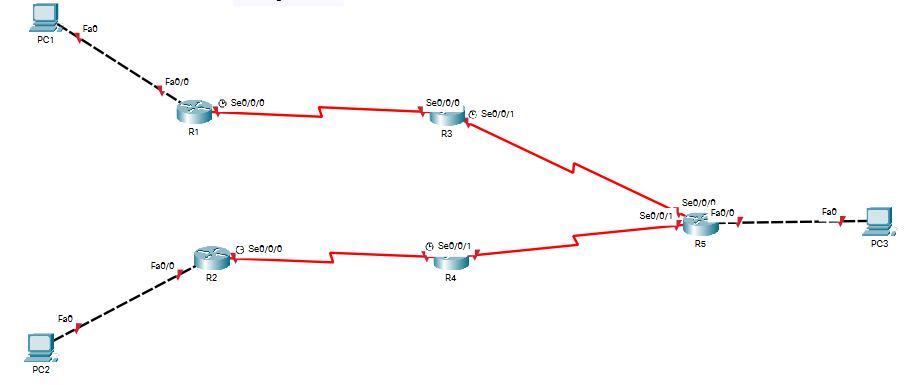
***LAB 2A : Configure IP addresses IT 341***

Packet Tracer – Configuring IP addresses on Router Interfaces.



**Addressing Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP address** | **Subnet Mask** | **Default Gateway** |
| **R1** | **S0/0/0** | **10.1.1.1** | **255.255.255.0** | **N/A** |
| **F0/0** | **172.25.1.1** | **255.255.255.0** | **N/A** |
| **R2** | **S0/0/0** | **10.1.2.1** | **255.255.255.0** | **N/A** |
| **F0/0** | **172.22.1.1** | **255.255.255.0** | **N/A** |
| **R3** | **S0/0/0** | **10.1.1.2** | **255.255.255.0** | **N/A** |
| **S0/0/1** | **192.168.1.1** | **255.255.255.0** | **N/A** |
| **R4** | **S0/0/0** | **10.1.2.2** | **255.255.255.0** | **N/A** |
| **S0/0/1** | **192.168.2.1** | **255.255.255.0** | **N/A** |
| **R5** | **S0/0/0** | **192.168.1.2** | **255.255.255.0** | **N/A** |
| **S0/0/1** | **192.168.2.2** | **255.255.255.0** | **N/A** |
| **F0/0** | **172.30.1.1** | **255.255.255.0** | **N/A** |
| **PC1** | **NIC** | **172.25.1.2** | **255.255.255.0** | **172.25.1.1** |
| **PC2** | **NIC** | **172.22.1.2** | **255.255.255.0** | **172.22.1.1** |
| **PC3** | **NIC** | **172.30.1.2** | **255.255.255.0** | **172.30.1.1** |

**Introduction:**

The first step toward enabling a router to forward IP packets is to configure IP information on the interfaces. This configuration provides access to directly connected networks.

**Learning Objectives:**

* Configure IP information on routers.
* Verify the configuration.
* Verify Layer 1 and Layer 2 information.
* Examine the IP routing table.

**TASK 1: Configure IP addresses on R1 interfaces – 50points**

**Step 1:** Access router R1 and enter the global configuration: From the CLI tab, enter the privileged exec mode by issuing the **enable** command. Enter the global configuration mode by issuing the command **config t**.

**Step 2: Configure interfaces**

* On router R1 enter the configuration mode, then we need to enter the FastEthernet interface by issuing the command interface Fa0/0.
* Configure the IP address by issuing the command IP address **172.25.1.1** **255.255.255.0** and bring the interface up with the **no shutdown** command.
* Now enter the **Exit** command to come back to the configuration mode.
* Enter the configuration mode, then we need to enter the first Serial interface by issuing the command interface s0/0/0.
* Configure the IP address by issuing the command ip address **10.1.1.1 255.255.255.0**.
* Configure the clock rate with the clock rate 64000 command and activate the interface.

**Step 3: Save the configuration**

Exit the configuration mode by hitting ctrl+z or Exit or end and then save the configuration by executing the command **copy running-config startup-config** in privilege mode

**Step 4: Using the routing table given above, configure IP addresses on Router R2, R3, R4 and R5.**

**TASK 2: Verify the configuration**

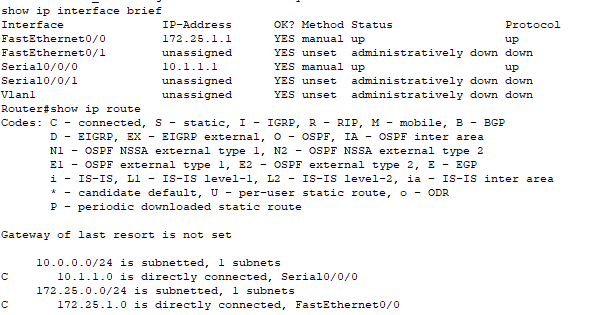
**Step 1: Verify the layer 1 and layer 2 information**

On each of the routers, verify the status of the interfaces by issuing the command s**how ip interface brief.** Verify the IP addresses on all the interfaces and that the interfaces are up and line protocol is up.

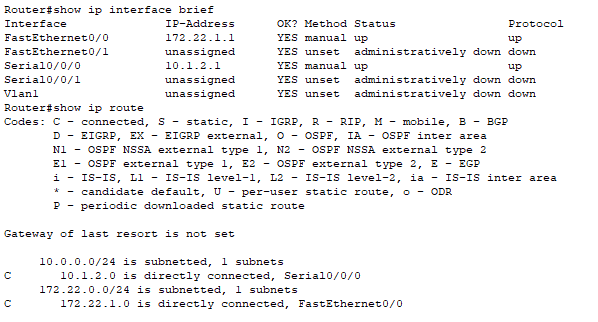
**Step 2: Examine the routing table**

On each of the routers, examine the IP routing table by issuing the command **show ip route.** Notice that the routing table contain information only about the directly connected networks.

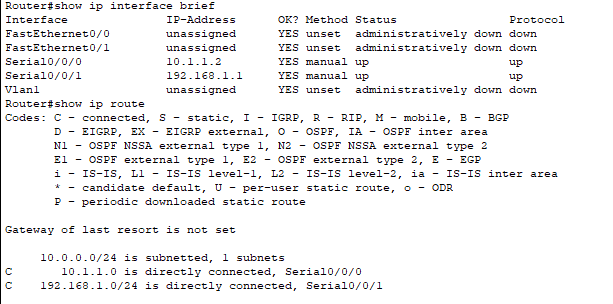
R1



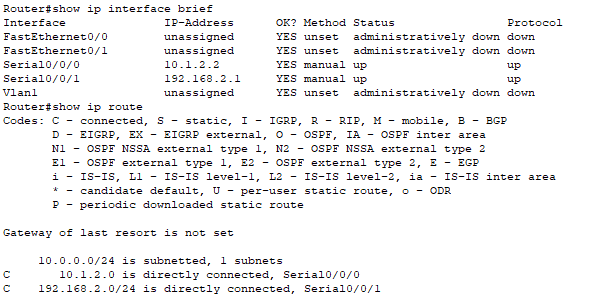
R2



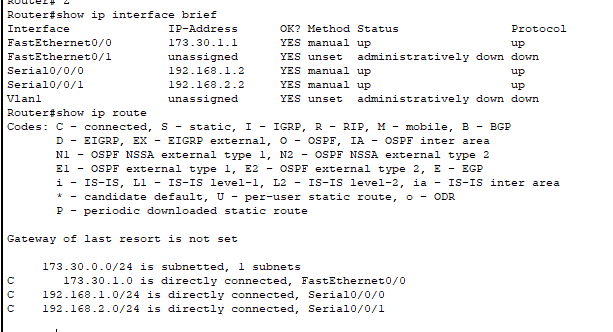
R3



R4



R5



**LAB 2Bs- Configuring Basic Switch Management**

**Addressing Table**

|  |  |  |  |
| --- | --- | --- | --- |
| **Device** | **Interface** | **IP Address** | **Subnet Mask** |
| **S1** | **VLAN99** | 172.17.99.11 | 255.255.255.0 |
| **PC1** | **NIC** | 172.17.99.21 | 255.255.255.0 |
| **Server** | **NIC** | 172.17.99.31 | 255.255.255.0 |

**Learning Objectives**

* Connect to the switch using a console connection
* Navigate through various CLI modes
* Use the Help Facility to configure the clock
* Access and configure command history
* Configure the boot sequence
* Configure a PC and connect it to a switch
* Configure full duplex
* Manage the MAC address table
* Manage the switch configuration file

**Introduction:**

Basic switch management is the foundation for configuring switches. This activity focuses on navigating command-line interface modes, using help functions, accessing the command history, configuring boot sequence parameters, setting speed and duplex settings, as well as managing the MAC address table and switch configuration file. Skills learned in this activity are necessary for configuring basic switch security in later chapters.

**Task 1: Connect to the Switch – 5.5 points**

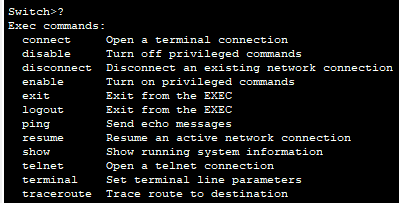
**Step 1. Connect S1 and PC1.**

* Using a console cable, connect the RS 232 interface on PC1 to the console interface on switch S1.
* Click **PC1** and then click the **Desktop** tab. Select **Terminal** in the Desktop tab.
* Keep these default settings for Terminal Configuration and then click **OK**:
  + Bits Per Second = 9600
  + Data Bits = 8
  + Parity = None
  + Stop Bits = 1
  + Flow Control = None
* You are now consoled into S1. Press **Enter** to get the Switch prompt.

**Task 2: Navigate Through CLI Modes – 5.5 points**

**Step 1. In user EXEC mode, type ?. Note the list of available commands.**

While in user EXEC mode, the available commands are limited to basic monitoring commands.



**Step 2. Use the enable command to go to privileged EXEC mode.**

Switch>**enable**

Switch#

The prompt changes from > to #.



**Step 3. In privileged EXEC mode, type ?. Note the list of available commands.**

There are now more available commands compared to user EXEC mode. In addition to the basic monitoring commands, configuration and management commands can now be accessed.



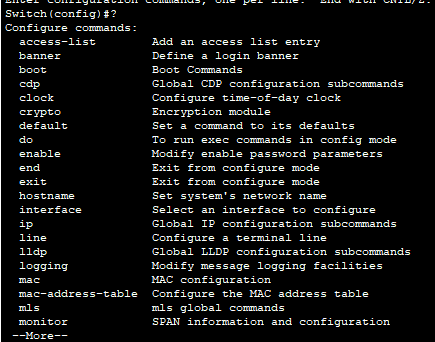
**Step 4. Change to global configuration mode.**

Switch#**configure terminal**

Switch(config)#



**Step 5. In global configuration mode, type ?. Note the list of available commands.**

****

**Step 6. Configure S1 as the hostname.**

Switch(config)#**hostname S1**

S1(config)#



**Step 7. Change to interface configuration mode for VLAN99.**

The **interface vlan 99** command creates the interface and changes to interface configuration mode for VLAN99.

S1(config)#**interface vlan 99**

S1(config-if)#

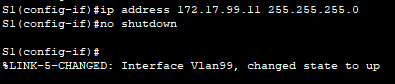


**Step 8. Configure VLAN99 with 172.17.99.11/24 and activate the interface.**

Use the **ip address** and **no shutdown** commands to assign the correct IP address/subnet mask and activate the interface.

S1(config-if)#**ip address 172.17.99.11 255.255.255.0**

S1(config-if)#**no shutdown**



**Step 9. Change to interface configuration mode for Fa0/18.**

S1(config-if)#**interface fa0/18**

S1(config-if)#



**Step 10. Set the port mode to access.**

To allow for frames to be sent and received from the interface, change the switching mode to access using the **switchport mode access** command.

S1(config-if)#**switchport mode access**



**Step 11. Assign VLAN99 to the port.**

To allow the Fa0/18 interface to act as a member of VLAN 99, issue the **switchport access vlan 99** command.

S1(config-if)#**switchport access vlan 99**



**Step 12. Exit interface configuration mode.**

Issue the **exit** command to leave interface configuration mode and enter global configuration mode.



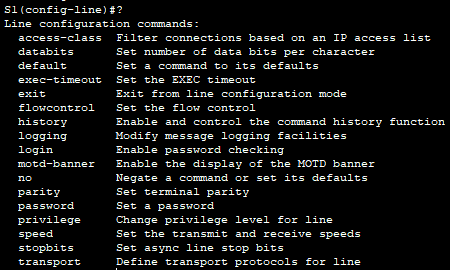
**Step 13. Enter configuration mode for the console line.**

S1(config)#**line console 0**

S1(config-line)#



**Step 14. In line configuration mode, type ?. Note the list of available commands.**

****

**Step 15. Enter cisco as the password.**

S1(config-line)#**password cisco**

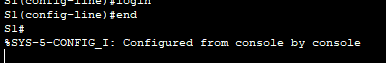
S1(config-line)#**login**



**Step 16. Return to privileged EXEC mode using the end command.**

S1(config-line)#**end**

S1#



**Task 3: Use Help Facility to Configure the Clock – 5.5 points**

**Step 1. At the privileged EXEC command prompt, type clock ?.**

S1#**clock ?**

The only option is **set**.



**Step 2. Use Help to assist setting the clock to the current time.**

S1#**clock ?**

set Set the time and date

S1#**clock set ?**

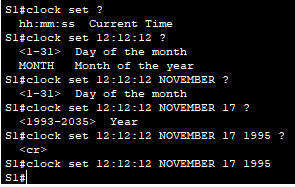
hh:mm:ss Current Time

S1#**clock set 12:12:12 ?**

<1-31> Day of the month

MONTH Month of the year

Continue issuing the **?** command until you have completed configuring the clock. You are warned with a % **Incomplete command message** if the **clock** command is not fully entered with all the required arguments.



**Step 3. Verify that the clock is set.**

To verify that the clock is set, issue the **show clock** command. **Note:** Packet Tracer does not always show the correct time configured. Completion is still at 31% at the end of this Task.

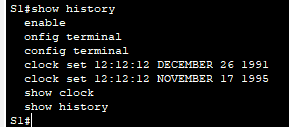


**Task 4: Access and Configure Command History – 5.5 points**

**Step 1. View the most recent commands entered.**

Issue the **show history** command. Remember how many commands are listed.

S1#**show history**



Don’t laugh. I didn’t notice that you can’t set it before 1993 ☹

**Step 2. Change the number of commands stored in the history buffer.**

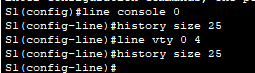
Enter line configuration mode for both the console and Telnet lines. Set the number of commands held in the history buffer to 25

S1(config)#**line console 0**

S1(config-line)#**history size 25**

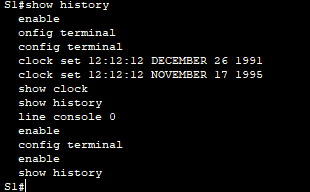
S1(config-line)#**line vty 0 4**

S1(config-line)#**history size 25**



**Step 3. Verify that the size of the history buffer has changed.**

Return to privileged EXEC mode and issue the **show history** command again. There should be more commands displayed than previously.



**Task 5: Configure the Boot Sequence – 5.5 points**

**Step 1. Check which Cisco IOS software version is currently loaded.**

S1#**show version**

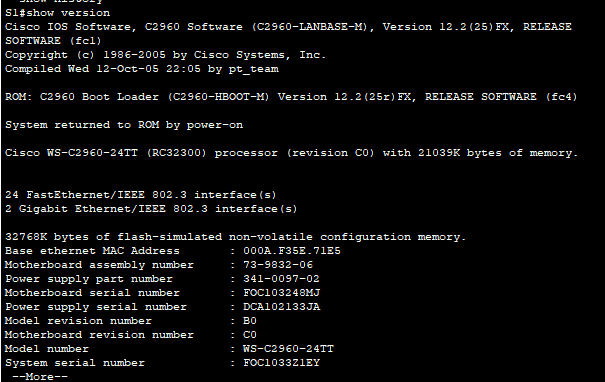
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEASE SOFTWARE (fc1)

Copyright (c) 1986-2005 by Cisco Systems, Inc.

Compiled Wed 12-Oct-05 22:05 by pt\_team

<output omitted>

The version is listed in the first line.



**Step 2. Check which Cisco IOS images are loaded in flash memory.**

S1#**show flash**

Directory of flash:/

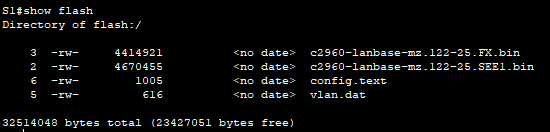
3 -rw- 4414921 c2960-lanbase-mz.122-25.FX.bin

2 -rw- 4670455 c2960-lanbase-mz.122-25.SEE1.bin

6 -rw- 616 vlan.dat

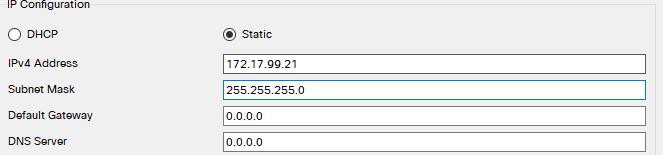
32514048 bytes total (23428056 bytes free)

Note that there are two versions in flash memory.



**Task 6: Configure a PC and Connect it to a Switch- 5.5 points**

**Step 1. Configure PC1 with the IP address/subnet mask 172.17.99.21/24.**

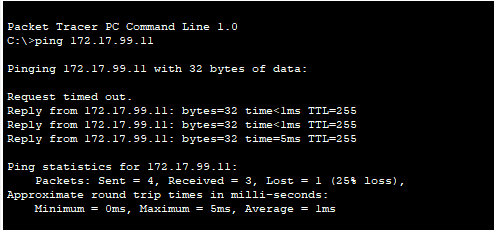
* Exit the terminal to return to the **Desktop**tab.
* Click **IP Configuration** and set the IP address to 172.17.99.21 and subnet mask to 255.255.255.0
* 

**Step 2. Connect PC1 to Fa0/18 on the switch.**

Using the copper straight-through cable, connect the FastEthernet port of the PC to the Fa0/18 port on the switch.

**Step 3. Test connectivity between S1 and PC1.**

Ping between S1 and PC1. It may take a few attempts, but it should be successful.

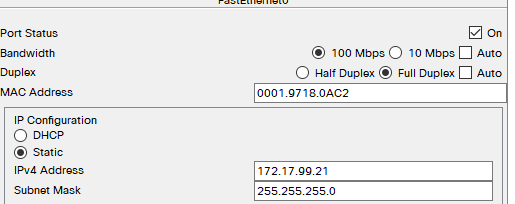


**Task 7: Configure Duplex and Speed – 5.5 points**

**Note: If you don’t have config tab, please skip the task 7 and move directly to Task 8.**

**Step 1. Use the Config tab change the settings.**

On PC1, select the **Config** tab. Set the bandwidth of the FastEthernet interface to 100 Mbps and Full Duplex.

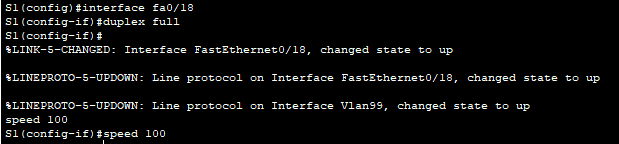


**Step 2. Use Cisco IOS commands to set Fa0/18.**

Return to the desktop and select **Terminal**, and then configure the interface. S1(config)#**interface fa0/18**

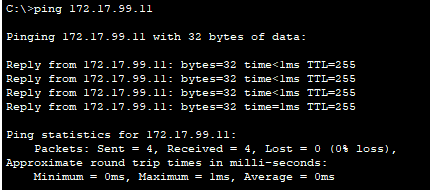
S1(config-if)#**duplex full**

S1(config-if)#**speed 100**



**Step 3. Test connectivity between S1 and PC1.**

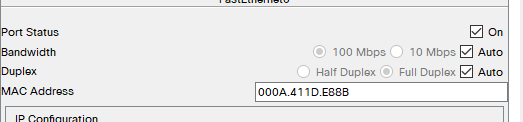
Issue a ping from S1 to PC1. It may take a few attempts, but it should be successful.



**Task 8: Manage the MAC Address Table – 5.5 points**

**Step 1. Check the MAC address of the server.**

Click the **Server**, then the **Config** tab, and then **FastEthernet**. The MAC Address is 000A.411D.E88B



**Step 2. Configure static MAC for the TFTP server.**

By configuring a static MAC for the TFTP server, the switch always knows which port to use to send out traffic destined for the server. In global configuration mode on S1, add the MAC address to the addressing table of the switch:

S1(config)#**mac-address-table static 000A.411D.E88B vlan 99 int fa0/24**



**Step 3. Verify that the static MAC address is now in the MAC address table.**

S1#**show mac-address-table**

Mac Address Table

-------------------------------------------

Vlan Mac Address Type Ports

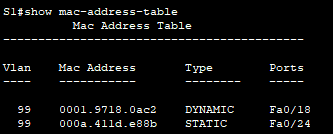
---- ----------- -------- -----

99 000A.411D.E88B STATIC Fa0/24

99 0090.2B8A.6168 DYNAMIC Fa0/18

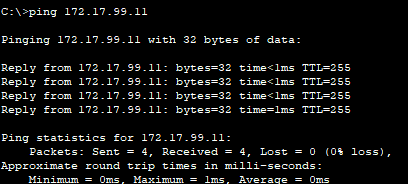
S1#

Notice how the MAC address from PC1 was added dynamically. This entry may or may not be in your table depending on how long it has been since you pinged from PC1 to S1.



**Step 4. Test connectivity between S1 and PC1.**

Issue a ping from S1 to PC1. It may take a few attempts, but the command should be successful.



**Task 9: Manage the Switch Configuration File – 5.5 points**

Using a copper straight-through cable, connect the FastEthernet port on the server to the Fa0/24 port on the switch.

**Step 1. Enter interface configuration mode for Fa0/24.**

S1#**configure terminal**

S1(config)#**interface fa0/24**

S1(config-if)#



**Step 2. Set the port mode to access.**

Setting the port mode to access allows frames to be sent and received from the interface.

S1(config-if)#**switchport mode access**



**Step 3. Assign VLAN99 to the port.**

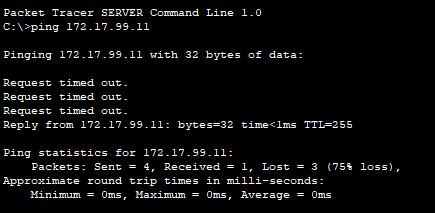
Assigning VLAN99 to the port allows the Fa0/24 interface to act as a member of VLAN 99.

S1(config-if)#**switchport access vlan 99**



**Step 4. Verify S1 can ping the server.**

Ping the server from S1. It may take a few attempts, but it should be successful.

****

**Step 5. Save the running config**

Execute the following command and save the running config to the start-up config.

S1#**wr**

