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		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		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

Part 1: Test and Restore IPv4 Connectivity

Step 1: Use ipconfig and ping to verify connectivity.

a. Click **PC1** and open the **Command Prompt**.

b. Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.

c. Click **PC3** and open the **Command Prompt**.

d. Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.

e. Use the **ping** command to test connectivity between **PC1** and **PC3**. The ping should fail.

Step 2: Locate the source of connectivity failure.

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

What is the last successful IPv4 address that was reached?

10.10.1.97

b. The trace will eventually end after 30 attempts. Enter **Ctrl**+**C** to stop the trace before 30 attempts.

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

What is the last successful IPv4 address that was reached?

10.10.1.17

d. Enter **Ctrl**+**C** to stop the trace.

e. Click **R1**. Press **ENTER** and log in to the router.

f. 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?

10.10.1.6

g. 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?

10.10.1.4/30
10.10.1.6/32

h. Repeat steps 2e through 2g with **R3** and record your answers.

10.10.1.10
10.10.1.8/30
10.10.1.10/32

i. Click **R2**. Press **ENTER** and log into the router.

j. Enter the **show ip interface brief** command and record your addresses.

10.10.1.2 (This was supposed to be 10.10.1.5 according to the addressing table. So the problem lies here in R2)
10.10.1.9

k. Run more tests if it helps visualise 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?

In R2, interface s0/0/0 the ip address was supposed to be 10.10.1.5 but 10.10.1.2 was given.

What solution would you propose to correct the problem?

Update the incorrect IP address to 10.10.1.5

Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

Step 5: Verify that connectivity is restored.

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

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

Is the problem resolved?

Yes!

Step 6: Document the solution.

Part 2: Test and Restore IPv6 Connectivity

Step 1: Use ipv6config and ping to verify connectivity.

a. Click **PC2** and open the **Command Prompt**.

b. Enter the **ipv6config /all** command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.

c. Click **PC4** and open the **Command Prompt**.

d. Enter the **ipv6config /all** command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.

e. Test connectivity between **PC2** and **PC4**. The ping should fail.

Step 2: Locate the source of connectivity failure.

a. From **PC2**, enter the necessary command to trace the route to **PC4**.

What is the last successful IPv6 address that was reached?

2001:DB8:1:3::2

b. The trace will eventually end after 30 attempts. Enter **Ctrl+C** to stop the trace before 30 attempts.

c. From **PC4**, enter the necessary command to trace the route to **PC2**.

What is the last successful IPv6 address that was reached?

No IPv6 addresses were reached.

d. Enter **Ctrl+C** to stop the trace.

e. Click **R3**. Press **ENTER** and log in to the router.

f. 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?

Yes.

g. Run more tests if it helps visualise 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?

The default gateway of pc4 does not match with that of the addressing table. It was supposed to be FE80::3 but is set as FE80::2

What solution would you propose to correct the problem?

Update the default gateway.

Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

Step 5: Verify that connectivity is restored.

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

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

Is the problem resolved?

Yes!

Step 6: Document the solution.