## Lab 6.2.3 Managing the MAC Address Table
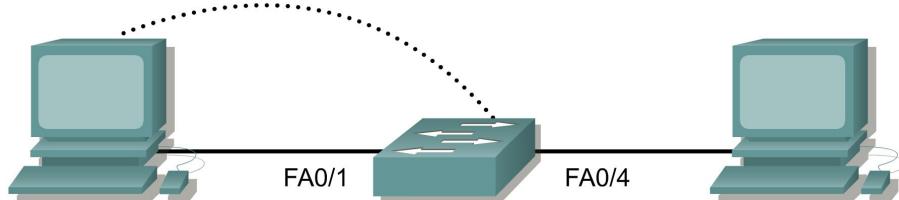
Switch Designation	Switch Name	Enable Secret Password	Enable, VTY, and Console Passwords	VLAN 1 IP Address	Default Gateway IP Address	Subnet Mask
Switch 1	ALSwitch	class	cisco	192.168.1.2	192.168.1.1	255.255.255.0

Straight-through cable	————————
Serial cable	———Z———
Console (Rollover)	••••••••••••••••••••
Crossover cable	– – – – – – – – – •
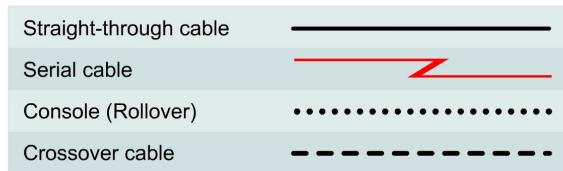
Objective

- Create a basic switch configuration.
- Manage the switch MAC table.

Background/Preparation

Cable a network similar to the one in the diagram. The configuration output used in this lab is produced from a 2950 series switch. Any other switch used may produce different output. The following steps are to be executed on each switch unless specifically instructed otherwise. Instructions are also provided for the 1900 Series switch, which initially displays a User Interface Menu. Select the "Command Line" option from the menu to perform the steps for this lab.

Start a HyperTerminal session.

Note: Go to the erase and reload instructions at the end of this lab. Perform those steps on all switches in this lab assignment before continuing.

Step 1 Configure the switch

Configure the hostname, access and command mode passwords, as well as the management LAN settings. These values are shown in the chart. If problems occur while performing this configuration, refer to the Basic Switch Configuration lab.

Step 2 Configure the hosts attached to the switch

Configure the hosts to use the same IP subnet for the address, mask, and default gateway as on the switch.

Step 3 Verify connectivity

a. To verify that hosts and switch are correctly configured, ping the switch IP address from the hosts.

b. Were the pings successful? _____

c. If the answer is no, troubleshoot the hosts and switch configurations.

Step 4 Record the MAC addresses of the host

a. Determine and record the layer 2 addresses of the PC network interface cards.

If running Windows 98, check by using **Start** > **Run** > `winipcfg`, then click on `More info`.

If running Windows 2000, check by using **Start** > **Run** > `cmd` > `ipconfig /all`.

b. PC1: _____

c. PC2: _____

Step 5 Determine the MAC addresses that the switch has learned

a. To determine the MAC addresses the switch has learned, use the `show mac-address-table` command as follows at the privileged EXEC mode prompt:

ALSwitch#`show mac-address-table`

b. How many dynamic addresses are there? _____

c. How many total MAC addresses are there? _____

d. How many addresses have been user defined? _____

e. Do the MAC addresses match the host MAC addresses? _____

Step 6 Determine the show MAC table options

a. To determine the options the `show mac-address-table` command has use the `?` option as follows:

ALSwitch#`show mac-address-table ?`

b. How many options are available for the `show mac-address-table` command? _____

c. Show only the MAC addresses from the table that were learned dynamically.

d. How many are there? _____

Step 7 Clear the MAC address table

To remove the existing MAC addresses use the `clear mac-address-table` command from the privileged EXEC mode prompt as follows:

ALSwitch#`clear mac-address-table dynamic`

Step 8 Verify the results

a.   Verify that the `mac-address-table` was cleared as follows:

```
ALSwitch#show mac-address-table
```

b.   How many total MAC addresses are there now? _____

c.   How many dynamic addresses are there? _____

Step 9 Determine the clear MAC table options

a.   To determine the options available use the command `clear mac-address-table ?` at the privileged EXEC mode prompt as follows:

```
ALSwitch#clear mac-address-table ?
```

b.   How many options are there? _____

c.   In what circumstances would these options be used? _____

Step 10 Examine the MAC table again

a.   Look at the MAC address table again using the `show mac-address-table` command at the privileged EXEC mode prompt as follows:

```
ALSwitch#show mac-address-table
```

b.   How many dynamic addresses are there? _____

c.   Why did this change from the last display? _____

d.   The table has not changed yet. Ping the switch IP address from the hosts two times each and repeat Step 10.

Step 11 Exit the switch

a.   Type `exit`, as follows to leave the switch welcome screen.

```
Switch#exit
```

b.   Once the steps are completed, logoff by typing `exit`, and turn all the devices off. Then remove and store the cables and adapter.

Erasing and Reloading the Switch

For the majority of the labs in CCNA 3 and CCNA 4 it is necessary to start with an unconfigured switch. Use of a switch with an existing configuration may produce unpredictable results. These instructions allow preparation of the switch prior to performing the lab so previous configuration options do not interfere. The following is the procedure for clearing out previous configurations and starting with an unconfigured switch. Instructions are provided for the 2900, 2950, and 1900 Series switches.

2900 and 2950 Series Switches

1. Enter into the privileged EXEC mode by typing **enable**.

   If prompted for a password, enter **class** (if that does not work, ask the instructor).

   ```
   Switch>enable
   ```

2. Remove the VLAN database information file.

   ```
   Switch#delete flash:vlan.dat
   Delete filename [vlan.dat]?[Enter]
   Delete flash:vlan.dat? [confirm] [Enter]
   ```

   If there was no VLAN file, this message is displayed.

   ```
   %Error deleting flash:vlan.dat (No such file or directory)
   ```

3. Remove the switch startup configuration file from NVRAM.

   ```
   Switch#erase startup-config
   ```

   The responding line prompt will be:

   ```
   Erasing the nvram filesystem will remove all files! Continue? [confirm]
   ```

   Press **Enter** to confirm.
   The response should be:

   ```
   Erase of nvram: complete
   ```

4. Check that VLAN information was deleted.

   Verify that the VLAN configuration was deleted in Step 2 using the **show vlan** command. If previous VLAN configuration information (other than the default management VLAN 1) is still present it will be necessary to power cycle the switch (hardware restart) instead of issuing the **reload** command. To power cycle the switch, remove the power cord from the back of the switch or unplug it. Then plug it back in.

   If the VLAN information was successfully deleted in Step 2, go to Step 5 and restart the switch using the **reload** command.

5. Software restart (using the **reload** command)

   Note: This step is not necessary if the switch was restarted using the power cycle method.

   a. At the privileged EXEC mode enter the command **reload**.

      ```
      Switch(config)#reload
      ```

      The responding line prompt will be:

      ```
      System configuration has been modified. Save? [yes/no]:
      ```

b. Type **n** and then press **Enter**.

The responding line prompt will be:

```
Proceed with reload? [confirm] [Enter]
```

The first line of the response will be:

```
Reload requested by console.
```

After the switch has reloaded, the line prompt will be:

```
Would you like to enter the initial configuration dialog? [yes/no]:
```

c. Type **n** and then press **Enter**.

The responding line prompt will be:

```
Press RETURN to get started! [Enter]
```

1900 Series Switches

1. Remove VLAN Trunking Protocol (VTP) information.

```
#delete vtp
This command resets the switch with VTP parameters set to factory
defaults.
All other parameters will be unchanged.

Reset system with VTP parameters set to factory defaults, [Y]es or
[N]o?
```

Enter **y** and press **Enter**.

2. Remove the switch startup configuration from NVRAM.

```
#delete nvram
```

This command resets the switch with factory defaults. All system parameters will revert to their default factory settings. All static and dynamic addresses will be removed.

Reset system with factory defaults, [**Y**]es or [**N**]o?

Enter **y** and press **Enter**.