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CHAPTER 1

Configuring the MAC Address Table

All Ethernet switching ports maintain media access control (MAC) address tables.

This chapter includes the following sections:

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- [Configuring MAC Addresses, page 1-1](#)
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Information About MAC Addresses

To switch frames between LAN ports efficiently, 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.

In addition, you can enter a multicast address as a statically configured MAC address. A multicast address can accept more than one interface as its destination.

The address table can store a number of unicast and multicast address entries without flooding any frames (for details, see the [“Configuration Limits” section on page 1-1](#). The switch uses an aging mechanism, defined by a configurable aging timer, so if an address remains inactive for a specified number of seconds, it is removed from the address table.

Configuring MAC Addresses

This section includes the following topics:

- [Configuring a Static MAC Address, page 1-2](#)
- [Configuring the Aging Time for the MAC Table, page 1-2](#)
- [Clearing Dynamic Addresses from the MAC Table, page 1-3](#)

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Configuring a Static MAC Address

You can configure MAC addresses for the switch. These addresses are static MAC addresses.



Note

You can also configure a static MAC address in interface configuration mode or VLAN configuration mode.

To configure a static MAC address, perform this task:

	Command	Purpose
Step 1	switch# configure terminal	Enters 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.

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 2/1
```

To delete a static MAC address, perform this task:

	Command	Purpose
	switch(config-if)# no mac-address-table static mac_address vlan vlan-id	To delete the static entry from the MAC address table, enter the no form of the command.

You can use the **mac-address-table static** command to assign a static MAC address to a virtual interface.

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) remain in the MAC table.



Note

You can also configure MAC aging time in interface configuration mode or VLAN configuration mode.

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To configure the aging time for all MAC addresses, perform this task:

	Command	Purpose
Step 1	switch# <code>configure terminal</code>	Enters configuration mode.
Step 2	switch(config)# <code>mac-address-table aging-time seconds [vlan vlan_id]</code>	Specifies the time before an entry ages out and is discarded from the MAC address table. The range is from 0 to 1000000; the default is 300 seconds. 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 600 seconds (10 minutes):

```
switch# configure terminal
switch(config)# mac-address-table aging-time 600
```

Clearing Dynamic Addresses from the MAC Table

You can clear all dynamic entries in the MAC address table.

To clear the MAC address table, perform this task:

Command	Purpose
switch(config)# <code>clear mac-address-table dynamic {address mac_addr} {interface [type slot/port port-channel number] {vlan vlan_id}}</code>	Clears the dynamic address entries from the MAC address table.

This example shows how to clear the dynamic entries in the MAC address table:

```
switch# clear mac-address-table dynamic
```

Verifying the MAC Address Configuration

To display MAC address configuration information, perform one of these tasks:

Command	Purpose
switch# <code>show mac-address-table aging-time</code>	Displays the MAC address aging time for all VLANs defined in the switch.
switch# <code>show mac-address-table</code>	Displays the contents of the MAC address table.

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
```

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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
```