface is reached, the device can forward unknown frames received on the interface.

Views

Layer 2 Ethernet interface view

Predefined user roles

network-admin

Examples

Configure Ten-GigabitEthernet 1/0/1 to learn a maximum of 600 MAC address entries.

```
<Sysname> system-view
```

```
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] mac-address max-mac-count 600
```

\# Disable the device from forwarding unknown frames received on Ten-GigabitEthernet 1/0/1 after the MAC learning limit on Ten-GigabitEthernet 1/0/1 is reached.

```
[Sysname-Ten-GigabitEthernet1/0/1] undo mac-address max-mac-count enable-forwarding
```

Related commands

mac-address

mac-address max-mac-count

mac-address notification mac-move

Use **mac-address notification mac-move** to enable MAC address move notifications and optionally specify a MAC move detection interval.

Use **undo mac-address notification mac-move** to disable MAC address move notifications.

Syntax

mac-address notification mac-move [**interval** *interval*]

undo mac-address notification mac-move

Default

MAC address move notifications are disabled.

Views

System view

Predefined user roles

network-admin

Parameters

interval *interval*: Specifies the interval for detecting MAC address moves, in the range of 1 to 60 minutes. If you do not specify this option, the default setting of 1 minute is used.

Usage guidelines

With MAC address move notifications enabled, the system records the MAC address move logs every MAC move detection interval. Each record of the MAC address move logs contains the following information:

- MAC address.
- VLAN ID of the MAC address entry.
- Current port and source port of the MAC address moves.
- Number of MAC address moves within a detection interval.

A MAC address can have only one MAC address move record. If a MAC address moves multiple times, the new record overrides the old record.

Within a detection interval, an IRF member device can record MAC address move information for a maximum of 20 MAC addresses. The records are ranked in descending order of MAC move counts. When the MAC move count of a new record is higher than the MAC move count of any existing record, the device performs the following operations:

- Discards the record that has the lowest MAC move count.
- Ranks the MAC address move records in descending order of MAC move count.

Then in the next detection interval, the device discards all MAC address move records generated in the previous detection interval and starts another round of MAC move record generation.

After you execute this command, the system sends only syslog messages to the information center module. If the **snmp-agent trap enable mac-address** command is also executed, the system also sends SNMP notifications to the SNMP module.

Examples

Enable MAC address move notifications.

```
<Sysname> system-view
[Sysname] mac-address notification mac-move
[Sysname]
%May 14 17:16:45:688 2013 Sysname MAC/4/MAC_FLAPPING: MAC address 0000-0012-0034 in VLAN
500 has moved from port XGE1/0/1 to port XGE1/0/2 for 1 times
```

The output shows that:

- The VLAN ID of MAC address 0000-0012-0034 is VLAN 500.
- The MAC address moved from Ten-GigabitEthernet 1/0/1 to Ten-GigabitEthernet 1/0/2.
- The MAC address has moved once within a MAC move detection interval.

Related commands

display mac-address mac-move

mac-address notification mac-move suppression (interface view)

Use **mac-address notification mac-move suppression** to enable MAC address move suppression on an interface.

Use **undo mac-address notification mac-move suppression** to disable MAC address move suppression on an interface.

Syntax

mac-address notification mac-move suppression

undo mac-address notification mac-move suppression

Default

MAC address moves are not suppressed.

Views

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

Predefined user roles

network-admin

Usage guidelines

This feature shuts an interface down when a MAC address has been moved to or from the interface more than the suppression threshold within a MAC move detection interval. The shutdown interface automatically goes up after a suppression interval. Also, you can use the **shutdown** command and then the **undo shutdown** command to bring up the interface.

When MAC address move suppression shuts an interface down, the system sends only syslog messages to the information center module. If the **snmp-agent trap enable mac-address** command is also executed, the system also sends SNMP notifications to the SNMP module.

Examples

Enable MAC address move suppression on Ten-GigabitEthernet 1/0/1.

```
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] mac-address notification mac-move suppression
```

Related commands

> **mac-address notification mac-move suppression** (system view)

mac-address notification mac-move suppression (system view)

Use **mac-address notification mac-move suppression** to set the suppression interval or the suppression threshold.

Use **undo mac-address notification mac-move suppression** to restore the default.

Syntax

> **mac-address notification mac-move suppression** { **interval** *interval* | **threshold** *threshold* }

> **undo mac-address notification mac-move suppression** { **interval** | **threshold** }

Default

> The suppression interval is 30 seconds. The suppression threshold is 3.

Views

> System view

Predefined user roles

> network-admin

Parameters

> **interval** *interval*: Specifies the MAC address move suppression interval during which a suppressed interface stays down. The value range for the *interval-value* argument is 30 to 86400 seconds. If you do not specify this option, the default suppression interval of 30 seconds is used.

> **threshold** *threshold*: Specifies the suppression threshold for MAC address moves sourced from or destined for an interface within a MAC move detection interval. The value range for this argument is 0 to 1024. If you do not specify this option, the default suppression threshold of 3 is used.

Usage guidelines

> For this command to take effect on an interface, you must also enable MAC address move suppression on the interface.

> If you set the suppression interval or suppression threshold multiple times, the most recent configuration applies. The suppression interval setting is independent of the suppression threshold setting.

Examples

> # Set the suppression interval to 40 seconds and the suppression threshold to 1 for MAC address moves.

```
<Sysname> system-view
[Sysname] mac-address notification mac-move suppression interval 40
[Sysname] mac-address notification mac-move suppression threshold 1
```

Related commands

> **mac-address notification mac-move suppression** (interface view)

mac-address static source-check enable

Use **mac-address static source-check enable** to enable the static source check feature.

Use **undo mac-address static source-check enable** to disable the static source check feature.

Syntax

mac-address static source-check enable

undo mac-address static source-check enable

Default

The static source check feature is enabled.

Views

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

Layer 3 Ethernet interface view

Layer 3 aggregate interface view

IRF physical interface view

Predefined user roles

network-admin

Examples

Disable the static source check feature on Ten-GigabitEthernet 1/0/1.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] undo mac-address static source-check enable
```

mac-address timer

Use **mac-address timer** to set the aging timer for dynamic MAC address entries.

Use **undo mac-address timer** to restore the default.

Syntax

mac-address timer { **aging** *seconds* | **no-aging** }

undo mac-address timer

Default

The aging timer is 300 seconds for dynamic MAC address entries.

Views

System view

Predefined user roles

network-admin

Parameters

aging *seconds*: Specifies an aging timer for dynamic MAC address entries, in seconds. The value range for the *seconds* argument is 10 to 1000000.

no-aging: Configures dynamic MAC address entries not to age.

Usage guidelines

To set the aging timer appropriately, follow these guidelines:

- A long aging interval causes the MAC address table to retain outdated entries and fail to accommodate the most recent network changes.
- A short aging interval results in removal of valid entries. Then, unnecessary broadcast packets appear and affect device performance.

Examples

\# Set the aging time to 500 seconds for dynamic MAC address entries.

```
<Sysname> system-view
[Sysname] mac-address timer aging 500
```

Related commands

display mac-address aging-time

snmp-agent trap enable mac-address

Use **snmp-agent trap enable mac-address** to enable SNMP notifications for the MAC address table.

Use **undo snmp-agent trap enable mac-address** to disable SNMP notifications for the MAC address table.

Syntax

snmp-agent trap enable mac-address [**mac-move**]

undo snmp-agent trap enable mac-address [**mac-move**]

Default

SNMP notifications are enabled for the MAC address table.

Views

System view

Predefined user roles

network-admin

Parameters

mac-move: Specifies notifications about the MAC address moves for the MAC address table. If you do not specify this keyword, the command enables all types of SNMP notifications for the MAC address table.

Usage guidelines

To report critical MAC address move events to an NMS, enable SNMP notifications for the MAC address table. For MAC address move event notifications to be sent correctly, you must also configure SNMP on the device.

When SNMP notifications are disabled for the MAC address table, the device sends the generated logs to the information center. To display the logs, configure the log destination and output rule configuration in the information center.

For information about SNMP and information center configuration, see the network management and monitoring configuration guide for the device.

The MAC address table supports only SNMP notifications about MAC address moves. When you enable or disable SNMP notifications about MAC address moves, you enable or disable all types of SNMP notifications for the MAC address table.

Examples

Disable SNMP notifications about MAC address moves for the MAC address table.

```
<Sysname> system-view
[Sysname] undo snmp-agent trap enable mac-address mac-move
```

Related commands

mac-address notification mac-move

MAC Information commands

mac-address information enable (interface view)

Use **mac-address information enable** to enable MAC Information on an interface.

Use **undo mac-address information enable** to disable MAC Information on an interface.

Syntax

mac-address information enable { **added** | **deleted** }

undo mac-address information enable { **added** | **deleted** }

Default

MAC Information is disabled on an interface.

Views

Layer 2 Ethernet interface view

S-channel interface view

S-channel aggregate interface view

S-channel bundle interface view

Predefined user roles

network-admin

Parameters

added: Enables the device to record MAC change information when a new MAC address is learned on an interface.

deleted: Enables the device to record MAC change information when an existing MAC address is deleted.

Usage guidelines

Before you enable MAC Information on an interface, enable MAC Information globally.

Examples

Enable MAC Information on Ten-GigabitEthernet 1/0/1 to enable the interface to record MAC change information when learning a new MAC address.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] mac-address information enable added
```

Enable MAC Information on S-Channel 1/0/1:10 to enable the interface to record MAC change information when learning a new MAC address.

```
<Sysname> system-view
[Sysname] interface s-channel 1/0/1:10
[Sysname-S-Channel1/0/1:10] mac-address information enable added
```

Enable MAC Information on Schannel-Aggregation 1:2 to enable the interface to record MAC change information when learning a new MAC address.

```
<Sysname> system-view
[Sysname] interface schannel-aggregation 1:2
[Sysname-Schannel-Aggregation1:2] mac-address information enable added
```

Related commands

> **mac-address information enable** (system view)

mac-address information enable (system view)

> Use **mac-address information enable** to enable MAC Information globally.
>
> Use **undo mac-address information enable** to disable MAC Information globally.

Syntax

> **mac-address information enable**
>
> **undo mac-address information enable**

Default

> MAC Information is disabled globally.

Views

> System view

Predefined user roles

> network-admin

Usage guidelines

> Before you enable MAC Information on an interface, enable MAC Information globally.

Examples

> \# Enable MAC Information globally.
> ```
> <Sysname> system-view
> [Sysname] mac-address information enable
> ```

Related commands

> **mac-address information enable** (interface view)

mac-address information interval

> Use **mac-address information interval** to set the MAC change notification interval.
>
> Use **undo mac-address information interval** to restore the default.

Syntax

> **mac-address information interval** *interval*
>
> **undo mac-address information interval**

Default

> The MAC change notification interval is 1 second.

Views

> System view

Predefined user roles

> network-admin

Parameters

> *interval*: Specifies the MAC change notification interval in the range of 1 to 20000 seconds.

To prevent syslog messages or SNMP notifications from being sent too frequently, set the MAC change notification interval to a larger value.

Examples

Set the MAC change notification interval to 200 seconds.

```
<Sysname> system-view
[Sysname] mac-address information interval 200
```

mac-address information mode

Use **mac-address information mode** to set the MAC Information mode. The MAC Information mode specifies the type of messages (syslog messages or SNMP notifications) used to notify MAC changes.

Use **undo mac-address information mode** to restore the default.

Syntax

mac-address information mode { **syslog** | **trap** }

undo mac-address information mode

Default

SNMP notifications are sent to notify MAC changes.

Views

System view

Predefined user roles

network-admin

Parameters

syslog: Specifies that the device sends syslog messages to notify MAC changes.

trap: Specifies that the device sends SNMP notifications to notify MAC changes.

Examples

Configure the MAC Information mode as **trap**.

```
<Sysname> system-view
[Sysname] mac-address information mode trap
```

mac-address information queue-length

Use **mac-address information queue-length** to set the MAC Information queue length.

Use **undo mac-address information queue-length** to restore the default.

Syntax

mac-address information queue-length *value*

undo mac-address information queue-length

Default

The MAC Information queue length is 50.

Views

System view

Predefined user roles

network-admin

Parameters

value: Specifies the MAC Information queue length in the range of 0 to 1000. The MAC Information queue length indicates the number of MAC change messages.

Usage guidelines

If the MAC Information queue length is 0, the device sends a syslog message or SNMP notification immediately after learning or deleting a MAC address.

If the MAC Information queue length is not 0, the device stores MAC changes in the queue:

- The device overwrites the oldest MAC change written into the queue with the most recent MAC change when the following conditions exist:
  - o The MAC change notification interval does not expire.
  - o The queue has been exhausted.
- The device sends syslog messages or SNMP notifications only if the MAC change notification interval expires.

Examples

Set the MAC Information queue length to 600.

```
<Sysname> system-view
[Sysname] mac-address information queue-length 600
```