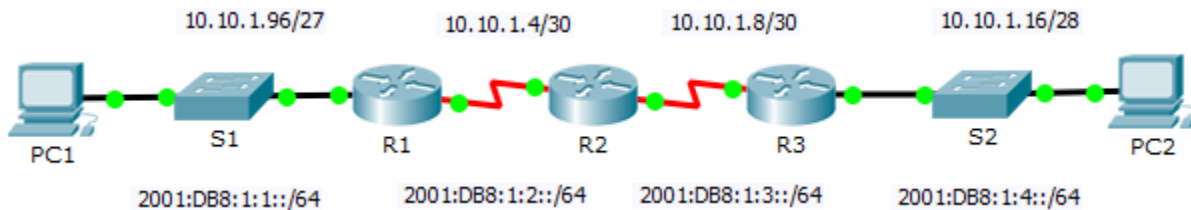


## Packet Tracer - Verifying IPv4 and IPv6 Addressing (Instructor Version – Optional Packet Tracer)

**Instructor Note:** Red font color or gray highlights indicate text that appears in the instructor copy only. Optional activities are designed to enhance understanding and/or to provide additional practice.

### 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
```

## Packet Tracer - Verifying IPv4 and IPv6 Addressing

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	
<b>Part 1 Total</b>		<b>40</b>	
Part 2: Test Connectivity Using Ping	Step 1a	7	
	Step 1b	7	
	Step 2a	7	
	Step 2b	7	
<b>Part 2 Total</b>		<b>28</b>	
Part 3: Discover the Path by Tracing the Route	Step 1a	8	
	Step 1b	8	
	Step 2a	8	
	Step 2b	8	
<b>Part 3 Total</b>		<b>32</b>	
<b>Total Score</b>		<b>100</b>	