 **BC - RESPONSES**

**Packet Tracer - Build a Switch and Router Network - Physical**

**Mode**

# Topology



# Addressing Table

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

*Blank Line - no additional information*

# 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 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

1. Move the required router and switch from the **Shelf** to the **Rack**.
2. Move the required PCs from the **Shelf** to the **Table**.
3. Cable the devices, as shown in the **Topology** and the **Addressing Table**.
4. 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.**

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

Question:

Why were the pings not successful?

**Pings from PC-A to PC-B are currently unsuccessful due to the lack of configuration, more specifically the router configuration.**

**Step 2: Configure the router.**

1. Console into the router and enable privileged EXEC mode.

*Open configuration window*

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

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

*Close configuration window*

1. 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.

Question:

Were the pings successful? Explain.

**Yes, because even though the switch is not configured its default settings are enough in this situation as the router is doing most of the heavy lifting across networks and subnets.**

***Type your answers here.***

**Step 3: Configure the switch.**

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

*Open configuration window*

1. Console into the switch and enable privileged EXEC mode.
2. Enter configuration mode.
3. Assign a device name to the switch.
4. Configure and activate the VLAN interface on the switch S1.
5. Configure the default gateway for the switch S1.
6. Save the running configuration to the startup configuration file.

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

1. From PC-A, ping PC-B.
2. From S1, ping PC-B.

All the pings should be successful.

*Close configuration window*

## 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.**

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

*Open configuration window*

Questions:

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

**Code C indicates “Connected” and Code L indicates “Local” *your answers here.***

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

**There are 2 route entries coded with C for “Connected” in the routing table.*pe your answers here.***

What interface types are associated to the C coded routes?

**For Router R1, Interface types coded with C include: GigabitEthernet0/0/0 and GigabitEthernet0/0/0.*Type your answers here.***

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

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

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

Questions:

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

**GigabitEthernet0/0/1 is up, line protocol is up (connected)**

***Type your answers here.***

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

**Interface GigabitEthernet0/0/1 MAC Address - 0060.4731.8102*Type your answers here.***

How is the internet address displayed in this command?

**The Internet Address (IPv4) for Interface GigabitEthernet0/0/1 is displayed as 192.168.1.1/24 when viewing results of Command [ interface g0/0/1 ]*Type your answers here.***

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

**Results Include:**

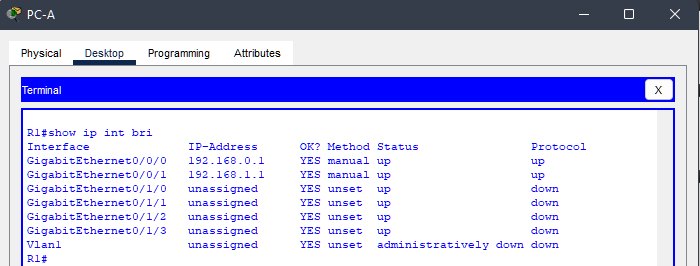
**GigabitEthernet0/0/1 is up, line protocol is up IPv6 is enabled, link-local address is FE80::1**

**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.

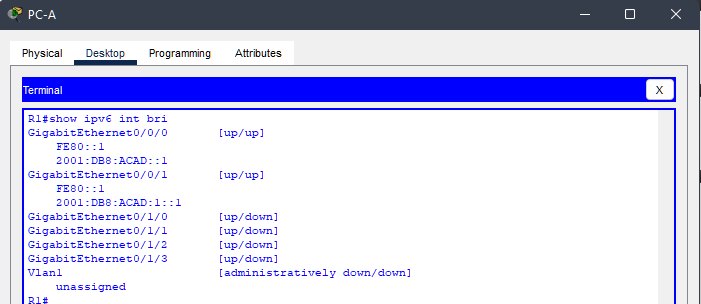
1. Enter the **show ip interface brief** command on R1.

R1# **show ip interface brief**



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

R1# **show ipv6 interface brief**

*Close configuration window* 

*c.*

*C*

*Open configuration window*

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

# **show ip interface brief**

Table

Description automatically generated

*Close configuration window*

# 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?

**R1(config-if)# no shutdown**

***Type your answers here.***

1. What would happen if you had incorrectly configured interface G0/0/1 on the router with an IP address of 192.168.1.2?

**If Interface G0/0/1 on the router was misconfigured, in this topology this would cause no communication to be able to transpire between device PC-A and PC-B. So, any communication or packets that require being sent to the R1 (router) or default-gateway for it to then route the packets next hop, will essentially never be able to reach the targeted device.**