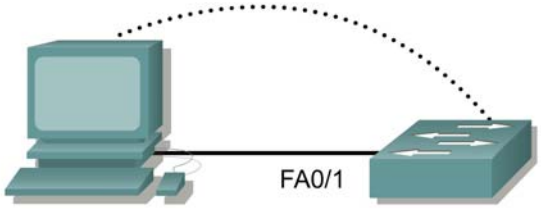
Lab 6.2.7a Managing Switch Operating System Files



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	
Console (Rollover)	
Crossover cable	

Objective

- Create and verify a basic switch configuration.
- Backup the switch IOS to a TFTP server and then restore it.

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 host to use the same subnet for the address, mask, and default gateway as on the switch. This host will act as the TFTP server in this lab. Be sure to take note of the IP address assigned.

Step 3 Verify connectivity

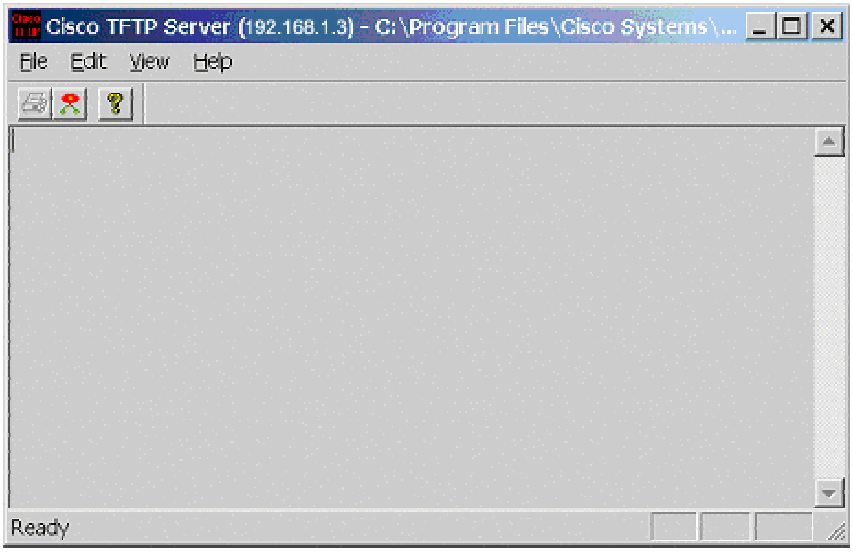
a. To verify that the host and switch are correctly configured, ping the switch IP address from the host.

b. Was the ping successful? _____

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

Step 4 Starting and configuring the Cisco TFTP server

a. The TFTP server that is shown may not be like the one that is used in this classroom. Please check with the instructor for the operating instructions for the TFTP server used in place of the Cisco TFTP server.



b. Once the TFTP server is running and shows the correct address configuration on the workstation, copy the IOS file to the switch.

Step 5 Copying IOS to the TFTP server (1900: Skip to Step 8)

a. Verify that the TFTP server is running and that it can be pinged from the switch.

b. What is the IP address of the TFTP server? _____

c. From the console session, enter **`show flash`**.

d. What is the name and length of the Cisco IOS image stored in flash?

_____

e. What attributes can be identified from the codes in the Cisco IOS filename?

_____

f. From the console session in the Privileged EXEC mode, enter the **`copy flash tftp`** command. At the prompt enter the IP address of the TFTP server.


```
ALSwitch#copy flash tftp
Source filename []? c2950-c3h2s-mz.120-5.3.WC.1.bin
Address or name of remote host []? 192.168.1.3
Destination filename [c2950-c3h2s-mz.120-5.3.WC.1.bin]?[Enter]
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
1674921 bytes copied in 29.952 secs (57755 bytes/sec)
ALSwitch#
```

2900:

```
ALSwitch#copy flash:c2900XL-hs-mz-112.8.10-SA6.bin tftp
Source filename [c2900XL-hs-mz-112.8.10-SA6.bin]?[Enter]
Destination IP address or hostname []? 192.168.1.3
Destination filename [c2900XL-hs-mz-112.8.10-SA6.bin]?[Enter]
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
1119104 bytes copied in 22.895 secs (50868 bytes/sec)
ALSwitch#
```

1900: (download only)

Step 6 Verify the transfer to the TFTP server

a. Verify the transfer to the TFTP server by checking the log file. Click on **View** > **Log File**. The output should look similar to the following output:

```
Mon Sep 16 14:10:08 2002: Receiving 'c2950-c3h2s-mz.120-5.3.WC.1.bin'
in binary mode
Mon Sep 16 14:11:14 2002: Successful.
```

b. Verify the flash image size in the TFTP server directory. To locate it click on **View** > **Options**. This will show the TFTP server root directory. It should be similar to the following, unless the default directories were changed.

```
C:\Program Files\Cisco Systems\Cisco TFTP Server
```

c. Locate this directory using the File Manager and look at the detail listing of the file. The file length in the **`show flash`** command should be the same file size as the file stored on the TFTP server. If the file sizes are not identical in size, check with the instructor.

Step 7 Copying IOS from the TFTP server

a. Now that the IOS is backed up, the image must be tested and the IOS must be restored to the switch. Verify again that the TFTP server is running, sharing a network with the switch and can be reached by pinging the TFTP server IP address.

b. Record the IP address of the TFTP server. ____

c. Now start the actual copying, from the privileged EXEC prompt as follows:

Note: It is important that this process is not interrupted.


```
ALSwitch#copy tftp flash
Address or name of remote host []? 192.168.1.3
Source filename []? c2950-c3h2s-mz.120-5.3.WC.1.bin
Destination filename [c2950-c3h2s-mz.120-5.3.WC.1.bin]? [enter]
%Warning: There is a file already existing with this name
Do you want to over write? [confirm] [enter]
Accessing tftp://192.168.1.3/c2950-c3h2s-mz.120-5.3.WC.1.bin...
Loading c2950-c3h2s-mz.120-5.3.WC.1.bin from 192.168.1.3 (via VLAN1):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!
[OK - 1674921 bytes]
1674921 bytes copied in 51.732 secs (32841 bytes/sec)
ALSwitch#
```

d. The switch may prompt for an overwrite flash. Will the image fit in available flash? ___________

e. What is the size of the file being loaded? ____

f. What happened on the switch console screen as the file was being downloaded?

____

g. Was the verification successful? ____

h. Was the whole operation successful? ____

Step 8 Upgrading Catalyst 1900 Firmware with a TFTP Server

a. Select option "F" to go to the Firmware Configuration menu from the main menu. An example of the Firmware Configuration menu is:

```
        Catalyst 1900 - Firmware Configuration

---------------------- System Information -----------------------------
     FLASH:  1024K bytes
     V8.01.00    : Enterprise Edition
     Upgrade status:
     No upgrade currently in progress.

---------------------- Settings ---------------------------------------
     [S] TFTP Server name or IP address              192.168.1.3
     [F] Filename for firmware upgrades              cat1900.bin
     [A] Accept upgrade transfer from other hosts    Enabled

---------------------- Actions ----------------------------------------
     [U] System XMODEM upgrade       [D] Download test subsystem
(XMODEM)
     [T] System TFTP upgrade         [X] Exit to Main Menu

Enter Selection:
```

b. Copy the switch firmware file to the TFTP server.

c. Select option "S" from the Firmware Configuration menu and enter the IP address of the server where the switch upgrade file is located.

d. Select option “F” from the Firmware Configuration menu and enter the name of the firmware upgrade file.

e. Select '”T” from the Firmware Configuration menu to initiate the upgrade.

f. Verify the upgrade is in progress by checking the Upgrade status section of the Firmware Configuration menu. If the upgrade is in progress, the field reads "in-progress".

g. When the transfer is complete, the switch resets automatically and executes the newly downloaded firmware.

Caution: During the transfer of the upgrade file, the switch might not respond to commands for as long as 1 minute. This is normal and correct. The firmware could be corrupted if the transfer is interrupted by turning the switch off and on.

Step 9 Test the restored IOS image

Verify that the switch image is correct. To do this, cycle the switch power and observe the startup process to confirm that there were no flash errors. If there are none then the IOS on the switch should have started correctly. Also to further verify IOS image in flash, issue the **show version** command which will show output similar to the following:

```
System image file is "flash:c2950-c3h2s-mz.120-5.3.WC.1.bin"
```

Once the steps are complete, 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**.

