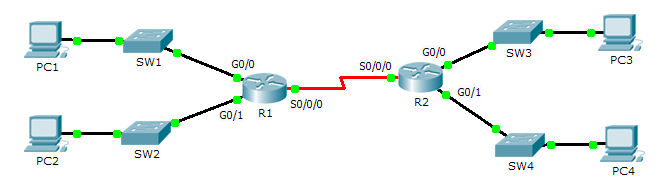
Packet Tracer - Investigating Directly Connected Routes

1. Topology



1. Objectives

Part 1: Investigate IPv4 Directly Connected Routes

Part 2: Investigate IPv6 Directly Connected Routes

1. 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.**

1. Investigate IPv4 Directly Connected Routes
   1. Use show commands to gather information about the IPv4 directly connected networks.

Enter the following command on **R1**:

R1> **show ip route ?**

* + 1. What option would be most beneficial in determining the networks assigned to the interfaces of the router? \_ **show ip route c**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    2. Which networks are directly connected on **R1**? Hint: Use the option determined above.

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C 172.31.20.0/23 is directly connected, GigabitEthernet0/0

C 172.31.22.0/23 is directly connected, GigabitEthernet0/1

C 209.165.200.224/30 is directly connected, Serial0/0/0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* + 1. Which IP addresses are assigned to the LAN interfaces on **R1**?

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L 172.31.21.254/32 is directly connected, GigabitEthernet0/0

L 172.31.21.254/32 is directly connected, GigabitEthernet0/0

L 209.165.200.225/32 is directly connected, Serial0/0/0

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* + 1. Which networks are directly connected on **R2**?

C 172.31.24.0/24 is directly connected, GigabitEthernet0/0

C 172.31.25.0/24 is directly connected, GigabitEthernet0/1

C 209.165.200.224/30 is directly connected, Serial0/0/0

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* + 1. Which IP addresses are assigned to the LAN interfaces on **R2**?

L 172.31.24.254/32 is directly connected, GigabitEthernet0/0

L 172.31.25.254/32 is directly connected, GigabitEthernet0/1

L 209.165.200.226/32 is directly connected, Serial0/0/0

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* 1. Verify PC addressing and test connectivity.
     1. 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.

\_\_\_Yes, because they are on the same network. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. 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. \_\_Yes, it connects. \_\_\_\_\_\_\_\_\_\_\_\_\_
    2. Determine the IP addresses of **PC3** and **PC4**. Record the results and determine if **PC3** and **PC4** are able to communicate.

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PC3: 172.31.24.10

PC4: 172.31.25.10 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. Test connectivity from **PC1** to **PC3**. Was the test successful? \_\_\_Yes\_\_\_\_\_\_\_\_\_\_\_
    2. **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**? \_\_They are on the same network \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Investigate IPv6 Directly Connected Routes
   1. Use show commands to gather information about the IPv6 directly connected networks.
      1. Which IPv6 networks are available on **R1**?

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C 2001:DB8:C001:1::/64 [0/0]

via GigabitEthernet0/0, directly connected

C 2001:DB8:C001:2::/64 [0/0]

via GigabitEthernet0/1, directly connected

C 2001:DB8:C001:ACE::/64 [0/0]

via Serial0/0/0, directly connected

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* + 1. Which IPv6 unicast addresses are assigned to the LAN interfaces on **R1**?

L 2001:DB8:C001:1::1/128 [0/0]

via GigabitEthernet0/0, receive

L 2001:DB8:C001:2::1/128 [0/0]

via GigabitEthernet0/1, receive

L 2001:DB8:C001:ACE::1/128 [0/0]

via Serial0/0/0, receive

L FF00::/8 [0/0]

via Null0, receive

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* + 1. Which IPv6 networks are available on R2?

C 2001:DB8:C001:3::/64 [0/0]

via GigabitEthernet0/0, directly connected

C 2001:DB8:C001:4::/64 [0/0]

via GigabitEthernet0/1, directly connected

C 2001:DB8:C001:ACE::/64 [0/0]

via Serial0/0/0, directly connected

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* + 1. Which IPv6 addresses are assigned to the LAN interfaces on **R2**?

L 2001:DB8:C001:3::1/128 [0/0]

via GigabitEthernet0/0, receive

L 2001:DB8:C001:4::1/128 [0/0]

via GigabitEthernet0/1, receive

L 2001:DB8:C001:ACE::2/128 [0/0]

via Serial0/0/0, receive

L FF00::/8 [0/0]

via Null0, receive

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* 1. Verify PC settings and connectivity.
     1. 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

\_\_\_Yes because its on the same network \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* + 1. 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. \_\_Yes \_\_\_\_\_\_\_\_\_\_\_\_\_
    2. Determine the IPv6 addresses of **PC3** and **PC4**. Record the results and determine if **PC3** and **PC4** are able to communicate.

PC3: 2001:DB8:C001:3::10

PC4: 2001:DB8:C001: 4::10

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* + 1. Test connectivity from **PC1** to **PC3**. Was the test successful? \_Yes\_\_\_\_\_\_\_\_\_\_\_\_\_
    2. **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**?

Incorrect routes. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Suggested Scoring Rubric

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| --- | --- | --- | --- |
| 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 |  |
| **Total Score** | | **100** |  |