Packet Tracer - 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
		2001:db8:1:1::1/64		
	S0/0/1	10.10.1.6	255.255.255.252	N/A
		2001:db8:1:2::2/64		
		fe80::1		
R2	S0/0/0	10.10.1.5	255.255.255.252	N/A
		2001:db8:1:2::1/64		
	S0/0/1	10.10.1.9	255.255.255.252	N/A
		2001:db8:1:3::1/64		
		fe80::2		
R3	G0/0	10.10.1.17	255.255.255.240	N/A
		2001:db8:1:4::1/64		
	S0/0/1	10.10.1.10	255.255.255.252	N/A
		2001:db8:1:3::2/64		
		fe80::3		
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.

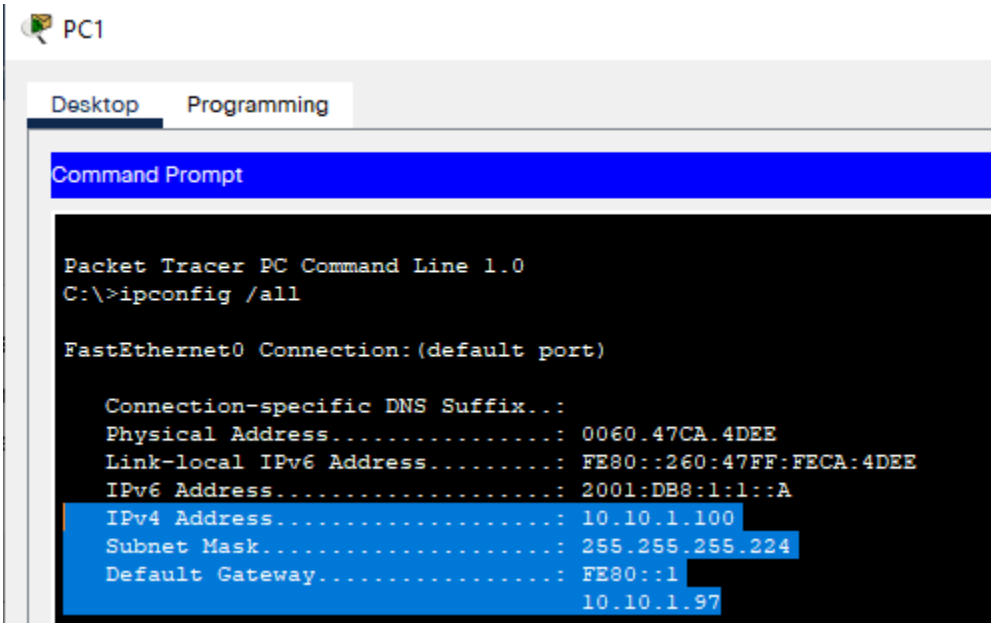
Instructions

Part 1: Complete the Addressing Table Documentation

Step 1: Use ipconfig to verify IPv4 addressing.

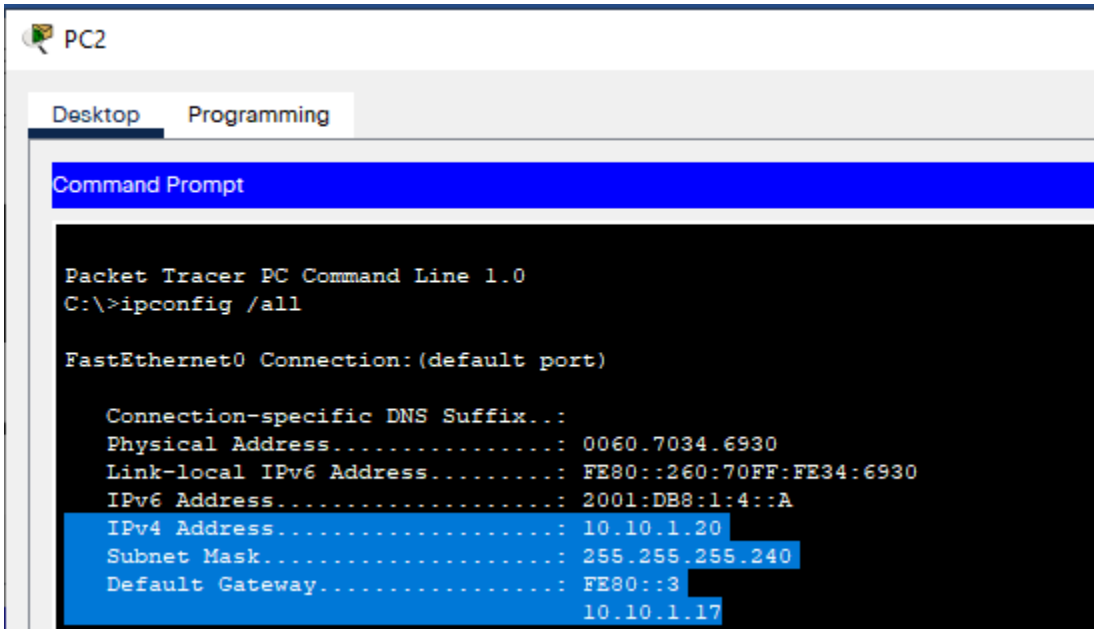
a. Click **PC1** and open the **Command Prompt.**

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 open the **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.

```
C:\>ipv6config /all

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Physical Address.....................: 0060.47CA.4DEE
   Link-local IPv6 Address.....: FE80::260:47FF:FECA:4DEE
   IPv6 Address.....................: 2001:DB8:1:1::A
   Default Gateway.....................: FE80::1
```

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.

```
C:\>ipv6config /all

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Physical Address.....................: 0060.7034.6930
   Link-local IPv6 Address.....: FE80::260:70FF:FE34:6930
   IPv6 Address.....................: 2001:DB8:1:4::A
   Default Gateway.....................: FE80::3
```

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.***

```
C:\>ping 10.10.1.20

Pinging 10.10.1.20 with 32 bytes of data:

Reply from 10.10.1.20: bytes=32 time=14ms TTL=125
Reply from 10.10.1.20: bytes=32 time=10ms TTL=125
Reply from 10.10.1.20: bytes=32 time=2ms TTL=125
Reply from 10.10.1.20: bytes=32 time=11ms TTL=125

Ping statistics for 10.10.1.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 14ms, Average = 9ms
```

b. From **PC2**, ping the IPv4 address for **PC1**.

Was the result successful? ***Yes.***

```
C:\>ping 10.10.1.100

Pinging 10.10.1.100 with 32 bytes of data:

Reply from 10.10.1.100: bytes=32 time=18ms TTL=125
Reply from 10.10.1.100: bytes=32 time=10ms TTL=125
Reply from 10.10.1.100: bytes=32 time=2ms TTL=125
Reply from 10.10.1.100: bytes=32 time=12ms TTL=125

Ping statistics for 10.10.1.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 18ms, Average = 10ms
```

Step 2: Use ping to verify IPv6 connectivity.

a. From **PC1**, ping the IPv6 address for **PC2**.

Was the result successful? ***Yes.***

```
C:\>ping 2001:DB8:1:4::A

Pinging 2001:DB8:1:4::A with 32 bytes of data:

Reply from 2001:DB8:1:4::A: bytes=32 time=19ms TTL=125
Reply from 2001:DB8:1:4::A: bytes=32 time=14ms TTL=125
Reply from 2001:DB8:1:4::A: bytes=32 time=10ms TTL=125
Reply from 2001:DB8:1:4::A: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:4::A:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 19ms, Average = 11ms

C:\>
```

b. From **PC2**, ping the IPv6 address of **PC1**.

Was the result successful? ***Yes.***

```
C:\>ping 2001:DB8:1:1::A

Pinging 2001:DB8:1:1::A with 32 bytes of data:

Reply from 2001:DB8:1:1::A: bytes=32 time=6ms TTL=125
Reply from 2001:DB8:1:1::A: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:1::A: bytes=32 time=2ms TTL=125
Reply from 2001:DB8:1:1::A: bytes=32 time=2ms TTL=125

Ping statistics for 2001:DB8:1:1::A:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 6ms, Average = 3ms

C:\>
```

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?

```
C:\>tracert 10.10.1.20

Tracing route to 10.10.1.20 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      10.10.1.97
  2    0 ms      0 ms      5 ms      10.10.1.5
  3    1 ms      1 ms      0 ms      10.10.1.10
  4    0 ms      0 ms      1 ms      10.10.1.20

Trace complete.

C:\>
```

With which interfaces are the four addresses associated?

10.10.1.97 → R1, G0/0

10.10.1.5 → R2, S0/0/0

10.10.1.10 → R3, S0/0/01

10.10.1.20 → PC2, NIC

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

What addresses were encountered along the path?

```
C:\>tracert 10.10.1.100

Tracing route to 10.10.1.100 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      10.10.1.17
  2    0 ms      0 ms      1 ms      10.10.1.9
  3    7 ms      8 ms      2 ms      10.10.1.6
  4    0 ms      6 ms      3 ms      10.10.1.100

Trace complete.

C:\>
```

With which interfaces are the four addresses associated?

10.10.1.17 → **R3, G0/0**
10.10.1.9 → **R2, S0/0/1**
10.10.1.6 → **R1, S0/0/1**
10.10.1.100 → **PC1, NIC**

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?

```
C:\>tracert 2001:DB8:1:4::A

Tracing route to 2001:DB8:1:4::A over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      2001:DB8:1:1::1
  2    0 ms      0 ms      0 ms      2001:DB8:1:2::1
  3    1 ms      8 ms      1 ms      2001:DB8:1:3::2
  4    0 ms      1 ms      7 ms      2001:DB8:1:4::A

Trace complete.

C:\>
```

With which interfaces are the four addresses associated?

2001:db8:1:1: :1 → **R1, G0/0**
2001:db8:1:2: :1 → **R2, S0/0/0**
2001:db8:1:3: :2 → **R3, S0/0/1**
2001:db8:1:4: :a → **PC2, NIC**

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

What addresses were encountered along the path?

```
C:\>tracert 2001:DB8:1:1::A

Tracing route to 2001:DB8:1:1::A over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      2001:DB8:1:4::1
  2    0 ms      0 ms      0 ms      2001:DB8:1:3::1
  3    1 ms      0 ms      7 ms      2001:DB8:1:2::2
  4    0 ms      2 ms      0 ms      2001:DB8:1:1::A

Trace complete.

C:\>
```

With which interfaces are the four addresses associated?

2001:db8:1:4: :1 → **R3, G0/0**
2001:db8:1:3: :1 → **R2, S0/0/1**
2001:db8:1:2: :2 → **R1, S0/0/1**
2001:db8:1:1: :a → **PC1, NIC**