1. **Information Security**
2. **Chapter 3: Network Protocols and Services**
4. **Lab 11 - Verify IPv4 and IPv6 Addressing**

# Addressing Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address / Prefix | | Default Gateway |
| R1 | G0/0 | 10.10.1.97 | 255.255.255.224 | N/A |
| R1 | G0/0 | 2001:db8:1:1::1/64 | | 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 | 10.10.1.17 | 255.255.255.240 | N/A |
| R3 | G0/0 | 2001:db8:1:4::1/64 | | 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 | FastEthernet0 | 10.10.1.100 | 255.255.255.224 | 10.10.1.97 |
| PC1 | NIC | 2001:DB8:1:1::A | | FE80::1 |
| PC2 | FastEthernet0 | 10.10.1.20 | 255.255.255.240 | 10.10.1.17 |
| PC2 | NIC | 2001:DB8:1:4::A | | 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.

# Instructions

## Complete the Addressing Table Documentation

### Use ipconfig to verify IPv4 addressing.

* + - 1. Click **PC1** and open the **Command Prompt.**
      2. Enter the **ipconfig /all** command to collect the IPv4 information. Fill-in the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
      3. Click **PC2** and open the **Command Prompt.**
      4. Enter the **ipconfig /all** command to collect the IPv4 information. Fill-in the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.

### Use ipv6config to verify IPv6 addressing.

* + - 1. 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.
      2. 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.

## Test Connectivity Using Ping

### Use ping to verify IPv4 connectivity.

* + - 1. From **PC1**, ping the IPv4 address for **PC2**.

#### Question:

Was the result successful?

Ans: It was successful 75 % and lost 25 % packets. Out of 4 one lost.

* + - 1. From **PC2**, ping the IPv4 address for **PC1**.

#### Question:

Was the result successful?

Ans: Yes it is completely successful.

### Use ping to verify IPv6 connectivity.

* + - 1. From **PC1**, ping the IPv6 address for **PC2**.

#### Question:

Was the result successful?

Ans: Yes it is successful.

* + - 1. From **PC2**, ping the IPv6 address of **PC1**.

#### Question:

Was the result successful?

Ans: Yes it is successful.

## Discover the Path by Tracing the Route

### Use tracert to discover the IPv4 path.

* + - 1. From **PC1**, trace the route to **PC2**.

PC> **tracert 10.10.1.20**

#### Questions:

What addresses were encountered along the path?

Ans:

10.10.1.97

10.10.1.5

10.10.1.10

10.10.1.20

With which interfaces are the four addresses associated

Ans: G0/0 > S0/0/0 > S0/0/1 > FastEthernet0

* + - 1. From **PC2**, trace the route to **PC1**.

#### Questions:

What addresses were encountered along the path?

Ans:

10.10.1.17

10.10.1.9

10.10.1.6

10.10.1.100

With which interfaces are the four addresses associated?

Ans:

G0/0 > S0/0/1 > S0/0/1 > FastEthernet0

### Use tracert to discover the IPv6 path.

* + - 1. From **PC1**, trace the route to the IPv6 address for **PC2**.

PC> **tracert 2001:db8:1:4::a**

#### Questions:

What addresses were encountered along the path?

Ans:

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?

Ans: G0/0 > S0/0/0 > S0/0/1 > FastEthernet0

* + - 1. From **PC2**, trace the route to the IPv6 address for **PC1**.

#### Questions:

What addresses were encountered along the path?

Ans:

2001:DB8:1:4::1

2001:DB8:1:3::1

2001:DB8:1:2::2

2001:DB8:1:1::A

With which interfaces are the four addresses associated?

Ans: G0/0 > S0/0/1 > S0/0/1 > FastEthernet0