Lab. 10: Pinging and Tracing to Test the Path

Topology

10.10.1.96/27

10.10.1.16/28

PC1
IPv4 Client

S1

10.10.1.4/30   10.10.1.8/30

S3

PC3
IPv4 Client

R1   R2   R3

2001:DB8:1:2::/64   2001:DB8:1:3::/64

PC2
IPv6 Client

S2

S4

PC4
IPv6 Client

2001:DB8:1:4::/64
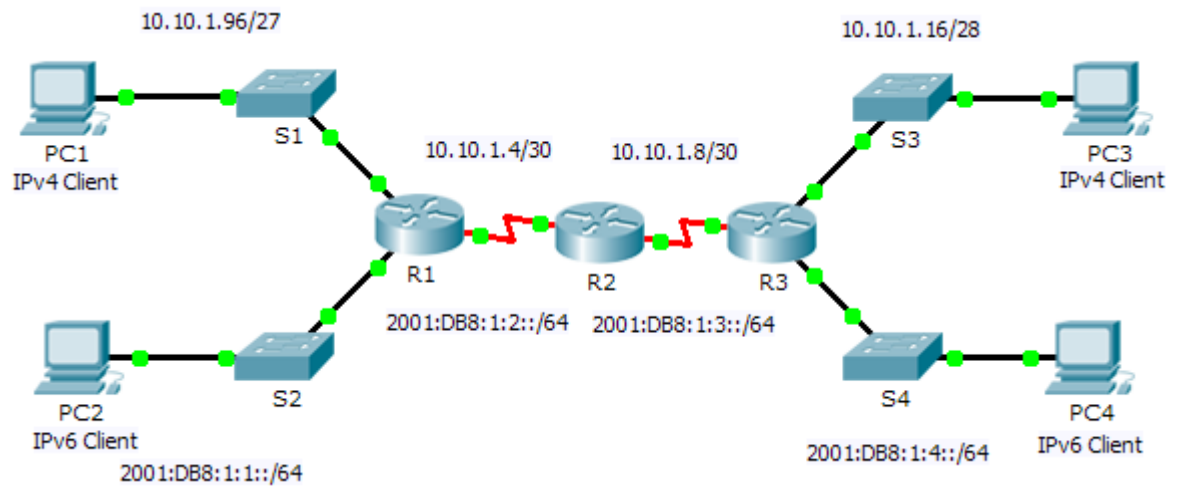
2001:DB8:1:1::/64

Part 1:

Addressing Table

Part 2: Device	Part 3: Interface	Part 4: IPv4 Address / Part 7: IPv6 Address/Prefix	Part 5: Subnet Mask	Part 6: 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		N/A
	Link-local	FE80::1		N/A
R2	S0/0/0	10.10.1.5	255.255.255.252	N/A
		2001:DB8:1:2::1/64		N/A
	S0/0/1	10.10.1.9	255.255.255.252	N/A
		2001:DB8:1:3::1/64		N/A
	Link-local	FE80::2		N/A
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		N/A
	Link-local	FE80::3		N/A
PC1	NIC	10.10.1.98	255.255.255.224	10.10.1.97 _G0/1 - R1_
PC2	NIC	2001:DB8:1:1::2/64		FE80::1 _Link-local - R1_
PC3	NIC	10.10.1.18	255.255.255.224	10.10.1.17 _G0/1 - R3_
PC4	NIC	2001:DB8:1:4::2/64		FE80::2 _Link-local - R2_

Objectives

Part 1: Test and Restore IPv4 Connectivity

Part 2: Test and Restore IPv6 Connectivity

Scenario

Part 8:   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.

Part 9:   **Note:** The user EXEC password is **cisco**. The privileged EXEC password is **class**.

Test and Restore IPv4 Connectivity

Use ipconfig and ping to verify connectivity.

    a. Click **PC1** and click the **Desktop** tab > **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 click the **Desktop** tab > **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. Test connectivity between **PC1** and **PC3**. The ping should fail.

Locate the source of connectivity failure.

    f. 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

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

    h. 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

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

    j. Click **R1** and then the **CLI** tab. Press **ENTER** and log in to the router.

    k. 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

    l. 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

    m. Repeat step 2e to 2g with **R3** and the answers here.

       10.10.1.10; 10.10.1.8/30, 10.10.1.10/32

       Notice how the serial interface for R3 changes.

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

Propose a solution to solve the problem.

    o. Compare your answers in Step 2 to the documentation you have available for the network. What is the error?

  in R2 Serial 0/0/0 interface is configured with the wrong IP address

      Instead of 10.10.1.2 , it should be 10.10.1.5

p. What solution would you propose to correct the problem?

Configure the correct IP address on R2 Serial 0/0/0 interface (10.10.1.5)

Implement the plan.

Implement the solution you proposed in Step 3b.

Verify that connectivity is restored.

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

From **PC3** test connectivity to **PC1**. Is the problem resolved?

Yes _____

Document the solution.

Test and Restore IPv6 Connectivity

Use ipv6config and ping to verify connectivity.

q. Click **PC2** and click the **Desktop** tab > **Command Prompt**.

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

s. Click **PC4** and click the **Desktop** tab > **Command Prompt**.

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

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

Locate the source of connectivity failure.

v. 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 _____
_____

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

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

_____ No IPv6 address was reached _____
_____

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

z. Click **R3** and then the **CLI** tab. Press **ENTER** and log in to the router.

aa. 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 _____
_____

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

Propose a solution to solve the problem.

    cc. Compare your answers in Step 2 to the documentation you have available for the network. What is the error?

<u>**PC4 is using the wrong default gateway configuration**</u>
——————

يستخدم PC4 تكوين البوابة الافتراضية الخاطئ

    dd. What solution would you propose to correct the problem?

Configure PC4 with the correct default gateway address: FE80::3.
——————

تكوين PC4 باستخدام عنوان البوابة الافتراضي الصحيح FE80::3.

Implement the plan.

    Implement the solution you proposed in Step 3b.

Verify that connectivity is restored.

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

    From **PC4** test connectivity to **PC2**. Is the problem resolved?

    ——————**Yes**——————————————

Document the solution.

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