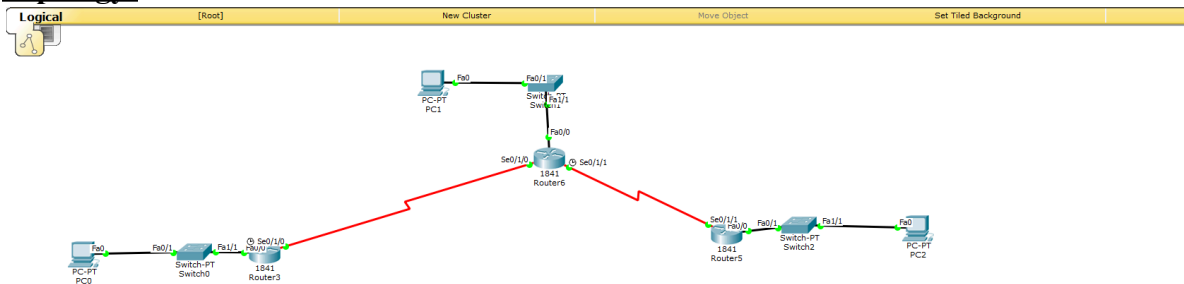


Program – 5:

Aim: Configure default route, static route to the Router

Topology:



Procedure:

1. Create Topology

Create a 3-router topology where each topology contains:

- 1 PC
- 1 Switch
- 1 Router

2. Router Hardware Setup

For all 3 routers:

- Click on **Physical** tab
- Turn **Router OFF**
- Drag & drop **HWIC-2T module**
- Turn **Router ON**

3. Connect the Routers

Use **Serial DCE cable** to interconnect all the 3 routers in serial topology.

Router Configurations:

Router 1

Step 1: Configure Serial Interface

Router> enable

Router# configure terminal

Router(config)# int Se0/1/0

Router(config-if)# ip address 172.16.1.1 255.255.255.252

Router(config-if)# no shutdown

Router(config-if)# exit

Step 2: Configure FastEthernet

Router(config)# interface Fa0/0

Router(config-if)# ip address 192.168.10.1 255.255.255.0

Router(config-if)# no shutdown

Router(config-if)# exit

Step 3: Save Configuration

Router# write memory
Router# exit

Router 2

Router> enable
Router# configure terminal
Router(config)# hostname R2
Serial Interface (to Router 1)
R2(config)# int Se0/1/0
R2(config-if)# ip address 172.16.1.2 255.255.255.252
R2(config-if)# no shutdown
FastEthernet Interface
R2(config)# int Fa0/0
R2(config-if)# ip address 192.168.20.1 255.255.255.0
R2(config-if)# no shutdown
Serial Interface (to Router 3)
R2(config)# int Se0/1/1
R2(config-if)# ip address 172.16.2.1 255.255.255.252
R2(config-if)# no shutdown
R2(config-if)# exit
R2# write memory

Router 3

Router> enable
Router# configure terminal
Router(config)# hostname R3
Serial Interface (to Router 2)
R3(config)# int Se0/1/1
R3(config-if)# ip address 172.16.2.2 255.255.255.252
R3(config-if)# no shutdown
FastEthernet Interface
R3(config)# int Fa0/0
R3(config-if)# ip address 192.168.30.1 255.255.255.0
R3(config-if)# no shutdown
R3(config-if)# exit
R3# write memory

PC IP Configuration

PC0

- IP: 192.168.10.10
- Default Gateway: 192.168.10.1

PC1

- IP: 192.168.20.10
- Default Gateway: 192.168.20.1

PC2

- IP: 192.168.30.10
- Default Gateway: 192.168.30.1

Static Route Configuration

Router 1

R1> enable

```
R1# configure terminal
R1(config)# hostname R1
R1(config)# ip route 192.168.20.0 255.255.255.0 172.16.1.2
R1(config)# ip route 192.168.30.0 255.255.255.0 172.16.1.2
R1# write memory
```

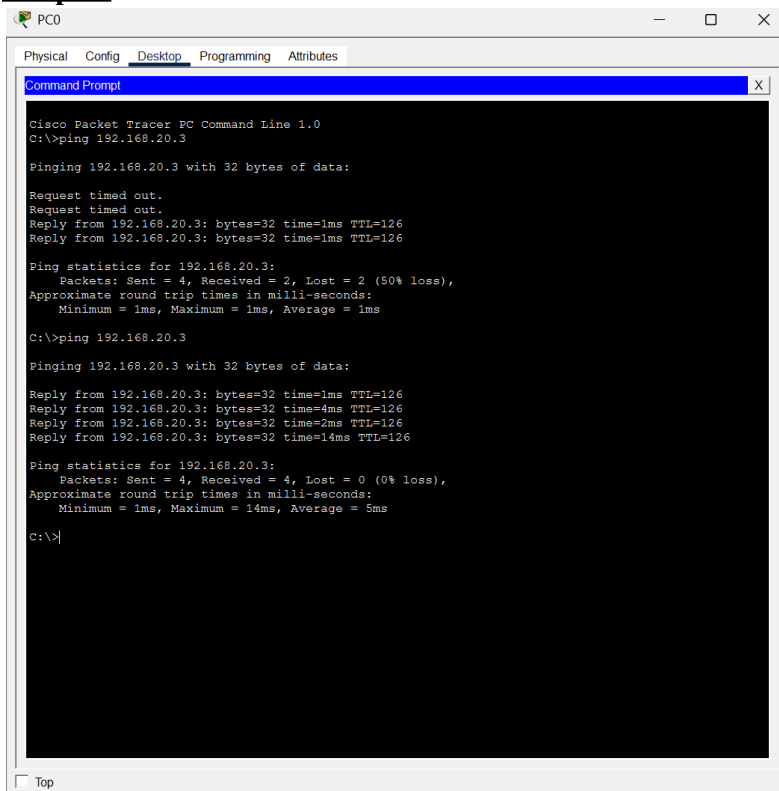
Router 2

```
R2> enable
R2# configure terminal
R2(config)# ip route 192.168.10.0 255.255.255.0 172.16.1.1
R2(config)# ip route 192.168.30.0 255.255.255.0 172.16.2.2
R2# write memory
```

Router 3 (Default Route)

```
R3> enable
R3# configure terminal
R3(config)# ip route 0.0.0.0 0.0.0.0 Se0/1/1
R3# write memory
```

Output:



```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.3

Pinging 192.168.20.3 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 192.168.20.3: bytes=32 time=1ms TTL=126
Reply from 192.168.20.3: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.20.3:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>ping 192.168.20.3

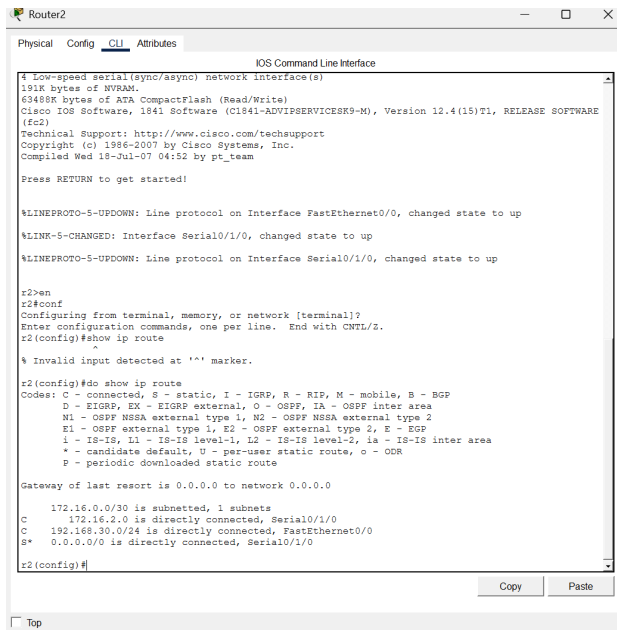
Pinging 192.168.20.3 with 32 bytes of data:

Reply from 192.168.20.3: bytes=32 time=1ms TTL=126
Reply from 192.168.20.3: bytes=32 time=4ms TTL=126
Reply from 192.168.20.3: bytes=32 time=2ms TTL=126
Reply from 192.168.20.3: bytes=32 time=14ms TTL=126

Ping statistics for 192.168.20.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 14ms, Average = 5ms

C:\>
```

Fig 5.1 ping to PC1 from PC0



The screenshot shows a Cisco Router2 CLI window with the following content:

```
Router2
Physical Config CLI Attributes
IOS Command Line Interface

4 Low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M, Version 12.4(15)T1, RELEASE SOFTWARE
(fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

r2>en
r2#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
r2(config)#show ip route
% Invalid input detected at '^' marker.

r2(config)#do show ip route
Codes: C - connected, S - static, I - IGRP, 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 0.0.0.0 to network 0.0.0.0

172.16.0.0/30 is subnetted, 1 subnets
C      172.16.2.0 is directly connected, Serial0/1/0
C      192.168.30.0/24 is directly connected, FastEthernet0/0
S*     0.0.0.0/0 is directly connected, Serial0/1/0

r2(config)#
```

Buttons: Copy, Paste

Top

Fig 5.2 ip route information in default router