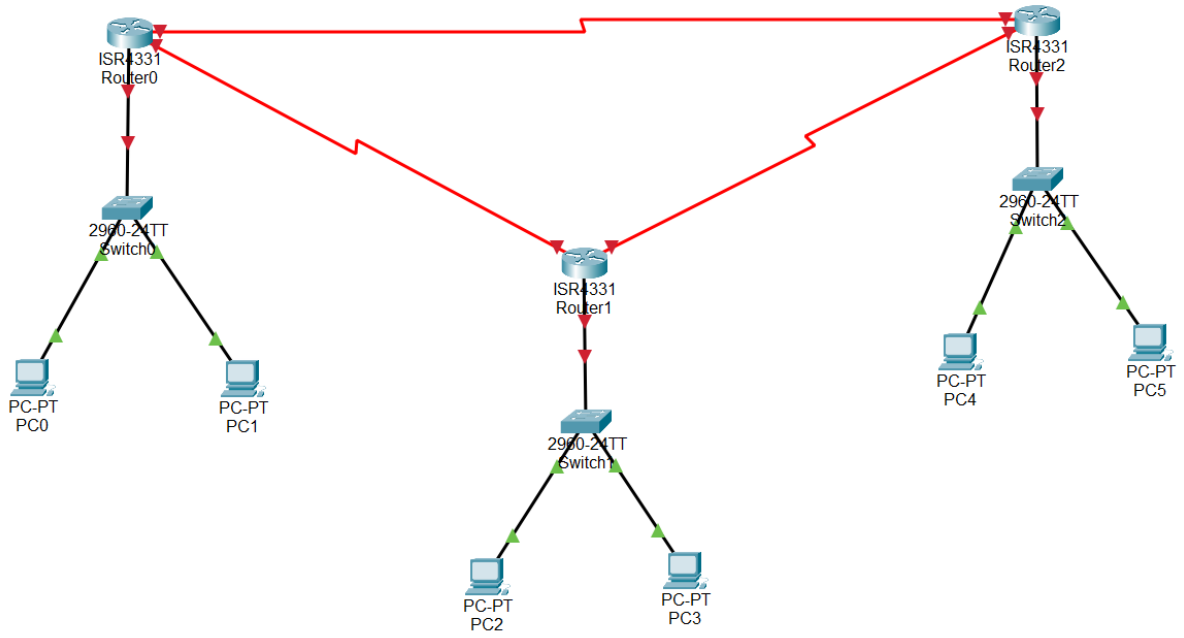
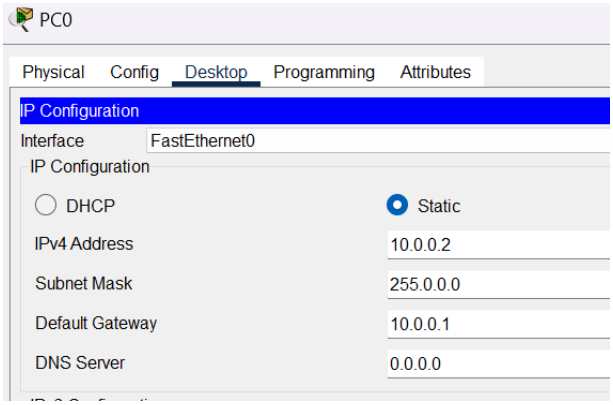
Marwadi University Marwadi Chandarana Group	**Marwadi University** **Faculty of Engineering and Technology** **Department of Information and Communication Technology**	
Subject: Computer Networks (01CT0503)	**Aim: Perform** dynamic routing protocol (RIP) and **analyze** the results	
Experiment No: 06	**Date: 26-09-2024**	**Enrolment No: 92200133029**

Aim: **Perform** dynamic routing protocol (RIP) and **analyze** the results.

Step-1: Open the cisco packet tracer, take Routers, Switches and PCs. Connect the router, switch and PC via cable. For connecting route to the switch and switch to the PC use copper straight cable and for router to router use serial DTE cable



Step-2: Give IP address to all the PC. Also provide the gateway to each PC.



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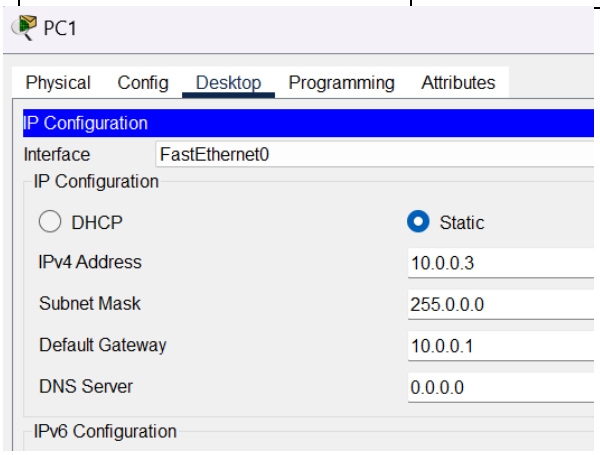

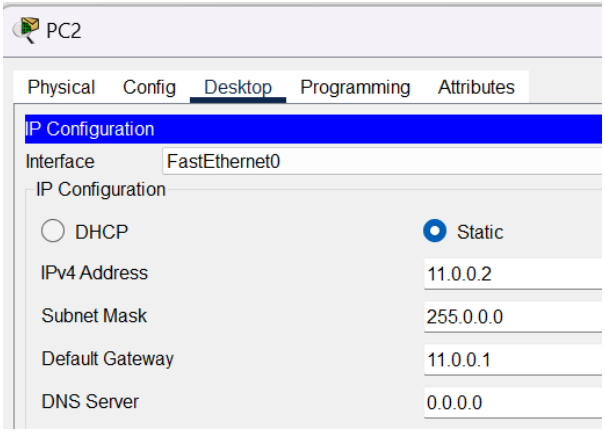

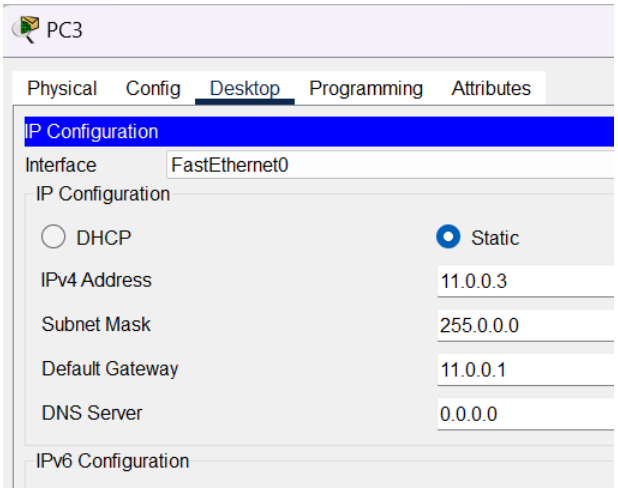

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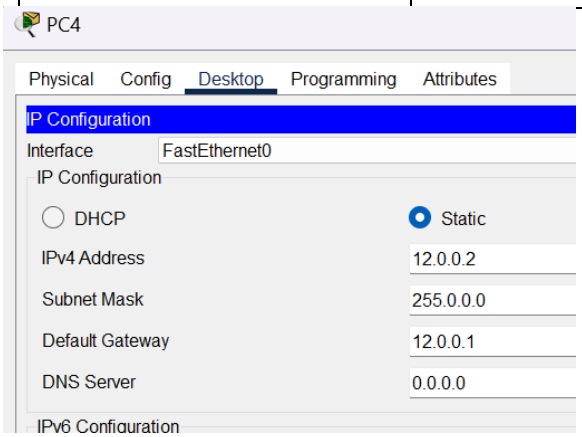

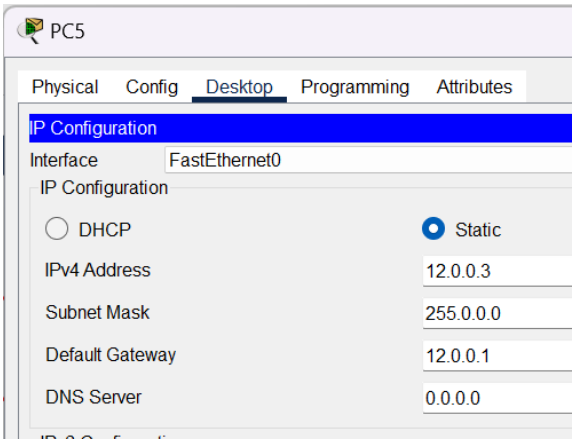

Step-3: Give the Ip add to all the routers. For that click on the router, open the cli and type the following command -

int <port>

Ip add <ip add> <subnetmask>

No shut

For giving the ip add we have to go in the configuration mode.

Give the ip add to all the 3 ports of the router which we are going to use for networking.

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```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int g0/0/0
Router(config-if)#ip add 10.0.0.1 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up

Router(config-if)#exit
Router(config)#int s0/1/0
Router(config-if)#ip add 13.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Router(config-if)#exit
Router(config)#int s0/1/1
Router(config-if)#ip add 15.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
Router(config-if)#exit
Router(config)#
```

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int g0/0/0
Router(config-if)#ip add 11.0.0.1 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up

Router(config-if)#exit
Router(config)#int s0/1/1
Router(config-if)#ip add
% Incomplete command.
Router(config-if)#ip add 14.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
Router(config-if)#exit
Router(config)#int s0/1/0
Router(config-if)#
Router(config-if)#ip add 13.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

Router(config-if)#exit
Router(config)#
```

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```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#intg0/0/0
                ^
% Invalid input detected at '^' marker.

Router(config)#int g0/0/0
Router(config-if)#ip add 12.0.0.1 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up

Router(config-if)#exit
Router(config)#int s0/1/0
Router(config-if)#ip add 14.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router(config)#int s0/1/1
Router(config-if)#ip add 15.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up

Router(config-if)#exit
Router(config)#
```

Step-4: Now to configure the Routing Information Protocol (RIP), open the cli and type the following command –

router rip

network <network add>

The router rip command enables RIP routing protocol on a router. The network <ip address> command specifies which network should participate in RIP. This allows the router to advertise that network and exchange routing information with other RIP-enabled routers.

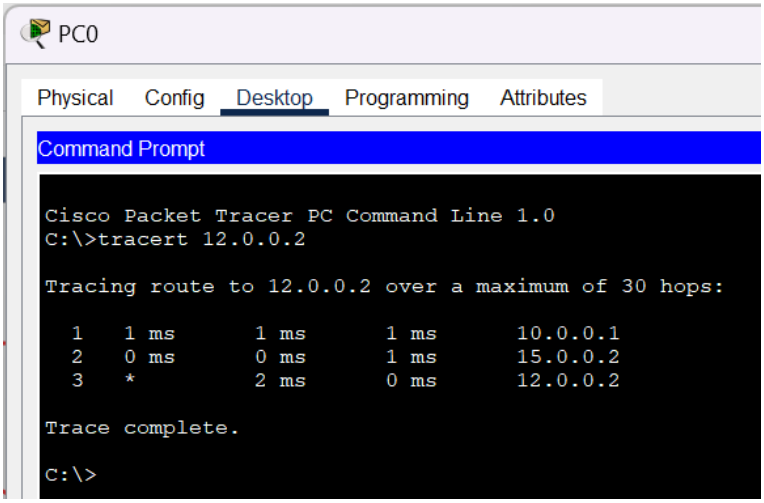
```
Router#
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 15.0.0.0
Router(config-router)#exit
Router(config)#
```

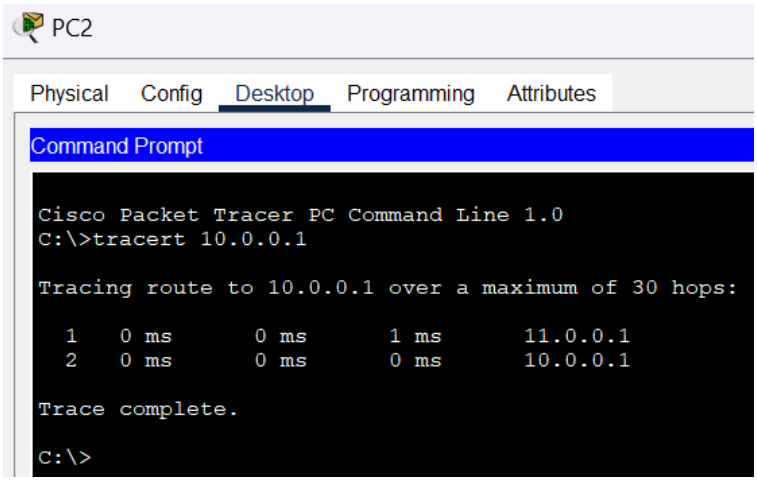
```
Router(config)#
Router(config)#router rip
Router(config-router)#network 11.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#exit
Router(config)#
```

```
Router(config)#
Router(config)#router rip
Router(config-router)#network 12.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#network 15.0.0.0
Router(config-router)#exit
Router(config)#
```

Step-5: Now for finding that on which route the packets are travel from source to destination, use the command – tracert <destination ip add>

This command shows the path that packet takes as it travels thorough different routers to reach its destination. It also tells how much time it takes to reach each stop.





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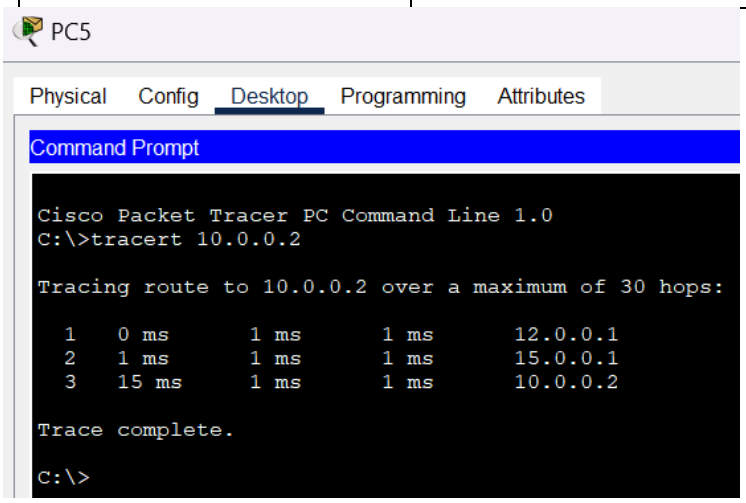

Step-6: The show ip route command displays the router's routing table. It showing all known networks and the paths to reach them. It incudes directly connected networks and also the routes that are learned from routing protocols.

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/8 is directly connected, GigabitEthernet0/0/0
L       10.0.0.1/32 is directly connected, GigabitEthernet0/0/0
R    11.0.0.0/8 [120/1] via 13.0.0.2, 00:00:16, Serial0/1/0
R    12.0.0.0/8 [120/1] via 15.0.0.2, 00:00:19, Serial0/1/1
     13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       13.0.0.0/8 is directly connected, Serial0/1/0
L       13.0.0.1/32 is directly connected, Serial0/1/0
R    14.0.0.0/8 [120/1] via 13.0.0.2, 00:00:16, Serial0/1/0
                [120/1] via 15.0.0.2, 00:00:19, Serial0/1/1
     15.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       15.0.0.0/8 is directly connected, Serial0/1/1
 --More--
```

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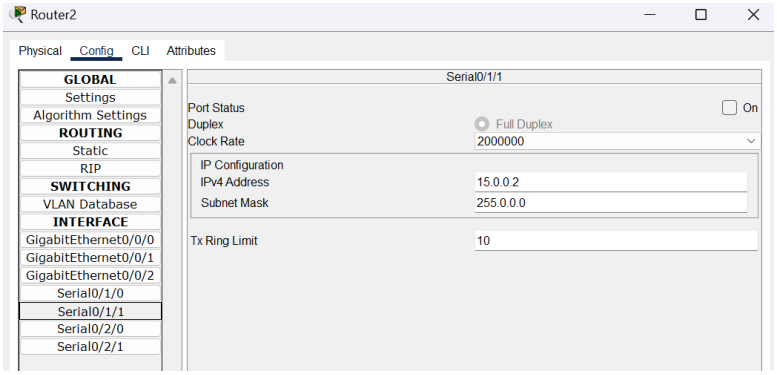
```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

R    10.0.0.0/8 [120/1] via 13.0.0.1, 00:00:11, Serial0/1/0
     11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       11.0.0.0/8 is directly connected, GigabitEthernet0/0/0
L       11.0.0.1/32 is directly connected, GigabitEthernet0/0/0
R    12.0.0.0/8 [120/1] via 14.0.0.2, 00:00:01, Serial0/1/1
     13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       13.0.0.0/8 is directly connected, Serial0/1/0
L       13.0.0.2/32 is directly connected, Serial0/1/0
     14.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       14.0.0.0/8 is directly connected, Serial0/1/1
L       14.0.0.1/32 is directly connected, Serial0/1/1
R    15.0.0.0/8 [120/1] via 13.0.0.1, 00:00:11, Serial0/1/0
 --More--
```

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

R    10.0.0.0/8 [120/1] via 15.0.0.1, 00:00:09, Serial0/1/1
R    11.0.0.0/8 [120/1] via 14.0.0.1, 00:00:21, Serial0/1/0
     12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       12.0.0.0/8 is directly connected, GigabitEthernet0/0/0
L       12.0.0.1/32 is directly connected, GigabitEthernet0/0/0
R    13.0.0.0/8 [120/1] via 14.0.0.1, 00:00:21, Serial0/1/0
                [120/1] via 15.0.0.1, 00:00:09, Serial0/1/1
     14.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       14.0.0.0/8 is directly connected, Serial0/1/0
L       14.0.0.2/32 is directly connected, Serial0/1/0
     15.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       15.0.0.0/8 is directly connected, Serial0/1/1
 --More--
```

Step-7: Now shut down any one port of any of the router so the packets can not travel from that router. For that click on the router open configuration then select the port which you have to shut down and make the port status off. By doing this that port will shut down and not able to route the packets.



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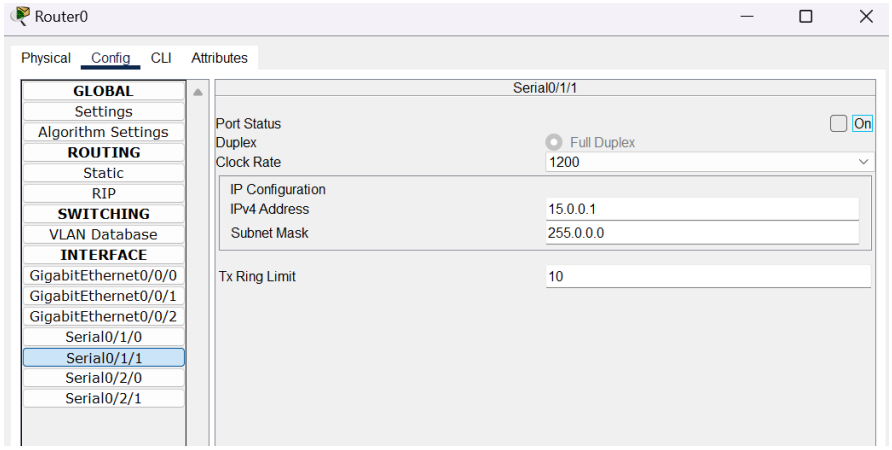
Step-8: Now again enter the tracert command and at this time since we shut down the one port, the packet will travels from different routes.

```
C:\>tracert 10.0.0.2

Tracing route to 10.0.0.2 over a maximum of 30 hops:

  1    0 ms      0 ms      0 ms      12.0.0.1
  2    1 ms      7 ms      1 ms      14.0.0.1
  3    1 ms      3 ms      1 ms      13.0.0.1
  4    11 ms     11 ms     2 ms      10.0.0.2

Trace complete.

C:\>
```

Do same for the second router.




```
C:\>tracert 12.0.0.2

Tracing route to 12.0.0.2 over a maximum of 30 hops:

  1    0 ms      0 ms      1 ms      10.0.0.1
  2    0 ms      1 ms      1 ms      13.0.0.2
  3    2 ms      1 ms      1 ms      14.0.0.2
  4    11 ms     11 ms     11 ms     12.0.0.2

Trace complete.

C:\>
```

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Conclusion : In this experiment, I learned about the RIP protocol in detail and its role in enabling routers to share information about network paths. I also learned how the RIP protocol is used for routing information from the source to the destination. Additionally, I explored commands like tracert and show ip route to determine the routes that data takes during transmission. I observed that when we shut down any port on one of the routers along the path, the data would change its route accordingly.

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