### **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::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.**

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.

### **Step 2: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?

**10.10.1.97**

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?

**10.10.1.17**

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?

**10.10.1.6**

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?

10.10.1.6/32, 10.10.1.4/30

1. 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**

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.***

**10.10.1.2, 10.10.1.9**

1. 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?

**R2’s Serial 0/0/0 interface is configured with the wrong IP address.**

What solution would you propose to correct the problem?

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

### **Step 4:Implement the plan.**

Implement the solution you proposed in Step 3b.

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

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

#### Question:

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.**

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.

### **Step 2: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?

**2001:db8:1:3::2**

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?

**No IPv6 address was reached.**

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?

**Yes**

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

*Close a command prompt*

### **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 is using the wrong default gateway configuration.**

What solution would you propose to correct the problem?

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

### **Step 4:Implement the plan.**

Implement the solution you proposed in Step 3b.

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

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

#### Question:

Is the problem resolved?

**Yes**