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

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**.

Question:
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**.

Question:
What is the last successful IPv4 address that was reached?

10.10.1.17

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

Open configuration window

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.

Question:
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.

Question:
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.

Serial0/0/0 10.10.1.2

Serial0/0/1 10.10.1.9

k. Run more tests if it helps visualize the problem. Simulation mode is available.

Close configuration window

Step 3: 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?

There was wrong address in Serial0/0/0

What solution would you propose to correct the problem?

Type your answers here.

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**.

Question:
Is the problem resolved?

Yes. The problem is solved.

Step 6: Document the solution.

Step-1. Goto R2 CLI

Step-2. Password: cisco

Step-3. R2> enable

Step-4. Password: class

Step-5. R2# configure terminal

Step-6. R2(config)#interface serial 0/0/0

Step-7. R2(config-if)#ip address 10.10.1.5 255.255.255.252

Step-8. R2(config-if)#no shut

Step-9. R2(config-if)#end

Step-10. R2#copy running-config startup-config

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**.

Question:
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**.

Question:
What is the last successful IPv6 address that was reached?

Reached none.

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.

Question:
Is there a discrepancy?

Yes, the containing gateway is incorrect. It is FE80::2, but the correct one is FE80::3

g. 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.

Question:
What is the error?

PC4 was holding the wrong gateway.

What solution would you propose to correct the problem?

Updating the route to use the correct gateway, FE80::3.

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**.

Question:
Is the problem resolved?

Connectivity tests using ping and traceroute are successful on all networks.

Step 6: Document the solution.

End of document

Step-1. Goto PC4

Step-2. Select “IP Configuration”

Step-3. Set the default gateway to FE80::3