

12.9.1 Packet Tracer - Implement a Subnetted IPv6 Addressing Scheme (Instructor Version)

Instructor Note: Red font color or gray highlights indicate text that appears in the instructor copy only.

Addressing Table

Device	Interface	IPv6 Address	Link-local Address
R1	G0/0	2001:db8:acad:00c8::1/64	fe80::1
	G0/1	2001:db8:acad:00c9::1/64	fe80::1
	S0/0/0	2001:db8:acad:00cc::1/64	fe80::1
R2	G0/0	2001:db8:acad:00ca::1/64	fe80::2
	G0/1	2001:db8:acad:00cb::1/64	fe80::2
	S0/0/0	2001:db8:acad:00cc::2/64	fe80::2
PC1	NIC	Auto Config	
PC2	NIC	Auto Config	
PC3	NIC	Auto Config	
PC4	NIC	Auto Config	

Objectives

Step 1: Determine IPv6 subnets and addressing scheme.

Step 2: Configure IPv6 addressing on routers and PCs.

Step 3: Verify IPv6 connectivity.

Background / Scenario

Network administrators must know how to implement IPv6 in their networks. You have been asked to set up a network for use by the sales staff for a customer demonstration. The network will use a series of consecutive IPv6 subnets for four LANs. Your job is to assign the subnets to the LANs and configure the routers and PCs with IPv6 addressing. Make certain to configure all the necessary components for IPv6 routing on the routers.

Instructions

Step 1: Determine IPv6 subnets and addressing scheme.

You have been given the IPv6 subnet **2001:db8:acad:00c8::/64** as the starting subnet. You will need four more subnets for each network that is required. Increment the subnet addresses consecutively by one to arrive at the four required subnets. Complete the table below.

Subnet Table

Subnet	Address
R1 G0/0/ LAN	2001:db8:acad:00c8::0/64
R1 G0/1 LAN	2001:db8:acad:00c9::0/64
R2 G0/0 LAN	2001:db8:acad:00ca::0/64
R2 G0/1 LAN	2001:db8:acad:00cb::0/64
R1 to R2 link network	2001:db8:acad:00cc::0/64

Step 2: Configure IPv6 addressing on routers and PCs.

Complete the addressing table above to use as a guide for configuring the devices.

- Assign the first IP address in the subnet to the router LAN interfaces.
- Assign the link-local addresses as designated in the addressing table.
- For the connection between the routers, assign the first address in the subnet to R1.
- For the connection between the routers, assign the second address in the subnet to R2.
- Set all four hosts to automatically configure with IPv6 addresses.

Step 3: Verify IPv6 connectivity.

The PCs should be able to ping each other if addressing has been configured properly.

Device Configuration

Router R1

```
enable
configure terminal
ipv6 unicast-routing
interface GigabitEthernet0/0
  ipv6 address fe80::1 link-local
  ipv6 address 2001:db8:acad:c8::1/64
  no shutdown
interface GigabitEthernet0/1
  ipv6 address fe80::1 link-local
  ipv6 address 2001:db8:acad:c9::1/64
  no shutdown
interface Serial0/0/0
  ipv6 address fe80::1 link-local
  ipv6 address 2001:db8:acad:cc::1/64
  no shutdown
```

Router R2

```
enable
configure terminal
```

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```
ipv6 unicast-routing
interface GigabitEthernet0/0
  ipv6 address fe80::2 link-local
  ipv6 address 2001:db8:acad:ca::1/64
  no shutdown
interface GigabitEthernet0/1
  ipv6 address fe80::2 link-local
  ipv6 address 2001:db8:acad:cb::1/64
  no shutdown
interface Serial0/0/0
  ipv6 address fe80::2 link-local
  ipv6 address 2001:db8:acad:cc::2/64
  no shutdown
end
```