



# Configuring MAC Address Tables

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## Information About MAC Address Tables

Layer 2 ports correlate the MAC address on a packet with the Layer 2 port information for that packet using the MAC address table. A MAC address table is built using the MAC source addresses of the frames received. When a frame is received for a MAC destination address not listed in the address table, the frame is flooded to all LAN ports of the same VLAN with the exception of the port that received the frame. When the destination station replies, the relevant MAC source addresses and port IDs are added to the address table. Subsequent frames are forwarded to a single LAN port without flooding all LAN ports.

You can configure MAC addresses, which are called static MAC addresses, to statically point to specified interfaces on the device. These static MAC addresses override any dynamically learned MAC addresses on those interfaces. You cannot configure broadcast or multicast addresses as static MAC addresses. The static MAC entries are retained across reboots if you copy the static MAC addresses configuration to the startup configuration by using the `copy running-config startup-config` command.

The address table per VEM can store up to 32,000 MAC entries. An aging timer triggers removal of addresses from the table when they remain inactive for the default time of 300 seconds. The aging timer can be configured on a global basis but not per VLAN.

You can configure the length of time an entry remains in the MAC address table, clear the table, and so forth.

## Guidelines and Limitations

- The forwarding table for each VLAN in a VEM can store up to 4094 MAC addresses.

- You can configure only 1024 static MAC addresses on a single interface.

## Default Settings

**Table 1: Default MAC Address Aging Time**

Parameters	Default
Aging time	300 seconds

## Configuring the MAC Address Table

### Configuring a Static MAC Address

Use this procedure to configure a MAC address to statically point to a specific interface.

#### Before You Begin

- You are logged in to the CLI in EXEC mode.
- You cannot configure broadcast or multicast addresses as static MAC addresses.
- Static MAC addresses override dynamically-learned MAC addresses on an interface.



#### Note

Be aware that the Cisco NX-OS commands may differ from those used in Cisco IOS.

#### Procedure

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>mac address-table static mac_address vlan vlan-id [drop]</b>	Adds a static MAC address in the Layer 2 MAC address table and saves it in the running configuration.
<b>Step 3</b>	switch(config)# <b>show mac address static interface [ type if_id ]</b>	(Optional) Displays static MAC addresses.
<b>Step 4</b>	switch(config)# <b>copy running-config startup-config</b>	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

```
switch# configure terminal
switch(config)# mac address static
switch(config)# show mac address static
switch(config)#
```

## Configuring the Aging Time

Use this procedure to configure the amount of time that packet source MAC addresses, and the ports on which they are learned, remain in the MAC table containing the Layer 2 information.



**Note** The aging time is a global setting that cannot be configured per VLAN. Although it is a global setting, you can also configure MAC aging time in interface configuration mode or VLAN configuration mode.

### Before You Begin

You are logged in to the CLI in EXEC mode.



**Note** Be aware that the Cisco NX-OS commands may differ from those used in Cisco IOS.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch# <b>mac address-table aging-time <i>seconds</i></b>	Specifies and saves in the running configuration the amount of time that will elapse before an entry in the Layer 2 MAC address table is discarded.  Allowable entries include: <ul style="list-style-type: none"> <li>• 120 to 918000 seconds (default is 300)</li> <li>• If you specify zero (0), MAC aging is disabled.</li> </ul>

```
switch# configure terminal
switch(config)# mac address-table aging-time 600
switch(config)# show mac address-table aging-time
Vlan Aging Time
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101 600
100 600
1 600
switch#
```

## Clearing Dynamic Addresses from the MAC Address Table

### Before You Begin

You are logged in to the CLI in EXEC mode.



#### Note

Be aware that the Cisco NX-OS commands may differ from those used in Cisco IOS.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>clear mac address-table dynamic</b> [ vlan <i>vlan_id</i> ]	Clears the dynamic address entries from the Layer 2 MAC address table.
<b>Step 2</b>	switch# <b>show mac address-table</b> [ vlan <i>vlan_id</i> ]	(Optional) Displays the MAC address table.  <b>Note</b> If the switch has several modules and interfaces, you should not use the <b>show mac address-table</b> command. The command will take a long time to complete. Instead, we recommend that you use a more focused show command, for example, for a specific VLAN.

The following example clears the entire MAC address table of all dynamic entries:

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

The following example clears the MAC address table of only those dynamic MAC addresses learned on VLAN 5:

```
switch# clear mac address-table dynamic vlan 5
switch#
```

## Verifying the MAC Address Table Configuration

Use one of the following commands to verify the configuration:

Command	Purpose
<b>show mac address-table</b>	Displays the MAC address table.  <b>Note</b> If the switch has several modules and interfaces, you should not use the <b>show mac address-table</b> command. The command will take a long time to complete. Instead, we recommend that you use a more focused show command, for example, for a specific module or VLAN.

Command	Purpose
<b>show mac address-table module</b> <i>module-number</i>	Displays the MAC address table for a specific module.
<b>show mac address-table static</b>	Displays information about the MAC address table static entries.
<b>show mac address-table static   inc veth</b>	Displays the static MAC address of vEthernet interfaces in case a VEM physical port learns a dynamic MAC and the packet source is in another VEM on the same VSM.
<b>show mac address static interface</b> [ <b>type</b> <i>if_id</i> ]	Displays all static MAC addresses.
<b>show mac address-table aging-time</b>	Displays the aging time in the MAC address table.
<b>show mac address-table count</b>	Displays a count of MAC address entries.
<b>show interface</b> <i>interface_id</i> <b>mac</b>	Displays the MAC addresses and the burn-in MAC address for an interface.

## Feature History for the MAC Address Table

Feature Name	Release	Description
MAC Address Tables	Release 5.2(1)SK1(2.1)	This feature was introduced

