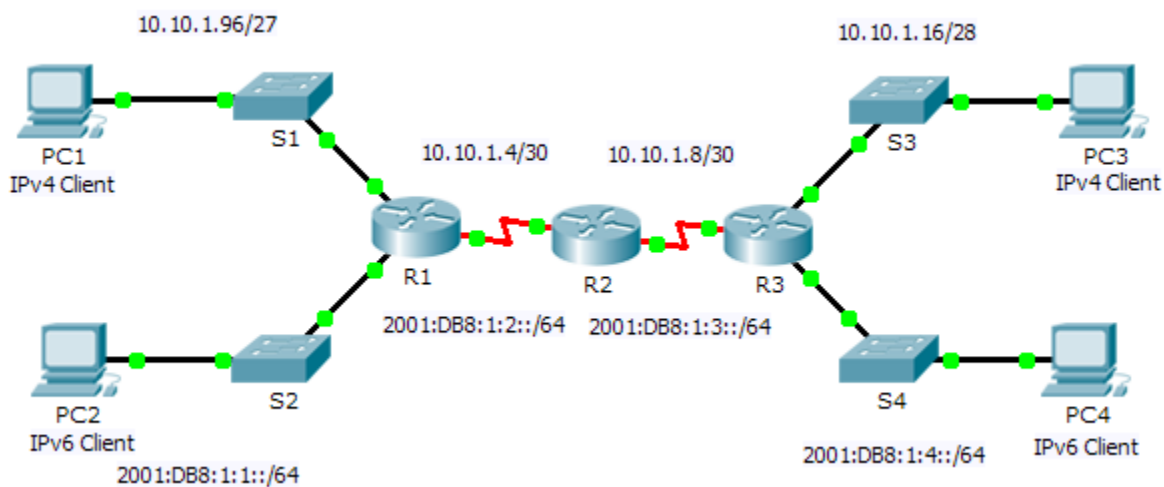


## Packet Tracer - Pinging and Tracing to Test the Path (Instructor Version)

**Instructor Note:** Red font color or Gray highlights indicate text that appears in the instructor copy only.

### 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	10.10.1.98	255.255.255.224	10.10.1.97
PC2	NIC	2001:DB8:1:1::2/64		FE80::1
PC3	NIC	10.10.1.18	255.255.255.240	10.10.1.17
PC4	NIC	2001:DB8:1:4::2/64		FE80::1

## 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? **10.10.1.97**
- 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? **10.10.1.17**
- 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? **10.10.1.6**
- 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? **10.10.1.6/32, 10.10.1.4/30**
- h. Repeat step 2e to 2g with **R3** and the answers here. **10.10.1.10, 10.10.1.8/30, 10.10.1.10/32**  
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? **R2's Serial 0/0/0 interface is configured with the wrong IP address.**
- b. What solution would you propose to correct the problem? **Configure the correct IP address on R2's Serial 0/0/0 interface (10.10.1.5)**

### 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? **Yes**

### Step 6: Document the solution.

## Part 2: Test and Restore IPv6 Connectivity

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

- a. Click **PC2** and click the **Desktop** tab > **Command Prompt**.

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

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

- a. From **PC2**, enter the necessary command to trace the route to **PC4**. What is the last successful IPv6 address that was reached? **2001:DB8:1:3::2**
- b. The trace will eventually end after 30 attempts. Enter **Ctrl+C** to stop the trace before 30 attempts.
- c. From **PC4**, enter the necessary command to trace the route to **PC2**. What is the last successful IPv6 address that was reached? **No IPv6 address was reached**
- d. Enter **Ctrl+C** to stop the trace.
- e. Click **R3** and then the **CLI** tab. Press **ENTER** and log in to the router.
- f. 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? **Yes**
- g. 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? **PC4 is using the wrong default gateway configuration.**
- b. What solution would you propose to correct the problem? **Configure PC4 with the correct default gateway address: FE80::3.**

### Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

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

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

**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>	