

# Useful Switch Information

More detailed information is available at

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/index.htm>

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## Summary of Commands

This section tells you pretty much what you need to know for the next assignment. See the section “Command Details” for detailed information.

### The enable command

Use the **enable** command to change from user mode (mode 0) to privileged EXEC mode (level 15). After you type enable, the switch or router will ask for a password. In all cases, use the password green.

### The show mac-address-table command

Use **show mac-address-table dynamic** to view the mac-address-table entries on a switch. The keyword dynamic limits the display to the MAC addresses that are learned as the switch operates. These are the ones you need to see.

### The show version command

The **show version** command provides information about software and hardware versions on the switch. You can use the command **show version | include Base** to determine the MAC address of the switch.

### The ping command

**ping <ip-address>** or **ping <switch-name>** can be used to make sure the mac-address-tables from the between the two switches (pinger and pingee) have entries for the both switches (they are set for the pinger on the outgoing ping and for the pingee on the ping reply).

## Command Details

### The *enable* command

To enter privileged EXEC mode, or any other security level set by a system administrator, use the *enable* EXEC command. Many commands will work only in privileged EXEC mode.

```
enable [level]
```

### Syntax Description

level	(Optional) Privileged level on which to log in.
-------	---

### Command Modes

EXEC

### Normal Usage for CSc72010 Class

Use this command to change from user mode (mode 0) to privileged EXEC mode (level 15). After you type *enable*, the switch or router will ask for a password. In all cases, use the password *green*.

### Usage Guidelines

Entering privileged EXEC mode enables the use of privileged commands. Because many of the privileged commands set operating parameters, privileged access should be password-protected to prevent unauthorized use. If the system administrator has set a password with the *enable password global configuration* command, you are prompted to enter it before being allowed access to privileged EXEC mode. The password is case sensitive.

If an *enable* password has not been set, *enable* mode only can be accessed from the router console.

Security levels can be set by an administrator using the *enable password* and *privilege level* commands. Up to 16 privilege levels can be specified, using the numbers 0 through 15. Using these privilege levels, the administrator can allow or deny access to specific commands.

Privilege level 0 is traditionally associated with normal EXEC mode, and privilege level 15 is traditionally associated with privileged EXEC mode.

For more information on defined privilege levels, see the "Passwords and Privileges" chapters of the Cisco IOS Security Configuration Guide and the Cisco IOS Security Command Reference publications.

If a level is not specified when entering the *enable* command, the user will enter the default mode of privileged EXEC (level 15).

## The MAC Address Table

The MAC address table contains address information that the switch uses to forward traffic between ports. All MAC addresses in the address table are associated with one or more ports. The address table includes these types of addresses:

- Dynamic address: a source MAC address that the switch learns and then ages when it is not in use.
- Static address: a manually entered unicast or multicast address that does not age and that is not lost when the switch resets.

The address table lists the destination MAC address, the associated VLAN ID, and port number associated .

## Building the Address Table

With multiple MAC addresses supported on all ports, you can connect any port on the switch to individual workstations, repeaters, switches, routers, or other network devices. The switch provides dynamic addressing by learning the source address of packets it receives on each port and adding the address and its associated port number to the address table. As stations are added or removed from the network, the switch updates the address table, adding new dynamic addresses and aging out those that are not in use.

The aging interval is configured on a per-switch basis. However, the switch maintains an address table for each VLAN, and STP can accelerate the aging interval on a per-VLAN basis.

The switch sends packets between any combinations of ports, based on the destination address of the received packet. Using the MAC address table, the switch forwards the packet only to the port or ports associated with the destination address. If the destination address is on the port that sent the packet, the packet is filtered and not forwarded. The switch always uses the store-and-forward method: complete packets are stored and checked for errors before transmission.

## Displaying Address Table Entries

You can display the MAC address table by using one or more of the privileged EXEC commands described in [Table 7-4](#). The most important command for class use will be **show mac-address-table dynamic**. This displays the MAC addresses that are learned as the switch operates.

**Table 7-4** Commands for Displaying the MAC Address Table

Command	Description
show mac address-table address	Displays MAC address table information for the specified MAC address.

show mac address-table aging-time	Displays the aging time in all VLANs or the specified VLAN.
show mac address-table count	Displays the number of addresses present in all VLANs or the specified VLAN.
show mac address-table dynamic	Displays dynamic MAC address table entries only.
show mac address-table interface	Displays the MAC address table information for the specified interface.
show mac address-table multicast	Displays the Layer 2 multicast entries for all VLANs or the specified VLAN.
show mac address-table static	Displays static MAC address table entries only.
show mac address-table vlan	Displays the MAC address table information for the specified VLAN.

## The *show version* command

Use the **show version** user EXEC command to display version information for the hardware and firmware.

**show version** [ | {**begin** | **exclude** | **include**} *expression*]

### Syntax Description

<b>begin</b>	(Optional) Display begins with the line that matches the <i>expression</i> .
<b>exclude</b>	(Optional) Display excludes lines that match the <i>expression</i> .
<b>include</b>	(Optional) Display includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

## Command Modes

User EXEC

## Normal Class Usage

You can use the command **show version | include Base** to determine the MAC address of the switch.

## Usage Guidelines

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

## Examples

The following command will give you the MAC address of the switch you are using:

```
show version | include Base
```

The response to the command on hulk is:

```
Base ethernet MAC Address: 00:12:DA:A1:07:00
```

The following is sample output from the unmodified **show version** command:

```
IOS (tm) C3550 Software (C3550-I5Q3L2-M), Version 12.1(20)EA1a, RELEASE SOFTWARE  
(fc1)  
Copyright (c) 1986-2004 by cisco Systems, Inc.  
Compiled Mon 19-Apr-04 21:50 by yenanh  
Image text-base: 0x00003000, data-base: 0x008273B8
```

```
ROM: Bootstrap program is C3550 boot loader
```

```
hulk uptime is 2 days, 1 hour, 36 minutes  
System returned to ROM by power-on  
System image file is "flash:c3550-i5q3l2-mz.121-20.EA1a/c3550-i5q3l2-mz.121-20.EA1a.bin"
```

```
cisco WS-C3550-24-PWR (PowerPC) processor (revision J0) with 65526K/8192K bytes of  
memory.
```

```
Processor board ID CAT0851Y0XC
```

```
Last reset from warm-reset
```

```
Bridging software.
```

```
Running Layer2/3 Switching Image
```

```
Ethernet-controller 1 has 12 Fast Ethernet/IEEE 802.3 interfaces
```

```
Ethernet-controller 2 has 12 Fast Ethernet/IEEE 802.3 interfaces
```

```
Ethernet-controller 3 has 1 Gigabit Ethernet/IEEE 802.3 interface
```

```
Ethernet-controller 4 has 1 Gigabit Ethernet/IEEE 802.3 interface
```

24 FastEthernet/IEEE 802.3 interface(s)  
2 Gigabit Ethernet/IEEE 802.3 interface(s)

The password-recovery mechanism is enabled.  
384K bytes of flash-simulated non-volatile configuration memory.  
Base ethernet MAC Address: 00:12:DA:A1:07:00  
Motherboard assembly number: 73-8100-09  
Power supply part number: 341-0029-03  
Motherboard serial number: CAT08510KB4  
Power supply serial number: DTH08503P1H  
Model revision number: J0  
Motherboard revision number: A0  
Model number: WS-C3550-24PWR-EMI  
System serial number: CAT0851Y0XC  
Configuration register is 0x10F

### **The *ping* command**

You can use ping <ip-address> on a switch just like you can use it on a host. Also, switches respond to pings, so the switches can ping each other.

### **Normal class usage**

**ping <ip-address>** or **ping <switch-name>** can be used to make sure the mac-address-tables from the between the two switches (pinger and pingee) have entries for the both switches (they are set for the pinger on the outgoing ping and for the pingee on the ping reply).