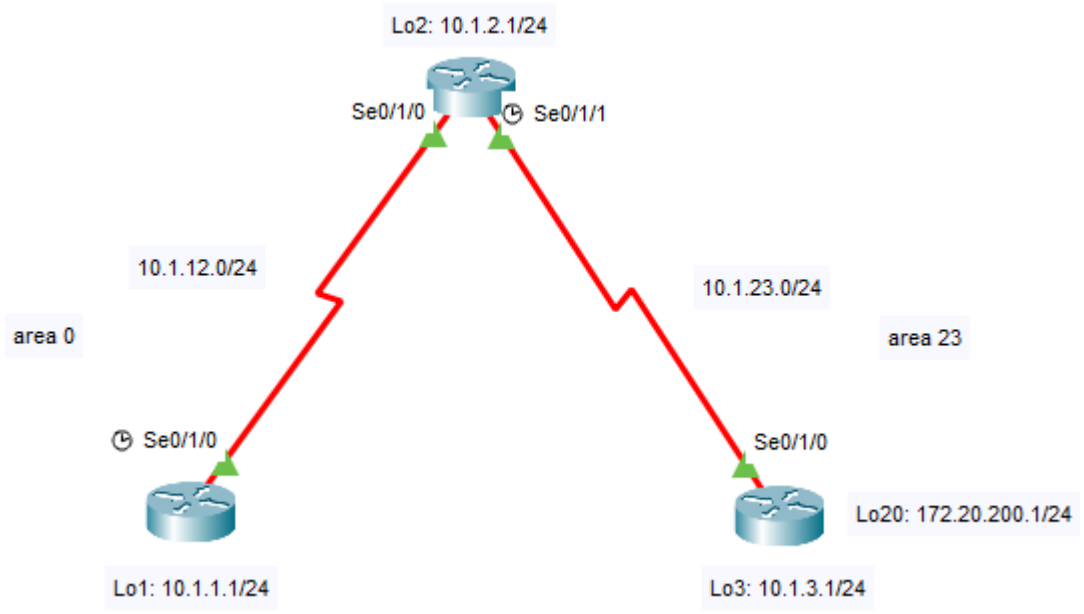
Prac 2



Step 1→ Configuring addressing and loopbacks.

```
R1(config)#int lo1

R1(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

R1(config-if)#ip add 10.1.1.1 255.255.255.0
R1(config-if)#exit
R1(config)#int s0/1/0
R1(config-if)#ip add 10.1.12.1 255.255.255.0
R1(config-if)#exit
R1(config)#no shut
                ^
% Invalid input detected at '^' marker.

R1(config)#int s0/1/0
R1(config-if)#ip add 10.1.12.1 255.255.255.0
R1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R1(config-if)#
%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(config)#int lo2

R2(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up

R2(config-if)#ip add 10.1.2.1 255.255.255.0
R2(config-if)#exit
R2(config)#int s0/1/0
R2(config-if)#ip add 10.1.12.2 255.255.255.0
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

R2(config-if)#int S
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to ups
                ^
% Invalid input detected at '^' marker.

R2(config-if)#int s0/1/1
R2(config-if)#ip add 10.1.23.2 255.255.255.0
R2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
R2(config-if)#
```

```
R3(config)#int lo3

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up

R3(config-if)#ip add 10.1.3.1 255.255.255.0
R3(config-if)#exit
R3(config)#int lo20

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback20, changed state to up

R3(config-if)#ip add 172.20.200.1 255.255.255.0
R3(config-if)#exit
R3(config)#int s0/1/0
R3(config-if)#ip add 10.1.23.3 255.255.255.0
R3(config-if)#no shut

R3(config-if)#
%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
```

Step 2→Add interfaces into OSPF

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router ospf 1
R1(config-router)#network 10.1.12.0 0.0.0.255 area 0
R1(config-router)#network 10.1.1.0 0.0.0.255 area 0
R1(config-router)#exit
R1(config)#int lo1
R1(config-if)#ip ospf network point-to-point
R1(config-if)#
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#network 10.1.12.0 0.0.0.255 area 0
R2(config-router)#network 10.1.2.0 0.0.0.255 area 0
00:33:41: %OSPF-5-ADJCHG: Process 1, Nbr 10.1.1.1 on Serial0/1/0 from LOADING to FULL,
Loading Done

R2(config-router)#network 10.1.2.0 0.0.0.255 area 0
R2(config-router)#exit
R2(config)#int lo2
R2(config-if)#ip ospf network point-to-point
R2(config-if)#router ospf 1
R2(config-router)#network 10.1.23.0 0.0.0.255 area 23
R2(config-router)#
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#network 10.1.23.0 0.0.0.255 area 23
R3(config-router)#
00:37:45: %OSPF-5-ADJCHG: Process 1, Nbr 10.1.2.1 on Serial0/1/0 from LOADING to FULL,
Loading Done

R3(config-router)#network 10.1.3.0 0.0.0.255 area 23
R3(config-router)#exit
R3(config)#int lo3
R3(config-if)#ip ospf network point-to-point
R3(config-if)#
```

```
R1>en
R1#sh 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

     10.0.0.0/24 is subnetted, 5 subnets
C       10.1.1.0 is directly connected, Loopback1
O       10.1.2.0 [110/65] via 10.1.12.2, 00:12:57, Serial0/1/0
O IA    10.1.3.0 [110/129] via 10.1.12.2, 00:07:59, Serial0/1/0
C       10.1.12.0 is directly connected, Serial0/1/0
O IA    10.1.23.0 [110/128] via 10.1.12.2, 00:12:07, Serial0/1/0

R1#
```

Step 3→ Configure a stub area

```
R1#sh ip ospf neighbor


Neighbor ID     Pri   State           Dead Time   Address         Interface
10.1.2.1          0   FULL/  -        00:00:31    10.1.12.2       Serial0/1/0
R1#
```

```
R2(config)# router ospf 1
R2(config-router)# area 23 stub

R3(config)# router ospf 1
R3(config-router)# area 23 stub
```

Confirm that it comes up by using the **show ip ospf neighbors** command.

```
R2# show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
10.1.1.1          0   FULL/  -        00:00:36    10.1.12.1       Serial0/0/0
10.1.3.1          0   FULL/  -        00:00:36    10.1.23.3       Serial0/0/1

R3# show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
10.1.2.1          0   FULL/  -        00:00:31    10.1.23.2       Serial0/0/1
```

Step 4→ Configure a totally stubby area

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#area 23 stub
R2(config-router)#
00:54:11: %OSPF-5-ADJCHG: Process 1, Nbr 172.20.200.1 on Serial0/1/1 from FULL to DOWN,
Neighbor Down: Adjacency forced to reset

00:54:11: %OSPF-5-ADJCHG: Process 1, Nbr 172.20.200.1 on Serial0/1/1 from FULL to DOWN,
Neighbor Down: Interface down or detached
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#area 23 stub
R3(config-router)#
00:54:06: %OSPF-5-ADJCHG: Process 1, Nbr 10.1.2.1 on Serial0/1/0 from LOADING to FULL,
Loading Done
```

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#area 23 stub no-summary
R2(config-router)#
```

```
R3#sh 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 10.1.23.2 to network 0.0.0.0

     10.0.0.0/24 is subnetted, 2 subnets
C       10.1.3.0 is directly connected, Loopback3
C       10.1.23.0 is directly connected, Serial0/1/0
     172.20.0.0/24 is subnetted, 1 subnets
C       172.20.200.0 is directly connected, Loopback20
O*IA 0.0.0.0/0 [110/65] via 10.1.23.2, 00:09:27, Serial0/1/0

R3#
```

```
R2#sh ip ospf
 Routing Process "ospf 1" with ID 10.1.2.1
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
 It is an area border router
 SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
 Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
 Number of external LSA 0. Checksum Sum 0x000000
 Number of opaque AS LSA 0. Checksum Sum 0x000000
 Number of DCbitless external and opaque AS LSA 0
 Number of DoNotAge external and opaque AS LSA 0
 Number of areas in this router is 2. 1 normal 1 stub 0 nssa
 External flood list length 0
    Area BACKBONE(0)
        Number of interfaces in this area is 2
        Area has no authentication
        SPF algorithm executed 8 times
        Area ranges are
        Number of LSA 3. Checksum Sum 0x01cb6b
        Number of opaque link LSA 0. Checksum Sum 0x000000
        Number of DCbitless LSA 0
        Number of indication LSA 0
        Number of DoNotAge LSA 0
        Flood list length 0
    Area 23
        Number of interfaces in this area is 1
        It is a stub area
          generates stub default route with cost 1
        Area has no authentication
        SPF algorithm executed 6 times
        Area ranges are
        Number of LSA 5. Checksum Sum 0x013067
 --More--
```

```
R3#sh 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 10.1.23.2 to network 0.0.0.0

     10.0.0.0/24 is subnetted, 4 subnets
O IA    10.1.2.0 [110/65] via 10.1.23.2, 00:06:26, Serial0/1/0
C       10.1.3.0 is directly connected, Loopback3
O IA    10.1.12.0 [110/128] via 10.1.23.2, 00:06:26, Serial0/1/0
C       10.1.23.0 is directly connected, Serial0/1/0
     172.20.0.0/24 is subnetted, 1 subnets
C       172.20.200.0 is directly connected, Loopback20
O*IA 0.0.0.0/0 [110/65] via 10.1.23.2, 00:06:26, Serial0/1/0
```

Step 5 →Configure a not-so stubby area

```
R2(config-router)#exit
R2(config)#router ospf 1
R2(config-router)#no area 23 stub
R2(config-router)#
01:10:09: %OSPF-5-ADJCHG: Process 1, Nbr 172.20.200.1 on Serial0/1/1 from FULL to DOWN,
Neighbor Down: Adjacency forced to reset

01:10:09: %OSPF-5-ADJCHG: Process 1, Nbr 172.20.200.1 on Serial0/1/1 from FULL to DOWN,
Neighbor Down: Interface down or detached

R2(config-router)#area 23 nssa
R2(config-router)#
01:12:52: %OSPF-5-ADJCHG: Process 1, Nbr 172.20.200.1 on Serial0/1/1 from LOADING to
FULL, Loading Done
```