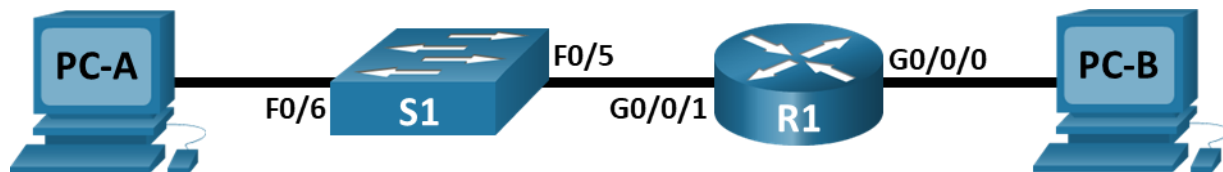


## Packet Tracer - Build a Switch and Router Network - Physical Mode

### Topology



### Addressing Table

Device	Interface	IP Address / Prefix	Default Gateway
R1	G0/0/0	192.168.0.1 /24	N/A
		2001:db8:acad::1/64	
		fe80::1	
	G0/0/1	192.168.1.1 /24	N/A
		2001:db8:acad:1::1/64	
		fe80::1	
S1	VLAN 1	192.168.1.2 /24	192.168.1.1
PC-A	NIC	192.168.1.3 /24	192.168.1.1
		2001:db8:acad:1::3/64	fe80::1
PC-B	NIC	192.168.0.3 /24	192.168.0.1
		2001:db8:acad::3/64	fe80::1

### Objectives

**Part 1: Set Up the Topology**

**Part 2: Configure Devices and Verify Connectivity**

**Part 3: Display Device Information**

### Background / Scenario

This is a comprehensive activity to review the IOS commands you have learned. In this Packet Tracer Physical Mode (PTPM) activity, you will cable the equipment as shown in the topology diagram. You will then configure the devices to match the addressing table. After the configurations have been saved, you will verify your configurations by testing for network connectivity.

After the devices have been configured and network connectivity has been verified, you will use IOS commands to retrieve information from the devices to answer questions about your network equipment.

This activity provides minimal assistance with the commands necessary to configure the router. Test your knowledge by trying to configure the devices without referring to the course content or the previous activities.

### Instructions

#### Part 1: Set Up the Topology

- Move the required router and switch from the **Shelf** to the **Rack**.
- Move the required PCs from the **Shelf** to the **Table**.
- Cable the devices, as shown in the **Topology** and the **Addressing Table**.
- Power on all the devices.

#### Part 2: Configure Devices and Verify Connectivity

In this part, you will set up the network topology and configure basic settings, such as the interface IP addresses, device access, and passwords. Refer to the **Topology** and **Addressing Table** at the beginning of this activity for device names and address information.

##### Step 1: Assign static IP information to the PC interfaces.

- On PC-A, configure the IP address, subnet mask, and default gateway settings.
- On PC-B, configure the IP address, subnet mask, and default gateway settings.
- From a command prompt window on PC-A, ping PC-B.

Why were the pings not successful?

##### Step 2: Configure the router.

- Console into the router and enable privileged EXEC mode.
- Enter configuration mode.
- Assign the device name to the router.
- Assign **class** as the privileged EXEC encrypted password.
- Assign **cisco** as the console password and enable login.
- Assign **cisco** as the vty password and enable login.
- Encrypt the plaintext passwords.
- Create a banner that warns anyone accessing the device that unauthorized access is prohibited.
- Configure and activate both interfaces on the router.
- Configure an interface description for each interface indicating which device is connected to it.
- To enable IPv6 routing, enter the **ipv6 unicast-routing** command.
- Save the running configuration to the startup configuration file.
- Set the clock on the router.

**Note:** Use the question mark (?) to help with the correct sequence of parameters needed to execute this command.

- From a command prompt window on PC-A, ping PC-B.

**Note:** If pings are not successful, the Windows Firewall may need to be turned off.

Were the pings successful? Explain.

### Step 3: Configure the switch.

In this step, you will configure the hostname, the VLAN 1 interface, and its default gateway.

- a. Console into the switch and enable privileged EXEC mode.
- b. Enter configuration mode.
- c. Assign a device name to the switch.
- d. Configure and activate the VLAN interface on the switch S1.
- e. Configure the default gateway for the switch S1.
- f. Save the running configuration to the startup configuration file.

### Step 4: Verify connectivity end-to-end connectivity.

- a. From PC-A, ping PC-B.
- b. From S1, ping PC-B.

All the pings should be successful.

## Part 3: Display Device Information

In Part 3, you will use **show** commands to retrieve interface and routing information from the router and switch.

### Step 1: Display the routing table on the router.

- a. Use the **show ip route** command on R1 to answer the following questions.

What code is used in the routing table to indicate a directly connected network?

How many route entries are coded with a C code in the routing table?

What interface types are associated to the C coded routes?

- b. Use the **show ipv6 route** command on R1 to display the IPv6 routes.

### Step 2: Display interface information on R1.

- a. Use the **show interface g0/0/1** to answer the following questions.

What is the operational status of the G0/0/1 interface?

What is the Media Access Control (MAC) address of the G0/1 interface?

How is the internet address displayed in this command?

- b. For the IPv6 information, enter the **show ipv6 interface *interface*** command.

### Step 3: Display a summary list of the interfaces on the router and switch.

There are several commands that can be used to verify an interface configuration. One of the most useful is the **show ip interface brief** command. The command output displays a summary list of the interfaces on the device and provides immediate feedback about the status of each interface.

- a. Enter the **show ip interface brief** command on R1.

```
R1# show ip interface brief
```

- b. Enter the **show ipv6 interface brief** command on R1 to see the IPv6 interface information.

```
R1# show ipv6 interface brief
```

- c. Enter the **show ip interface brief** command on S1.

```
S1# show ip interface brief
```

### Reflection Questions

1. If the G0/0/1 interface showed that it was administratively down, what interface configuration command would you use to bring the interface up?
2. What would happen if you had incorrectly configured interface G0/0/1 on the router with an IP address of 192.168.1.2?