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**.

#### Question:

What is the last successful IPv4 address that was reached?

**10.10.1.97**

***Type your answers here.***

* + - 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**.

#### Question:

What is the last successful IPv4 address that was reached?

**10.10.1.17**

***Type your answers here.***

* + - 1. Enter **Ctrl**+**C** to stop the trace.

*Open configuration window*

* + - 1. Click **R1**. Press **ENTER** and log in to the router.
      2. 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.

#### Question:

What is the other?

**10.10.1.6**

***Type your answers here.***

* + - 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.

#### Question:

What are they?

**10.10.1.4/30, 10.10.1.6/32**

Type your answers here.

* + - 1. Repeat steps 2e through 2g with **R3** and record your answers.
         1. **10.10.1.10**
         2. **10.10.1.8/30, 10.10.1.10/32**

***Type your answers here.***

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

***Type your addresses here.***

* + - 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?

**The error is that in the Serial0/0/1 port of R2, the IP address is 10.10.1.2 instead of 10.10.1.5 which is wrong.**

***Type your answers here.***

What solution would you propose to correct the problem?

Type your answers here.

**We have to update the IP address using the following commands-**

* **configure terminal**
* **interface s0/0/0**
* **ip address 10.10.1.5 255.255.255.252**
* **no shutdown**

### Implement the plan.

Implement the solution you proposed in Step 3b.

### Verify that connectivity is restored.

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

#### Question:

Is the problem resolved?

**Yes**

***Type your answers here.***

### 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**.

#### Question:

What is the last successful IPv6 address that was reached?

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

***Type your answers here.***

* + - 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?

**No ipv6 addresses were reached.**

***Type your answers here.***

* + - 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?

**Yes, there is.**

***Type your answers here.***

* + - 1. 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.

#### Question:

What is the error?

**The default gateway of PC4 was configured incorrectly i.e. the default gateway was *FE80::2 instead of FE80::3***

***Type your answers here.***

What solution would you propose to correct the problem?

**I updated the default gateway by replacing *FE80::2 with FE80::3***

***Type your answers here.***

### 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?

**Yes**

***Type your answers here.***

### Document the solution.

*End of document*