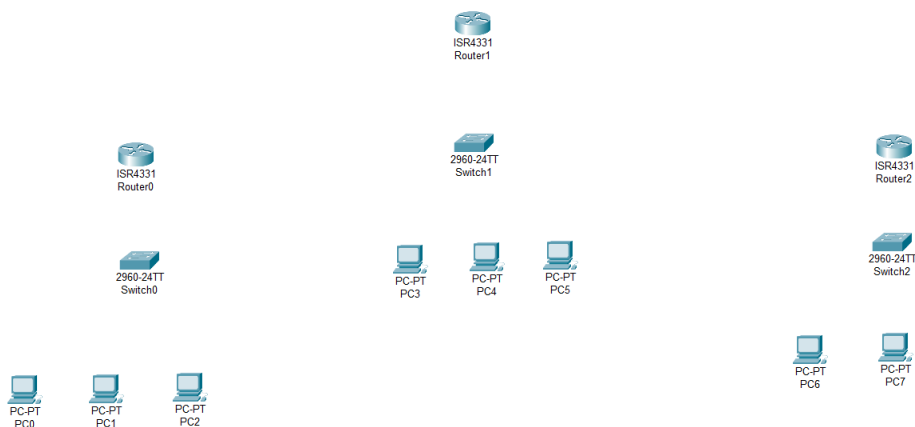
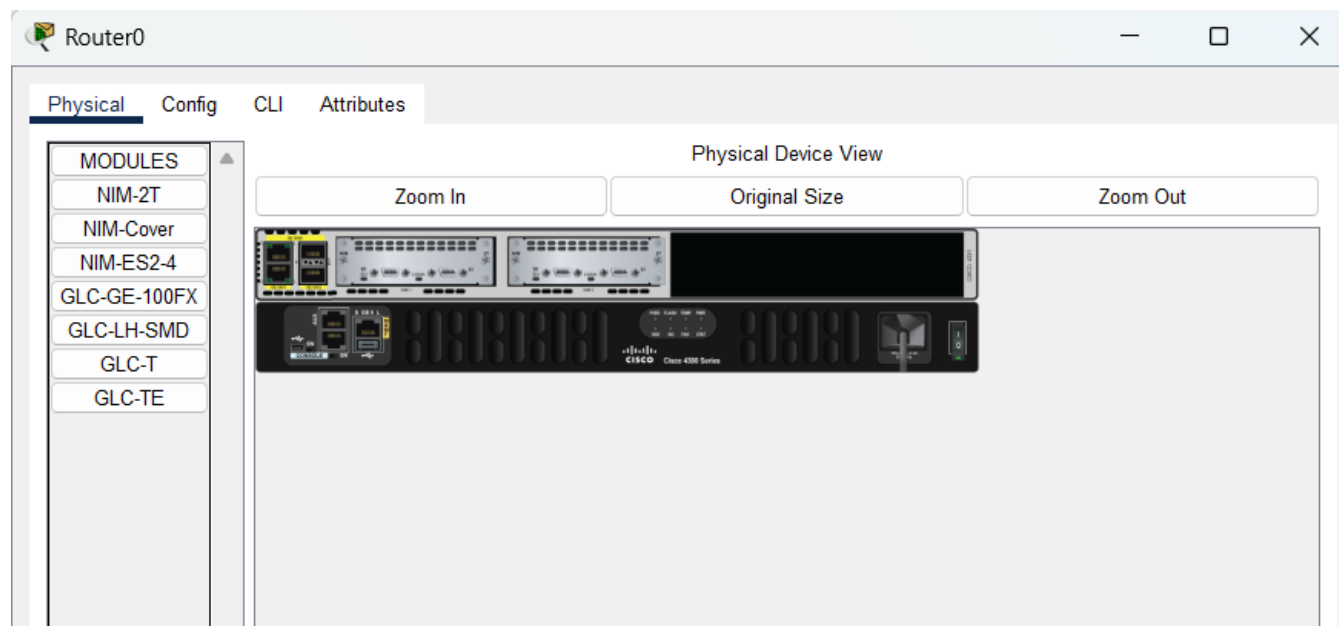
 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Perform dynamic routing protocol (RIP) and analyze the results.	
Experiment No: 06	Date: 05-09-2024	Enrolment No: 92200133030


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

Step – 1:- Open the Cisco Packet tracer and take three routers, three switch and nine PC's.

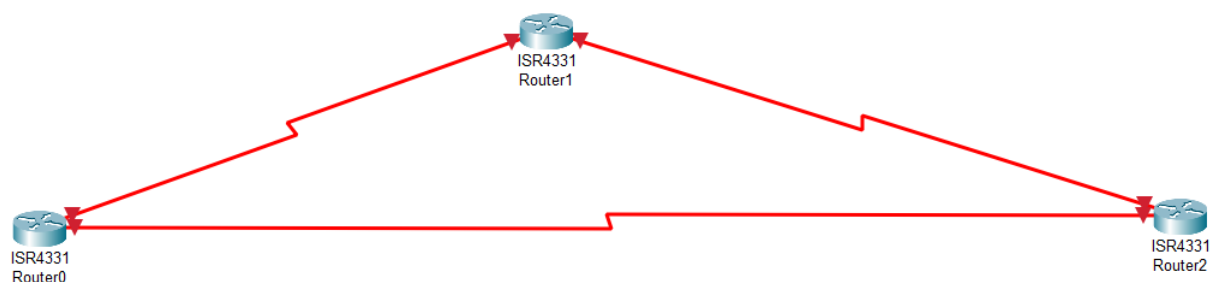


Step – 2 :- To long distance communication we need to connect router using Serial DTE cable. For the serial port we have to open router turn off it and drag and drop WIC-1T on router and turn on router.

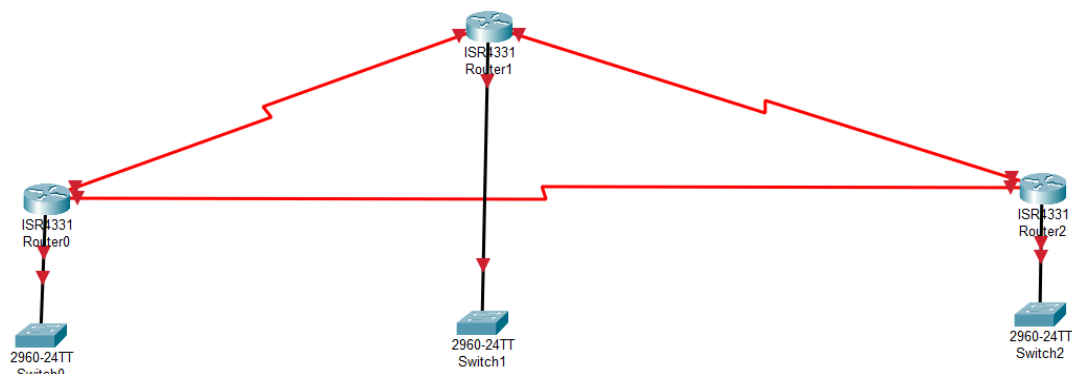


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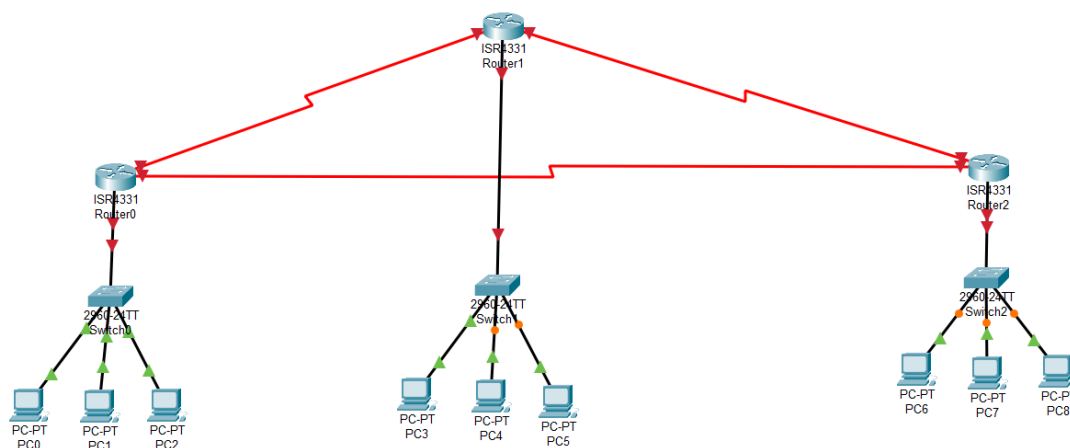
Step – 3 :- Now Connect Two Routers Using Serial DTE Cable.



Step – 4 :- Now Connect the Switches with routers using Copper Straight through cable In GigaEthernet Port.



Step – 5 :- Now Connect PC's with Switches using copper Straight through cable.





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Step – 6:- Now assign the IP address And Subnet mask and Gateway to all PC's.

PC0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 10.0.0.1

DNS Server 0.0.0.0

PC1

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.3

Subnet Mask 255.0.0.0

Default Gateway 10.0.0.1

DNS Server 0.0.0.0

PC2

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.4

Subnet Mask 255.0.0.0

Default Gateway 10.0.0.1

DNS Server 0.0.0.0

PC3

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 11.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 11.0.0.1

DNS Server 0.0.0.0

PC4

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 11.0.0.3

Subnet Mask 255.0.0.0

Default Gateway 11.0.0.1

DNS Server 0.0.0.0

PC5

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 11.0.0.4

Subnet Mask 255.0.0.0

Default Gateway 11.0.0.1

DNS Server 0.0.0.0

PC6

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 12.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 12.0.0.1

DNS Server 0.0.0.0

PC7

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 12.0.0.3

Subnet Mask 255.0.0.0

Default Gateway 12.0.0.1

DNS Server 0.0.0.0

PC8

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration


☐ DHCP ☒ Static

IPv4 Address 12.0.0.4

Subnet Mask 255.0.0.0

Default Gateway 12.0.0.1

DNS Server 0.0.0.0

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Step – 7 :- Assign IP Address to Routers

Router – 0 :-

```

Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int
Router(config)#int g0/0/0
Router(config-if)#ip add 10.0.0.1 255.255.255.0
      ^
% Invalid input detected at '^' marker.
Router(config-if)#ip add 10.0.0.1 255.255.255.0
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)#int s0/1/0
Router(config-if)#ip add 13.0.0.1
% Incomplete command.
Router(config-if)#ip add 13.0.0.1 255.255.255.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Router(config-if)#int s0/2/0
Router(config-if)#ip add 15.0.0.1 255.255.255.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/2/0, changed state to down
Router(config-if)#
Router(config-if)#

```

Router – 1 :-

```

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

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 11.0.0.1 255.255.255.0
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)#int s0/1/0
Router(config-if)#ip add 13.0.0.2 255.255.255.0
Router(config-if)#no shut

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


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

Router(config-if)#int s0/1/1
Router(config-if)#ip add 15.0.0.2 255.255.255.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#exit

```

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Router – 2 :-

```

Press RETURN to get started!

Router>enable
Router#confi t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int g0/0/0
Router(config-if)#ip add 12.0.0.1 255.255.255.0
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)#int s0/2/0
Router(config-if)#ip add 15.0.0.2 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up

Router(config-if)#int s0/1/1
Router(config-if)#ip add 14.0.0.1 255.255.255.0
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)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

```

Step – 8 :- now we will configure router for RIP Protocol.


We need to implement routing protocol onto routers so that router can find destination for another network, for that in dynamic routing protocol we have command “router rip” using that we entered in router-rip configuration mode and then we have command “network <network address>”.

Router - 0

```

Router>enable
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)#

```


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Router – 1 :-

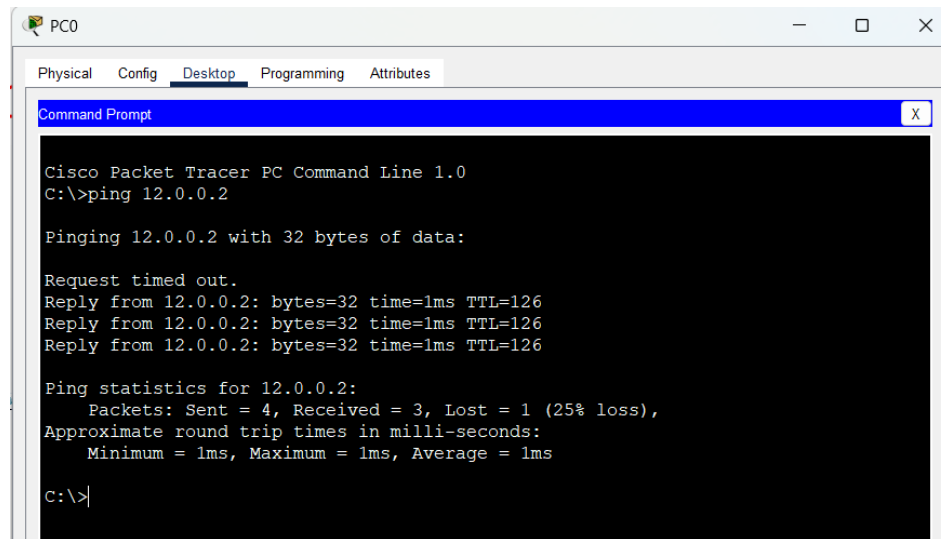
```
Router>
Router>
Router>
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 11.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#exit
Router(config)#
Router(config)#
```

Router-2 :-

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
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)#
Router(config)#
```

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Step – 9 :- now we will check connection using ping command.



```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 12.0.0.2

Pinging 12.0.0.2 with 32 bytes of data:

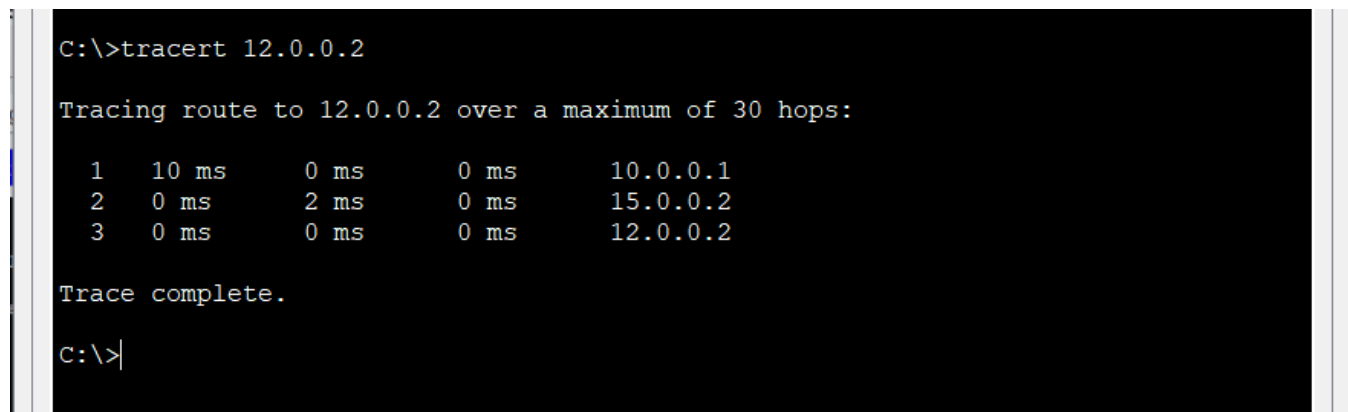
Request timed out.
Reply from 12.0.0.2: bytes=32 time=1ms TTL=126
Reply from 12.0.0.2: bytes=32 time=1ms TTL=126
Reply from 12.0.0.2: bytes=32 time=1ms TTL=126

Ping statistics for 12.0.0.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>

```

Step – 10 :- using tracert ip_add command we can check how packet will be reach at ip add.



```

C:\>tracert 12.0.0.2

Tracing route to 12.0.0.2 over a maximum of 30 hops:


  1  10 ms    0 ms    0 ms    10.0.0.1
  2   0 ms    2 ms    0 ms    15.0.0.2
  3   0 ms    0 ms    0 ms    12.0.0.2

Trace complete.

C:\>

```

Step – 11 :- using s hip route command we can analys=zethe routing table of router.

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```

Router>enable
Router#sh 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, 00:00:24, Serial0/1/0
    11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C     11.0.0.0/24 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 14.0.0.1, 00:00:27, Serial0/1/1
    13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C     13.0.0.0/24 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     14.0.0.0/24 is directly connected, Serial0/1/1
L     14.0.0.2/32 is directly connected, Serial0/1/1
R    15.0.0.0/8 [120/1] via 13.0.0.1, 00:00:24, Serial0/1/0
--More--

```

Conclusion :-

Through this experiment, I learned the importance of routing protocols in facilitating communication between different networks, specifically the Routing Information Protocol (RIP). By examining the output of the "show ip route" command, I analyzed the routing table and identified that:

"R" (RIP) indicates routes learned through the RIP routing protocol.

The routing table displays various network entries, denoting the destination networks and their associated next-hop routers.

"C" (Connected) signifies that the router is directly connected to the mentioned networks and IP addresses (e.g., 11.0.0.0/24 , 13.0.0.0/24 , 14.0.0.0/24 etc.).

"L" (Local) implies that the router is directly connected to specific IP addresses within those networks (e.g., 11.0.0.1/32, 13.0.0.2/32, 14.0.0.2/32, etc.).