Lab 5 - Configure a Wireless Network for SOHO

Objectives

- Connect to a wireless router
- Update default router settings
- Configure the wireless router
- Connect a wired device to the wireless router
- Connect a wireless device to the wireless router
- Add an AP to the network to extend wireless coverage

Introduction

In this lab, you will configure a wireless router and an access point to accept wireless clients and route IP packets. Furthermore, you will also update some of the default settings.

Instructions

Part 1: Connect to a Wireless Router

Step 1: Connect Admin to WR.

a. Connect **Admin** to **WR** using a straight-through Ethernet cable through the Ethernet ports. Select **Connections**, represented by a lightning bolt, from the bottom-left side of Packet Tracer. Click **Copper Straight-Through**, represented by a solid black line.

b. When the cursor changes to connection mode, click **Admin** and choose **FastEthernet0**. Click **WR** and choose an available Ethernet port to connect the other end of the cable.

WR will act as a switch to the devices connected to the LAN and as a router to the internet. **Admin** is now connected to the LAN (**GigabitEthernet 1**). When Packet Tracer displays green triangles on both sides of the connection between **Admin** and **WR**, continue to the next step.

Note: If no green triangles are shown, make sure to enable **Show Link Lights** under **Options > Preferences**. You may also click **Fast Forward Time** just above the **Connections** selection box in the yellow bar.

Step 2: Configure Admin to use DHCP.

To reach the **WR** management page, **Admin** must communicate on the network. A wireless router usually includes a DHCP server, and the DHCP server is usually enabled by default on the LAN. **Admin** will receive IP address information from the DHCP server on **WR**.

a. Click **Admin**, and select the **Desktop** tab.

b. Click **IP Configuration** and select **DHCP**. If the initial DHCP request fails, wait a few seconds and try again.

QUESTION 1: Did the Admin PC receive an IP address from the WR wireless router and, if so, what was the address?

Before proceeding, go to the "Lab 5 - Configure a Wireless Network for SOHO - QUESTIONS" quiz on the Moodle page and enter your answer for question 1. Leave the quiz open while you complete the rest of the lab sheet.

c. Close the **IP Configuration** window.

Step 3: Connect to the WR Web Interface.

a. In the **Desktop** tab on **Admin**, choose **Web Browser**.

b. Enter **172.16.0.1** in the URL field to open the web configuration page of the wireless router.

c. Use **admin** for both the username and password.

Part 2: Update Default Router Settings

Wireless router default IP addresses, usernames and passwords can generally be easily found on the Internet. Therefore, your first priority should be to change these defaults for security reasons.

Step 1: Change the WR Access Password.

a. Navigate to **Administration > Management** and change the current **Router Password** to **cisco**.

b. Scroll to the bottom of the window and click **Save Settings**.

c. Use the username **admin** and the new password **cisco** when prompted to log in to the wireless router. Click **OK** to continue.

d. Click **Continue** and move on to the next step.

Step 2: Change the DHCP address range in WR.

In this step, you will change the internal network address from 172.16.0.0/24 to 192.168.50.0/24. When the LAN network address changes, the IP addresses on the devices in the LAN and WLAN must be renewed to receive new IP addresses before the lease is timed out.

a. Navigate to **Setup > Basic Setup**.

b. Scroll down the page to **Network Setup** heading and examine the IP address range for the DHCP server.

QUESTION 2: What is the current DHCP server pool start IP address?

Before proceeding, return to the quiz on the Moodle page and enter your answer for question 2. Leave the quiz open while you complete the rest of the lab sheet.

QUESTION 3: What is the current maximum number of addresses (i.e. users) in the DHCP pool?

Before proceeding, return to the quiz on the Moodle page and enter your answer for question 3. Leave the quiz open while you complete the rest of the lab sheet.

c. The IP address assigned to **Router IP** is 172.16.0.1. Change it to 192.168.50.1. Leave the remaining DHCP pool settings as they currently are.

d. Add **209.165.201.20** as the DNS server with the DHCP settings.

e. Scroll to the bottom of the window and click **Save Settings**.

f. Notice that the DHCP range of addresses has been automatically updated to reflect the interface IP address change.

The Web Browser will display a **Request Timeout** after a short time. This is because the Admin IP address is no longer within the same network as the router. The IP address of Admin is outside the new range of the DHCP server which has been changed to 192.168.50.50-74 to reflect the new network address we have assigned

g. Close the **Admin** web browser.

h. In **Admin Desktop** tab, click **Command Prompt**.

i. Type **ipconfig /renew** to force **Admin** re-acquire its IP information via DHCP. The PC should be assigned the new IP address of 192.168.50.50 which is the first address in the updated DHCP pool.

QUESTION 4: Was the Admin PC successfully assigned the DNS server address we configured on the wireless router in task "d." above?

Before proceeding, return to the quiz on the Moodle page and enter your answer for question 4. Leave the quiz open while you complete the rest of the lab sheet.

Step 3: Configure the Internet Port of WR.

In this step, **WR** is configured to route the packets from the wireless clients to Internet. You will configure the **Internet** port on **WR** to connect to the internet.

a. On **Admin**, navigate to WR GUI interface at **192.168.50.1**. Remember to use the new password of **cisco** with the original username of **admin**.

b. Under the **Internet Setup** at the top of the **Basic Setup** page, change the Internet IP address method from **Automatic Configuration – DHCP** to **Static IP**.

c. Type the IP address to be assigned to the Internet interface as follows:

Internet IP Address: 209.165.200.225

Subnet Mask: 255.255.255.252

Default Gateway: 209.165.200.226

DNS Server: 209.165.201.20

d. Scroll down the page and click **Save Settings**.

Note: If you get a **Request Timeout** message, close the Admin window and wait for the orange lights to turn into green triangles. Click the fast forward button to make this happen faster. Then reconnect to **WR** from **Admin's** browser.

e. To verify connectivity, open a new web browser and navigate to **www.cisco.pka** server.

Note It may take a few seconds for the network to converge. Click **Fast Forward Time** or **Alt+D** to speed up the process.

QUESTION 5: What message is displayed in the web browser of the Admin PC when the web address http://cisco.pka is successfully navigated to?

Before proceeding, return to the quiz on the Moodle page and enter your answer for question 5. Leave the quiz open while you complete the rest of the lab sheet.

Part 3: Configure the Wireless Settings

In this activity, you will only configure the wireless settings for 2.4 GHz.

Step 1: Configure the WR SSID.

a. Navigate to the **WR** GUI interface at **192.168.50.1** in a web browser on **Admin**.

b. Navigate to **Wireless > Basic Wireless Settings**.

c. Change **Network Name (SSID)** to **aCompany** for only 2.4 GHz. Notice that SSIDs are case-sensitive.

d. Change the **Standard Channel** to **6 - 2.437GHz**.

e. For this activity, disable both 5 GHz frequencies by changing the **Network Mode** to **Disabled**. Leave the rest of the settings unchanged.

f. Scroll to the bottom of the window and click **Save Settings**.

Step 2: Configure wireless security settings.

In this step, you configure the wireless security settings using WPA2 security mode with encryption and passphrase.

a. Navigate to **Wireless > Wireless Security**.

b. Under the 2.4 GHz heading, select **WPA2 Personal** for the Security Mode.

c. For the Encryption field, keep the default **AES** setting.

d. In the Passphrase field, enter **Cisco123!** as the passphrase.

e. Click **Save Settings**.

f. Verify that the settings in the **Basic Wireless Settings** and **Wireless Security** pages are correct and saved.

Step 3: Connect the Wireless Clients.

a. Open **Laptop1**. Select **Desktop** tab. Click **PC Wireless**.

b. Select the **Connect** tab. Click **Refresh** as necessary. Select the Wireless Network Name **aCompany** and click **Connect**.

c. Enter the passphrase configured in the previous step in the pre-shared key field and click **Connect**. Close the PC Wireless window. Notice the topology diagram changes to show Laptop1 now wirelessly connected to WR.

d. Open a web browser on **Laptop1** and verify that you can navigate to **www.cisco.pka** server.

e. Repeat the above steps to connect **Laptop2** to the wireless network.

Part 4: Connect Wireless Clients to an Access Point

An access point (AP) is a device that extends the wireless local area network. An access point is connected to a wired router using an Ethernet cable to project the signal to a desired location.

Step 1: Configure the Access Point.

a. Connect **Port 0** of **AP** to an available Ethernet port of **WR** using a straight-through Ethernet cable.

b. Click **AP**. Select the **Config** tab.

c. Under the INTERFACE heading, select **Port 1**.

d. In the SSID field, enter **aCompany**.

e. Select **WPA2-PSK**. Enter the passphrase **Cisco123!** In the Pass Phrase field.

f. Keep **AES** as the default Encryption Type.

Step 2: Connect the Wireless Clients.

a. Open **Laptop3**. Select **Desktop** tab. Click **PC Wireless**.

b. Select the **Connect** tab. Click **Refresh** as necessary. Notice that there are two wireless networks named **aCompany** listed and that each has a different signal strength. This is due to gain of the antennas on the respective devices, as well as the proximity to the current location of Laptop3.

QUESTION 6: Which of the two aCompany wireless networks has the strongest signal, the one on channel 1 or the one on channel 6?

Before proceeding, return to the quiz on the Moodle page and enter your answer for question 6. Leave the quiz open while you complete the rest of the lab sheet.

c. Select the Wireless Network Name **aCompany** with the stronger signal and click **Connect**.

d. Open a web browser and verify that you can navigate to **www.cisco.pka** server.

If you have correctly configured all parts of the lab your activity score should now be showing as 100%. If so, click on "check results" in the activity window. Return to the Moodle quiz one last time and enter the code into the appropriate question box (Q7) of the quiz.

You have completed the lab – please submit the Moodle quiz.