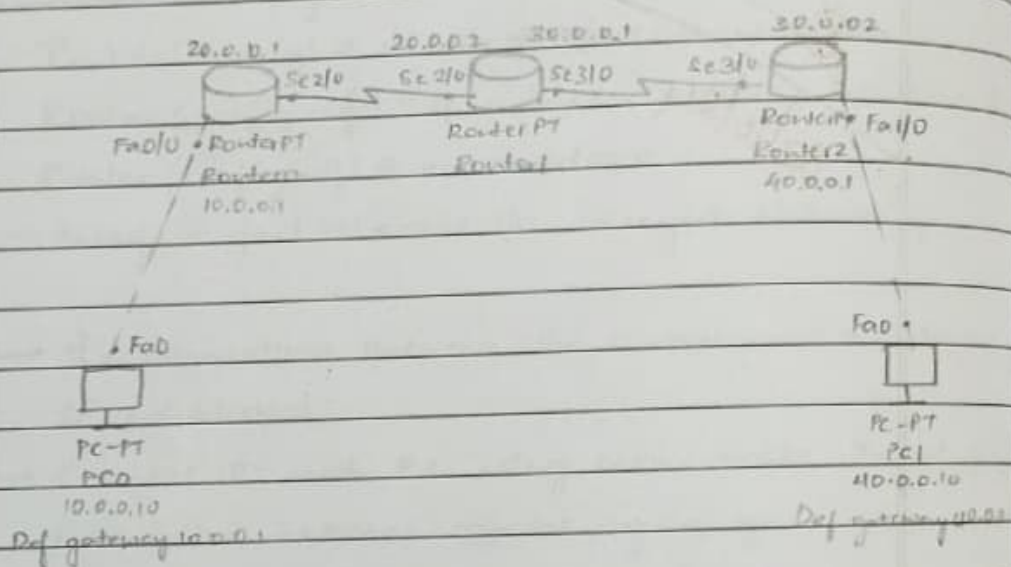


LAB-0401. Objective:

Demonstration of static and default routing using three routers
(and two end devices)

Topology:Procedure:

- Select three generic routers R0, R1 and R2.
- Select two generic PCs PC0 and PC1.
- Connect PC0 with R0 and PC1 with R2 with copper crossover wires, establishing fast ethernet.
- Connect R0 with R1 and R1 with R2 using serial wires, establishing serial connections.
- Set the IP addresses and default gateways as shown in the figure.
- In router 0, do:
 - >enable
 - # config terminal
 - # interface fastethernet 0/0

```
# ip address 10.0.0.1 255.0.0.0
```

```
# no shutdown
```

```
"Interface FastEthernet 0/0, changed state to up"
```

```
# exit
```

```
# interface serial 2/0
```

```
# ip address 20.0.0.1 255.0.0.0
```

```
# no shutdown
```

```
"Interface Serial 2/0, changed state to down"
```

```
# exit
```

→ In router 1, do

```
> enable
```

```
# config terminal
```

```
# interface serial 2/0
```

```
# ip address 20.0.0.2 255.0.0.0
```

```
# no shut
```

```
"Interface Serial 2/0, changed state to up"
```

```
# exit
```

```
# interface serial 3/0
```

```
# ip address 30.0.0.1 255.0.0.0
```

```
# no shut
```

```
"Interface Serial 3/0, changed state to down"
```

```
# exit
```

```
"Interface Serial 3/0, changed state to up"
```

→ In router 2, do

```
> enable
```

```
# config terminal
```

```
# interface serial 3/0
```

```
# ip address 30.0.0.2 255.0.0.0
```

```
# no shut
```

```
"Interface Serial 3/0, changed state to up"
```

```
# exit
```

```
# interface serial fastethernet 1/0
```

ip address 40.0.0.1 255.0.0.0

no shut

"Interface FastEthernet 1/0, changed state to up"

exit

→ To set up Static routing in router R1, do

> enable

show ip route

"C 20.0.0.0/8 is directly connected, Serial 2/0"

"C 30.0.0.0/8 is directly connected, Serial 3/0"

config terminal

ip route 10.0.0.0 255.0.0.0 20.0.0.1

ip route 40.0.0.0 255.0.0.0 30.0.0.2

exit

show ip route

"S 10.0.0.0/8 [1/0] via 20.0.0.1"

"C 20.0.0.0/8 is directly connected, Serial 2/0"

"C 30.0.0.0/8 is directly connected, Serial 3/0"

"S 40.0.0.0/8 via 30.0.0.2"

→ To set up Default routing in R0, do

> enable

config terminal

ip route 0.0.0.0 0.0.0.0 20.0.0.2

exit

show ip route

"C 0.0.0.0/0 is directly connected, FastEthernet0/0"

"C 20.0.0.0/8 is directly connected, Serial 2/0"

"S* 0.0.0.0/0 [1/0] via 20.0.0.2"

→ To set up Default routing in R2, do

> enable

config terminal

ip route 0.0.0.0 0.0.0.0 30.0.0.1

exit

show ip route

"C 30.0.0.0/8 is directly connected, Serial 3/0"

"C 40.0.0.0/8 is directly connected, FastEthernet 1/0"

"S* 0.0.0.0/0 [1/0] via 30.0.0.1"

Observations:

→ After setting up the mentioned topology, an attempt was made to ping PC1 from PC2 and vice versa.

→ PC2:

> ping 40.0.0.10

"Packets: Sent = 4, Received = 3, Lost = 1 (25% Loss)"

→ PC1:

> ping 10.0.0.10

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

→ It was understood that while static routing enables identification of neighbouring networks already present, default routing is essential to ensure proper identification and redirection of packets from device IPs which are not recognized.

→ It was observed that the initial ping had "request timed out", since it took some time for the packets to identify the destination.

→ The later ping did not have any "request timed out", and was successful with 0% loss since the network is already identified.

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