Basic Router and Switch Instructions (Cisco Devices)

Basic Device Connection

1. Connect to the device via the console cable (light blue cable) and the use of a terminal program (Windows Hyperterminal, Putty)
2. Start the selected program
3. Set the serial communications port (normally com2)
4. Connection settings are default:
    - Bits per second: 9600
    - Data Bits: 8
    - Parity: None
    - Stop Bits: 1
    - Flow Control: None
5. Once connected, you will see a connection prompt

Write Erasing Configurations (Switches and Routers)

1. Connect to the device as listed in Basic Device Connection
2. At the prompt, type **enable** and press <Enter>
3. Type **write erase** and press <Enter> twice (Once to enter the command and a second time to confirm). This will remove the startup configuration from the device, but a restart will be required to load the defaults in after the write erase.
    a. For 2950 & 3560 Switches, an additional step to remove the vlan.dat file is necessary to remove any VLAN configurations located on the flash memory.
        i. type **show flash**: <Enter>
        ii. **delete flash:vlan.dat** <Enter>
4. Finally, reload the default information to the device.
    a. At the prompt: **reload <Enter><Enter>** and select **no** when asked to save the configuration.

Password Recovery

Router Password Recovery (2800, 2600, 1200)

At times, a student will place a password on a router and not remove it. In this case, a password recovery must be completed to allow the device to be used again.

1. Power off the device.
2. Power the device back on and use the break command <CTRL> + <C> to stop the boot process
3. You should see a rommon prompt ('<'). If you do not, repeat steps 1 and 2.
4. At the prompt, type **confreg 0x2142 <ENTER>**. This tells the router to ignore the startup configuration.
5. Now boot the router, type **boot <ENTER>**
6. Once booted, complete the Write Erase instructions.
7. Final step, after reload, the device will enter rommon mode again.

- However when it reload enter rommon again using the break sequence and type **confreg 0x2102**, then **boot**.

Router Password Recovery (2514)

1. Power off the device.
2. Power the device back on and use the break command <CTRL> + <C> to stop the boot process
3. You should see a rommon prompt ('<'). If you do not, repeat steps 1 and 2.
4. Type **o <Enter>** to see the current configuration register
5. Type **o/r 0x2142 <Enter>**
6. Type **i** to reboot the router and load the IOS
7. Type **enable** and then **write erase**
8. This step may require multiple reboots. From the putty or terminal window, and send a special command of break to the session. This should put you in configure terminal mode (i.e. rommon). If it does not, reboot and send the break again. Once in the correct mode, type **config-register 0x2102** <Enter>.
9. Save the configuration and reload by issuing the commands:
    - Copy running-config startup-config <Enter>
    - Reboot <Enter>

Switch Password Recovery (2950, 3560)

1. Connect to the device via the console port.
2. Push in and hold the mode button to power cycle the switch until you see the switch: prompt.
3. Issue the **flash_init** command.
4. Use the **dir flash** command to see all the files on the switch. To remove the configuration and vlans (and thus the password), remove the following files: **config.text**, and **vlan.dat**.

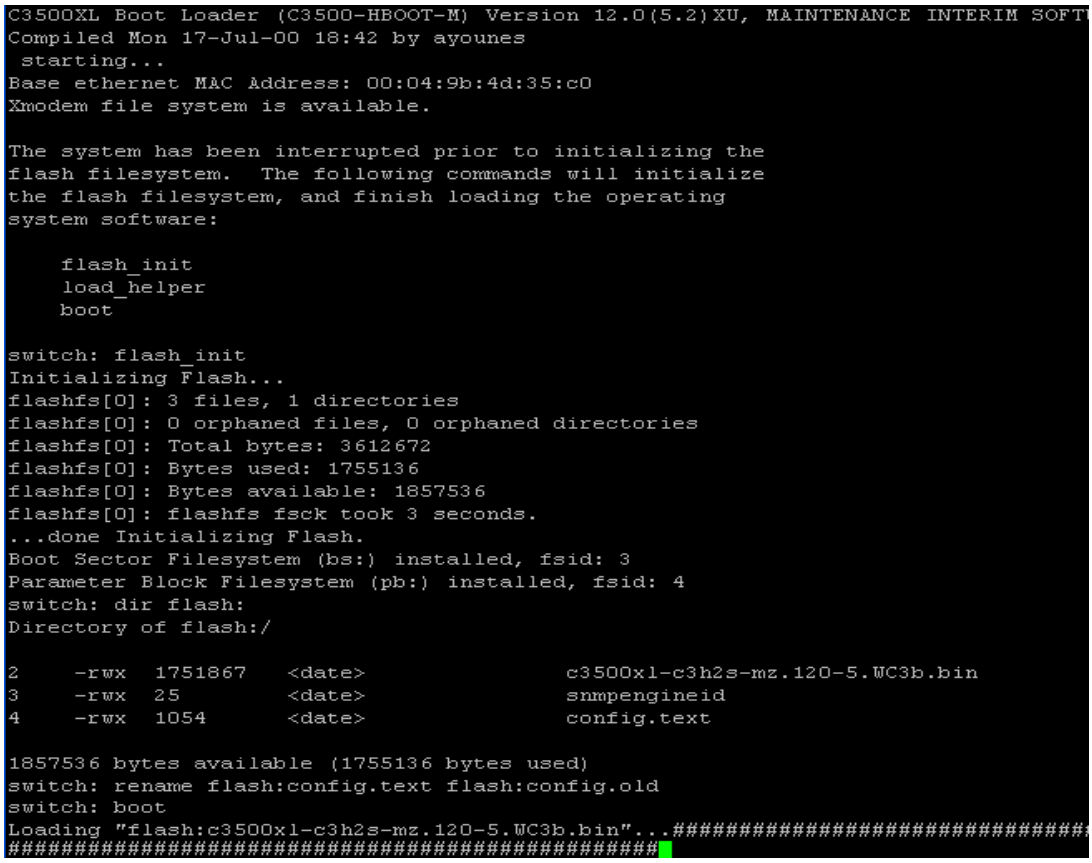
    - Issue the commands: **delete flash:config.text <Enter>**
    - Next, enter: **delete flash:vlan.dat <Enter>**

5. Finally, type **boot** <Enter> and the switch will reset with a default configuration.

More information on the password recovery can be found at
http://cisco.com/en/US/products/sw/iosswrel/ps1831/products_tech_note09186a00801746e6.shtml

Switch Password Recovery (3500XL)

1. Power off the device.
2. Power the device on, while holding the button on the front left of the device. This will put you in rommon mode (switch:)
3. Type **flash_init <Enter>**
4. Type **dir flash:** to find the name of the config file
5. Type **rename flash:config.text flash:config.old**
6. Type **boot**



Switch VLAN Creation

3500XL Switches

On the 3500 switches you must create vlans at the interface level, as there is no direct method to create a vlan.

1. Type **Enable**
2. Type **Configure Terminal**
3. Type **Interface Fa0/1**
4. Type **Switchport access vlan #** (# is the number of the vlan you are trying to create)
5. Type **End**
6. Type **Show Vlan** to confirm your VLAN was created

```
Switch>Enable
Switch#Configure Terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#Interface Fa0/1
Switch(config-if)#Switchport access vlan 100
Switch(config-if)#End
Switch#
00:16:44: %SYS-5-CONFIG_I: Configured from console by console
Switch#Show Vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/2, Fa0/3, Fa0/4, Fa0/5,
                                                Fa0/6, Fa0/7, Fa0/8, Fa0/9,
                                                Fa0/10, Fa0/11, Fa0/12, Fa0/13,
                                                Fa0/14, Fa0/15, Fa0/16, Fa0/17,
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21,
                                                Fa0/22, Fa0/23, Fa0/24, Gi0/1,
                                                Gi0/2
100  VLAN0100                         active    Fa0/1
```

Saving Configuration to Flash

Depending upon the device, the following commands will be used:

1. Write
2. Copy Run Start
3. Write Memory

Saving Configuration to TFTP Server (configuration backup)

A backup copy of a configuration for a device can be made to allow the saving of a configuration for reloading or use on a compatible device. You must have a TFTP Server setup and configured for this option and know the IP address of the TFTP server. On the selected device:

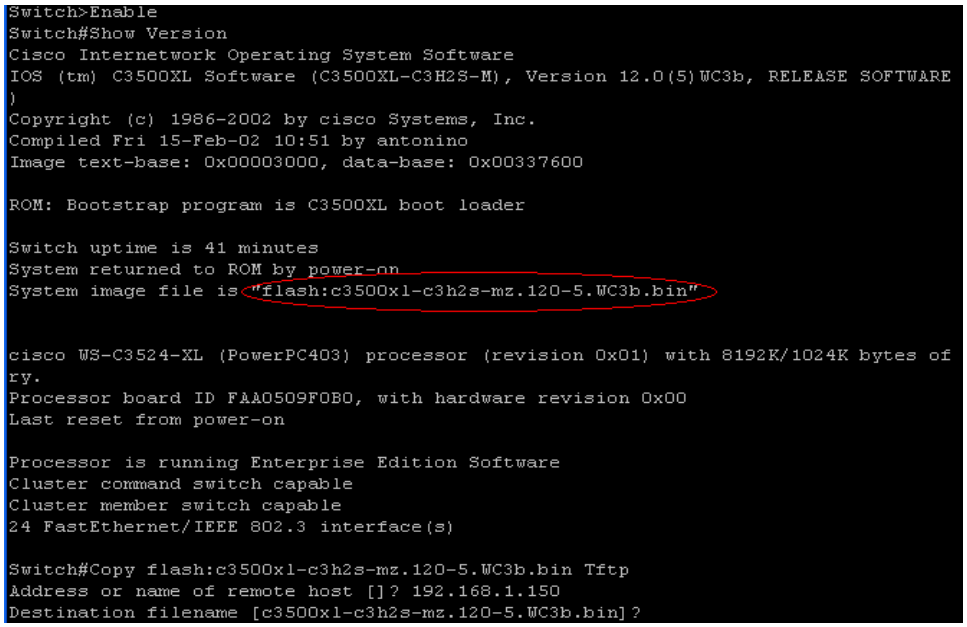
1. Type Enable
2. Type Copy Run Tftp
3. Type in the IP Address or DNS name of the TFTP Server in this case: ex. **192.168.1.150**
4. Type in the name that you wish to save this configuration with (default is switch-config), in this case: **Test-Config**
5. Press **Enter** and it will upload it to your tftp server.

```
Switch>Enable
Switch#Copy Run Tftp
Address or name of remote host []? 192.168.1.150
Destination filename [switch-confg]? Test-Config
```

Saving an IOS Image to a TFTP Server

There are times the main operating system for a device may need to be restored or modified to a new version. The current IOS can be saved to a TFTP server for future use or backup in case of failure. A TFTP server and its IP address must be configured before this option will be available.

1. Type **Enable**
2. Type **Show Version**, find the .bin file listed in the output. (Example Below).
3. Hit the **Escape** key to exit out of the Show version output.
4. Type **Copy flash:c3500xl-c3h2s-mz.120-5.WC3b.bin Tftp** (Replace **c3500xl-c3h2s-mz.120-5.WC3b.bin** with the name of your IOS Image)
5. Type in the IP Address or DNS name of the TFTP Server in this case: **192.168.1.150**
6. Type the file name that you wish to save it with (default are shown in **[ ]** after the question, if you want the default just hit **Enter**), in this case: **c3500xl-c3h2s-mz.120-5.WC3b.bin**
7. Press **Enter** and it will upload it to your tftp server.



Loading an IOS to a device from a TFTP Server

This option will be used to restore an IOS version to a device or to load a new IOS to a device. A TFTP server must be configured and the DNS name / IP address known.

1. Type **Enable**
2. Type **Copy Tftp Run**
3. Type in the IP Address or DNS name of the TFTP Server in this case: **192.168.1.150**
4. Type in the file name that you wish to pull down, in this case: **c3500xl-c3h2s-mz.120-5.WC3b.bin**
5. Press **Enter** and it will download it to your flash.

```
Switch>Enable
Switch#Copy Tftp Run
Address or name of remote host []? 192.168.1.150
Source filename []? c3500xl-c3h2s-mz.120-5.WC3b.bin
Destination filename [running-config]?
Accessing tftp://192.168.1.150/c3500xl-c3h2s-mz.120-5.WC3b.bin...
```

Creating Room on the Device for the IOS (Not Enough Space Error)

When loading a new IOS, the error of Not Enough Space may be received. In this case, the current image must be removed to provide the space for the new IOS to be installed. Before beginning this, you will want to save the current IOS to the TFTP server as a precaution. At any time during the delete process before step 6, the <CTRL>+ <C> combination may be used to cancel the process.

1. Type Enable
2. Type Dir flash:
3. Look for the name of a .bin file
4. Type delete flash:**c3500xl-c3h2s-mz.120-5.WC3b.bin**
5. Hit **Enter** twice to confirm the name to delete and to confirm the actual deletion.

```
Switch>Enable
Switch#dir flash:
Directory of flash:/

  2  -rwx     1751867   Jul 25 2002 06:48:26  c3500xl-c3h2s-mz.120-5.WC3b.bin
  3  -rwx          25   Mar 01 1993 00:10:09  snmpengineid
  4  -rwx         616   Mar 01 1993 00:16:41  vlan.dat

3612672 bytes total (1858048 bytes free)
Switch#delete c3500xl-c3h2s-mz.120-5.WC3b.bin
Delete filename [c3500xl-c3h2s-mz.120-5.WC3b.bin]?
Delete flash:c3500xl-c3h2s-mz.120-5.WC3b.bin? [confirm]
```

Determining the VLAN ports of a switch

You may need to determine what ports on a switch are in specific vlans.

1. Type **Enable**
2. Type **Show vlan** , the vlans will be listed along the left side and the ports that are associated with them are directly to the right. Notice in the diagram the Vlan is circled in red and the ports associated to that vlan are circled in blue.

```
Switch>Enable
Switch#Show vlan
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/2, Fa0/3, Fa0/4, Fa0/5,
                                                Fa0/6, Fa0/7, Fa0/8, Fa0/9,
                                                Fa0/10, Fa0/11, Fa0/12, Fa0/13,
                                                Fa0/14, Fa0/15, Fa0/16, Fa0/17,
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21,
                                                Fa0/22, Fa0/23, Fa0/24, Gi0/1,
                                                Gi0/2
100  VLAN0100                         active    Fa0/1
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active
```

Creating a Monitor (Mirrored) Port on a switch

Using a monitor port eleviates the need for using a hub to capture traffic. When setting up a monitor port you can choose to monitor the traffic going over a specific port or a specific VLAN. Which ever you choose will be used in step X.

1. Type **Enable**
2. Type **Configure Terminal**
3. Type **Interface FastEthernet 0/1** where FastEthernet 0/1 is the interface you want the traffic to be sent to. Make sure that the interface your monitoring on is in the same vlan of whatever port or vlan you are going to be monitoring. Then proceed to either step 4 or 5.
4. Type in **Port Monitor FastEthernet 0/5** to monitor the traffic going over port FastEthernet 0/5
5. Type **Port Monitor vlan #** (where # is the vlan number you want to monitor)

```
Switch>Enable
Switch#Configure Terminal
Enter configuration commands, one per line.  End with CNTL/Z
Switch(config)#Interface FastEthernet 0/1
Switch(config-if)#Port Monitor FastEthernet 0/5
Switch(config-if)#Port Monitor Vlan 100
```

Creation and Setup of a TFTP Server

A TFTP server can easily be created on any Windows Server or desktop using the following instructions. You will need to download a free program called TFTPD32 to accomplish this task.

1. Download Tftpd32 3.35
2. Install Tftpd32 using the default options and start it running.
3. As shown in the screen shot, all you will need to do, is configure the following:
    a. Where the files are stored on the computer / server
    b. The IP address of your computer that the device will attempt to contact
4. Once configured, you're TFTP server is ready to send and receive IOS and configuration files.