



1.8. Configure and verify IPv6 addressing and prefix

Objective:

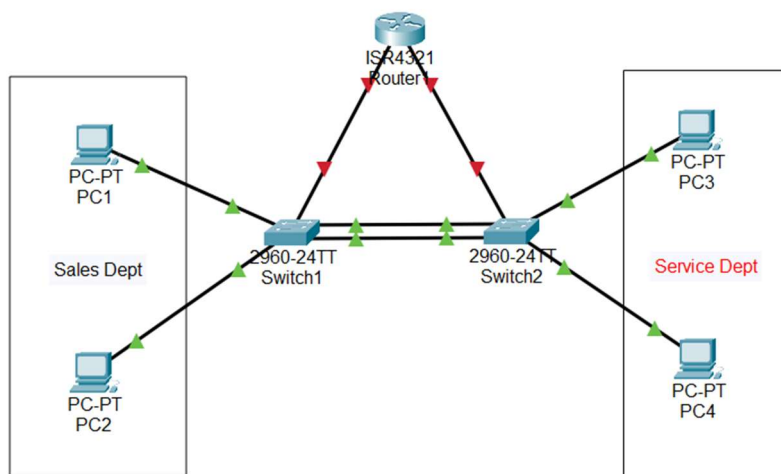
Configure and verify IPv6 addressing on end devices and router interfaces to establish connectivity across multiple subnets.

Topology

- **Router1** connected to **Switch1** and **Switch2**
- **Switch1** connected to **PC1**, and **PC2**,
- **Switch2** connected to **PC3**, and **PC4**
- **Switch1** and **Switch2** connected via etherchannel

IPv6 Subnet Allocations

- **Service Dept Subnet:** 2001:db8:acad:1::/64 → Router1 G0/0/0 + PC1, PC2
- **Sales Dept Subnet:** 2001:db8:acad:2::/64 → Router1 G0/0/1 + PC3, PC4



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Lab Tasks

Step 1 – Enable IPv6 Routing on Router1

Step 2 – Configure IPv6 addresses on Router1 interfaces:

- G0/0/0 → 2001:db8:acad:1::1/64 (Sales Dept Subnet)
- G0/0/1 → 2001:db8:acad:2::1/64 (Service Dept Subnet)

Step 3 – Configure IPv6 Addresses on PCs:

- PC1 → 2001:db8:acad:1::10/64, Gateway: (***Assign the appropriate Gateway***)
- PC2 → 2001:db8:acad:1::11/64, Gateway: (***Assign the appropriate Gateway***)
- PC3 → 2001:db8:acad:2::10/64, Gateway: (***Assign the appropriate Gateway***)
- PC4 → 2001:db8:acad:2::11/64, Gateway: (***Assign the appropriate Gateway***)

Step 4 – Verify Connectivity

- Each PC can ping its default gateway.
 - PCs on different subnets can ping each other.
-

ANSWERS BEYOND THIS POINT.
LET’S SEE HOW YOU DID!.....

Solution Key

Step 1 – Enable IPv6 Routing and Configure IPv6 Gateway's on Router1

```
Router1> enable
```

```
Router1# configure terminal
```

```
Router1(config)# ipv6 unicast-routing
```

```
Router1(config)# interface gig0/0/0
```

```
Router1(config-if)# ipv6 address 2001:db8:acad:1::1/64
```

```
Router1(config-if)# no shutdown
```

```
Router1(config)# interface gig0/0/1
```

```
Router1(config-if)# ipv6 address 2001:db8:acad:2::1/64
```

```
Router1(config-if)# no shutdown
```

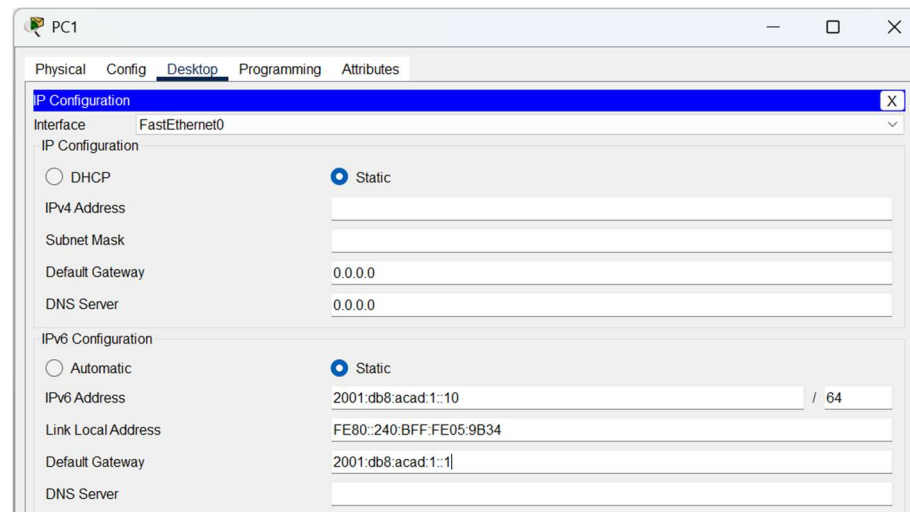
```
Router1# show ipv6 interface brief
```

```
Router1#show ipv6 interface brief
GigabitEthernet0/0/0      [up/up]
    FE80::202:16FF:FE1D:4601
    2001:DB8:ACAD:1::1
GigabitEthernet0/0/1      [up/up]
    FE80::202:16FF:FE1D:4602
    2001:DB8:ACAD:2::1
Vlan1                     [administratively down/down]
    unassigned
Router1#
```

Step 2 – Configure IPv6 Addresses on PCs

On PC1

- IPv6 Address: 2001:db8:acad:1::10/64
- Default Gateway: 2001:db8:acad:1::1



On PC2

- IPv6 Address: 2001:db8:acad:1::11/64
- Default Gateway: 2001:db8:acad:1::1

On PC3

- IPv6 Address: 2001:db8:acad:2::10/64
- Default Gateway: 2001:db8:acad:2::1

On PC4

- IPv6 Address: 2001:db8:acad:2::11/64
- Default Gateway: 2001:db8:acad:2::1

Step 3 – Verification

- From **PC1**: ping 2001:db8:acad:1::1 (gateway) → success.
- From **PC1**: ping 2001:db8:acad:2::10 (PC3) → success.
- Confirm that all PCs can ping both their gateway and at least one host in the other subnet.