

## Packet Tracer - Use Ping and Traceroute to Test Network Connectivity

### Addressing Table

Device	Interface	IP Address / Prefix		Default Gateway
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		
		fe80::1		
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	
		2001:db8:1:3::1/64		
		fe80::2		
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		
		fe80::3		
PC1	NIC	10.10.1.98	255.255.255.224	10.10.1.97
PC2	NIC	2001:DB8:1:1::2		FE80::1
PC3	NIC	10.10.1.18	255.255.255.240	10.10.1.17
PC4	NIC	2001:DB8:1:4::2		FE80::2

### 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**.

## Instructions

### Part 1: Test and Restore IPv4 Connectivity

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

- Click **PC1** and open the **Command Prompt**.
- Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
- Click **PC3** and open the **Command Prompt**.
- Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
- Use the **ping** command to test connectivity between **PC1** and **PC3**. The ping should fail.

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

- 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**
- The trace will eventually end after 30 attempts. Enter **Ctrl+C** to stop the trace before 30 attempts.
- 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**
- Enter **Ctrl+C** to stop the trace.
- Click **R1**. Press **ENTER** and log in to the router.
- 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**
- 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?  
**10.10.1.4/30, 10.10.1.6/32**
- Repeat steps 2e through 2g with **R3** and record your answers.  
**Other: 10.10.1.10, Serial0/0/1: 10.10.1.8/30, 10.10.1.10/32**
- Click **R2**. Press **ENTER** and log into the router.
- Enter the **show ip interface brief** command and record your addresses.  
**Serial0/0/0 10.10.1.2**  
**Serial0/0/1 10.10.1.9**
- 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?

*From the table, we can see that Router 02's Serial0/0/0 should be 10.10.1.5, instead it is set to 10.10.1.2. That's the reason behind error.*

What solution would you propose to correct the problem?

*Need to change ip address of Router 02's Serial0/0/0 interface*

### Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

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

- From **PC1** test connectivity to **PC3**.
- 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.

- Click **PC2** and open the **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 open the **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?

*2001:DB8:1:3::2*

- 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?

*Couldn't reach any ip.*

- Enter **Ctrl+C** to stop the trace.
- Click **R3**. 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. None of the ipv6 addresses match with the gateway address.*

- g. 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?

*PC4's default gateway isn't set correctly. It is set to FE80::2 instead of FE80::3*

What solution would you propose to correct the problem?

*Need to update PC4's default gateway to FE80::3*

### 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?

*Yes*

### Step 6: Document the solution.