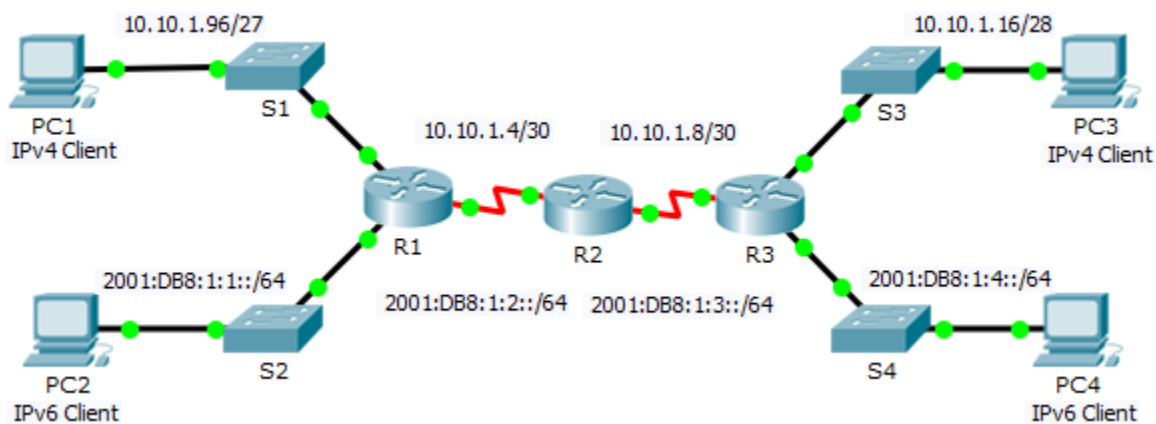


## Packet Tracer - Pinging and Tracing to Test the Path

### Topology



## Addressing Table

| Device | Interface  | IPv4 Address        | Subnet Mask     | Default Gateway |
|--------|------------|---------------------|-----------------|-----------------|
|        |            | IPv6 Address/Prefix |                 |                 |
| R1     | G0/0       | 2001:DB8:1:1::1/64  |                 | N/A             |
|        | G0/1       | 10.10.1.97          | 255.255.255.224 | N/A             |
|        | S0/0/1     | 10.10.1.6           | 255.255.255.252 | N/A             |
|        |            | 2001:DB8:1:2::2/64  |                 | N/A             |
|        | Link-local | FE80::1             |                 | N/A             |
| R2     | S0/0/0     | 10.10.1.5           | 255.255.255.252 | N/A             |
|        |            | 2001:DB8:1:2::1/64  |                 | N/A             |
|        | S0/0/1     | 10.10.1.9           | 255.255.255.252 | N/A             |
|        |            | 2001:DB8:1:3::1/64  |                 | N/A             |
|        | Link-local | FE80::2             |                 | N/A             |
| R3     | G0/0       | 2001:DB8:1:4::1/64  |                 | N/A             |
|        | G0/1       | 10.10.1.17          | 255.255.255.240 | N/A             |
|        | S0/0/1     | 10.10.1.10          | 255.255.255.252 | N/A             |
|        |            | 2001:DB8:1:3::2/64  |                 | N/A             |
|        | Link-local | FE80::3             |                 | N/A             |
| PC1    | NIC        |                     |                 |                 |
| PC2    | NIC        |                     |                 |                 |
| PC3    | NIC        |                     |                 |                 |
| PC4    | NIC        |                     |                 |                 |

## Objectives

### Part 1: Test and Restore IPv4 Connectivity

### Part 2: Test and Restore IPv6 Connectivity

## Scenario

There are connectivity issues in this activity. In addition to gathering and documenting information about the network, you will locate the problems and implement acceptable solutions to restore connectivity.

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

## Part 1: Test and Restore IPv4 Connectivity

### Step 1: Use ipconfig and ping to verify connectivity.

- Click **PC1** and click the **Desktop** tab > **Command Prompt**.

- b. Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
- c. Click **PC3** and click the **Desktop** tab > **Command Prompt**.
- d. Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
- e. Test connectivity between **PC1** and **PC3**. The ping should fail.

### Step 2: Locate the source of connectivity failure.

- a. From **PC1**, enter the necessary command to trace the route to **PC3**. What is the last successful IPv4 address that was reached?
- b. The trace will eventually end after 30 attempts. Enter **Ctrl+C** to stop the trace before 30 attempts.
- c. From **PC3**, enter the necessary command to trace the route to **PC1**. What is the last successful IPv4 address that was reached?
- d. Enter **Ctrl+C** to stop the trace.
- e. Click **R1** and then the **CLI** tab. Press **ENTER** and log in to the router.
- f. Enter the **show ip interface brief** command to list the interfaces and their status. There are two IPv4 addresses on the router. One should have been recorded in Step 2a. What is the other?
- g. Enter the **show ip route** command to list the networks to which the router is connected. Note that there are two networks connected to the **Serial0/0/1** interface. What are they?
- h. Repeat step 2e to 2g with **R3** and the answers here.  
Notice how the serial interface for R3 changes.
- i. Run more tests if it helps visualize the problem. Simulation mode is available.

### Step 3: Propose a solution to solve the problem.

- a. Compare your answers in Step 2 to the documentation you have available for the network. What is the error?
- b. What solution would you propose to correct the problem?

### Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

### Step 5: Verify that connectivity is restored.

- a. From **PC1** test connectivity to **PC3**.
- b. From **PC3** test connectivity to **PC1**. Is the problem resolved?

### Step 6: Document the solution.

## Part 2: Test and Restore IPv6 Connectivity

### Step 1: Use `ipv6config` and ping to verify connectivity.

- Click **PC2** and click the **Desktop** tab > **Command Prompt**.
- Enter the `ipv6config /all` command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.
- Click **PC4** and click the **Desktop** tab > **Command Prompt**.
- Enter the `ipv6config /all` command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.
- Test connectivity between **PC2** and **PC4**. The ping should fail.

### Step 2: Locate the source of connectivity failure.

- From **PC2**, enter the necessary command to trace the route to **PC4**. What is the last successful IPv6 address that was reached?
- The trace will eventually end after 30 attempts. Enter **Ctrl+C** to stop the trace before 30 attempts.
- From **PC4**, enter the necessary command to trace the route to **PC2**. What is the last successful IPv6 address that was reached?
- Enter **Ctrl+C** to stop the trace.
- Click **R3** and then the **CLI** tab. Press **ENTER** and log in to the router.
- Enter the `show ipv6 interface brief` command to list the interfaces and their status. There are two IPv6 addresses on the router. One should match the gateway address recorded in Step 1d. Is there a discrepancy?
- Run more tests if it helps visualize the problem. Simulation mode is available.

### Step 3: Propose a solution to solve the problem.

- Compare your answers in Step 2 to the documentation you have available for the network. What is the error?
- What solution would you propose to correct the problem?

### Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

### Step 5: Verify that connectivity is restored.

- From **PC2** test connectivity to **PC4**.
- From **PC4** test connectivity to **PC2**. Is the problem resolved?

**Step 6: Document the solution.**

**Suggested Scoring Rubric**

| Activity Section                                          | Question Location | Possible Points | Earned Points |
|-----------------------------------------------------------|-------------------|-----------------|---------------|
| Part 1: Test and Restore Connectivity Between PC1 and PC3 | Step 1b           | 5               |               |
|                                                           | Step 1d           | 5               |               |
|                                                           | Step 2a           | 5               |               |
|                                                           | Step 2c           | 5               |               |
|                                                           | Step 2f           | 5               |               |
|                                                           | Step 2g           | 5               |               |
|                                                           | Step 2h           | 5               |               |
|                                                           | Step 3a           | 5               |               |
|                                                           | Step 3b           | 5               |               |
| <b>Part 1 Total</b>                                       |                   | <b>45</b>       |               |
| Part 2: Test and Restore Connectivity Between PC2 and PC4 | Step 1b           | 5               |               |
|                                                           | Step 1d           | 5               |               |
|                                                           | Step 2a           | 5               |               |
|                                                           | Step 2c           | 5               |               |
|                                                           | Step 2f           | 5               |               |
|                                                           | Step 3a           | 5               |               |
|                                                           | Step 3b           | 5               |               |
| <b>Part 2 Total</b>                                       |                   | <b>35</b>       |               |
| <b>Packet Tracer Score</b>                                |                   | <b>20</b>       |               |
| <b>Total Score</b>                                        |                   | <b>100</b>      |               |