Configuring MAC Address Tables

This chapter contains the following sections:

Information About MAC Addresses

To switch frames between LAN ports, the switch maintains an address table. When the switch receives a frame, it associates the media access control (MAC) address of the sending network device with the LAN port on which it was received.

The switch dynamically builds the address table by using the MAC source address of the frames received. When the switch receives a frame for a MAC destination address not listed in its address table, it floods the frame to all LAN ports of the same VLAN except the port that received the frame. When the destination station replies, the switch adds its relevant MAC source address and port ID to the address table. The switch then forwards subsequent frames to a single LAN port without flooding all LAN ports.

You can also enter a MAC address, which is termed a static MAC address, into the table. These static MAC entries are retained across a reboot of the switch.

Configuring MAC Addresses

Configuring Static MAC Addresses

You can configure static MAC addresses for the switch. These addresses can be configured in interface configuration mode or in VLAN configuration mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config) # **mac-address-table static** *mac_address* **vlan** *vlan-id* {**drop** | **interface** {*type slot*/*port*} | **port-channel** *number*} [**auto-learn**]
3. (Optional) switch(config)# **no mac address-table static** *mac_address* **vlan** *vlan-id*

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config) # **mac-address-table static** *mac_address* **vlan** *vlan-id* {**drop**	**interface** {*type slot*/*port*}	**port-channel** *number*} [**auto-learn**]	Specifies a static address to add to the MAC address table. If you enable the **auto-learn** option, the switch will update the entry if the same MAC address is seen on a different port.
Step 3	switch(config)# **no mac address-table static** *mac_address* **vlan** *vlan-id*	(Optional) Deletes the static entry from the MAC address table. Use the **mac address-table static** command to assign a static MAC address to a virtual interface.

This example shows how to put a static entry in the MAC address table:

```
switch# configure terminal
switch(config) # mac address-table static 12ab.47dd.ff89 vlan 3 interface ethernet 1/4
switch(config) #
```

Configuring the Aging Time for the MAC Table

You can configure the amount of time that an entry (the packet source MAC address and port that packet ingresses) remains in the MAC table. MAC aging time can be configured in either interface configuration mode or in VLAN configuration mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **mac-address-table aging-time** *seconds* [**vlan** *vlan_id*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **mac-address-table aging-time** *seconds* [**vlan** *vlan_id*]	Specifies the time before an entry ages out and is discarded from the MAC address table.

Command or Action	Purpose
	The *seconds* range is from 0 to 1000000. The default is 300 seconds for Cisco NX-OS 5500 and 1800 for Cisco NX-OS 5600 and 6000 series. Entering the value 0 disables the MAC aging. If a VLAN is not specified, the aging specification applies to all VLANs.

This example shows how to set the aging time for entries in the MAC address table to 300 seconds:

```
switch# configure terminal
switch(config) # mac-address-table aging-time 300
switch(config) #
```

Clearing Dynamic Addresses from the MAC Table

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **clear mac-address-table dynamic** {**address** *mac-addr*} {**interface** [*type slot*/*port* | **port-channel** *number*} {**vlan** *vlan-id*}

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **clear mac-address-table dynamic** {**address** *mac-addr*} {**interface** [*type slot*/*port*	**port-channel** *number*} {**vlan** *vlan-id*}	Clears the dynamic address entries from the MAC address table.

Verifying the MAC Address Configuration

Use one of the following commands to verify the configuration:

Table 1: MAC Address Configuration Verification Commands

Command	Purpose
show mac-address-table aging-time	Displays the MAC address aging time for all VLANs defined in the switch.

Command	Purpose
show mac-address-table	Displays the contents of the MAC address table. **Note** IGMP snooping learned MAC addresses are not displayed.
show mac address-table loop-detect	Displays the currently configured action.

This example shows how to display the MAC address table:

```
switch# show mac-address-table
VLAN      MAC Address       Type    Age        Port
---------+----------------+-------+---------+----------------------------
1         0018.b967.3cd0    dynamic 10         Eth1/3
1         001c.b05a.5380    dynamic 200        Eth1/3
Total MAC Addresses: 2
```

This example shows how to display the current aging time:

```
switch# show mac-address-table aging-time
Vlan  Aging Time
----- ----------
1     300
13    300
42    300
```

This example shows how to display the currently configured action:

```
switch# configure terminal
switch(config)# show mac address-table loop-detect
Port Down Action Mac Loop Detect : enabled



switch# configure terminal
switch(config)# no mac address-table loop-detect port-down
switch(config)# show mac address-table loop-detect
Port Down Action Mac Loop Detect : disabled
```