

## 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
		fe80::1	
	G0/1	2001:db8:1:2::1/64	N/A
		fe80::1	
	S0/0/0	2001:db8:1:a001::2/64	N/A
		fe80::1	
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.

### Part 1: Configure IPv6 Addressing on the Router

#### Step 1: Enable the router to forward IPv6 packets.

- Click **R1** and then the **CLI** tab. Press **Enter**.
- Enter privileged EXEC mode.
- 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
```

### Step 2: Configure IPv6 addressing on GigabitEthernet0/0.

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

```
R1(config-if)# ipv6 address 2001:db8:1:1::1/64
```
- Configure the link-local IPv6 address with the following command:  

```
R1(config-if)# ipv6 address fe80::1 link-local
```
- Activate the interface.  

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

### Step 3: Configure IPv6 addressing on GigabitEthernet0/1.

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

### Step 4: Configure IPv6 addressing on Serial0/0/0.

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

### Step 5: 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.

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

```
R1# show ipv6 interface brief
```
- 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
```

- Save the router configuration to NVRAM.

## Part 2: Configure IPv6 Addressing on the Servers

### Step 1: Configure IPv6 addressing on the Accounting Server.

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

### Step 2: 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.

## Part 3: Configure IPv6 Addressing on the Clients

### Step 1: Configure IPv6 addressing on the Sales and Billing Clients.

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

### Step 2: Configure IPv6 Addressing on the Engineering and Design Clients.

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

## Part 4: Test and Verify Network Connectivity

### Step 1: Open the server web pages from the clients.

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

### Step 2: Ping the ISP.

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

```
PC> ping 2001:db8:1:a001::1
```
- Repeat the **ping** command with other clients until full connectivity is verified.