**Packet Tracer - Verifying IPv4 and IPv6 Addressing**

**Addressing Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IPv4 Address** | **Subnet Mask** | **Default Gateway** |
| **IPv6 Address/Prefix** | |
| R1 | G0/0 | 10.10.1.97 | 255.255.255.224 | N/A |
| 2001:DB8:1:1::1/64 | | 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 | 10.10.1.17 | 255.255.255.240 | N/A |
| 2001:DB8:1:4::1/64 | | 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 | 10.10.1.100 | 255.255.255.224 | 10.10.1.97 |
| 2001:DB8:1:1::A/64 | | FE80::1 |
| PC2 | NIC | 10.10.1.20 | 255.255.255.240 | 10.10.1.17 |
| 2001:DB8:1:4::A/64 | | FE80::3 |

**Objectives**

**Part 1: Complete the Addressing Table Documentation**

**Part 2: Test Connectivity Using Ping**

**Part 3: Discover the Path by Tracing the Route**

**Background**

Dual-stack allows IPv4 and IPv6 to coexist on the same network. In this activity, you will investigate a dual-stack implementation including documenting the IPv4 and IPv6 configuration for end devices, testing connectivity for both IPv4 and IPv6 using **ping**, and tracing the path from end to end for IPv4 and IPv6.

**Part 1:**     **Complete the Addressing Table Documentation**

**Step 1:**     **Use ipconfig to verify IPv4 addressing.**

a.     Click **PC1**and click the **Desktop**tab > **Command Prompt.**

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

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

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

**Step 2:**     **Use ipv6config to verify IPv6 addressing.**

a.     On **PC1**, enter the **ipv6config /all** command to collect the IPv6 information. Fill in the **Addressing Table**with the IPv6 address, subnet prefix, and default gateway.

b.    On **PC2**, enter the **ipv6config /all** command to collect the IPv6 information. Fill in the **Addressing Table**with the IPv6 address, subnet prefix, and default gateway.

**Part 2:**     **Test Connectivity Using Ping**

**Step 1:**     **Use ping to verify IPv4 connectivity.**

a.     From **PC1**, ping the IPv4 address for **PC2**. Was the result successful? **Yes**

b.    From **PC2**, ping the IPv4 address for **PC1**. Was the result successful? **Yes**

**Step 2:**     **Use ping to verify IPv6 connectivity.**

a.     From **PC1**, ping the IPv6 address for **PC2**. Was the result successful? **Yes**

b.    From **PC2**, ping the IPv6 address of **PC1**. Was the result successful? **Yes**

**Part 3:**     **Discover the Path by Tracing the Route**

**Step 1:**     **Use tracert to discover the IPv4 path.**

a.     From **PC1**, trace the route to **PC2**.

PC> **tracert 10.10.1.20**

What addresses were encountered along the path?

10.10.1.97

10.10.1.5

10.10.1.10

10.10.1.20

With which interfaces are the four addresses associated?

10.10.1.97 – GigabitEthernet0/0 of R1,

10.10.1.5 - Serial0/0/0 of R2

10.10.1.10 - Serial0/0/1 of R3

10.10.1.20 – FastEthernet0 of PC2

b.    From **PC2**, trace the route to **PC1**.

What addresses were encountered along the path?

10.10.1.17

10.10.1.9

10.10.1.6

10.10.1.100

With which interfaces are the four addresses associated?

10.10.1.17 - GigabitEthernet0/0 of R3

10.10.1.9 - Serial0/0/1 of R2

10.10.1.6 – Serial 0/0/1 of R1

10.10.1.100 – FastEthernet0 of PC1

**Step 2:**     **Use tracert to discover the IPv6 path.**

a.     From **PC1**, trace the route to the IPv6 address for **PC2**.

PC> **tracert 2001:DB8:1:4::A**

What addresses were encountered along the path?

2001:DB8:1:1::1

2001:DB8:1:2::1

2001:DB8:1:3::2

2001:DB8:1:4::A

With which interfaces are the four addresses associated?

2001:DB8:1:1::1 - GigabitEthernet0/0 of R1

2001:DB8:1:2::1 - Serial0/0/0 of R2

2001:DB8:1:3::2 - Serial0/0/1 of R3

2001:DB8:1:4::A – FastEthernet0 of PC2

b.    From **PC2**, trace the route to the IPv6 address for **PC1**.

What addresses were encountered along the path?

2001:DB8:1:4::1 - GigabitEthernet0/0 of R3

2001:DB8:1:3::1 - Serial0/0/1 of R2

2001:DB8:1:2::2 – Serial 0/0/1 of R1

2001:DB8:1:1::A – FastEthernet0 of PC1

With which interfaces are the four addresses associated?

2001:DB8:1:4::1

2001:DB8:1:3::1

2001:DB8:1:2::2

2001:DB8:1:1::A

**Suggested Scoring Rubric**

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity Section** | **Question Location** | **Possible Points** | **Earned Points** |
| Part 1: Complete the Addressing Table Documentation | Step 1b | 10 |  |
| Step 1d | 10 |  |
| Step 2a | 10 |  |
| Step 2b | 10 |  |
| **Part 1 Total** | | **40** |  |
| Part 2: Test Connectivity Using Ping | Step 1a | 7 |  |
| Step 1b | 7 |  |
| Step 2a | 7 |  |
| Step 2b | 7 |  |
| **Part 2 Total** | | **28** |  |
| Part 3: Discover the Path by Tracing the Route | Step 1a | 8 |  |
| Step 1b | 8 |  |
| Step 2a | 8 |  |
| Step 2b | 8 |  |
| **Part 3 Total** | | **32** |  |
| **Total Score** | | **100** |  |