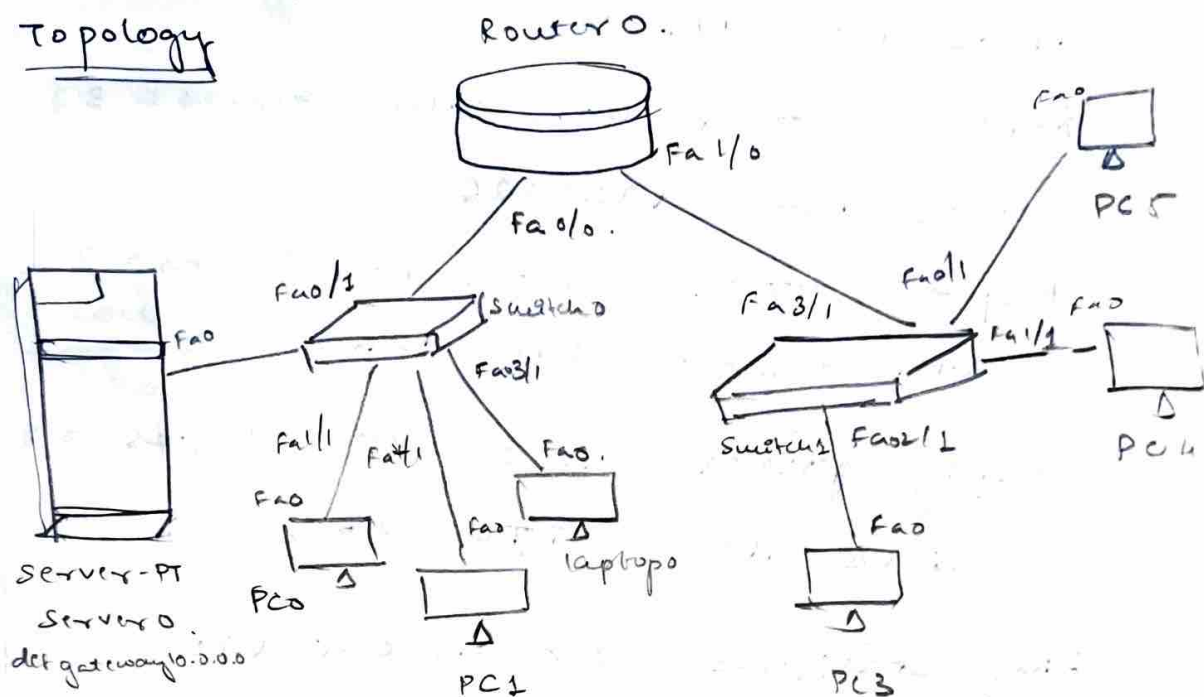


Experiment-4

Q) configure DHCP within a LAN and outside LAN

Aim: Demonstrate DHCP within LAN and outside a LAN

Topology



Topology Description:

1. switch 0 connected Router 0 interface Fa0/0 using copper straight-through cable from
2. PC0, PC1, PC2 are connected to Switch 0 via a copper straight cable with IP address → 10.0.0.2, 10.0.0.3 and 10.0.0.4 respectively.
3. Server 0 is connected to Switch 0 with IP address 10.0.0.2.
4. PC3, PC4, PC5 are connected to Switch 1 with IP address → PC3: 20.0.0.3
PC4: 20.0.0.4
PC5: 20.0.0.5

Procedure:

- 1) Router: Place the router in the middle.
- 2) Switch: Connect two switches to Router 0.
- 3) PC: Take 3 PC's and connect it to switch 0 and another 3 PC's to switch 1.
- 4) Server: Place and connect it to the switch 1 via cable (straight-through copper).

Configure server 0 by clicking on the server and click IP configuration.

Set IP address $\rightarrow 10.0.0.2$

Subnet mask $\rightarrow 255.0.0.0$

Default gateway $\rightarrow 10.0.0.1$

In DHCP services, add switch 0 and configure with:

Pool Name \rightarrow switch 0

Start IP address $- 10.0.0.0$

Default gateway $- 0.0.0.0$

Subnet mask $- 255.0.0.0$

In DHCP services, add switch 1 configure

with Poolname - switch 1

Start IP address $\rightarrow 10.0.0.3$

Default gateway $\rightarrow 10.0.0.1$

Subnet mask $\rightarrow 255.0.0.0$

\rightarrow Set the IP configuration of all PC's PC0 to PC1 to DHCP due to which each PC obtains

its IP address, subnet mask, Default gateway.

• Configure Router 0 by clicking on the router and selecting CLI.

Assign IP addresses to the router interfaces.

CLI

```
Router> enable
```

```
Router# configure terminal
```

```
Router(config)# interface Fa0/0
```

```
Router(config)# ip address 10.0.0.1
```

```
255.0.0.0
```

```
Router(config)# ip helper-address
```

```
10.0.0.2
```

```
Router(config)# no shut.
```

```
Router(config)# interface Fa1/0
```

```
Router(config)# ip address 20.0.0.1
```

```
255.0.0.0
```

```
Router(config)# ip helper-address-
```

```
10.0.0.2
```

```
Router(config)# no shut
```

```
Router# exit.
```

Observation:

If config and cabling are correct, you will receive successful ping replies between two PCs.

```
PC> ping 10.0.0.3
```

```
Pinging 10.0.0.3 with 32 bytes of Data
```

```
Reply from 10.0.0.3: bytes=32 time=1ms
```

```
TTL=120
```


Reply from 10.0.0.3 bytes=32, time=0ms TTL=120
Reply from 10.0.0.3 bytes=32, time=0ms, TTL=120
Reply from 10.0.0.3 bytes=32 time=2ms, TTL=120

Ping statistics for 10.0.0.3:

Packets: Sent = 4, Received = 4, Loss = 0 (0% loss)

Approximate round trip times in milliseconds:

Minimum = 0ms, Maximum = 2ms, Average = 0ms