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::2/64 | | 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::3 |

# 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**.

**tracert 10.10.1.18**

#### Question:

What is the last successful IPv4 address that was reached?

The default gateway of PC1 which is the entering port of R1 router: 10.10.1.97answers 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**.

**tracert 10.10.1.98**

#### Question:

What is the last successful IPv4 address that was reached?

T The default gateway of PC3 which is the entering port of R3 router:n10.10.1.17wers here.

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

Open configuration window

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

**Cisco**

**en**

**class**

* + - 1. 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? Type your answers here.

**Serial0/0/1: 10.10.1.6 (This is on the external port of R1)**

* + - 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?

Type your answers here.

IPV4 connections:

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

**C 10.10.1.96/27 is directly connected, GigabitEthernet0/1**

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

**f)For R3: Serial0/0/1 10.10.1.10, GigabitEthernet0/1 10.10.1.17; g)**

**g) C 10.10.1.8/30 is directly connected, Serial0/0/1, C 10.10.1.16/28 is directly connected, GigabitEthernet0/1**

e

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

1. **Serial0/0/0 10.10.1.2**
2. Serial0/0/1 10.10.1.9 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 serial0/0/0 has the wrong IP configured; it should be 10.10.1.5ype your answers here.

What solution would you propose to correct the problem?

Type your answers here.

**I’ll config the router R2’s s0/0/0 port and set the correct ip address.**

### Implement the plan.

Implement the solution you proposed in Step 3b.

**R2#config t**

**Enter configuration commands, one per line. End with CNTL/Z.**

**R2(config)#int s0/0/0**

**R2(config-if)#ip add 10.10.1.5 255.255.255.252**

### 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.

We solved the problem by configuring R2 properly. The method is given above. Solved prove:

* + - * 1. ping 10.10.1.18

Pinging 10.10.1.18 with 32 bytes of data:

Request timed out.

Reply from 10.10.1.18: bytes=32 time=3ms TTL=125

Reply from 10.10.1.18: bytes=32 time=2ms TTL=125

Reply from 10.10.1.18: bytes=32 time=2ms TTL=125

2) ping 10.10.1.18

Pinging 10.10.1.18 with 32 bytes of data:

Request timed out.

Reply from 10.10.1.18: bytes=32 time=3ms TTL=125

Reply from 10.10.1.18: bytes=32 time=2ms TTL=125

Reply from 10.10.1.18: bytes=32 time=2ms TTL=125

## 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

* + - 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?

**R3: 2001:db8:1:3::2/64**.

* + - 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? **No there isn’t**

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?

In pc4, default gateway should be FE80:3 as it is connected to R3nswers here.

What solution would you propose to correct the problem?

**I will configure the ip of pc4 and set the default gateway properly.**

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.

Pinging 2001:DB8:1:4::2 with 32 bytes of data:

Reply from 2001:DB8:1:4::2: bytes=32 time=21ms TTL=125

Reply from 2001:DB8:1:4::2: bytes=32 time=2ms TTL=125

Reply from 2001:DB8:1:4::2: bytes=32 time=2ms TTL=125

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ping 2001:DB8:1:1::2

Pinging 2001:DB8:1:1::2 with 32 bytes of data:

Reply from 2001:DB8:1:1::2: bytes=32 time=14ms TTL=125

Reply from 2001:DB8:1:1::2: bytes=32 time=2ms TTL=125

Reply from 2001:DB8:1:1::2: bytes=32 time=2ms TTL=125

Reply from 2001:DB8:1:1::2: bytes=32 time=2ms TTL=125

Reply from 2001:DB8:1:4::2: bytes=32 time=2ms TTL=125