

Week - 4

Experiment : Static Routing and Default Routing Configure.

LAB-04

23/10/21

(7)

AIM:

Configure default route, static route to the Router

Procedure:

- 1) Select Two PC's & Set the IP address for both the PC's & also Set the Gateway to that PC's

PC1 IP address → 10.0.0.10

PC2 IP address → 40.0.0.10

Gateway1 → 10.0.0.1

Gateway2 → 40.0.0.1

- 2) Then Select the 3 Routers & Set the IP address & Subnet mask for all the 3 routers.

Router1 IP address → 20.0.0.1

Router2 IP address → 20.0.0.2 & 30.0.0.1

Router3 IP address → 30.0.0.2

To establish connection between PC0 & router0
Follow these commands in router0 CLI →

1. enable
2. Config terminal
3. interface FastEthernet 0/0
4. ip address 10.0.0.1 255.0.0.0
5. no shutdown

To establish connection between PC0 & router1
Follow these commands in router1 CLI →

- 1) enable
- 2) config terminal
- 3) interface Serial 3/0
- 4) ip address 20.0.0.2 255.0.0.0

5) no shut

6) wit

To establish connection between router 0 & router 1
follow these commands in the router 0 CLI →

1) enable.

2) Config terminal

3) interface Serial 0/0

4) ip address 20.0.0.1 255.0.0.0

5) no shut

6) exit

* To establish connection between router 0 & router 1, router 2.
follow these command in router 1

1) ip route 10.0.0.0 255.0.0.0 20.0.0.1

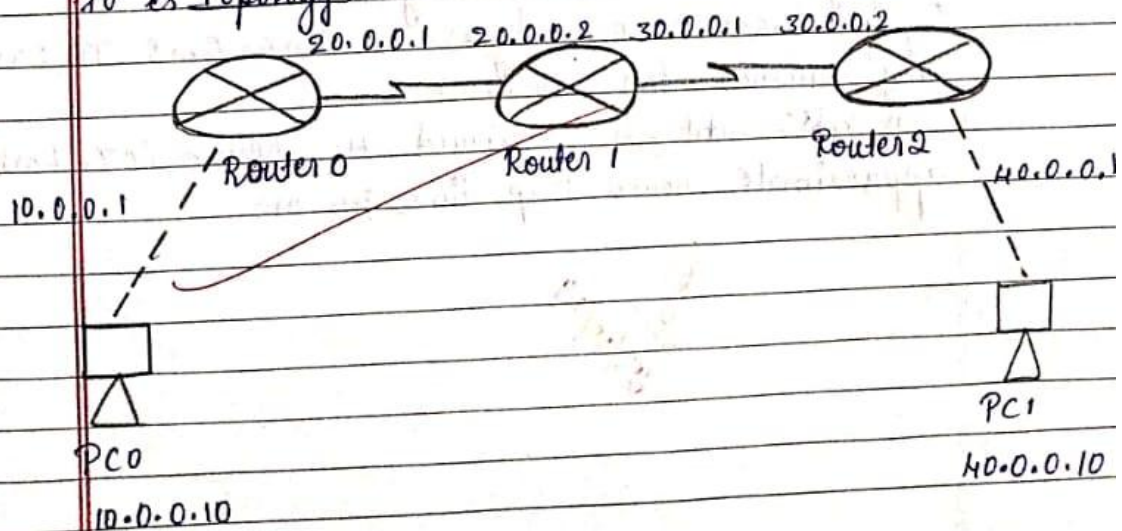
2) ip route 40.0.0.0 255.0.0.0 30.0.0.2

To establish connection between PC0 & router 1
follow these commands in router 0 & router 1

ip route 0.0.0.0 0.0.0.0 20.0.0.2

ip route 0.0.0.0 0.0.0.0 30.0.0.1

Topology:



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Observation: we will get to know how to connect 3 Routers, & how to connect the static route.

→ Connection establishes from router 0.

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

→ Connection establishes from router 1

S 10.0.0.0/8 [1/0] via 20.0.0.1

C 20.0.0.0/8 is directly connected, Serial 3/0

C 30.0.0.0/8 is directly connected, Serial 2/0

S 40.0.0.0/8 [1/0] via 30.0.0.2

→ Connection establish from router 2

C 30.0.0.0/8 is directly connected, Serial 3/0

C 40.0.0.0/8 is directly connected, FastEthernet 1/0

S* 0.0.0.0/0 [1/0] via 30.0.0.1

? output for the Ping Command:-

→ ping 20.0.0.1

pinging 20.0.0.1 with 32 bytes of data

Reply from 20.0.0.1: bytes=32 time=0ms TTL=255

ping statistics for 20.0.0.1

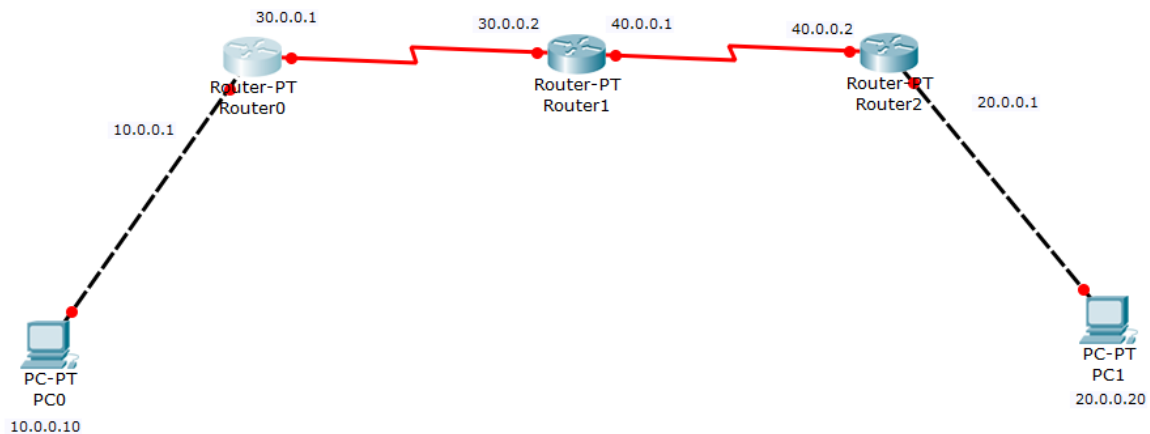
packets: Sent = 4, Received = 4, loss=0 (0% loss)

approximate round trip times in ms.

23/10/24

Default route, static route to the Router:

Initial Topology:



ROUTER 0:

```
Router#enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 30.0.0.1 255.0.0.0
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 to up

Router(config-if)#interface Serial2/0
Router(config-if)#ip address 30.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

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
C    30.0.0.0/8 is directly connected, Serial2/0
```

```

Router(config)#ip route 0.0.0.0 0.0.0.0 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 30.0.0.2 to network 0.0.0.0

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    30.0.0.0/8 is directly connected, Serial2/0
S*   0.0.0.0/0 [1/0] via 30.0.0.2

Router(config)#ip route 0.0.0.0 0.0.0.0 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 30.0.0.2 to network 0.0.0.0

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    30.0.0.0/8 is directly connected, Serial2/0
S*   0.0.0.0/0 [1/0] via 30.0.0.2

```

ROUTER 1:

```

Router(config-if)#interface Serial3/0
Router(config-if)#ip address 30.0.0.2 255.0.0.0
Router(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router(config-if)#interface Serial2/0
Router(config-if)#ip address 40.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#

```

```

Router>enable
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    30.0.0.0/8 is directly connected, Serial3/0
C    40.0.0.0/8 is directly connected, Serial2/0

```

```

Router(config)#ip route 10.0.0.0 255.0.0.0 30.0.0.0
Router(config)#ip route 20.0.0.0 255.0.0.0 40.0.0.2

```

ROUTER 2:

```

Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet1/0
Router(config-if)#ip address 20.0.0.1 255.0.0.0
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 to up
|

Router(config-if)#interface Serial3/0
Router(config-if)#ip address 40.0.0.2 255.0.0.0
Router(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router>enable
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    20.0.0.0/8 is directly connected, FastEthernet1/0
C    40.0.0.0/8 is directly connected, Serial3/0

```

```

Router(config)#ip route 0.0.0.0 0.0.0.0 40.0.0.1
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 40.0.0.1 to network 0.0.0.0

C    20.0.0.0/8 is directly connected, FastEthernet1/0
C    40.0.0.0/8 is directly connected, Serial3/0
S*   0.0.0.0/0 [1/0] via 40.0.0.1

```

PC 0 PING RESULTS:

```

C:\>ping 30.0.0.1

Pinging 30.0.0.1 with 32 bytes of data:

Reply from 30.0.0.1: bytes=32 time<1ms TTL=255
Reply from 30.0.0.1: bytes=32 time<1ms TTL=255
Reply from 30.0.0.1: bytes=32 time<1ms TTL=255
Reply from 30.0.0.1: bytes=32 time<1ms TTL=255

Ping statistics for 30.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

```

```

C:\>ping 30.0.0.2

Pinging 30.0.0.2 with 32 bytes of data:

Reply from 30.0.0.2: bytes=32 time=2ms TTL=254
Reply from 30.0.0.2: bytes=32 time=1ms TTL=254
Reply from 30.0.0.2: bytes=32 time=1ms TTL=254
Reply from 30.0.0.2: bytes=32 time=1ms TTL=254

Ping statistics for 30.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

```

```

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=4ms TTL=254
Reply from 40.0.0.1: bytes=32 time=3ms TTL=254
Reply from 40.0.0.1: bytes=32 time=3ms TTL=254
Reply from 40.0.0.1: bytes=32 time=3ms TTL=254

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 4ms, Average = 3ms

```



```
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=6ms TTL=253
Reply from 40.0.0.2: bytes=32 time=2ms TTL=253
Reply from 40.0.0.2: bytes=32 time=5ms TTL=253
Reply from 40.0.0.2: bytes=32 time=2ms TTL=253

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 6ms, Average = 3ms
```

```
C:\>ping 20.0.0.20

Pinging 20.0.0.20 with 32 bytes of data:

Reply from 20.0.0.20: bytes=32 time=2ms TTL=125
Reply from 20.0.0.20: bytes=32 time=4ms TTL=125
Reply from 20.0.0.20: bytes=32 time=4ms TTL=125
Reply from 20.0.0.20: bytes=32 time=2ms TTL=125

Ping statistics for 20.0.0.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 4ms, Average = 3ms
```

PC1 PING RESULTS:

```
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=1ms TTL=255
Reply from 40.0.0.2: bytes=32 time<1ms TTL=255
Reply from 40.0.0.2: bytes=32 time<1ms TTL=255
Reply from 40.0.0.2: bytes=32 time<1ms TTL=255

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
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=1ms TTL=254
Reply from 40.0.0.1: bytes=32 time=1ms TTL=254
Reply from 40.0.0.1: bytes=32 time=3ms TTL=254
Reply from 40.0.0.1: bytes=32 time=1ms TTL=254

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 1ms
```



```
C:\>ping 30.0.0.1

Pinging 30.0.0.1 with 32 bytes of data:

Reply from 30.0.0.1: bytes=32 time=8ms TTL=253
Reply from 30.0.0.1: bytes=32 time=4ms TTL=253
Reply from 30.0.0.1: bytes=32 time=4ms TTL=253
Reply from 30.0.0.1: bytes=32 time=2ms TTL=253

Ping statistics for 30.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 8ms, Average = 4ms
```

```
C:\>ping 10.0.0.10

Pinging 10.0.0.10 with 32 bytes of data:

Reply from 10.0.0.10: bytes=32 time=8ms TTL=125
Reply from 10.0.0.10: bytes=32 time=5ms TTL=125
Reply from 10.0.0.10: bytes=32 time=2ms TTL=125
Reply from 10.0.0.10: bytes=32 time=4ms 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 = 2ms, Maximum = 8ms, Average = 4ms
```

FINAL TOPOLOGY :

