

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 | |
| S0/0/1 | 10.10.1.9 | 255.255.255.252 | N/A |
| 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.

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

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

1. From **PC1**, enter the necessary command to trace the route to **PC3**.

What is the last successful IPv4 address that was reached?

Answer: 10.10.1.97

1. The trace will eventually end after 30 attempts. Enter **Ctrl**+**C** to stop the trace before 30 attempts.
2. From **PC3**, enter the necessary command to trace the route to **PC1**.

What is the last successful IPv4 address that was reached?

Answer: 10.10.1.17

1. Enter **Ctrl**+**C** to stop the trace.
2. Click **R1**. Press **ENTER** and log in to the router.
3. 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?

Answer: 10.10.1.6

1. 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?

Answer: 1 is connected and another one is local

Type your answers here.

1. Repeat steps 2e through 2g with **R3** and record your answers.
2. Click **R2**. Press **ENTER** and log into the router.
3. Enter the **show ip interface brief** command and record your addresses.

Answer: Serial0/0/1

L 10.10.1.10/32 is directly connected, Serial0/0/1

C 10.10.1.16/28 is directly connected

1. 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?

Answer: wrong ip address for serial 0/0/0 on r2.

What solution would you propose to correct the problem?

Answer: change the ip address for serial 0/0/0 on r2.

Type your answers here.

## Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

## Step 5: Verify that connectivity is restored.

1. From **PC1** test connectivity to **PC3**.
2. From **PC3** test connectivity to **PC1**.

Is the problem resolved?

Answer: yes

**Step 6: Document the solution.**

# Part 2: Test and Restore IPv6 Connectivity

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

1. Click **PC2** and open the **Command Prompt**.
2. Enter the **ipv6config /all** command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.
3. Click **PC4** and open the **Command Prompt**.
4. Enter the **ipv6config /all** command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.
5. Test connectivity between **PC2** and **PC4**. The ping should fail.

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

1. From **PC2**, enter the necessary command to trace the route to **PC4**. What is the last successful IPv6 address that was reached?

Answer: 2001:DB8:1:3::2

1. The trace will eventually end after 30 attempts. Enter **Ctrl**+**C** to stop the trace before 30 attempts.
2. From **PC4**, enter the necessary command to trace the route to **PC2**.

What is the last successful IPv6 address that was reached?

Answer: None

1. Enter **Ctrl**+**C** to stop the trace.
2. Click **R3**. Press **ENTER** and log in to the router.
3. 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?

Answer: no

1. 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?

Answer: default gateway on pc4

What solution would you propose to correct the problem?

Answer: change default gateway on pc4

## Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

## Step 5: Verify that connectivity is restored.

1. From **PC2** test connectivity to **PC4**.
2. From **PC4** test connectivity to **PC2**.

Is the problem resolved?

Answer: yes

**Step 6: Document the solution.**