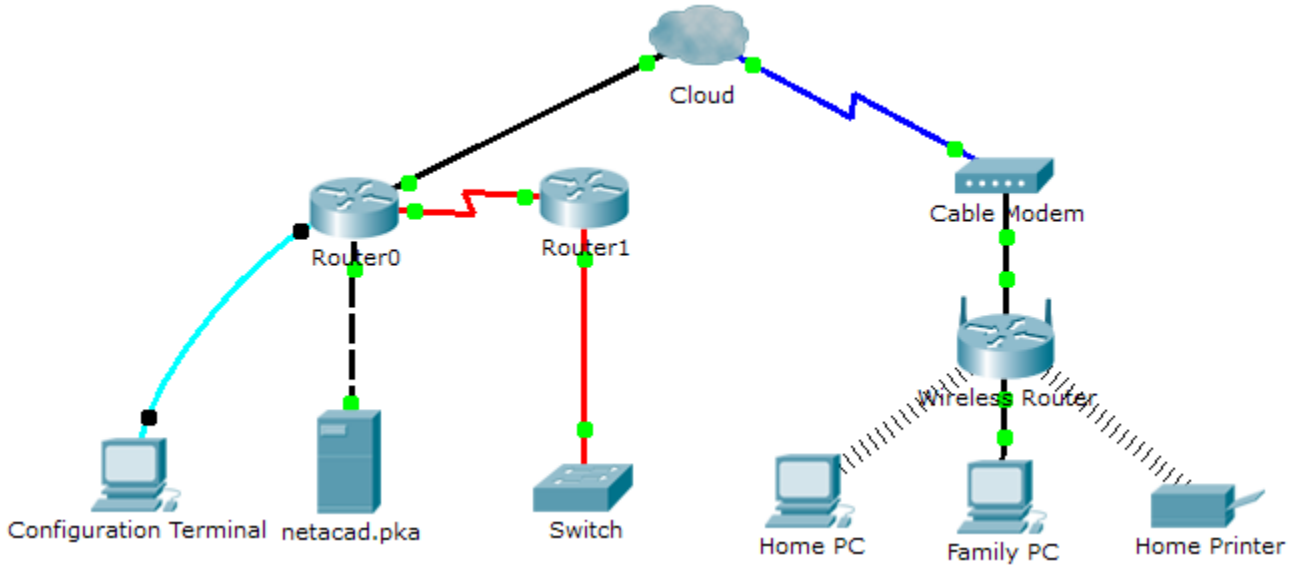
Packet Tracer - Connecting a Wired and Wireless LAN

Topology



Addressing Table

Device	Interface	IP Address	Connects To
Cloud	Eth6	N/A	Fa0/0
	Coax7	N/A	Port0
Cable Modem	Port0	N/A	Coax7
	Port1	N/A	Internet
Router0	Console	N/A	RS232
	Fa0/0	192.168.2.1/24	Eth6
	Fa0/1	10.0.0.1/24	Fa0
	Ser0/0/0	172.31.0.1/24	Ser0/0
Router1	Ser0/0	172.31.0.2/24	Ser0/0/0
	Fa1/0	172.16.0.1/24	Fa0/1
WirelessRouter	Internet	192.168.2.2/24	Port 1
	Eth1	192.168.1.1	Fa0
Family PC	Fa0	192.168.1.102	Eth1
Switch	Fa0/1	172.16.0.2	Fa1/0
Netacad.pka	Fa0	10.0.0.1	Fa0/1
Configuration Terminal	RS232	N/A	Console

Objectives

Part 1: Connect to the Cloud

Part 2: Connect Router0

Part 3: Connect Remaining Devices

Part 4: Verify Connections

Part 5: Examine the Physical Topology

Background

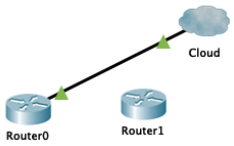
When working in Packet Tracer (a lab environment or a corporate setting), you should know how to select the appropriate cable and how to properly connect devices. This activity will examine device configurations in Packet Tracer, selecting the proper cable based on the configuration, and connecting the devices. This activity will also explore the physical view of the network in Packet Tracer.

1. Connect to the Cloud

1. Connect the cloud to Router0.

a. At the bottom left, click the orange lightning icon to open the available **Connections**.

b. Choose the correct cable to connect **Router0 Fa0/0** to **Cloud Eth6**. **Cloud** is a type of switch, so use a **Copper Straight-Through** connection. If you attached the correct cable, the link lights on the cable turn green.

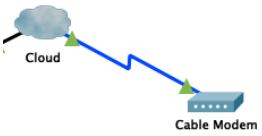


2. Connect the cloud to Cable Modem.

Choose the correct cable to connect **Cloud Coax7** to **Modem Port0**.

If you attached the correct cable, the link lights on the cable turn green.

- Coaxial Cable to connect Cloud Coaxial7 to Cable Modem Port0



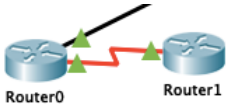
2. Connect Router0

1. Connect Router0 to Router1.

Choose the correct cable to connect **Router0 Ser0/0/0** to **Router1 Ser0/0**. Use one of the available **Serial** cables.

If you attached the correct cable, the link lights on the cable turn green.

- Serial DCE cable to connect Router0 Ser0/0/0 to Router1 Ser0/0.

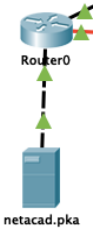


2. Connect Router0 to netacad.pka.

Choose the correct cable to connect **Router0 Fa0/1** to **netacad.pka Fa0**. Routers and computers traditionally use the same wires to transmit (1 and 2) and receive (3 and 6). The correct cable to choose consists of these crossed wires. Although many NICs can now autosense which pair is used to transmit and receive, **Router0** and **netacad.pka** do not have autosensing NICs.

If you attached the correct cable, the link lights on the cable turn green.

- Copper Cross-Over cable to connect Router0 Fa0/1 to netacad.pka Fa0.

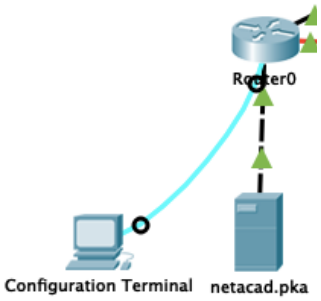


3. Connect Router0 to the Configuration Terminal.

Choose the correct cable to connect **Router0 Console** to **Configuration Terminal RS232**. This cable does not provide network access to **Configuration Terminal**, but allows you to configure **Router0** through its terminal.

If you attached the correct cable, the link lights on the cable turn black.

- Console cable to connect Router0 Console to Configuration Terminal RS232.



3. Connect Remaining Devices

1. Connect Router1 to Switch.

Choose the correct cable to connect **Router1 Fa1/0** to **Switch Fa0/1**.

If you attached the correct cable, the link lights on the cable turn green. Allow a few seconds for the light to transition from amber to green.

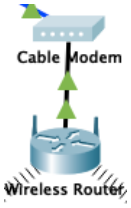
- Fiber cable to connect Router1 Fa1/0 to Switch Fa0/1.

2. Connect Cable Modem to Wireless Router.

Choose the correct cable to connect **Modem Port1** to **Wireless Router Internet** port.

If you attached the correct cable, the link lights on the cable will turn green.

- Copper Straight - Through cable to connect Modem Port1 to Wireless Router Internet port.



3. Connect Wireless Router to Family PC.

Choose the correct cable to connect **Wireless Router Ethernet 1** to **Family PC**.

If you attached the correct cable, the link lights on the cable turn green.

- Copper Straight - Through cable to connect Wireless Router Ethernet 1 to Family PC FastEthernet0.

4. Verify Connections

1. Test the connection from Family PC to netacad.pka.

a. Open the **Family PC** command prompt and ping **netacad.pka**.

```
C:\> ping netacad.pka

Pinging 10.0.0.254 with 32 bytes of data:

Reply from 10.0.0.254: bytes=32 time=1ms TTL=126
Reply from 10.0.0.254: bytes=32 time=1ms TTL=126
Reply from 10.0.0.254: bytes=32 time=1ms TTL=126
Reply from 10.0.0.254: bytes=32 time=3ms TTL=126

Ping statistics for 10.0.0.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 3ms, Average = 1ms
```

b. Open the **Web Browser** and the web address http://netacad.pka.

2. Ping the Switch from Home PC.

Open the **Home PC** command prompt and ping the **Switch** IP address of to verify the connection.

- ping 172.16.0.2

```
C:\> ping 172.16.0.2

Pinging 172.16.0.2 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 172.16.0.2: bytes=32 time=22ms TTL=252
Reply from 172.16.0.2: bytes=32 time=14ms TTL=252

Ping statistics for 172.16.0.2:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 22ms, Average = 18ms
```

3. Open Router0 from Configuration Terminal.

a. Open the **Terminal** of **Configuration Terminal** and accept the default settings.

b. Press **Enter** to view the **Router0** command prompt.i

c. Type **show ip interface brief** to view interface statuses.

```
Router0>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.2.1     YES manual up                    up
FastEthernet0/1        10.0.0.1        YES manual up                    up
Serial0/0/0            172.31.0.1      YES manual up                    up
Serial0/0/1            unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
```

5. Examine the Physical Topology

1. Examine the Cloud.

a. Click the **Physical Workspace** tab or press **Shift**+**P** and **Shift**+**L** to toggle between the logical and physical workspaces.

b. Click the **Home City** icon.

c. Click the **Cloud** icon. How many wires are connected to the switch in the blue rack? ~2

d. Click **Back** to return to **Home City**.

2. Examine the Primary Network.

a. Click the **Primary Network** icon. Hold the mouse pointer over the various cables. What is located on the table to the right of the blue rack? Configuration Terminal

b. Click **Back** to return to **Home City**.

3. Examine the Secondary Network.

a. Click the **Secondary Network** icon. Hold the mouse pointer over the various cables. Why are there two orange cables connected to each device? In the Logical Topology, orange cables are 'Fiber';

- Optical fiber cable transmits data over longer distances and at higher bandwidths than any other networking media. Unlike copper wires, fiberoptic cable can transmit signals with less attenuation and is completely immune to EMI and RFI. Optical fiber is commonly used to interconnect network devices;
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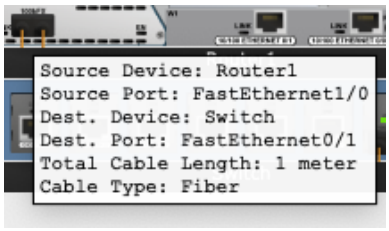

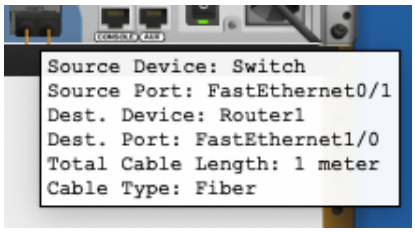

b. Click **Back** to return to **Home City**.

4. Examine the Home Network.

a. Why is there an oval mesh covering the home network?

- Mesh – This topology provides high availability but requires that every end system be interconnected to every other system. Therefore, the administrative and physical costs can be significant. Each link is essentially a point-to-point link to the other node.
- …a partial mesh is a hybrid topology in which some, but not all, end devices are interconnected.
- WANs are commonly interconnected using the point-to-point, hub and spoke, or mesh physical topologies.
- topology - The arrangement of networking components or nodes. Examples include star, extended star, ring, and mesh.
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b. Click the **Home Network** icon. Why is there no rack to hold the equipment?

- The Home Network icon does not have a 'Power Distribution Device' like the other icons, 'Cloud', 'Primary Network', and 'Secondary Network'. The racks are used to mount networking equipment and some home networks tend to be rather basic.
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c. Click the **Logical Workspace** tab to return to the logical topology.

Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 5: Examine the Physical Topology	Step 1c	4	
	Step 2a	4	
	Step 3a	4	
	Step 4a	4	
	Step 4b	4	
	Part 5 Total	**20**	
	Packet Tracer Score	**80**	
	Total Score	**100**	

Submit:

- Submit a completed PKA file.