Static Routing and Default Routing

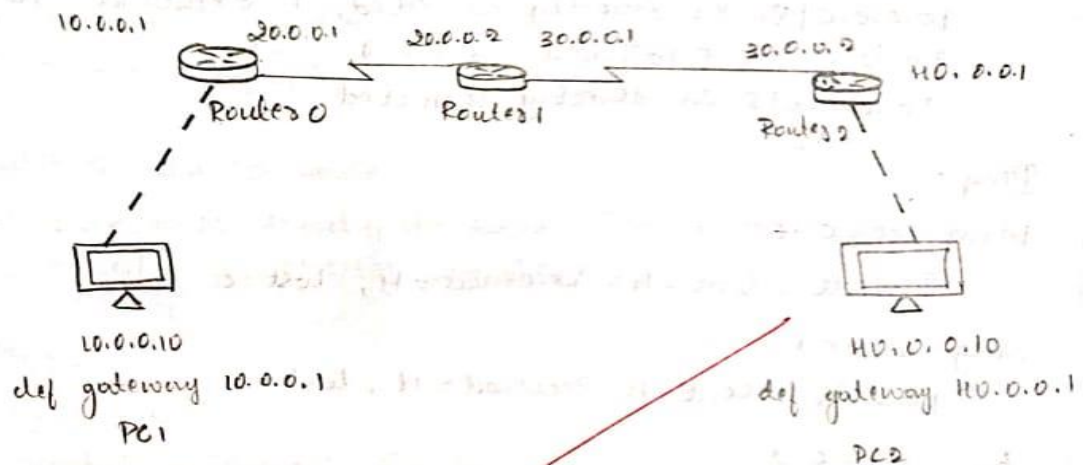**Configure default route, static route to the Router**

LAB-4   23/10/24

5] Configure default route, Static route to router.

Aim : Two connect three routers and observe the responses.

Topology :

10.0.0.1   20.0.0.1   20.0.0.2   30.0.0.1   30.0.0.2   40.0.0.1

Router 0   Router 1   Router 2

10.0.0.10   40.0.0.10

def gateway 10.0.0.1   def gateway 40.0.0.1

PC1   PC2

Procedure :-

1. Select 3 generic PT router and place on workbench.
2. Select two end devices (PC)
3. Connect 1st PC to router 0 and 2nd to router 2 through copper cross over.
4. Connect router 0 and router 1 g router 1 and router 2 using serial DCE.
5. Configure IP address 10.0.0.10 to PC1 and 40.0.0.1 to PC2.

Router 0 CLI :

i) Router > enable
Router # config terminal
Router (config) # interface fastethernet 0/0
Router (config - if) # ip address 10.0.0.1   255.0.0.0
Router (config-if) # no shutdown   10.0.0.1   255.0.0.0
exit

Router (config) # interface serial 2/0
Router (config - if) # ip address 20.0.0.1   255.0.0.0
Router (config-if) # no shut   30.0.0.2

Router # show ip route

10.0.0.0/8 is directly connected , Fastethernet 0/0

ii) Router (config) # ip route 0.0.0.0 0.0.0.0 20.0.0.2
                                                           30.0.0.1
Router # show ip route

C 10.0.0.0/8   is directly connected, Fastethernet 0/0
C 20.0.0.0/8   is directly connected, serial 2/0
S* 0.0.0.0/0   [1/0] via 20.0.0.2

Router2 : similar as Router 1

Router 1 CLI :-

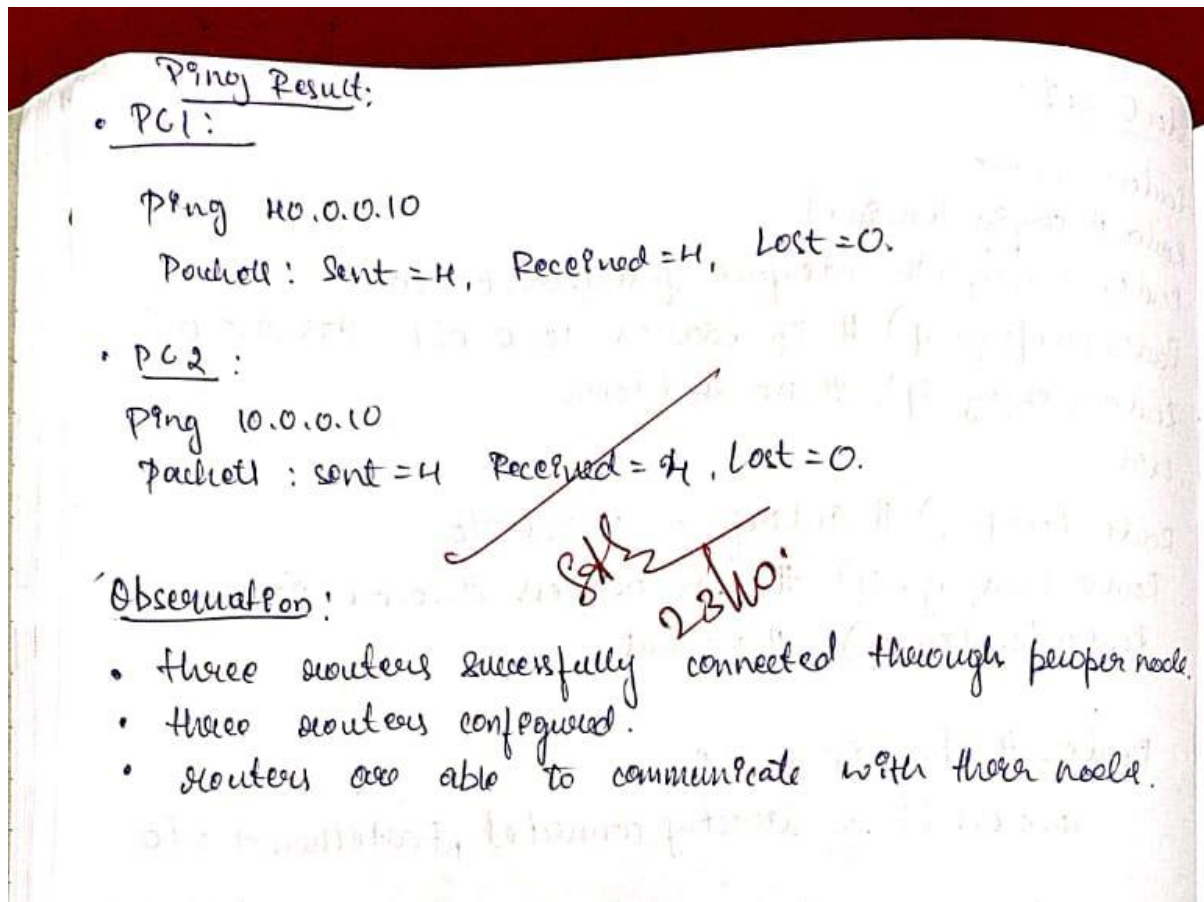Router (config - it) # ip address interface serial 9/0
Router (config - if) # ip address 20.0.0.2   255.0.0.0

Router (config) : # interface serial 3/0
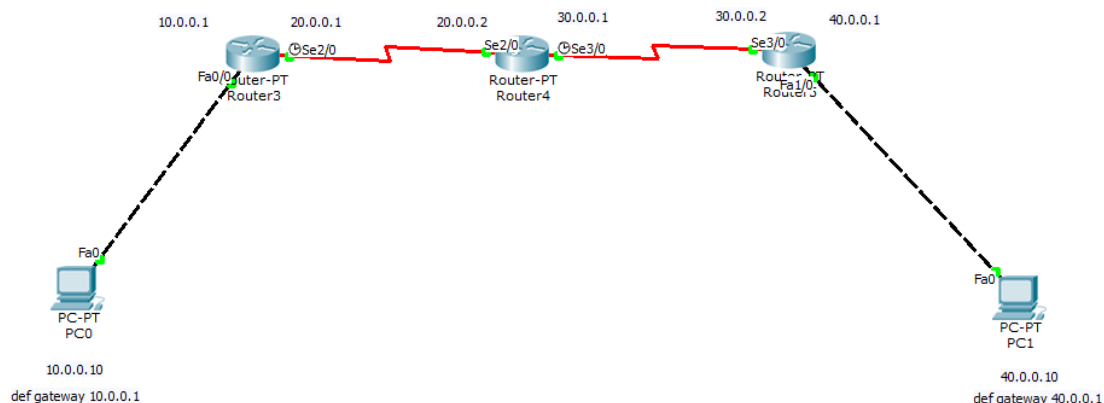Router (config - if) # ip address 30.0.0.1   255.0.0.0

Router (config) # ip route 10.0.0.0 255.0.0.0 20.0.0.1
      - " -   # ip route 40.0.0.0 255.0.0.0 30.0.0.2

Ping Result:
- PC1 :

  Ping 40.0.0.10
  Packets: Sent = 4, Received = 4, Lost = 0.

- PC2 :

  Ping 10.0.0.10
  Packets: sent = 4 Received = 4, Lost = 0.

Observation:
- three routers successfully connected through proper node.
- three routers configured.
- routers are able to communicate with there node.

Topology :

10.0.0.1   20.0.0.1   20.0.0.2   30.0.0.1   30.0.0.2   40.0.0.1
                Se2/0   Se2/0 Se3/0   Se3/0
Fa0/0 Router-PT   Router-PT   Router-PT Fa1/0
Router3   Router4   Router3

Fa0   Fa0

PC-PT   PC-PT
PC0   PC1

10.0.0.10   40.0.0.10
def gateway 10.0.0.1   def gateway 40.0.0.1

Router 0:

```
Continue with configuration dialog? [yes/no]: n


Press RETURN to get started!



Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastethernet 0/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up
exit




%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#exit
Router(config)#show ip route
                 ^
% Invalid input detected at '^' marker.

Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 not set

C    10.0.0.0/8 is directly connected, FastEthernet0/0
```

```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 20.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 20.0.0.2 to network 0.0.0.0

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    20.0.0.0/8 is directly connected, Serial2/0
S*   0.0.0.0/0 [1/0] via 20.0.0.2
Router#
```

Router 1:

```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 20.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 20.0.0.2 to network 0.0.0.0

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    20.0.0.0/8 is directly connected, Serial2/0
S*   0.0.0.0/0 [1/0] via 20.0.0.2
Router#
```

```
Router(config)#ip route 10.0.0.0 255.0.0.0 20.0.0.1
Router(config)#ip route 40.0.0.0 255.0.0.0 30.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 not set

S    10.0.0.0/8 [1/0] via 20.0.0.1
C    20.0.0.0/8 is directly connected, Serial2/0
C    30.0.0.0/8 is directly connected, Serial3/0
S    40.0.0.0/8 [1/0] via 30.0.0.2
Router#
```

Router 2:

```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastethernet 1/0
Router(config-if)#ip address 40.0.0.1 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state t
o up
exit
Router(config)#interface serial 3/0
Router(config-if)#ip address 30.0.0.2 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#exit
Router(config)#
```

```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#0.0.0.0 0.0.0.0 30.0.0.1
                ^
% Invalid input detected at '^' marker.

Router(config)#ip route 0.0.0.0 0.0.0.0 30.0.0.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 30.0.0.1 to network 0.0.0.0

C    30.0.0.0/8 is directly connected, Serial3/0
C    40.0.0.0/8 is directly connected, FastEthernet1/0
S*   0.0.0.0/0 [1/0] via 30.0.0.1
Router#
```

Ping Results:

```
PC>ping 40.0.0.10

Pinging 40.0.0.10 with 32 bytes of data:

Reply from 40.0.0.10: bytes=32 time=2ms TTL=125
Reply from 40.0.0.10: bytes=32 time=8ms TTL=125
Reply from 40.0.0.10: bytes=32 time=7ms TTL=125
Reply from 40.0.0.10: bytes=32 time=7ms TTL=125

Ping statistics for 40.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 8ms, Average = 6ms

PC>
```

PC1   — □ ✕

Physical   Config   Desktop   Custom Interface

Command Prompt   ✕

```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.10

Pinging 10.0.0.10 with 32 bytes of data:

Reply from 10.0.0.10: bytes=32 time=7ms TTL=125
Reply from 10.0.0.10: bytes=32 time=9ms TTL=125
Reply from 10.0.0.10: bytes=32 time=7ms TTL=125
Reply from 10.0.0.10: bytes=32 time=8ms TTL=125

Ping statistics for 10.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 7ms, Maximum = 9ms, Average = 7ms

PC>
```