TITLE: Dynamic Routing using 3 Routers, 3 switches and 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 to PC5.

iv) Cables : Copper straight Through (For PCs ↔ switches, Switches ↔ Routers) and serial DCE (for Router ↔ Router)

STEP 2: CONNECT THE DEVICES

FOR PCs and switches	For switches to Routers
→ Switch 0 ↔ PC 0 & PC 1	→ switch 0 ↔ Router 0 (Gig 0/0).
→ Switch 1 ↔ PC 2 & PC 3	→ Switch 1 ↔ Router 1 (Gig 0/0).
→ Switch 2 ↔ PC 4 & PC 5	→ switch 2 ↔ Router 2 (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 and 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	Gig 0/0	192.168.1.1	255.255.255.0
R1	Gig 0/0	192.168.2.1	255.255.255.0
R2	Gig 0/0	192.168.3.1	255.255.255.0

ROUTER TO ROUTER SERIAL INTERFACES

Link	Interface	IP Address	Subnet Mask
R0↔R1 (10.X)	R0-S0/0/0 - 10.0.0.1	R1-S0/0/0 - 10.0.0.2	255.255.255.0
R1↔R2 (11.X)	R1-S0/0/1 - 11.0.0.1	R2-S0/0/0 - 11.0.0.2	255.255.255.0
R2↔R0 (12.X)	R2-S0/0/1 - 12.0.0.1	R0-S0/0/1 - 12.0.0.2	255.255.255.0

STEP 4 : CONFIGURE IP ADDRESS IN ROUTERS

CONFIGURING ROUTER 0

```
Router > enable
Router # configure terminal
Router (config) # interface gig 0/0
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 and Router2, assigning respective IPs and clock rate on one side of the serials links.

STEP 5: DYNAMIC ROUTING USING RIP CONFIGURATION

On Each Router

Router > enable
Router # configure terminal
Router (config) # router rip
Router (config-router) # version 2
Router (config-router) # no auto summary
Router (config-router) # network 10.0.0.0.
Router (config-router) # network 11.0.0.0
Router (config-router) # network 12.0.0.0
Router (config-router) # network 192.168.x.0 (use routers LAN subnet).

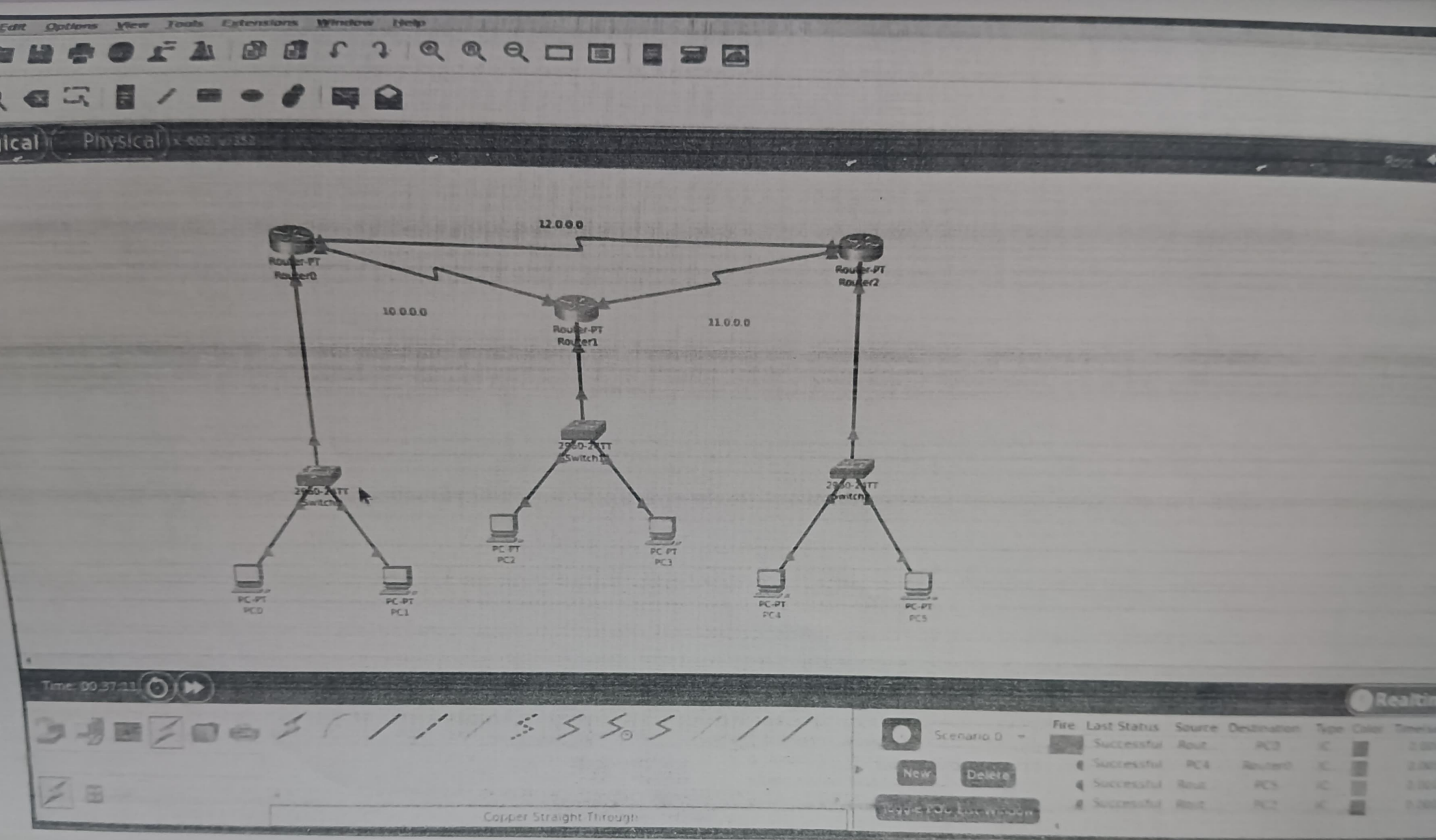
FOR EXAMPLE ON ROUTER 0 :

network 10.0.0.0
network 12.0.0.0
network 192.168.1.0

STEP 6: TEST THE NETWORK

a) use pings from PC0 to PC5, and other cross-router devices.
b) if everything in configured perpperly, all pings should be successful.

— X —


Edit Options View Tools Extensions Window Help
Physical
12.0.0.0
10.0.0.0
11.0.0.0
Router-PT
Router0
Router-PT
Router1
Router-PT
Router2
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
PC-PT
PC3
PC-PT
PC4
PC-PT
PC5
Time: 00:37:21
Scenario 0
New
Delete
Fire
Last Status
Source
Destination
Type
Color
Time
Copper Straight-Through