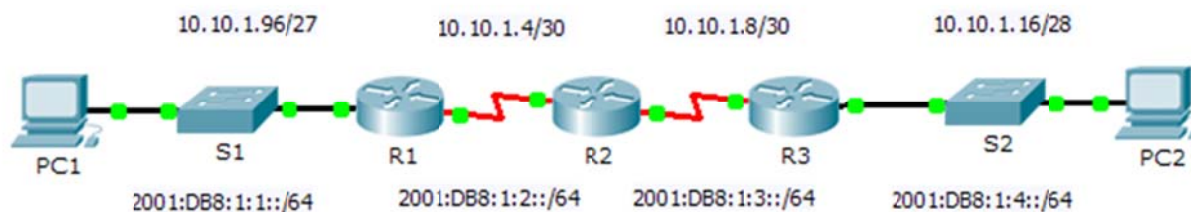


Packet Tracer - Verifying IPv4 and IPv6 Addressing (Instructor Version)

Instructor Note: Red font color or Gray highlights indicate text that appears in the instructor copy only.

Topology



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.

- Click **PC1** and click the **Desktop** tab > **Command Prompt**.
- Enter the **ipconfig /all** command to collect the IPv4 information. Fill in the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
- Click **PC2** and click the **Desktop** tab > **Command Prompt**.
- 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.

- 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.
- 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.

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

Step 2: Use ping to verify IPv6 connectivity.

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

- 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? **G0/0 of R1, S0/0/0 on R2, S0/0/01 on R3, NIC of PC2**

- 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? **G0/0 of R3, S0/0/1 of R2, S0/0/1 of R1, NIC of PC1**

Step 2: Use tracert to discover the IPv6 path.

- 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? g0/0 of R1, S0/0/0 of r2, S0/0/1 of R3, NIC 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, 2001:DB8:1:3::1, 2001:DB8:1:2::2, 2001:DB8:1:1::A

With which interfaces are the four addresses associated? Ga0/0 of R3, S0/0/1 of R2, S0/0/1 of R1, NIC of PC1

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 | |