ID: 17301121 Section: 07

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::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?

**Ans : 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?

**Ans : 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?

**Ans : 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?

Type your answers here.

**Ans : 10.10.1.4/30 , 10.10.1.6/32**

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

**Ans : 10.10.1.10 , 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?

**Ans: In router 2 interface serial (S0/0/0), the IP address is incorrect.**

What solution would you propose to correct the problem?

Type your answers here.

Ans: **To correct the problem, I would propose to update the ip address**.

### Implement the plan.

Implement the solution you proposed in Step 3b.

Ans: Implementation of the solution that I proposed in Step 3b:

R2#configure terminal

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

R2(config)#interface s0/0/0

R2(config-if)#ip address 10.10.1.5 255.255.255.252

R2(config-if)#

%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 10.10.1.6 (Serial0/0/0) is

up: new adjacency

R2(config-if)#no shutdown

R2(config-if)#

### Verify that connectivity is restored.

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

#### Question:

Is the problem resolved?

**Ans: Yes**

Type your answers here.

### Document the solution.

PC1- C:\>ping 10.10.1.18

Pinging 10.10.1.18 with 32 bytes of data:

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=7ms TTL=125

Reply from 10.10.1.18: bytes=32 time=12ms TTL=125

Ping statistics for 10.10.1.18:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 2ms, Maximum = 12ms, Average = 6ms

C:\>

PC3: C:\>ping 10.10.1.98

Pinging 10.10.1.98 with 32 bytes of data:

Reply from 10.10.1.98: bytes=32 time=17ms TTL=125

Reply from 10.10.1.98: bytes=32 time=23ms TTL=125

Reply from 10.10.1.98: bytes=32 time=2ms TTL=125

Reply from 10.10.1.98: bytes=32 time=2ms TTL=125

Ping statistics for 10.10.1.98:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 2ms, Maximum = 23ms, Average = 11ms

C:\>

## 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?

**Ans: 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?

**Ans: No ipv6 services 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?

**Ans: Yes**

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?

**Ans: PC4’s default gateway was configured incorrectly. It does not match with router 3’s given address. This is why PC4 could not even communicate with router 3.**

Type your answers here.

What solution would you propose to correct the problem?

**Ans: To correct the problem, I would propose to update the default gateway to the correct value. The correct value is fe80::3**

Type your answers here.

### Implement the plan.

Implement the solution you proposed in Step 3b.

Ans: Implementation of the solution that I proposed in Step 3b:

Step 1: Click on PC4.

Step 2: Click on IP Configuration from Desktop.

Step 3: Now change ipv6 configuration default gateway from FE80::2 to FE80::3

### 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**.

Type your answers here.

### Document the solution.

Ans:

PC2- C:\>ping 2001:DB8:1:4::2

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

Reply from 2001:DB8:1:4::2: bytes=32 time=3ms TTL=125

Reply from 2001:DB8:1:4::2: bytes=32 time=3ms TTL=125

Reply from 2001:DB8:1:4::2: bytes=32 time=14ms TTL=125

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

Ping statistics for 2001:DB8:1:4::2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 2ms, Maximum = 14ms, Average = 5ms

C:\>

PC4- C:\>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=16ms 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=3ms TTL=125

Ping statistics for 2001:DB8:1:1::2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 2ms, Maximum = 16ms, Average = 5ms

C:\>

End of document