Packet Tracer - Configure Initial Router Settings

Topology

Objectives

Part 1: Verify the Default Router Configuration

Part 2: Configure and Verify the Initial Router Configuration

Part 3: Save the Running Configuration File

Background

In this activity, you will perform basic router configurations. You will secure access to the CLI and console port using encrypted and plain text passwords. You will also configure messages for users logging into the router. These banners also warn unauthorized users that access is prohibited. Finally, you will verify and save your running configuration.

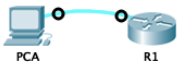
1. Verify the Default Router Configuration

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**.

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
```

c. Answer the following questions:

What is the router's hostname? Router

How many Fast Ethernet interfaces does the Router have? 0,1,2, and 3

How many Gigabit Ethernet interfaces does the Router have? 0 and 1

How many Serial interfaces does the router have? 0 and 1

What is the range of values shown for the VTY lines? 0 4

d. 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?

- The startup-config is probably not present because any changes made by the network administrator should be saved to the startup configuration file in NVRAM in order for them to take effect on the next reboot of the router;
- The running configuration is modified when the network administrator makes any changes. These changes should be saved to the startup configuration file in NVRAM in order for them to take effect on the next reboot of the router or during in the event of a power loss; rs
- startup-config – The file stored in Non-volatile Random Access Memory (NVRAM) that contains all of the commands that will be used by the device upon startup or reboot. NVRAM does not lose its contents when the device is powered off.
- NVRAM – Non-volatile memory used as permanent storage for the startup configuration file (startup-config);
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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 router.

1. Configure the initial settings on R1.

Note: If you have difficulty remembering the commands, refer to the content for this topic. The commands are the same as you configured on a switch.

a. **R1** as the hostname.

b. Use the following passwords:

1) Console: **letmein**

2) Privileged EXEC, unencrypted: **cisco**

3) Privileged EXEC, encrypted: **itsasecret**

c. Encrypt all plain text passwords.

d. Message of the day text: `Unauthorized access is strictly prohibited.`

2. Verify the initial settings on R1.

a. Verify the initial settings by viewing the configuration for R1. What command do you use?

- Verify that the configuration is accurate using the show run command.
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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?

- Although requiring passwords is one way to keep unauthorized personnel out of a network, it is vital to provide a method for declaring that only authorized personnel should attempt to gain entry into the device. To do this, add a banner to the device output. Banners can be an important part of the legal process in the event that someone is prosecuted for breaking into a device. Some legal systems do not allow prosecution, or even the monitoring of users, unless a notification is visible.
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If you are not prompted for a password, what console line command did you forget to configure?

- To enable password checking at login, use the **login** command in line configuration mode.
- Enter line console configuration mode using the line console 0 global configuration command. The zero is used to represent the first (and in most cases the only) console interface. Next, specify the user EXEC mode password using the password password command. Finally, enable user EXEC access using the login command. Console access will now require a password before gaining access to the user EXEC mode.
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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 password should be replaced with the newer encrypted secret password using the enable secret command.
- The most important password to configure secures access to the privileged EXEC mode. To secure privileged EXEC access, use the enable secret password global config command.
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If you configure any more passwords on the router, are they displayed in the configuration file as plain text or in encrypted form? Explain.

- Encrypted form; encrypt plain text passwords using the service password-encryption command;
- Using the global configuration command service password-encryption prevents unauthorized individuals from viewing passwords in plain text in the configuration file; This command causes the encryption of all passwords that are unencrypted.
- Use the service password-encryption global config command to encrypt all passwords.
- The command applies weak encryption to all encrypted passwords.
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3. Save the Running Configuration File

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;
- Verify that the configuration is accurate using the show run command.
- non-volatile RAM (NVRAM): RAM that does not lose its contents when the device is powered off.
- There are two system files that store the device configuration:
- startup-config – The file stored in Non-volatile Random Access Memory (NVRAM) that contains all of the commands that will be used by the device upon startup or reboot. NVRAM does not lose its contents when the device is powered off.

- running-config – The file stored in Random Access Memory (RAM) that reflects the current configuration. Modifying a running configuration affects the operation of a Cisco device immediately. RAM is volatile memory. It loses all of its content when the device is powered off or restarted.
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What is the shortest, unambiguous version of this command?

- copy ru st; copy r s
- You can also abbreviate commands and keywords by entering just enough characters to make the command unique from other commands. For example, you can abbreviate the show command to sh.
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Which command displays the contents of the NVRAM?

- Use the show startup-config command to display contents.
- startup-config – The file stored in Non-volatile Random Access Memory (NVRAM) that contains all of the commands that will be used by the device upon startup or reboot. NVRAM does not lose its contents when the device is powered off.
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b. Verify that all of the parameters configured are recorded. If not, analyze the output and determine which commands were not done or were entered incorrectly. You can also click **Check Results** in the instruction window.

2. Optional bonus: 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 now 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:

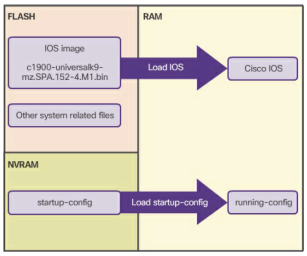
```
R1# show flash
```

How many files are currently stored in flash? ~ 3;

```
R1# show flash

System flash directory:
File  Length    Name/status
  3   33591768  c1900-universalk9-mz.SPA.151-4.M4.bin
  2   28282     sigdef-category.xml
  1   227537    sigdef-default.xml
[33847587 bytes used, 221896413 available, 255744000 total]
249856K bytes of processor board System flash (Read/Write)
```

Which of these files would you guess is the IOS image? File 3;



Why do you think this file is the IOS image?

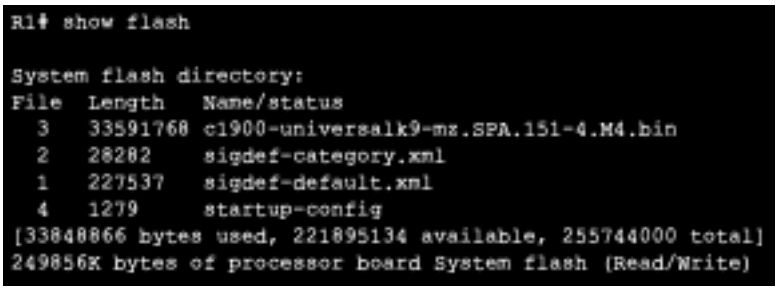
- Both Cisco routers and switches load the IOS image and startup configuration file into RAM when they are booted;

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

```
R1# copy startup-config flash
Destination filename [startup-config]
```

The router prompts 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.



Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 1: Verify the Default Router Configuration	Step 2c	10	
	Step 2d	2	
	Part 1 Total	**12**	
Part 2: Configure and Verify the Initial Router Configuration	Step 2a	2	
	Step 2c	5	
	Step 2d	6	
	Part 2 Total	**13**	
Part 3: Save the Running Configuration File	Step 1a	5	
	Step 2a (bonus)	5	
	Part 3 Total	**10**	
	Packet Tracer Score	**80**	
	Total Score (with bonus)	**105**	