

## Packet Tracer - Connect to a Wireless Network

### Objectives

- Connect to a wireless router
- 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
- Update default router settings

### Introduction

In this activity, 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.

- 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.
- 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**.

- Click **Admin**, and select the **Desktop** tab.
- Click **IP Configuration** and select **DHCP**.

Questions:

What is the IP address of the computer?

A. The IP Address of the Admin is 192.168.0.100.

What is the subnet mask of the computer?

- B. The Subnet Mask of the Admin is 255.255.255.0.

What is the default gateway of the computer?

- C. The Default Gateway of the Admin is 192.168.0.1.

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

**Note:** Values can vary within the network range due to normal DHCP operation.

### Step 3: Connect to the WR Web Interface.

- In the **Desktop** tab on **Admin**, choose **Web Browser**.
- Enter **192.168.0.1** in the URL field to open the web configuration page of the wireless router.
- Use **admin** for both the username and password.
- Under the Network Setup heading on the **Basic Setup** page, notice the IP address range for the DHCP server.

Question:

Is the IP address for **Admin** within this range? Is it expected? Explain your answer.

- The IP Range of the Admin starts at 192.168.0.100 and ends at 192.168.0.149.
- The IP Range is expected because there is a set amount of 50 users allowed and it is within the range of the maximum allotted users.

### Step 4: 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.

- 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**.
- 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:** 209.165.201.1

- 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 using the process explained in Step 3.

- 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.

## Part 2: Configure the Wireless Settings

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

### Step 1: Configure the WR SSID.

- Navigate to the **WR** GUI interface at **192.168.0.1** in a web browser on **Admin**.
- Navigate to **Wireless > Basic Wireless Settings**.
- Change **Network Name (SSID)** to **aCompany** for only 2.4 GHz. Notice that SSIDs are case-sensitive.
- Change the **Standard Channel** to **6 - 2.437GHz**.
- For this activity, disable both 5 GHz frequencies. Leave the rest of the settings unchanged.
- 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.

- Navigate to **Wireless > Wireless Security**.
- Under the 2.4 GHz heading, select **WPA2 Personal** for the Security Mode.
- For the Encryption field, keep the default **AES** setting.
- In the Passphrase field, enter **Cisco123!** as the passphrase.
- Click **Save Settings**.
- Verify that the settings in the **Basic Wireless Settings** and **Wireless Security** pages are correct and saved.

### Step 3: Connect the Wireless Clients.

- Open **Laptop1**. Select **Desktop** tab. Click **PC Wireless**.
- Select the **Connect** tab. Click **Refresh** as necessary. Select the Wireless Network Name **aCompany**.
- Enter the passphrase configured in the previous step. Enter **Cisco123!** In the pre-shared key field and click **Connect**. Close the PC Wireless window.
- Open a web browser and verify that you can navigate to **www.cisco.pka** server.
- Repeat the above steps to connect **Laptop2** to the wireless network.

## Part 3: 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.

- Connect **Port 0** of **AP** to an available Ethernet port of **WR** using a straight-through Ethernet cable.
- Click **AP**. Select the **Config** tab.
- Under the INTERFACE heading, select **Port 1**.
- 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. Select the Wireless Network Name **aCompany** with the stronger signal (Channel 1) and click **Connect**.
- c. Open a web browser and verify that you can navigate to **www.cisco.pka** server.

## Part 4: Other Administrative Tasks

### Step 1: Change the WR Access Password.

- a. On **Admin**, navigate to WR GUI interface at **192.168.0.1**.
- b. Navigate to **Administration > Management** and change the current **Router Password** to **cisco**.
- c. Scroll to the bottom of the window and click **Save Settings**.
- d. Use the username **admin** and the new password **cisco** when prompted to log in to the wireless router. Click **OK** to continue.
- e. 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 192.168.0.0/24 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**.
- c. The IP address assigned to **Router IP** is 192.168.0.1. Change it to 192.168.50.1. Verify that IP address still start at .100, and there are 50 available IP addresses in the DHCP pool.
- d. Add **209.165.201.1** as the DNS server with the DHCP settings.
- e. Scroll to the bottom of the window and click **Save Settings**.
- f. Note 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.

Question:

Why?

- A. It will show Request Timeout if it detects inactivity for a set period of time.
- 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.

Question:

What is the new IP address information for **Admin**?

The new IP information of the Admin terminal is:

- (i) IP address is now 192.168.0.2
  - (ii) Subnet Mask is now 255.255.255.248
  - (iii) The Default Gateway is still 192.168.0.1
  - (iv) It now shows the newly added DNS server 209.168.201.1
- j. Verify that you can still navigate to **www.cisco.pka** server.
- k. Renew the IP address on other laptops to verify that you can still navigate to **www.cisco.pka** server.
- l. Notice that **Laptop1** connected to the **AP** instead of **WR**.

Question:

Why?

- A. Laptop 1 is now connected to AP instead of WR because WR is now connected to AP which is the new access point which now sends signals which are stronger compared to the signals that is being sent by WR.

Documentation:

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. Select the Wireless Network Name aCompany with the stronger signal (Channel 1) and click Connect.

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

**Part 4: Other Administrative Tasks**

**Step 1: Change the WR Access Password.**

a. On Admin, navigate to WR GUI interface at 192.168.0.1.

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

c. Scroll to the bottom of the window and click Save Settings.

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

e. 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 192.168.0.0/24 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.

c. The IP address assigned to Router IP is 192.168.0.1. Change it to 192.168.50.1. Verify that IP address still start at .100, and there are 50 available IP addresses in the DHCP pool.

d. Add 209.165.201.1 as the DNS server with the DHCP settings.

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

f. Note 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.

Question:

Time Elapsed: 00:50:18      Completion: 100%

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The diagram shows a central wireless router (WR) connected to a cloud labeled 'Cluster0', which in turn connects to a server labeled 'www.cisco.pka'. The WR is also connected to an 'Admin' terminal. A wireless access point (AP) is connected to the WR and three laptops: 'Laptop1', 'Laptop2', and 'Laptop3'. Signal strength indicators are shown between the WR and the AP, and between the AP and the laptops.

## Packet Tracer - Connect to a Wireless Network

Assessment Items	Status	Points	Component(s)	Feedback
Network				
Admin		0	Other	
Ports		0	Other	
FastEthernet0		0	Other	
DHCP client enable	Correct	1	Ip	
AP				
Wireless				
Security Mode				
Authen Type	Correct	1	Other	
Encryption Type	Correct	1	Other	
Pass Phrase	Correct	1	Other	
SSID	Correct	1	Other	
Laptop1		0	Other	
Wireless		0	Other	
SSID	Correct	1	Other	
Laptop2		0	Other	
Wireless		0	Other	
SSID	Correct	1	Other	
Laptop3		0	Other	
Wireless		0	Other	
SSID	Correct	1	Other	
WR				
Default Gateway	Correct	1	Ip	
DHCP Server				
Pools				
Pool linksysPool				
Default Gateway	Correct	1	Ip	
DNS server IP	Correct	1	Ip	
Start IP address	Correct	1	Ip	
DNS Server IP	Correct	1	Ip	
Password	Correct	1	Other	
Ports				
Internet				
IP Address	Correct	1	Ip	
Subnet Mask	Correct	1	Ip	
Wireless 2.4G				
Security Mode				
Authen Type	Correct	1	Other	
Encryption Type	Correct	1	Other	
Pass Phrase	Correct	1	Other	
SSID	Correct	1	Other	

Score : 20/20

Item Count : 20/20

Component	Items/Total	Score
Ip	8/8	8/8
Other	12/12	12/12