25/9/2025

# Practical XI

AIM: Simulate RIP (Routing Information Protocol) using Cisco Packet Tracer

Initial IP configuration

| Device | Interface | IP Configuration | Connected with |
|---|---|---|---|
| PC0 | Fast Ethernet | 10.0.0.2/8 | Router0's Fa0/1 |
| Router0 | Fa0/1 | 10.0.0.1/8 | PC0's Fast Ethernet |
| Router0 | S0/0/1 | 192.168.1.254/30 | Router2's S0/0/1 |
| Router0 | S0/0/0 | 192.168.1.249/30 | Router1's S0/0/0 |
| Router1 | S0/0/0 | 192.168.1.250/30 | Router0's S0/0/0 |
| Router1 | S0/0/1 | 192.168.1.246/30 | Router2's S0/0/0 |
| Router2 | S0/0/0 | 192.168.1.245/30 | Router1's S0/0/0 |
| Router2 | S0/0/1 | 192.168.1.253/30 | Router0's S0/0/1 |
| Router2 | Fa0/1 | 20.0.0.1/30 | PC1's Fast Ethernet |
| PC1 | Fast Ethernet | 20.0.0.2/30 | Router2's Fa0/1 |

Assign IP address to PCs

Double click PCs and click Desktop menu item and click IP configuration. Assign IP address refereing the above table.

Assign IP address to interfaces of routers

Double click Router0 and click CLI and press Enter key to access command prompt of Router0.

We need to configure IP address and other parameters on interfaces before we could actually use them for routing. Interface mode is used to assign IP address and other parameters. Interface mode can be accessed from global configuration mode. Following commands are used to access global configuration mode.

```
Router>enable
Router# configure terminal
Router(config)#
```

interface fastEthernet 0/0 command is used to enter in interface mode.

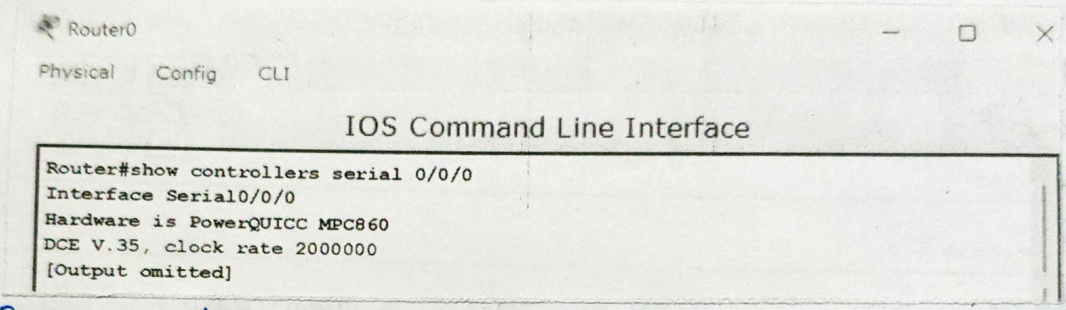
ip address 10.0.0.1 255.0.0.0 command will assign IP address to interface.

no shutdown command will bring the interface up.

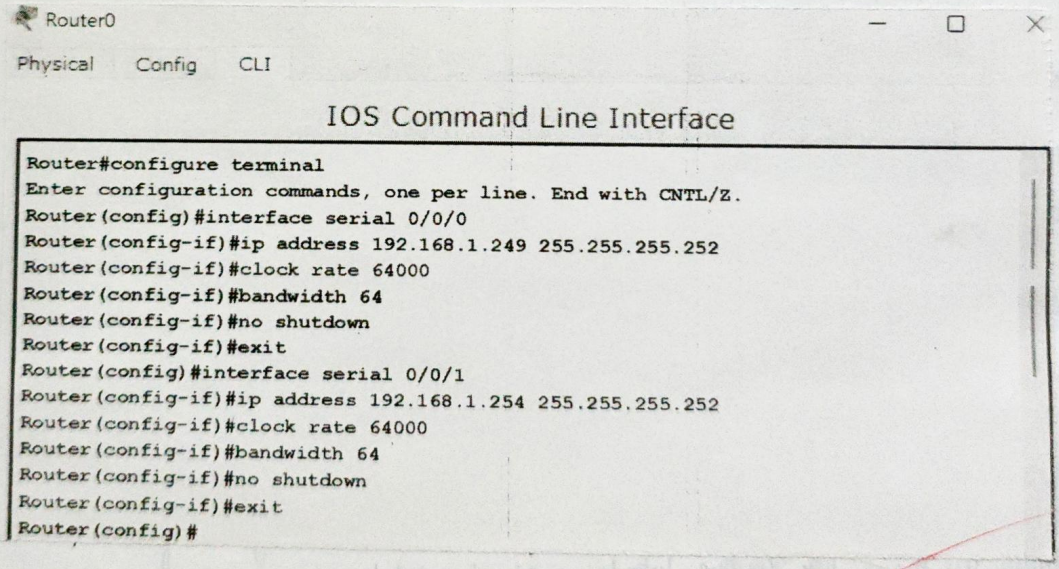
exit command is used to return in global configuration mode.

Serial interface needs two additional parameters : clock rate and bandwidth. Every serial cable has two ends DTE and DCE.

Use show controllers interface command from privilege mode to check the cable's end.




Fourth line of output confirms that DEE end of serial cable is attached. If you see DTE here instead of DCE, skip these parameters.




Router#configure terminal command is used to enter in global configuration mode.

Router(config)#interface serial 0/0/0 command is used to enter in interface mode.

Router(config-if)#ip address 192.168.1.249 255.255.255.252 command assigns IP address to interface. For serial link we usually use IP address from 130 subnet.

Router(config-if)#no shutdown command brings interface up

Router(config-if)#exit command is used to return in global configuration mode.

We will use the same commands to assign IP addresses on interfaces of remaining routers, i.e., Router1 and Router2.

Now, routers have information about the networks that they have on their own interfaces. Routers don't exchange this information between them on their own. We need to implement RIP routing protocol that will insist them to share this information.

Configure RIP routing protocol

Enable RIP routing protocol from global configuration mode
Tell RIP routing protocol which networks you want to advertise.

Router0

Router0(config)#router rip
Router0(config-router)#network 10.0.0.0
Router0(config-router)#network 192.168.1.252
Router0(config-router)#network 192.168.1.248

router rip command tells router to enable the RIP routing protocol.
network command allows users to specify the networks when they want to advertise.

That's all is needed to configure the RIP. Follow same steps on remaining routers.

To verify the setup, use the ping command. Access command prompt of PC1 and use the command to test the connectivity from PC0.

RIP protocol automatically manages routes. If one route goes down, it automatically switches to another available.

Currently there are two routes between PC0 and PC1.

Route 1

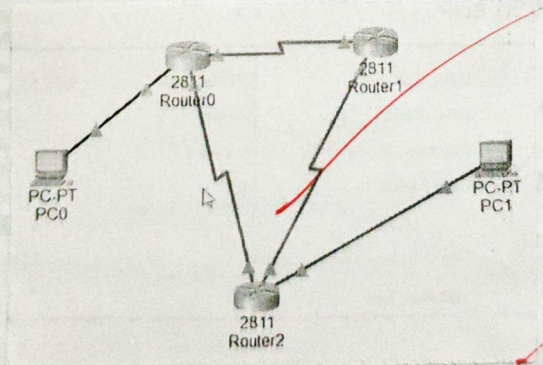
PC0 [Source/Destination - 10.0.0.2] <==> Router0 [FastEthernet0/1 - 10.0.0.1] <==>
Router0 [Serial0/0/1 - 192.168.1.254] <==> Router2 [Serial0/0/1 - 192.168.1.253] <==>
Router2 [FastEthernet0/0 - 20.0.0.1] <==> PC1 [Destination/Source - 20.0.0.2]

Route 2

PC0 [Source/Destination - 10.0.0.2] <==> Router0 [FastEthernet0/1 - 10.0.0.1] <==>
Router0 [Serial0/0/1 - 192.168.1.254] <==> Router1 [Serial0/0/0 - 192.168.1.250] <==>
Router1 [Serial0/0/1 - 192.168.1.246] <==> Router2 [Serial0/0/0 - 192.168.1.245]
<==> Router2 [FastEthernet0/0 - 20.0.0.1] <==> PC1 [Destination/Source - 20.0.0.2]

By default, RIP will use the route that has low hop counts between source and destination. In our network, Route 1 has low hop counts, so it will be selected. We can use tracert command to verify it.

Suppose route 1 is down, remove the cable attached between Route 0 and Route 2. RIP will automatically reroute the traffic.




9/10/24

Result: RIP (Routing Information Protocol) was simulated successfully