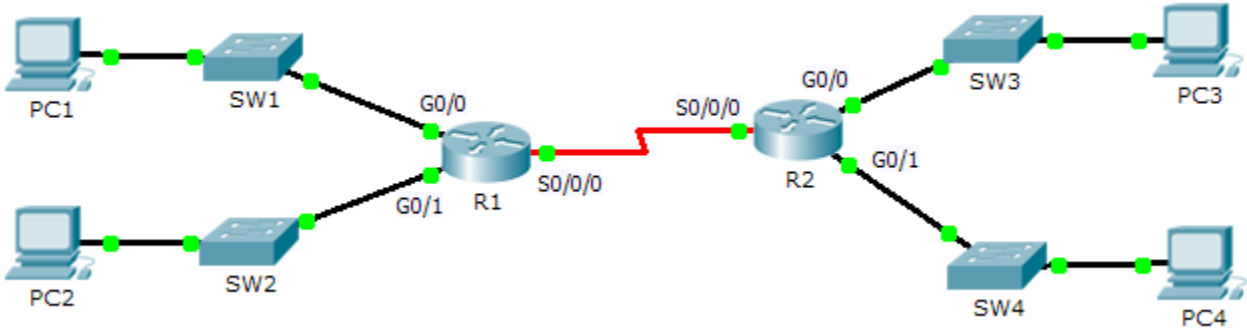


# Packet Tracer - Investigating Directly Connected Routes

## Topology



## Objectives

**Part 1: Investigate IPv4 Directly Connected Routes**

**Part 2: Investigate IPv6 Directly Connected Routes**

## Background

The network in the activity is already configured. You will log in to the routers and use **show** commands to discover and answer the questions below about the directly connected routes.

**Note:** The user EXEC password is **cisco** and the privileged exec password is **class**.

## Part 1: Investigate IPv4 Directly Connected Routes

**Step 1: Use show commands to gather information about the IPv4 directly connected networks.**

Enter the following command on **R1**:

```
R1> show ip route ?
```

- What option would be most beneficial in determining the networks assigned to the interfaces of the router?
- Which networks are directly connected on **R1**? Hint: Use the option determined above.

- Which IP addresses are assigned to the LAN interfaces on **R1**?

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- d. Which networks are directly connected on **R2**?
  
- e. Which IP addresses are assigned to the LAN interfaces on **R2**?

### **Step 2: Verify PC addressing and test connectivity.**

- a. Open a command prompt on **PC1**. Issue the command to display the IP settings. Based on the output, would you expect **PC1** to be able to communicate with all interfaces on the router? Provide a short answer describing your expectations.
  
- b. Open a command prompt on **PC2**. Issue the command to display the IP settings. Based on the output, would you expect **PC2** to be able to communicate with **PC1**? Verify your expectations.
  
- c. Determine the IP addresses of **PC3** and **PC4**. Record the results and determine if **PC3** and **PC4** are able to communicate.
  
- d. Test connectivity from **PC1** to **PC3**. Was the test successful?
  
- e. **Bonus:** Looking at the outputs of the routing tables on **R1** and **R2**, what might indicate a reason for the success or failure of communication between **PC1** and **PC3**?

## **Part 2: Investigate IPv6 Directly Connected Routes**

### **Step 1: Use show commands to gather information about the IPv6 directly connected networks.**

- a. Which IPv6 networks are available on **R1**?
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
- b. Which IPv6 unicast addresses are assigned to the LAN interfaces on **R1**?

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- c. Which IPv6 networks are available on R2?
  
  
  
  
  
  
  
  
  
  
- d. Which IPv6 addresses are assigned to the LAN interfaces on R2?

### Step 2: Verify PC settings and connectivity.

- a. Open a command prompt on **PC1**. Issue the command to display the IPv6 settings. Based on the output, would you expect **PC1** to be able to communicate with all interfaces on the router? Provide a short answer describing your expectations
  
  
  
  
  
  
  
  
  
  
- b. Open a command prompt on **PC2**. Issue the command to display the IPv6 settings. Based on the output, would you expect **PC2** to be able to communicate with **PC1**? Verify your expectations.
  
  
  
  
  
  
  
  
  
  
- c. Determine the IPv6 addresses of **PC3** and **PC4**. Record the results and determine if **PC3** and **PC4** are able to communicate.
  
  
  
  
  
  
  
  
  
  
- d. Test connectivity from **PC1** to **PC3**. Was the test successful?
  
  
  
  
  
  
  
  
  
  
- e. **Bonus:** What might indicate a reason for the success or failure of communication between **PC1** and **PC3** after looking at the outputs of the IPv6 routing tables on **R1** and **R2**?

### Suggested Scoring Rubric

| Activity Section                                   | Question Location | Possible Points | Earned Points |
|--|-------------------|-----------------|---------------|
| Part 1: Investigate IPv4 Directly Connected Routes | Step 1            | 25              |               |
|  | Step 2            | 25              |               |
| Part 2: Investigate IPv6 Directly Connected Routes | Step 1            | 25              |               |
|  | Step 2            | 25              |               |
| <b>Total Score</b>                                 |                   | <b>100</b>      |               |