Packet Tracer - Configure IPv6 Addressing

# Addressing Table

| Device | Interface | IPv6 Address/Prefix | Default Gateway |
| --- | --- | --- | --- |
| R1 | G0/0 | 2001:db8:1:1::1/64 | N/A |
| R1 | G0/0 | fe80::1 | N/A |
| R1 | G0/1 | 2001:db8:1:2::1/64 | N/A |
| R1 | G0/1 | fe80::1 | N/A |
| R1 | S0/0/0 | 2001:db8:1:a001::2/64 | N/A |
| R1 | S0/0/0 | fe80::1 | N/A |
| Sales | NIC | 2001:db8:1:1::2/64 | fe80::1 |
| Billing | NIC | 2001:db8:1:1::3/64 | fe80::1 |
| Accounting | NIC | 2001:db8:1:1::4/64 | fe80::1 |
| Design | NIC | 2001:db8:1:2::2/64 | fe80::1 |
| Engineering | NIC | 2001:db8:1:2::3/64 | fe80::1 |
| CAD | NIC | 2001:db8:1:2::4/64 | fe80::1 |
| ISP | S0/0/0 | 2001:db8:1:a001::1 | fe80::1 |

# Objectives

Part 1: Configure IPv6 Addressing on the Router

Part 2: Configure IPv6 Addressing on Servers

Part 3: Configure IPv6 Addressing on Clients

Part 4: Test and Verify Network Connectivity

# Background

In this activity, you will practice configuring IPv6 addresses on a router, servers, and clients. You will also practice verifying your IPv6 addressing implementation.

## Configure IPv6 Addressing on the Router

### Enable the router to forward IPv6 packets.

* + - 1. Click **R1** and then the **CLI** tab. Press **Enter**.

Open a configuration window

* + - 1. Enter privileged EXEC mode.
      2. Enter the **ipv6 unicast-routing** global configuration command. This command must be entered to enable the router to forward IPv6 packets.

R1(config)# **ipv6 unicast-routing**

### Configure IPv6 addressing on GigabitEthernet0/0.

* + - 1. Enter the commands necessary to move to interface configuration mode for GigabitEthernet0/0.
      2. Configure the IPv6 address with the following command:

R1(config-if)# **ipv6 address 2001:db8:1:1::1/64**

* + - 1. Configure the link-local IPv6 address with the following command:

R1(config-if)# **ipv6 address fe80::1 link-local**

* + - 1. Activate the interface.

R1(config-if)# **no shutdown**

### Configure IPv6 addressing on GigabitEthernet0/1.

* + - 1. Enter the commands necessary to move to interface configuration mode for GigabitEthernet0/1.
      2. Refer to the **Addressing Table** for the correct IPv6 address.
      3. Configure the IPv6 address, the link-local address and activate the interface.

### Configure IPv6 addressing on Serial0/0/0.

* + - 1. Enter the commands necessary to move to interface configuration mode for Serial0/0/0.
      2. Refer to the **Addressing Table** for the correct IPv6 address.
      3. Configure the IPv6 address, the link-local address and activate the interface.

### Verify IPv6 addressing on R1.

It is good practice to verify addressing when it is complete by comparing configured values with the values in the addressing table.

* + - 1. Exit configuration mode on R1.
      2. Verify the addressing configured by issuing the following command:

R1# **show ipv6 interface brief**

* + - 1. If any addresses are incorrect, repeat the steps above as necessary to make any corrections.

**Note**: To make a change in addressing with IPv6, you must remove the incorrect address or else both the correct address and incorrect address will remain configured on the interface.

Example:

R1(config-if)# **no** **ipv6 address 2001:db8:1:5::1/64**

* + - 1. Save the router configuration to NVRAM.

Close a configuration window

## Configure IPv6 Addressing on the Servers

### Configure IPv6 addressing on the Accounting Server.

* + 1. Click **Accounting** and click the **Desktop** tab > **IP Configuration**.
    2. Set the **IPv6 Address** to **2001:db8:1:1::4** with a prefix of **/64**.
    3. Set the **IPv6 Gateway** to the link-local address, **fe80::1**.

### Configure IPv6 addressing on the CAD Server.

Configure the **CAD** server with addresses as was done in Step 1. Refer to the **Addressing Table** for the addresses to use.

## Configure IPv6 Addressing on the Clients

### Configure IPv6 addressing on the Sales and Billing Clients.

* + - 1. Click **Billing** and then select the **Desktop** tab followed by **IP Configuration**.
      2. Set the **IPv6 Address** to **2001:db8:1:1::3** with a prefix of **/64**.
      3. Set the **IPv6 Gateway** to the link-local address, **fe80::1**.
      4. Repeat Steps 1a through 1c for **Sales**. Refer to the **Addressing Table** for the IPv6 address.

### Configure IPv6 Addressing on the Engineering and Design Clients.

* + - 1. Click **Engineering** and then select the **Desktop** tab followed by **IP Configuration**.
      2. Set the IPv6 Address to 2001:db8:1:2::3 with a prefix of /64.
      3. Set the **IPv6 Gateway** to the link-local address, **fe80::1**.
    1. Repeat Steps 2a through 2c for **Design**. Refer to the **Addressing Table** for the IPv6 address.

## Test and Verify Network Connectivity

### Open the server web pages from the clients.

* + - 1. Click **Sales** and click the **Desktop** tab. Close the **IP Configuration** window, if necessary.
      2. Click **Web Browser**. Enter **2001:db8:1:1::4** in the URL box and click **Go**. The **Accounting** website should appear.
      3. Enter **2001:db8:1:2::4** in the URL box and click **Go**. The **CAD** website should appear.
      4. Repeat steps 1a through 1c for the rest of the clients.

### Ping the ISP.

* + - 1. Click on any client.
      2. Click the Desktop tab > Command Prompt.
      3. Test connectivity to the ISP by entering the following command:

PC> **ping 2001:db8:1:a001::1**

* + - 1. Repeat the **ping** command with other clients until full connectivity is verified.

enable

config terminal

ipv6 unicast-routing

interface g0/0

ipv6 address 2001:db8:1:1::1/64

ipv6 address fe80::1 link-local

no shutdown

interface g0/1

ipv6 address 2001:db8:1:2::1/64

ipv6 address fe80::1 link-local

no shutdown

int s0/0/0

ipv6 address 2001:db8:1:a001::2/64

ipv6 address fe80::1 link-local

no shutdown

end

copy running-config startup-config

[OK]

R1#