

Connect the Physical Layer

Objectives

Part 1: Identify Physical Characteristics of Internetworking Devices

Part 2: Select Correct Modules for Connectivity

Part 3: Connect Devices

Part 4: Check Connectivity

Background

In this activity, you will explore the different options available on internetworking devices. You will also be required to determine which options provide the necessary connectivity when connecting multiple devices. Finally, you will add the correct modules and connect the devices.

Note: Scoring for this activity is a combination of Packet Tracer-automated scoring and your recorded answers to the questions posed in the instructions. See the Error! Not a valid bookmark self-reference. at the end of this activity and consult with your instructor to determine your final score.

Instructions

Part 1: Identify Physical Characteristics of Internetworking Devices

Step 1: Identify the management ports of a Network router.

- Click the **East** router. The **Physical** tab should be active.
- Zoom in and expand the window to see the entire router.

Which management ports are available? [Auxiliary ports and Console ports](#)

Step 2: Identify the LAN and WAN interfaces of a Network router.

- Which LAN and WAN interfaces are available on the **East** router and how many are there?
[2 LAN interfaces\(the gigabit ports\) and 2WAN interfaces\(the serial interfaces\)](#)

- Click the **CLI** tab, press the **Enter** key to access the user mode prompt, and enter the following commands:

```
East> show ip interface brief
```

The output verifies the correct number of interfaces and their designation. The **vlan1** interface is a virtual interface that only exists in software.

How many physical interfaces are listed? [4](#)

- Enter the following commands:

```
East> show interface gigabitethernet 0/0
```

What is the default bandwidth of this interface? [1000000Kbits](#)

```
East> show interface serial 0/0/0
```

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What is the default bandwidth of this interface? [1544Kbits](#)

Note: Bandwidth on serial interfaces is used by routing processes to determine the best path to a destination. It does not indicate the actual bandwidth of the interface. Actual bandwidth is negotiated with a service provider.

Step 3: Identify module expansion slots.

How many expansion slots are available to add additional modules to the **East** router? [1](#)

Click **Switch2**. How many expansion slots are available? [5](#)

Part 2: Select Correct Modules for Connectivity

Step 1: Determine which modules provide the required connectivity.

- a. Click **East** and then click the **Physical** tab. On the left, beneath the **Modules** label, you see the available options to expand the capabilities of the router. Click each module. A picture and a description display at the bottom. Familiarize yourself with these options.
 - 1) You need to connect PCs 1, 2, and 3 to the **East** router, but you do not have the necessary funds to purchase a new switch. Which module can you use to connect the three PCs to the **East** router?
[HWIC-4ESW](#)
 - 2) How many hosts can you connect to the router using this module? [4](#)

- b. Click **Switch2**.

Which module can you insert to provide a Gigabit optical connection to **Switch3**? [PT-SWITCH-NM-1FGE](#)

Step 2: Add the correct modules and power up devices.

- a. Click **East** and attempt to insert the appropriate module from Step 1a. Modules are added by clicking the module and dragging it to the empty slot on the device.

The **Cannot add a module when the power is on** message should display. Interfaces for this router model are not hot-swappable. The device must be turned off before adding or removing modules. Click the power switch located to the right of the Network device logo to turn off **East**. Insert the appropriate module from Step 1a. When done, click the power switch to power up **East**.

Note: If you insert the wrong module and need to remove it, drag the module down to its picture in the bottom right corner, and release the mouse button.

- b. Using the same procedure, insert the module that you identified in Step 1b into the empty slot farthest to the right in **Switch2**.
- c. Use the **show ip interface brief** command on **Switch2** to identify the slot in which the module was placed.

Into which slot was it inserted? [5](#)

Part 3: Connect Devices

This may be the first activity you have done where you are required to connect devices. Although you may not know the purpose of the different cable types, use the table below and follow these guidelines to successfully connect all the devices:

- a. Select the appropriate cable type.
- b. Click the first device and select the specified interface.
- c. Click the second device and select the specified interface.
- d. If you have correctly connected two devices, you will see your score increase.

Example: To connect **East** to **Switch1**, select the **Copper Straight-Through** cable type. Click **East** and choose **GigabitEthernet0/0**. Then, click **Switch1** and choose **GigabitEthernet0/1**. Your score should now be 4/55.

Note: For the purposes of this activity, link lights are disabled.

Device	Interface	Cable Type	Device	Interface
East	GigabitEthernet0/0	Copper Straight-Through	Switch1	GigabitEthernet0/1
East	GigabitEthernet0/1	Copper Straight-Through	Switch4	GigabitEthernet0/1
East	FastEthernet0/1/0	Copper Straight-Through	PC1	FastEthernet0
East	FastEthernet0/1/1	Copper Straight-Through	PC2	FastEthernet0
East	FastEthernet0/1/2	Copper Straight-Through	PC3	FastEthernet0
Switch1	FastEthernet0/1	Copper Straight-Through	PC4	FastEthernet0
Switch1	FastEthernet0/2	Copper Straight-Through	PC5	FastEthernet0
Switch1	FastEthernet0/3	Copper Straight-Through	PC6	FastEthernet0
Switch4	GigabitEthernet0/2	Copper Cross-Over	Switch3	GigabitEthernet3/1
Switch3	GigabitEthernet5/1	Fiber	Switch2	GigabitEthernet5/1
Switch2	FastEthernet0/1	Copper Straight-Through	PC7	FastEthernet0
Switch2	FastEthernet1/1	Copper Straight-Through	PC8	FastEthernet0
Switch2	FastEthernet2/1	Copper Straight-Through	PC9	FastEthernet0
Switch2	Gigabit3/1	Copper Straight-Through	AccessPoint	Port 0
East	Serial0/0/0	Serial DCE (connect to East first)	West	Serial0/0/0

Part 4: Check Connectivity

Step 1: Check the interface status on East.

- a. Click the **CLI** tab and enter the following commands:

```
East> show ip interface brief
```

Compare the output to the following:

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Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	172.30.1.1	YES	manual	up	up
GigabitEthernet0/1	172.31.1.1	YES	manual	up	up
Serial0/0/0	10.10.10.1	YES	manual	up	up
Serial0/0/1	unassigned	YES	unset	down	down
FastEthernet0/1/0	unassigned	YES	unset	up	up
FastEthernet0/1/1	unassigned	YES	unset	up	up
FastEthernet0/1/2	unassigned	YES	unset	up	up
FastEthernet0/1/3	unassigned	YES	unset	up	down
Vlan1	172.29.1.1	YES	manual	up	up

If all of the cabling is correct the outputs should match.

Step 2: Connect wireless devices, Laptop and TabletPC.

- a. Click the Laptop and select the **Config** Tab. Select the **Wireless0** interface. Put a check in the box labeled **On** next to Port Status. Within a few seconds the wireless connection should appear.
- b. Click the **Desktop** tab of the **Laptop**. Click on the **Web Browser** icon to launch the web browser. Enter **www.cisco.pka** in the URL box and click **Go**. The page should display **Packet Tracer**.
- c. Click the TabletPC and select the **Config** Tab. Select the **Wireless0** interface. Put a check in the box labeled **On** next to Port Status. Within a few seconds the wireless connection should appear.
- d. Repeat the steps in Step 2b to verify the page displays.

Step 3: Change the access method of the TabletPC.

- a. Click the TabletPC and select the **Config** Tab. Select the **Wireless0** interface. Uncheck the box labeled **On** next to Port Status. It should now be clear and the wireless connection will drop.
- b. Click the **3G/4G Cell1** interface. Put a check in the box labeled **On** next to Port Status. Within a few seconds the cellular connection should appear.
- c. Repeat the process of verifying web access.

Note: You should not have both the wireless0 interface and 3G/4G Cell1 interfaces active at the same time. This may cause confusion to the device when attempting to connect to some resources.

Step 4: Check connectivity of the other PCs.

All of the PCs should have connectivity to the web site and each other. You will learn to use connectivity testing in many upcoming labs.