

**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::2/64 | | | 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::1 |

**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.**

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

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

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

What is the last successful IPv4 address that was reached?

**ANS,** the last successful IPV4 address reached was 10.10.1.97.

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

What is the last successful IPv4 address that was reached?

**ANS,** the last successful IPV4 address reached was 10.10.1.17.

* Enter **Ctrl**+**C** to stop the trace.
* Click **R1**. Press **ENTER** and log in to the router.
* 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,** the other one is 10.10.1.6.

* 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?

Type your answers here.

**ANS,** the two networks connected to Serial0/0/1 interface are 10.10.1.6/32, 10.10.1.4/30.

* 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.

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

**ANS,** 10.10.1.2, 10.10.1.9

* 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?

**ANS,** the specific error is that R2's serial 0/0/0 interface had the wrong IP address.

What solution would you propose to correct the problem? Type your answers here.

**ANS,** the solution would be to configure R2's serial interface 0/0/0 with correct IP address.

**Step 4: Implement the plan.**

Implement the solution you proposed in Step 3b.

**Step 5: Verify that connectivity is restored.**

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

Is the problem resolved?

**ANS,** Yes the problem is solved.

**Step 6: Document the solution.**

**Part 2: Test and Restore IPv6 Connectivity**

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

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

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

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

**ANS,** the last successful Ipv6 address reached was 2001:db8:1:3::2.

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

What is the last successful IPv6 address that was reached?

**ANS,** No IPv6 address was reachable.

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

**ANS,**  Yes there is a discrepancy.

* 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?

**ANS,**  The error is that PC4 is configured with wrong default gateway configuration.

What solution would you propose to correct the problem?

**ANS,**  The solution is to configure PC4 is right default gateway configuration

**Step 4: Implement the plan.**

Implement the solution you proposed in Step 3b.

**Step 5: Verify that connectivity is restored.**

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

Is the problem resolved?

**ANS,**  Yes the problem is resolved.

**Step 6: Document the solution.**