## Instructions

The purpose of this lab assignment is to become familiar with the Cisco Internetwork Operating System (IOS) command-line interface (CLI). The Cisco IOS is the primary tool used to initialize, configure, and manage Cisco networking devices. While Cisco IOS is specific to Cisco devices, the syntax is common across other enterprise networking platforms, such as HPE, Dell, and Fortinet.

## Step 1 – Initial network setup

1. In Packet Tracer, start by adding a **2960** **switch** to your workspace.
2. Click on the switch, click the CLI tab, and wait for the switch to complete the boot.
   1. Once it's finished booting, you should see this prompt:



1. Press **RETURN** or **Enter** on your keyboard to enter the Cisco IOS command prompt.

## Step 2 – IOS Navigation and Help

1. At first glance, there is not a lot of information to go off, so we'll use some basic commands to get us going. Start by using the question mark '**?**' on your keyboard to get a list of commands available in the current mode.
2. Perform an Internet search for Cisco IOS modes. Identify and explain each mode. In your explanation, the command to enter that mode, and an example of a configuration change.
   1. For example, in the global configuration mode, you can set the hostname of the switch.
   2. Provide your answers here:

|  |  |  |  |
| --- | --- | --- | --- |
| **Mode** | **Command** | **Purpose/Usage** | **Example** |
| User exec | NA | Limited to allow user to view basic functions. | Such as viewing information about the device or basic troubleshooting. |
| Privileged Exec | enable | Higher end tasks like viewing device configuration, performing backups, restoring, installing new IOS image | This mode would be for anything short of changing the devices overall configuration. |
| Global | configure terminal | Configure new settings, update old ones, routing protocols, security, etc. | If you wanted to change the overall configuration of the device then this is the mode that you want to be in. |
| Setup | NA | Mode is present when the device does not find an IOS image. Allows the user to configure. | IOS image gets deleted, this will be the mode that is present when start happens. |
| Rommon | NA | Mode is present when there is a IOS but something is wrong with it. | This mode allows the user to trouble shoot the IOS, or select a different IOS from the different files available. |

1. Now that you are familiar with the different modes enter the **privileged EXEC mode** and use the question mark **?** to view available commands.
   1. What command are you going to issue to enter the Global Configuration mode?
      1. Answer: configure terminal
   2. What command are you going to issue to save the running configuration to the startup configuration?
      1. Answer: running-config startup-config
   3. What command do you give to return to the previous mode?
      1. Answer: exit

## Step 3 – Making Global Configurations

1. To start setting up our switch, we will make global configuration changes to set the hostname, set a password, encrypt our password, place the switch on to our domain, disable domain querying, and write a login display banner.
2. Enter global configuration mode on the switch and make the following changes:
   1. Set the hostname to: **cyb-sw-01**
   2. Create an enable password: **P@ssw0rd** (the 0 is a zero)
      1. Before moving on, use the **do show running-config** command to view your saved password in plaintext
   3. Use the **service password-encryption** to encrypt your recently set password
      1. Verify the password is encrypted with the previous show command
   4. Set the following banner message, **You are accessing an Oregon Institute of Technology (OIT) Information System (IS) that is provided for OIT-authorized use only. Only OIT network administrators are to access this system!**
      1. Hint: there are a couple of methods to set a system login banner. The command I have found most successful for this version of IOS is **banner motd #*write your message*#**, and press enter. You can verify by exiting all modes and re-entering Privileged EXEC mode.
   5. Next, use the **ip domain-name** command to put your switch on the **cyber.oit** domain.
   6. Disable domain name lookup with the **no ip domain-lookup** command.
      1. What is the purpose of using the no ip domain-lookup command? In other words, why would an administrator want to disable domain lookups?
         1. Answer: It will prevent the use of DNS names, instead will just use IP

## Step 4 – Interface Commands

1. Administrators can enter interface configuration mode from the global configuration mode to make configuration changes for specific interfaces. Changes can be applied to both physical and virtual interfaces.
2. To start, let's configuration a management interface.
   1. Research and explain the purpose of a management interface on a managed switch.
      1. Answer: Its really just an effective way to manage the devices that are available for the manger to change and configure.
   2. Move to the interface configuration mode for **vlan 1**
      1. Note: we have not discussed virtual LANs yet, but for the purpose of this assignment, you are making configuration changes for the virtual interface vlan 1, the default VLAN on most switches.
      2. Hint: **interface vlan 1**
      3. Configure the IP address and subnet mask with: **192.168.100.1 255.255.255.0**
      4. Set the description to "Mgmt Network"
      5. Turn the virtual interface on with the **no shutdown** command
3. Use the interface range command to administratively shutdown interfaces 3 through 24
   1. Note: there are 24 FastEthernet ports of on the front of this switch and 2 GigabitEthernet ports.
   2. For range, you can use the command **int range f0/3-24**
   3. Use the **shutdown** command to shutdown the ports
   4. Why would an administrator want to shutdown ports and explain what it means to administratively shutdown ports?
      1. Answer: The reason you would want to shutdown ports is to individually stop communication of those ports or the devices that are connected to those ports.
4. Use the interface range command to administratively turn on FastEthernet ports 1 and 2.
   1. What command did you use? Answer: interface range fa0/1 - 2

## Step 5 – Add Devices and Test Connectivity

1. Exit the CLI interface for the switch.
2. Add two PCs and connect them to ports 1 and 2 to the switch.
3. Manually assign the first PC an IP address of **192.168.100.100** with a subnet mask of **255.255.255.0**, and the second PC an IP address of **192.168.100.200** with a subnet mask of **255.255.255.0**.
4. Using the Command Prompt from the Desktop tab on the second PC, use the ping command to send ping requests to both the first PC and the management VLAN interface on the switch.
5. If your configurations are correct, the second PC should receive replies from both the first PC and the switch's management interface. Explain why successful ping replies are received from both devices.
   1. Answer: Because they are actively connected by the same switch on the same network? Along with being on the same LAN connection.

## Step 6 – Save, Reload, and Submit

1. Enter the CLI tab for the switch, enter the correct user mode, and save your running configuration changes to the startup configuration.
   1. What user mode and what command did you enter to perform this task?
      1. Answer: Global, running-config startup-config
   2. Why is it important to save your running configuration as the startup configuration? Explain.
      1. Answer: So that it will save and on next startup it will be the same as current.
2. Enter the correct user mode and use the **reload** command to reboot your switch.
3. After the switch has finished rebooting, save your Packet Tracer file as **FirstnameLastname\_Lab02\_PT.pkt**
4. Save a copy of this document with all of your answers as **FirstnameLastname\_Lab02\_Written.docx.**
5. Upload both files to Canvas for grading.