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 |
| *R1* | G0/1 | 10.10.1.97 | 255.255.255.224 | N/A |
| *R1* | S0/0/1 | 10.10.1.6 | 255.255.255.252 | N/A |
| *R1* | *S0/0/1* | 2001:db8:1:2::2/64 | | *N/A* |
| *R1* | *S0/0/1* | fe80::1 | | *N/A* |
| R2 | S0/0/0 | 10.10.1.5 | 255.255.255.252 | N/A |
| *R2* | *S0/0/0* | 2001:db8:1:2::1/64 | | *N/A* |
| *R2* | S0/0/1 | 10.10.1.9 | 255.255.255.252 | N/A |
| *R2* | *S0/0/1* | 2001:db8:1:3::1/64 | | *N/A* |
| *R2* | *S0/0/1* | fe80::2 | | *N/A* |
| R3 | G0/0 | 2001:db8:1:4::1/64 | | N/A |
| *R3* | G0/1 | 10.10.1.17 | 255.255.255.240 | N/A |
| *R3* | S0/0/1 | 10.10.1.10 | 255.255.255.252 | N/A |
| *R3* | *S0/0/1* | 2001:db8:1:3::2/64 | | *N/A* |
| *R3* | *S0/0/1* | 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 | | 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

## Test and Restore IPv4 Connectivity

### 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.

### 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?

**Ans: 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?

**Ans: 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?

**Ans: 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?

**Ans: C 10.10.1.4/30 is directly connected, Serial0/0/1**

**L 10.10.1.6/32 is directly connected, Serial0/0/1**

* + - 1. Repeat steps 2e through 2g with **R3** and record your answers.

**Ans: 10.10.1.10  
 C 10.10.1.8/30 is directly connected, Serial0/0/1**

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

* + - 1. Click **R2**. Press **ENTER** and log into the router.
      2. Enter the **show ip interface brief** command and record your addresses.

**Ans: 10.10.1.2**

**10.10.1.9**

* + - 1. Run more tests if it helps visualize the problem. Simulation mode is available.

*Close configuration window*

### Propose a solution to solve the problem.

Compare your answers in Step 2 to the documentation you have available for the network.

#### Question:

What is the error?

**Ans:**

**The Error is in the R2 router. According to the Addressing table the Serial0/0/0 suppose to have**

**10.10.1.5 but After checking from router we found Serial0/0/0 now has 10.10.1.2**

What solution would you propose to correct the problem?

Ans:

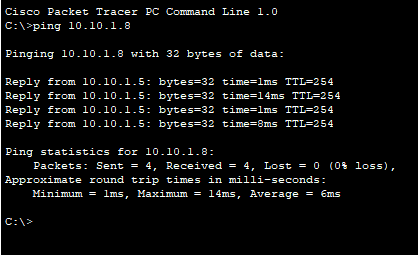
**We give ‘conf t’ to go to configuration mode for the R2 router then we provide ‘int S0/0/0’ to replace the ip address with the correct one According to the Addressing table. Then check the current S0/0/0 ip address using “show ip interface brief” Then try to ping PC3 from PC1 it works. Also, We are able to ping PC1 from PC3.**

### Implement the plan.

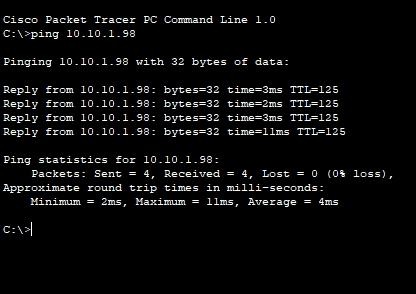
Implement the solution you proposed in Step 3b.

### Verify that connectivity is restored.

* + - 1. From **PC1** test connectivity to **PC3**.



* + - 1. From **PC3** test connectivity to **PC1**.



#### Question:

Is the problem resolved?

**Ans: Yes the problem is resolved.**

### Document the solution.

## Test and Restore IPv6 Connectivity

### 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.

### 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?

**Ans: 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**.

#### Question:

What is the last successful IPv6 address that was reached?

**Ans: No IPV6 Reached**

* + - 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.

#### Question:

Is there a discrepancy?

**Ans: PC4 default gateway did not match with the R3 router default gateway.** Run more tests if it helps visualize the problem. Simulation mode is available.

### 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?

**Ans: We find that the PC4 default gateway is not correctly configured.**

What solution would you propose to correct the problem?

**Ans: We need to set the PC4 default gateway the same as the default gateway of the Router R3.**

### Implement the plan.

Implement the solution you proposed in Step 3b.

### Verify that connectivity is restored.

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

#### Question:

Is the problem resolved?

**Ans: Yes the problem is resolved.**

### Document the solution.

*End of document*