Project Name :-

RIP Dynamic Routing Configuration Lab – CCNA

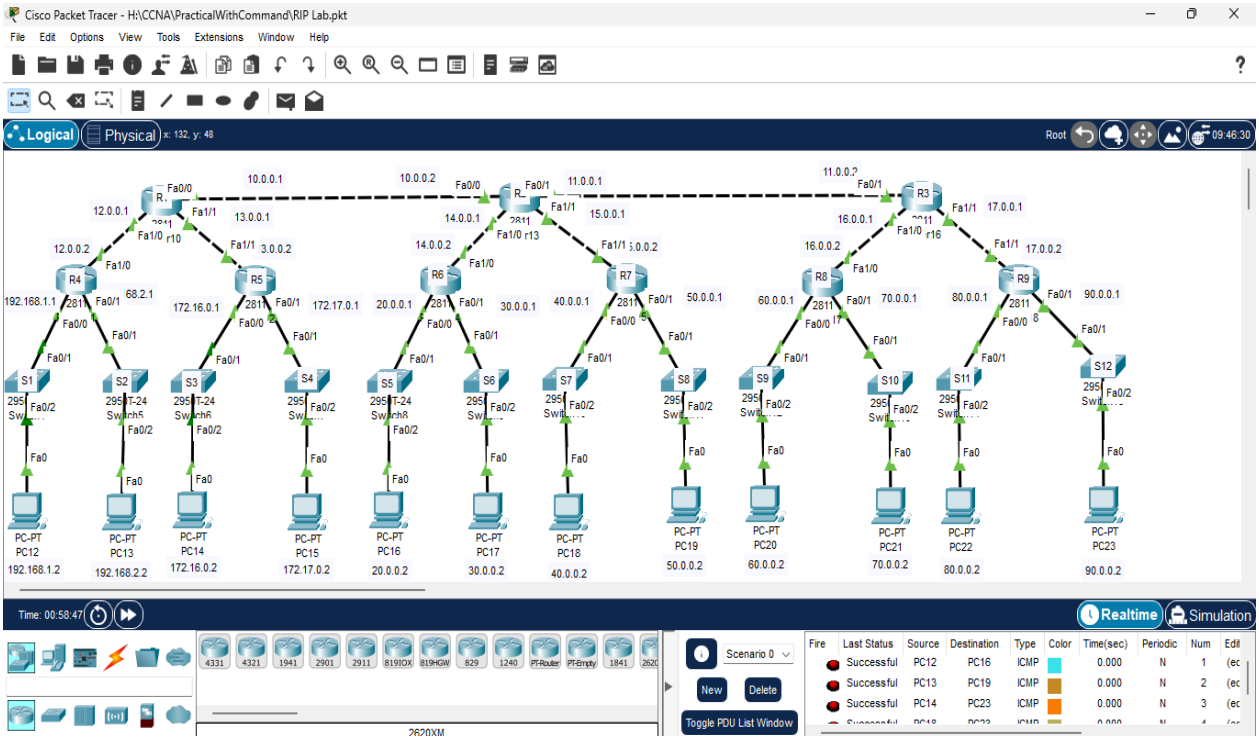
- **Name :-**

  Harshad Jalindar Nikam

- **Objective / Purpose :-**

  Learn and implement RIP Dynamic routing across multi-router topology.

- **Network Topology Diagram :-**



- **Lab Setup :-**

Router	Interfaces	IP Address	Subnet Mask	Description
R1	Fa 0/0	10.0.0.1	255.0.0.0	Connected to R2
	Fa 1/0	12.0.0.1	255.0.0.0	Connected to R4
	Fa 1/1	13.0.0.1	255.0.0.0	Connected to R5
R2	Fa 0/0	10.0.0.2	255.0.0.0	Connected to R1
	Fa 0/1	11.0.0.1	255.0.0.0	Connected to R3
	Fa 1/0	14.0.0.1	255.0.0.0	Connected to R6
	Fa 1/1	15.0.0.1	255.0.0.0	Connected to R7
R3	Fa 0/1	11.0.0.2	255.0.0.0	Connected to R2
	Fa 1/0	16.0.0.1	255.0.0.0	Connected to R8
	Fa 1/1	17.0.0.1	255.0.0.0	Connected to R9
R4	Fa 0/0	192.168.1.1	255.255.255.0	Connected to S1
	Fa 0/1	192.168.2.1	255.255.255.0	Connected to S2
	Fa 1/0	12.0.0.2	255.0.0.0	Connected to R4
R5	Fa 0/1	172.17.0.1	255.255.0.0	Connected to S4
	Fa 0/0	172.16.0.0	255.255.255.0	Connected to S3
	Fa 1/1	13.0.0.2	255.0.0.0	Connected to R1
R6	Fa 1/0	14.0.0.2	255.0.0.0	Connected to R2
	Fa 0/0	20.0.0.1	255.0.0.0	Connected to S5
	Fa 0/1	30.0.0.1	255.0.0.0	Connected to S6
R7	Fa 1/1	15.0.0.2	255.0.0.0	Connected to R2
	Fa 0/0	40.0.0.1	255.0.0.0	Connected to S7
	Fa 0/1	50.0.0.1	255.0.0.0	Connected to S8
R8	Fa 1/0	16.0.0.2	255.0.0.0	Connected to R3
	Fa 0/0	60.0.0.1	255.0.0.0	Connected to S9
	Fa 0/1	70.0.0.1	255.0.0.0	Connected to S10
R9	Fa 1/1	17.0.0.2	255.0.0.0	Connected to R3
	Fa 0/0	80.0.0.1	255.0.0.0	Connected to S11
	Fa 0/1	90.0.0.1	255.0.0.0	Connected to S12

- **Configuration Steps :-**

  -Configured IP addresses directly on router interfaces for each connected network.

  -Implemented RIP Dynamic routes using the –
  "router rip
  network [ip address]" Commands.

Router 1 :-

Router>enable

Router#configure terminal

Router(config)#hostname R1

R1(config)#router rip

R1(config-router)#ex

R1(config)#router rip

R1(config-router)#network 10.0.0.0

R1(config-router)#network 12.0.0.0

R1(config-router)#network 13.0.0.0

R1(config-router)#exit

R1(config)#do write

Router 2 :-

```
Router>enable
Router#configure terminal
Router(config)#hostname R2
R2(config)#router rip
R2(config-router)#network 10.0.0.0
R2(config-router)#network 11.0.0.0
R2(config-router)#network 14.0.0.0
R2(config-router)#network 15.0.0.0
R2(config-router)#exit
```

Router 3 :-

```
Router>enable
Router#configure terminal
Router(config)#hostname R3
R3(config)#router rip
R3(config-router)#network 11.0.0.0
R3(config-router)#network 16.0.0.0
R3(config-router)#network 17.0.0.0
R3(config-router)#exit
R3(config)#do write
```

Router 4 :-

```
Router>enable
Router#configure terminal.
Router(config)#hostname R4
R4(config)#router rip
R4(config-router)#network 12.0.0.0
R4(config-router)#network 192.168.1.0
R4(config-router)#network 192.168.2.0
R4(config-router)#exit
R4(config)#do write
```

Router 5 :-

```
Router>enable
Router#configure terminal
Router(config)#hostname R5
R5(config)#router rip
R5(config-router)#network 13.0.0.0
R5(config-router)#network 172.17.0.0
R5(config-router)#network 172.16.0.0
R5(config-router)#exit
R5(config)#do write
```

Router 6 :-

```
Router>enable
Router#configure terminal
Router(config)#hostname R6
R6(config)#router rip
R6(config-router)#network 14.0.0.0
R6(config-router)#network 20.0.0.0
R6(config-router)#network 30.0.0.0
R6(config-router)#exit
R6(config)#do write
```

Router 7 :-

```
Router>
Router>enable
Router#configure terminal
Router(config)#hostname R7
R7(config)#router rip
R7(config-router)#network 15.0.0.0
R7(config-router)#network 40.0.0.0
R7(config-router)#network 50.0.0.0
R7(config-router)#exit
R7(config)#do write
```

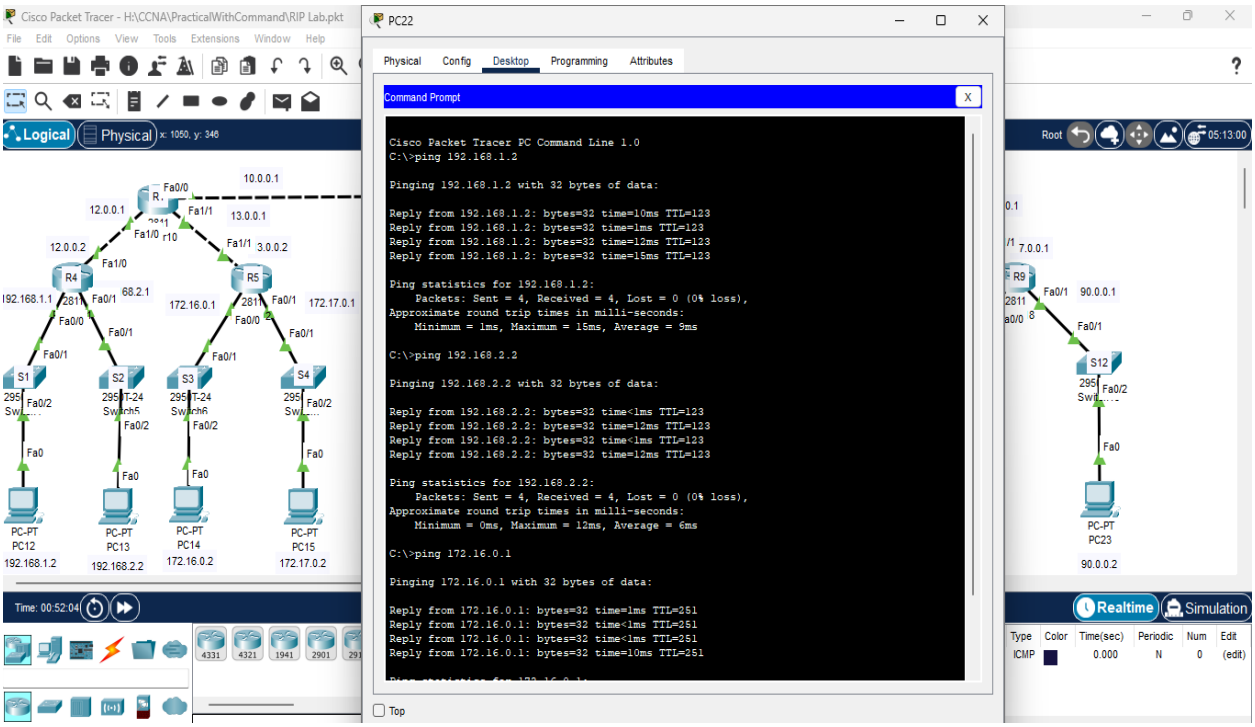
Router 8 :-

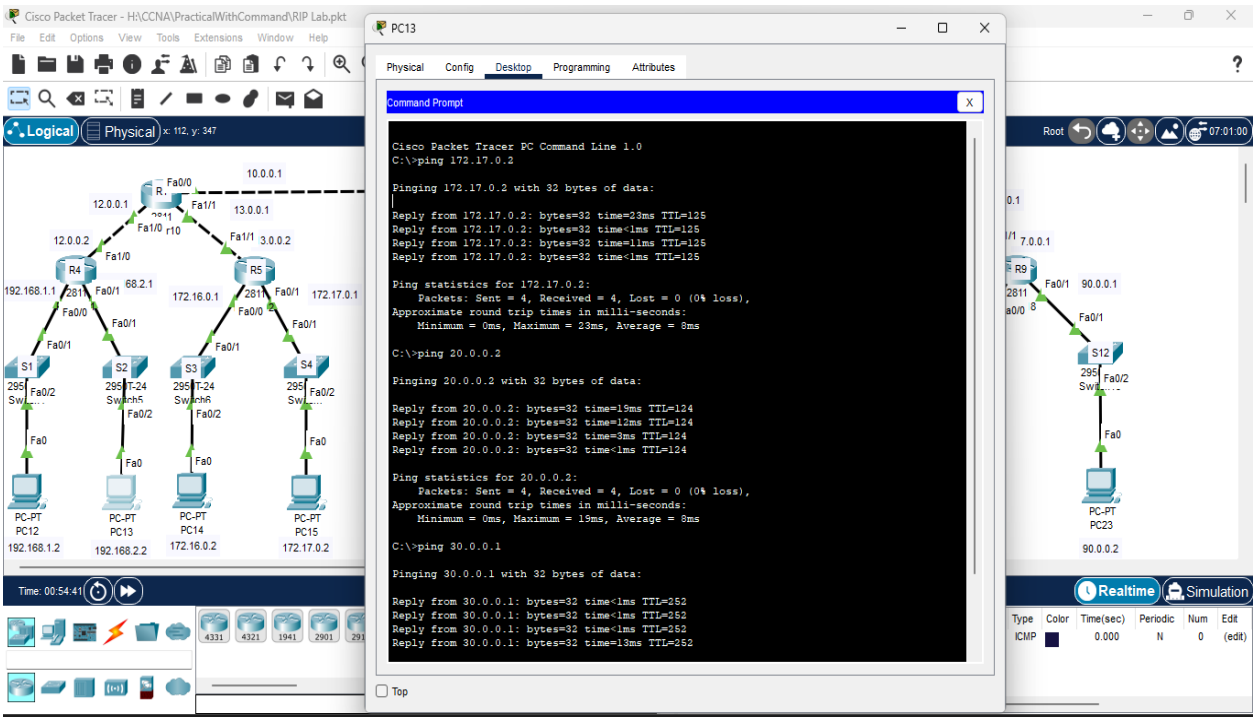
```
Router>
Router>enable
Router#configure terminal
Router(config)#hostname R8
R8(config)#router rip
R8(config-router)#network 16.0.0.0
R8(config-router)#network 60.0.0.0
R8(config-router)#network 70.0.0.0
R8(config-router)#exit
R8(config)#do write
```

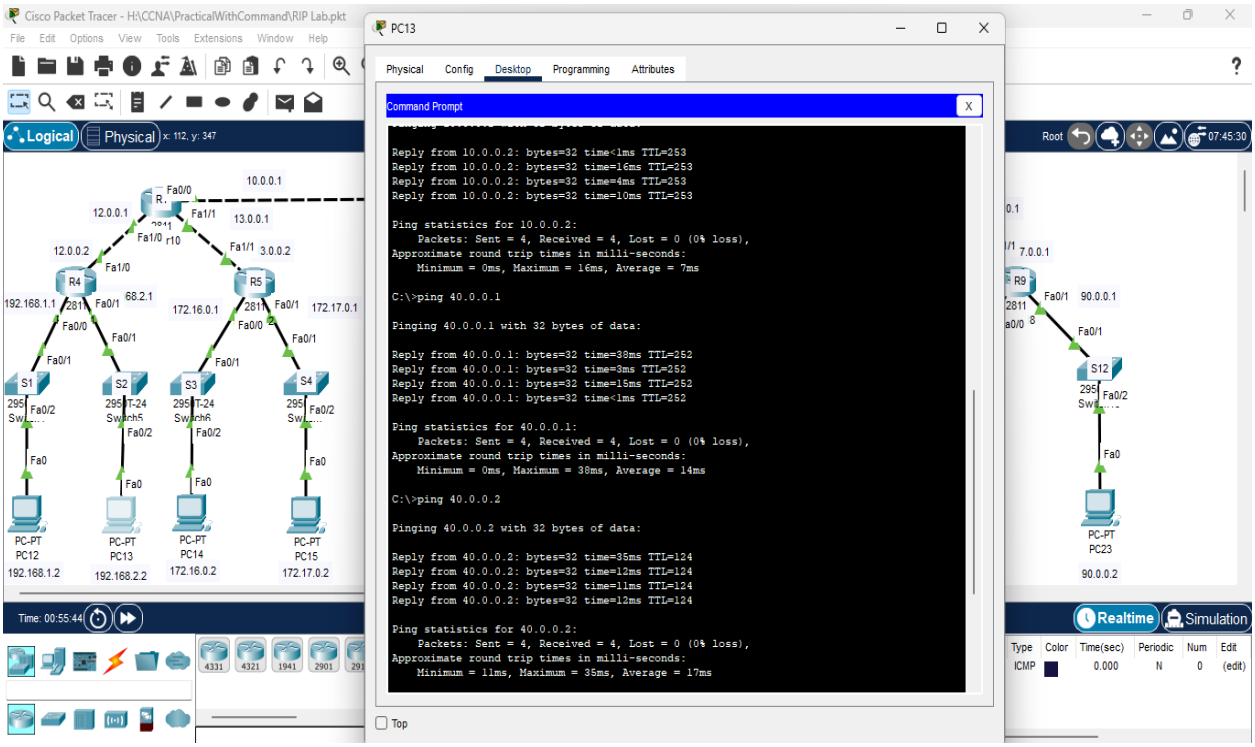
Router 9 :-

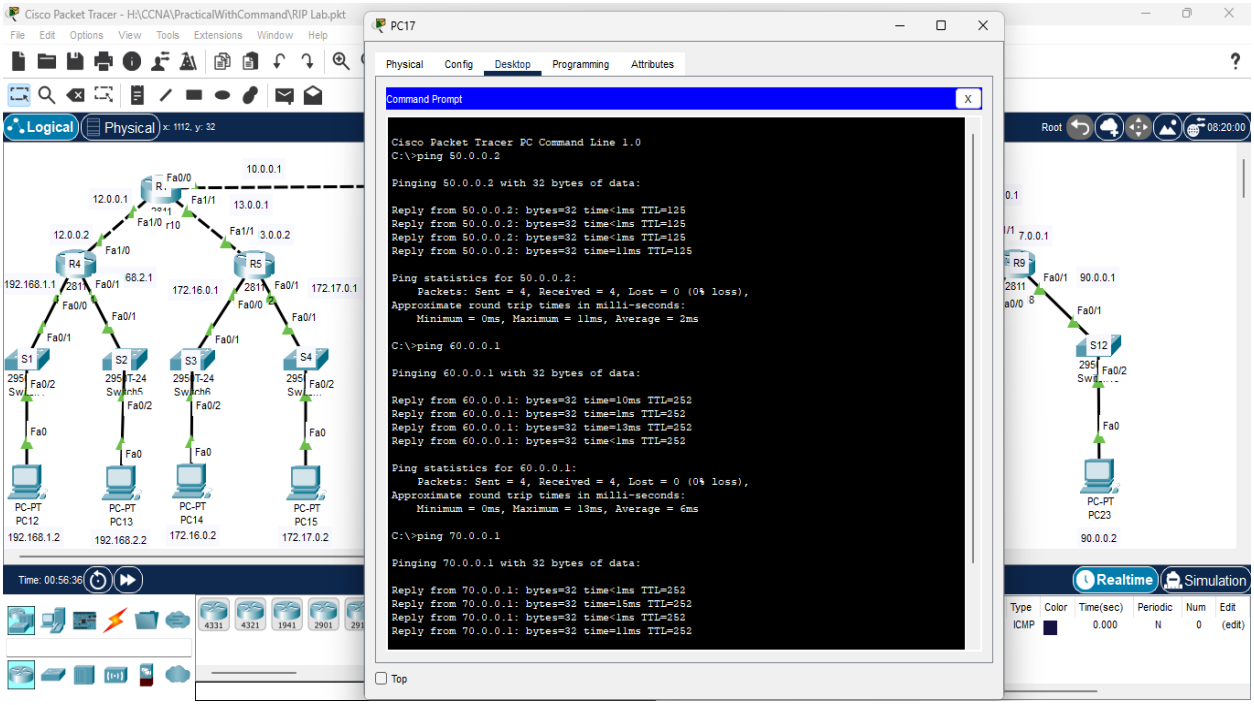
```
Router>enable
Router#configure terminal
Router(config)#hostname R9
R9(config)#router rip
R9(config-router)#network 17.0.0.0
R9(config-router)#network 80.0.0.0
R9(config-router)#network 90.0.0.0
R9(config-router)#exit
R9(config)#do write
```

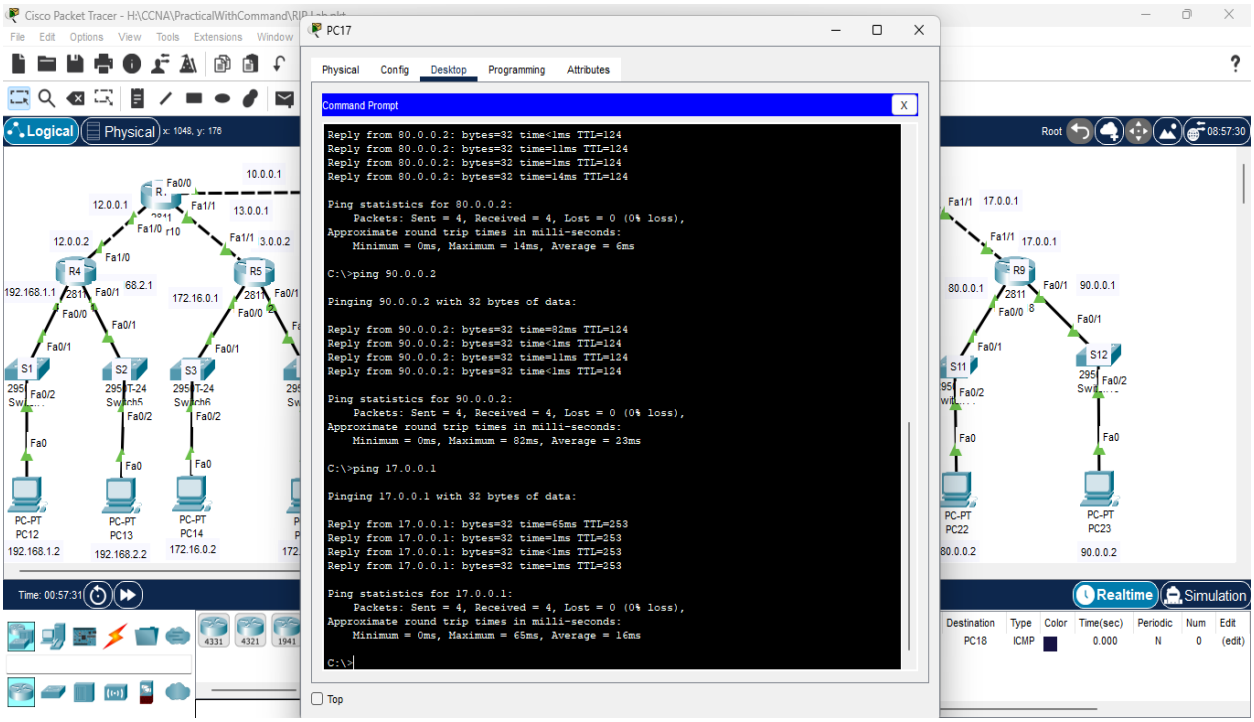
- **Ping Test Section :-**






Cisco Packet Tracer - H:\CCNA\PracticalWithCommand\RIP Lab.pkt
PC13
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Reply from 10.0.0.2: bytes=32 time<1ms TTL=253
Reply from 10.0.0.2: bytes=32 time=16ms TTL=253
Reply from 10.0.0.2: bytes=32 time=4ms TTL=253
Reply from 10.0.0.2: bytes=32 time=10ms TTL=253
Ping statistics for 10.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 16ms, Average = 7ms
C:\>ping 40.0.0.1
Pinging 40.0.0.1 with 32 bytes of data:
Reply from 40.0.0.1: bytes=32 time=38ms TTL=252
Reply from 40.0.0.1: bytes=32 time=3ms TTL=252
Reply from 40.0.0.1: bytes=32 time=15ms TTL=252
Reply from 40.0.0.1: bytes=32 time<1ms TTL=252
Ping statistics for 40.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 38ms, Average = 14ms
C:\>ping 40.0.0.2
Pinging 40.0.0.2 with 32 bytes of data:
Reply from 40.0.0.2: bytes=32 time=35ms TTL=124
Reply from 40.0.0.2: bytes=32 time=12ms TTL=124
Reply from 40.0.0.2: bytes=32 time=11ms TTL=124
Reply from 40.0.0.2: bytes=32 time=12ms TTL=124
Ping statistics for 40.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 35ms, Average = 17ms
Top
Logical
Physical
Root
Realtime
Simulation


Cisco Packet Tracer - H:\CCNA\PracticalWithCommand\RIP Lab.pkt
PC17
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 50.0.0.2
Pinging 50.0.0.2 with 32 bytes of data:
Reply from 50.0.0.2: bytes=32 time<1ms TTL=125
Reply from 50.0.0.2: bytes=32 time<1ms TTL=125
Reply from 50.0.0.2: bytes=32 time<1ms TTL=125
Reply from 50.0.0.2: bytes=32 time=11ms TTL=125
Ping statistics for 50.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 11ms, Average = 2ms
C:\>ping 60.0.0.1
Pinging 60.0.0.1 with 32 bytes of data:
Reply from 60.0.0.1: bytes=32 time=10ms TTL=252
Reply from 60.0.0.1: bytes=32 time=1ms TTL=252
Reply from 60.0.0.1: bytes=32 time=13ms TTL=252
Reply from 60.0.0.1: bytes=32 time<1ms TTL=252
Ping statistics for 60.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 13ms, Average = 6ms
C:\>ping 70.0.0.1
Pinging 70.0.0.1 with 32 bytes of data:
Reply from 70.0.0.1: bytes=32 time<1ms TTL=252
Reply from 70.0.0.1: bytes=32 time=15ms TTL=252
Reply from 70.0.0.1: bytes=32 time<1ms TTL=252
Reply from 70.0.0.1: bytes=32 time=11ms TTL=252
Top
Logical
Physical
Root
Realtime
Simulation


PC17
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Reply from 80.0.0.2: bytes=32 time<1ms TTL=124
Reply from 80.0.0.2: bytes=32 time=11ms TTL=124
Reply from 80.0.0.2: bytes=32 time=1ms TTL=124
Reply from 80.0.0.2: bytes=32 time=14ms TTL=124
Ping statistics for 80.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 14ms, Average = 6ms
C:\>ping 90.0.0.2
Pinging 90.0.0.2 with 32 bytes of data:
Reply from 90.0.0.2: bytes=32 time=82ms TTL=124
Reply from 90.0.0.2: bytes=32 time<1ms TTL=124
Reply from 90.0.0.2: bytes=32 time=11ms TTL=124
Reply from 90.0.0.2: bytes=32 time<1ms TTL=124
Ping statistics for 90.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 82ms, Average = 23ms
C:\>ping 17.0.0.1
Pinging 17.0.0.1 with 32 bytes of data:
Reply from 17.0.0.1: bytes=32 time=65ms TTL=253
Reply from 17.0.0.1: bytes=32 time=1ms TTL=253
Reply from 17.0.0.1: bytes=32 time<1ms TTL=253
Reply from 17.0.0.1: bytes=32 time=1ms TTL=253
Ping statistics for 17.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 65ms, Average = 16ms
C:\>
Top
Logical
Physical
Realtime
Simulation
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
PC18
ICMP
0.000
N
0
(edit)

- **Obeservations :-**

1. All routers successfully exchanged routing tables automatically using RIP.

2. The network achieved dynamic routing without manual route configuration.

3. The routing table updated periodically every 30 seconds.

4. RIP used UDP port 520 for communication between routers.

5. Convergence time was slightly higher compared to static routing.

- **Challenges / Troubleshooting :-**

1. Missing connectivity (Ping failure):

End devices couldn't ping due to wrong IP addressing or subnet mismatch.

✅ Fix: Checked interface IPs and subnet masks carefully.

- **Conclusion :-**

RIP is simple and easy to configure, suitable for small networks. However, it's slower and less efficient for large networks compared to modern routing protocols like OSPF or EIGRP.