

# Hà Đăng Long 22024552

## Packet Tracer – Configure Initial Router Settings

### Part 1: Verify the Default Router Configuration

Step 1: Establish a console connection to R1.

- a. Choose a Console cable from the available connections.
- b. Click PCA and select RS 232.
- c. Click R1 and select Console.
- d. Click PCA>Desktop tab >Terminal.
- e. Click OK and press ENTER. You are now able to configure R1.

Step 2: Enter privileged mode and examine the current configuration.

You can access all the router commands from privileged EXEC mode. However, because many of the privileged commands configure operating parameters, privileged access should be password-protected to prevent unauthorized use.

- a. Enter privileged EXEC mode by entering the enable command.

```
Router>enable
```

```
Router#
```

Notice that the prompt changed in the configuration to reflect privileged EXEC mode.

- b. Enter the show running-config command.

```
Router# show running-config
```

**What is the router's hostname?**

*Router*

**How many Fast Ethernet interfaces does the Router have?**

*4*

**How many Gigabit Ethernet interfaces does the Router have?**

*2*

**How many Serial interfaces does the router have?**

*2*

**What is the range of values shown for the vty lines?**

*0 – 4*

- c. Display the current contents of NVRAM.

Router# show startup-config

startup-config is not present

**Why does the router respond with the startup-config is not present message?**

*It displays this message because the configuration file was not saved to NVRAM. Currently it is only located in RAM.*

## **Part 2: Configure and Verify the Initial Router Configuration**

To configure parameters on a router, you may be required to move between various configuration modes. Notice how the prompt changes as you navigate through the IOS configuration modes.

Step 1: Configure the initial settings on R1.

- a. Configure R1 as the hostname.
- b. Configure Message of the day text: Unauthorized access is strictly prohibited.
- c. Encrypt all plain text passwords.

Use the following passwords:

- 1. Privileged EXEC, unencrypted: cisco
- 2. Privileged EXEC, encrypted: itsasecret
- 3. Console: letmein

Step 2: Verify the initial settings on R1.

- a. Verify the initial settings by viewing the configuration for R1.

**What command do you use?**

*show running-config*

- b. Exit the current console session until you see the following message:

R1 con0 is now available

Press RETURN to get started.

- c. Press ENTER; you should see the following message:

Unauthorized access is strictly prohibited.

User Access Verification

Password:

**Why should every router have a message-of-the-day (MOTD) banner?**

*Every router should have a banner to warn unauthorized users that access is prohibited.*

*MOTD Banners can also be used to send messages to network personnel (such as impending system shutdowns or who to contact for access).*

**If you are not prompted for a password before reaching the user EXEC prompt, what console line command did you forget to configure?**

*R1(config-line)#login*

- d. Enter the passwords necessary to return to privileged EXEC mode.

**Why would the enable secret password allow access to the privileged EXEC mode and the enable password no longer be valid?**

*The enable secret password overrides the enable password. If both are configured on the router, you must enter the enable secret password to enter privileged EXEC mode.*

**If you configure any more passwords on the router, are they displayed in the configuration file as plain text or in encrypted form? Explain.**

*The service password-encryption command encrypts all current and future passwords.*

### **Part 3: Save the Running Configuration File**

Step 1: Save the configuration file to NVRAM.

- a.

You have configured the initial settings for R1. Now back up the running configuration file to NVRAM to ensure that the changes made are not lost if the system is rebooted or loses power.

**What command did you enter to save the configuration to NVRAM?**

*copy running-config startup-config*

**What is the shortest, unambiguous version of this command?**

*cop r st*

**Which command displays the contents of the NVRAM?**

*show startup-configuration or show start*

- b. Verify that all of the parameters configured are recorded. If not, analyze the output and determine which commands were not executed or were entered incorrectly. You can also click Check Results in the instruction window.

Step 2: Optional: Save the startup configuration file to flash.

Although you will be learning more about managing the flash storage in a router in later chapters, you may be interested to know that, as an added backup procedure, you can save your startup configuration file to flash. By default, the router still loads the startup configuration from NVRAM, but if NVRAM becomes corrupt, you can restore the startup configuration by copying it over from flash.

Complete the following steps to save the startup configuration to flash.

- a. Examine the contents of flash using the show flash command:

```
R1# show flash
```

**How many files are currently stored in flash?**

*3*

**Which of these files would you guess is the IOS image?**

*c1900-universalk9-mz.SPA.151-4.M4.bin*

**Why do you think this file is the IOS image?**

*Answers may vary, but two clues are the file length compared to the others and the .bin at the end of the file name.*

- b. Save the startup configuration file to flash using the following commands:

```
R1# copy startup-config flash
```

```
Destination filename [startup-config]
```

The router prompts you to store the file in flash using the name in brackets. If the answer is yes, then press ENTER; if not, type an appropriate name and press ENTER.

- c. Use the show flash command to verify the startup configuration file is now stored in flash.

# Packet Tracer - Connect a Router to a LAN

## Part 1: Display Router Information

Step 1: Display interface information on R1.

- a. Which command displays the statistics for all interfaces configured on a router?  
*show interfaces*
- b. Which command displays the information about the Serial 0/0/0 interface only?  
*show interface serial 0/0/0*
- c. Enter the command to display the statistics for the Serial 0/0/0 interface on R1 and answer the following questions:
  1. What is the IP address configured on R1?  
*209.165.200.225/30*
  2. What is the bandwidth on the Serial 0/0/0 interface?  
*1544 kbits*
- d. Enter the command to display the statistics for the GigabitEthernet 0/0 interface and answer the following questions:
  1. What is the IP address on R1?  
*There is no IP address configured on the GigabitEthernet 0/0 interface.*
  2. What is the MAC address of the GigabitEthernet 0/0 interface?  
*000d.bd6c.7d01*
  3. What is the bandwidth (BW) of the GigabitEthernet 0/0 interface?  
*1000000 kbits*

Step 2: Display a summary list of the interfaces on R1.

- a. Which command displays a brief summary of the current interfaces, interface status, and the IP addresses assigned to them?  
*show ip interface brief*
- b. Enter the command on each router and answer the following questions:
  1. How many serial interfaces are there on R1 and R2?  
*Each router has 2 serial interfaces.*
  2. How many Ethernet interfaces are there on R1 and R2?  
*R1 has 6 Ethernet interfaces and R2 has 2 Ethernet interfaces.*
  3. Are all the Ethernet interfaces on R1 the same? If no, explain the difference(s).  
*No. There are two Gigabit Ethernet interfaces and 4 Fast Ethernet interfaces. Gigabit Ethernet interfaces support speeds of up to 1,000,000,000 bits per second and Fast Ethernet interfaces support speeds of up to 1,000,000 bits per second.*

Step 3: Display the routing table on R1.

- a. What command displays the contents of the routing table?

*show ip route*

- b. Enter the command on R1 and answer the following questions:

1. How many connected routes are there (uses the C code)?

*1*

- 2.

Which route is listed?

*209.165.200.224/30*

3. How does a router handle a packet destined for a network that is not listed in the routing table?

*A router will only send packets to a network listed in the routing table. If a network is not listed, the packet will be dropped.*

## Part 2: Configure Router Interfaces

Step 1: Configure the GigabitEthernet 0/0 interface on R1.

- a. Enter the following commands to address and activate the GigabitEthernet 0/0 interface on R1:

*R1(config)# interface gigabitethernet 0/0*

*R1(config-if)#ip address 192.168.10.1 255.255.255.0*

*R1(config-if)#no shutdown*

*%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up*

*%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up*

- b. It is good practice to configure a description for each interface to help document the network. Configure an interface description that indicates the device to which it is connected.

*R1(config-if)#description LAN connection to S1*

- c. R1 should now be able to ping PC1.

*R1(config-if)#end*

*%SYS-5-CONFIG\_I: Configured from console by console*

*R1# ping 192.168.10.10*

*Type escape sequence to abort.*

*Sending 5, 100-byte ICMP Echos to 192.168.10.10, timeout is 2 seconds:*

*..!!!*

*Success rate is 80 percent (4/5), round-trip min/avg/max = 0/2/8 ms*

Step 2: Configure the remaining Gigabit Ethernet Interfaces on R1 and R2.

- a. Use the information in the Addressing Table to finish the interface configurations for R1 and R2. For each interface, do the following:
1. Enter the IP address and activate the interface.
  2. Configure an appropriate description.
- b. Verify interface configurations.

Step 3: Back up the configurations to NVRAM.

**Save the configuration files on both routers to NVRAM. What command did you use?**

*copy run start*

### **Part 3: Verify the Configuration**

Step 1: Use verification commands to check your interface configurations.

- a. Use the show ip interface brief command on both R1 and R2 to quickly verify that the interfaces are configured with the correct IP address and are active.

**How many interfaces on R1 and R2 are configured with IP addresses and in the “up” and “up” state?**

*3 on each router*

**What part of the interface configuration is NOT displayed in the command output?**

*The subnet mask*

**What commands can you use to verify this part of the configuration?**

*show run, show interfaces, show ip protocols*

- b. Use the show ip route command on both R1 and R2 to view the current routing tables and answer the following questions:
  1. **How many connected routes (uses the C code) do you see on each router?**  
*3*
  2. **How many OSPF routes (uses the O code) do you see on each router?**  
*Both R1 and R2 show 2 OSPF routes.*
  3. **If the router knows all the routes in the network, then the number of connected routes and dynamically learned routes (OSPF) should equal the total number of LANs and WANs. How many LANs and WANs are in the topology?**  
*5*
  4. **Does this number match the number of C and O routes shown in the routing table?**  
*yes*