

Packet Tracer - Use Ping and Traceroute to Test Network Connectivity

Addressing Table

Device	Interface	IP Address / Prefix		Default Gateway
R1	G0/0	2001:db8:1:1::1/64		N/A
	G0/1	10.10.1.97	255.255.255.224	N/A
	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		N/A
	S0/0/1	10.10.1.9	255.255.255.252	
		2001:db8:1:3::1/64		
		fe80::2		
R3	G0/0	2001:db8:1:4::1/64		N/A
	G0/1	10.10.1.17	255.255.255.240	N/A
	S0/0/1	10.10.1.10	255.255.255.252	N/A
		2001:db8:1:3::2/64		
		fe80::3		
PC1	NIC	10.10.1.98	255.255.255.224	10.10.1.97
PC2	NIC	2001:DB8:1:1::2		FE80::1
PC3	NIC	10.10.1.18	255.255.255.240	10.10.1.17
PC4	NIC	2001:DB8:1:4::2		FE80::2

Objectives

Part 1: Test and Restore IPv4 Connectivity

Part 2: Test and Restore IPv6 Connectivity

Scenario

There are connectivity issues in this activity. In addition to gathering and documenting information about the network, you will locate the problems and implement acceptable solutions to restore connectivity.

Note: The user EXEC password is **cisco**. The privileged EXEC password is **class**.

Instructions

Part 1: Test and Restore IPv4 Connectivity

Step 1: Use ipconfig and ping to verify connectivity.

- a. Click **PC1** and open the **Command Prompt**.
- b. Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
- c. Click **PC3** and open the **Command Prompt**.
- d. Enter the **ipconfig /all** command to collect the IPv4 information. Complete the **Addressing Table** with the IPv4 address, subnet mask, and default gateway.
- e. Use the **ping** command to test connectivity between **PC1** and **PC3**. The ping should fail.

Step 2: Locate the source of connectivity failure.

- a. From **PC1**, enter the necessary command to trace the route to **PC3**.
What is the last successful IPv4 address that was reached?
10.10.1.97
- b. The trace will eventually end after 30 attempts. Enter **Ctrl+C** to stop the trace before 30 attempts.
- c. From **PC3**, enter the necessary command to trace the route to **PC1**.
What is the last successful IPv4 address that was reached?
10.10.1.17
- d. Enter **Ctrl+C** to stop the trace.
- e. Click **R1**. Press **ENTER** and log in to the router.
- f. Enter the **show ip interface brief** command to list the interfaces and their status. There are two IPv4 addresses on the router. One should have been recorded in Step 2a.
What is the other?
10.10.1.6
- g. Enter the **show ip route** command to list the networks to which the router is connected. Note that there are two networks connected to the **Serial0/0/1** interface.
What are they?
10.10.1.4/30
10.10.1.6/32
- h. Repeat steps 2e through 2g with **R3** and record your answers.
show ip interface brief: 10.10.1.17 and 10.10.1.10
show ip route: Serial 0/0/1: 10.10.1.8/30 and 10.10.1.10/32
- i. Click **R2**. Press **ENTER** and log into the router.
- j. Enter the **show ip interface brief** command and record your addresses.
P Addresses:
10.10.1.2

10.10.1.9

Connected to Serial0/0/0:

10.10.1.0/30

10.10.1.2/32

Connected to Serial0/0/1:

10.10.1.8/30

10.10.1.9/32

- k. Run more tests if it helps visualize the problem. Simulation mode is available.

Step 3: Propose a solution to solve the problem.

Compare your answers in Step 2 to the documentation you have available for the network.

What is the error?

Wrong IP address of R2 at Serial0/0/0.

What solution would you propose to correct the problem?

We need to configure the ip address using CLI.

Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

We used the following commands for the solution:

R2>enable

Password:

Password:

R2#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

R2(config)#interface s0/0/0

R2(config-if)#ip address 10.10.1.5 255.255.255.252

R2(config-if)#

%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 10.10.1.6 (Serial0/0/0) is up: new adjacency

R2(config-if)#no shutdown

R2(config-if)#

Step 5: Verify that connectivity is restored.

- From **PC1** test connectivity to **PC3**.
- From **PC3** test connectivity to **PC1**.

Is the problem resolved?

Yes.

Step 6: Document the solution.

Part 2: Test and Restore IPv6 Connectivity

Step 1: Use `ipv6config` and ping to verify connectivity.

- Click **PC2** and open the **Command Prompt**.
- Enter the `ipv6config /all` command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.
- Click **PC4** and open the **Command Prompt**.
- Enter the `ipv6config /all` command to collect the IPv6 information. Complete the **Addressing Table** with the IPv6 address, subnet prefix, and default gateway.
- Test connectivity between **PC2** and **PC4**. The ping should fail.

Step 2: Locate the source of connectivity failure.

- From **PC2**, enter the necessary command to trace the route to **PC4**.

What is the last successful IPv6 address that was reached?

2001:DB8:1:3::2

- The trace will eventually end after 30 attempts. Enter **Ctrl+C** to stop the trace before 30 attempts.
- From **PC4**, enter the necessary command to trace the route to **PC2**.

What is the last successful IPv6 address that was reached?

It didn't reach any IPv6 address.

- Enter **Ctrl+C** to stop the trace.
- Click **R3**. Press **ENTER** and log in to the router.
- Enter the `show ipv6 interface brief` command to list the interfaces and their status. There are two IPv6 addresses on the router. One should match the gateway address recorded in Step 1d.

Is there a discrepancy?

The PC4 default gateway doesn't match. However, It matches with Addressing table.

- Run more tests if it helps visualize the problem. Simulation mode is available.

Step 3: Propose a solution to solve the problem.

Compare your answers in Step 2 to the documentation you have available for the network.

What is the error?

The default gateway of PC4 is FE80::2 but in the R3 it is FE80::3. But as R3 default gateway matches with addressing table given in beginning, the problem is in PC4 IP configuration.

What solution would you propose to correct the problem?

Update PC4 IP configuration with correct gateway.

Step 4: Implement the plan.

Implement the solution you proposed in Step 3b.

Step 5: Verify that connectivity is restored.

- From **PC2** test connectivity to **PC4**. **Yes.**
- From **PC4** test connectivity to **PC2**. **Yes.**

Is the problem resolved?

Yes.

Step 6: Document the solution.

The screenshot shows the configuration window for PC4 in Packet Tracer. The window has tabs for 'Desktop' and 'Programming'. The 'IP Configuration' tab is active, showing settings for the 'FastEthernet0' interface. The 'Static' radio button is selected for both IPv4 and IPv6 configurations. The IPv6 configuration includes a static address of 2001:DB8:1:4::2/64, a link-local address of FE80::206:2AFF:FEBC:7CD4, and a default gateway of FE80::3. A red arrow points to the default gateway field with the handwritten word 'update' next to it. The '802.1X' section is also visible, with 'Use 802.1X Security' unchecked and 'Authentication' set to 'MD5'.

PC4

Desktop Programming

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address:

Subnet Mask:

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: 2001:DB8:1:4::2 / 64

Link Local Address: FE80::206:2AFF:FEBC:7CD4

Default Gateway: FE80::3

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

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