

Computer Networks: Lab Record

Week: 4

Experiment 4: Static Routing and Default Routing

Configure default route, static route to the Router to demonstrate Static and Default Routing.

Observation:

Lab-03 :

Ques: Configure default route, static route to the routers.

- Aim :- To apply & demonstrate static & default routing.
- Topology :-

IP Address: 20.0.0.2 IP Address: 30.0.0.1
Se2/0 Se2/0
Router-PT
Router 1

IP Address: 10.0.0.1 IP Address: 20.0.0.1 IP Address: 30.0.0.2 IP Address: 40.0.0.1
Se2/0 Se2/0 Se2/0 Se2/0
Router-PT Router-PT Router-PT
Router 0 Router 1 Router 2

PC-PT
PC 0
IP Address: 10.0.0.10
Gateway: 10.0.0.1
Subnet: 255.0.0.0

PC-PT
PC 1
IP Address: 40.0.0.10
Gateway: 40.0.0.1
Subnet: 255.0.0.0

Procedure:

- Configure all the systems and routes with respective IP and Gateways with the help of the above topology.
- staticly route networks 10.0.0.0 & 40.0.0.0 in router using CLI.

```
> 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
```

3. Execute commands on router 0 & router 2 as such to implement default routing.

```
<R0> ip route 0.0.0.0 0.0.0.0 20.0.0.2
<R2> ip route 0.0.0.0 0.0.0.0 30.0.0.1
```

Observation :

Upon executing "show ip route" following observations are made with successful pinging on end devices with no connection errors.

R0 :

C 10.0.0.0/8 is directly connected, FastEthernet0/0
C 20.0.0.0/8 is directly connected, serial 2/0
S* 0.0.0.0 [1/0] via 20.0.0.2

R1 :

S 10.0.0.0/8 [1/0] via 20.0.0.1
C 20.0.0.0/8 is directly connected, serial 2/0
C 30.0.0.0/8 is directly connected, serial 3/0
S 40.0.0.0/8 [1/0] via 30.0.0.2

R2 :

C 30.0.0.0/8 is directly connected, serial 3/0
C 40.0.0.0/8 is directly connected, FastEthernet0/0
S* 0.0.0.0/8 [1/0] via 30.0.0.1

Screenshots:

Router 0

Logical [Root]

Router0: IP Addr: 10.0.0.1, Fa0/0, PC0, IP Addr: 10.0.0.10, Gateway: 10.0.0.1

Router1: IP Addr: 20.0.0.2, Se2/0, Router-PT, Router1, IP Addr: 30.0.0.1, Se3/0

Router2: IP Addr: 30.0.0.2, Se3/0, Router-PT, Router2, IP Addr: 40.0.0.1, Fa1/0, PC1, IP Addr: 40.0.0.10, Gateway: 40.0.0.1

Router0 CLI:

```
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

Logical [Root]

Router0: IP Addr: 10.0.0.1, Fa0/0, PC0, IP Addr: 10.0.0.10, Gateway: 10.0.0.1

Router1: IP Addr: 20.0.0.2, Se2/0, Router-PT, Router1, IP Addr: 30.0.0.1, Se3/0

Router2: IP Addr: 30.0.0.2, Se3/0, Router-PT, Router2, IP Addr: 40.0.0.1, Fa1/0, PC1, IP Addr: 40.0.0.10, Gateway: 40.0.0.1

Router1 CLI:

```
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

Logical [Root]

Router0: IP Addr: 10.0.0.1, Fa0/0, PC0, IP Addr: 10.0.0.10, Gateway: 10.0.0.1

Router1: IP Addr: 20.0.0.2, Se2/0, Router-PT, Router1, IP Addr: 30.0.0.1, Se3/0

Router2: IP Addr: 30.0.0.2, Se3/0, Router-PT, Router2, IP Addr: 40.0.0.1, Fa1/0, PC1, IP Addr: 40.0.0.10, Gateway: 40.0.0.1

Router2 CLI:

```
Router>configure terminal
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#
Router>configure terminal
Router(config)#interface FastEthernet1/0
Router(config-if)#
```

After Successful Setup using Command Line Interface

