Assignment 4 → Static Routing using 3 routers, 3 switches & 6 end devices (2 per Switch)

★ Steps to Configure the complete setup are as following →

□ Step 1 : Topology Setup

• Devices Needed → i) 3 Routers : Router 0, Router 1, Router 2
ii) 3 Switches : Switch 0, Switch 1, Switch 2
iii) 6 End Devices : PC0 → PC5
iv) Cables : Copper Straight-through (For PCs ↔ Switches, Switches ↔ Routers) & Serial (DCE) for Router ↔ Router

□ Step 2 : Connect the Devices

• For PCs & Switches
→ Switch 0 ↔ PC0 & PC1
→ Switch 1 ↔ PC2 & PC3
→ Switch 2 ↔ PC4 & PC5

• For Switches to Routers
→ Switch 0 ↔ Router0 (Gig 0/0)
→ Switch 1 ↔ Router1 (Gig 0/0)
→ Switch 2 ↔ Router2 (Gig 0/0)

• Interconnect Routers Using Serial Connections (DCE)
→ Router 0 (Serial 0/0/0) ↔ Router 1 (Serial 0/0/0) → Network : (10.0.0.0/30)
→ Router 1 (Serial 0/0/1) ↔ Router 2 (Serial 0/0/0) → Network : (11.0.0.0/30)
→ Router 2 (Serial 0/0/1) ↔ Router 0 (Serial 0/0/1) → Network : (12.0.0.0/30)

Use Clock Rate on One end of each serial Connection (DCE Side)

☐ Step 3 : Assign IP Addresses

- PCs & Routers (LAN Side)

Device	Interface	IP Address	Subnet Mask
PC0	FastEthernet0	192.168.1.2	255.255.255.0
PC1	FastEthernet0	192.168.1.3	255.255.255.0
PC2	FastEthernet0	192.168.2.2	255.255.255.0
PC3	FastEthernet0	192.168.2.3	255.255.255.0
PC4	FastEthernet0	192.168.3.2	255.255.255.0
PC5	FastEthernet0	192.168.3.3	255.255.255.0

Router	Interface	IP Address	Subnet Mask
R0	Gig0/0	192.168.1.1	255.255.255.0
R1	Gig0/0	192.168.2.1	255.255.255.0
R2	Gig0/0	192.168.3.1	255.255.255.0

- Router-to-Router Serial Interfaces

Link	Interface	IP Addresses	Subnet Mask
R0 ↔ R1 (10.x)	R0-S0/0/0-10.0.0.1	R1-S0/0/0-10.0.0.2	255.255.255.252
R1 ↔ R2 (11.x)	R1-S0/0/1-11.0.0.1	R2-S0/0/0-11.0.0.2	255.255.255.252
R2 ↔ R0 (12.x)	R2-S0/0/1-12.0.0.1	R0-S0/0/1-12.0.0.2	255.255.255.252

Step 4: Configure IP Addresses in Routers

- Configuring Router 0

```
Router> enable
Router# configure terminal
Router(config)# interface gig0/0
Router(config-if)# ip address 192.168.1.1 255.255.255.0
Router(config-if)# no shutdown.

Router(config)# interface S0/0/0
Router(config-if)# ip address 10.0.0.1 255.255.255.252
Router(config-if)# clock rate 64000
Router(config-if)# no shutdown

Router(config)# interface S0/0/1
Router(config-if)# ip address 12.0.0.2 255.255.255.252
Router(config-if)# no shutdown.
```

Repeat similar steps for Router1 & Router2, assigning respective IPs & Clock rate on One side of the serial links.

P.T.O.

Step 5 : Static Routing Configuration

- On Router0

```
ip route 192.168.2.0  255.255.255.0  10.0.0.2
ip route 192.168.3.0  255.255.255.0  12.0.0.1
```

- On Router1

```
ip route 192.168.1.0  255.255.255.0  10.0.0.1
ip route 192.168.3.0  255.255.255.0  11.0.0.2
```

- On Router2

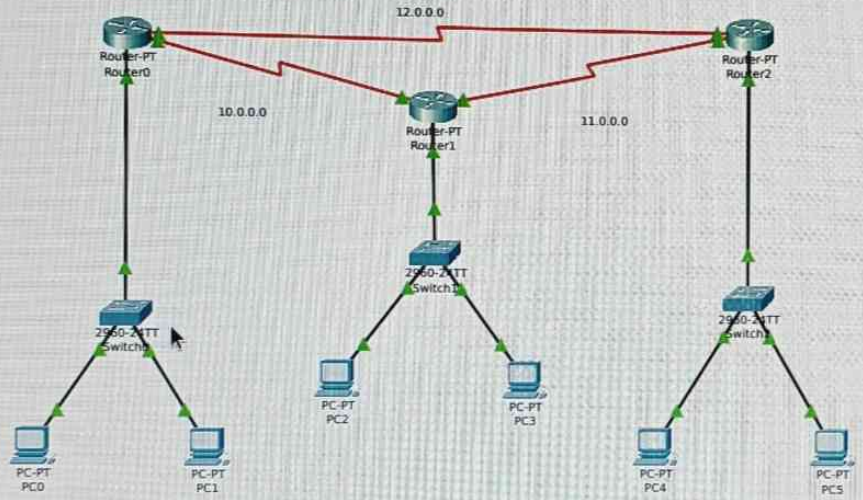
```
ip route 192.168.1.0  255.255.255.0  12.0.0.2
ip route 192.168.2.0  255.255.255.0  11.0.0.1
```

Step 6 : Test the Network

- Use ping from PC0 to PC5, & other cross router devices.
- If everything is configured properly, all pings should be successful.

File Edit Options View Tools Extensions Window Help

Logical | Physical | x: 603, y: 352 | Root | 18:56:30



Time: 00:37:11 | Realtime | Simulation

Copper Straight-Through

Scenario 0 | New | Delete | Toggle PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	Rout...	PC0	IC...		0.000	N	0	(e...
	Successful	PC4	Router0	IC...		0.000	N	1	(e...
	Successful	Rout...	PC5	IC...		0.000	N	2	(e...
	Successful	Rout...	PC2	IC...		0.000	N	3	(e...