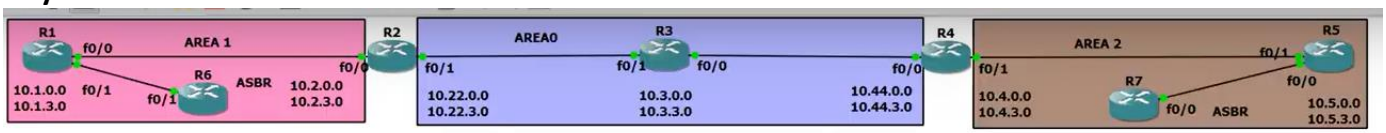
Day – 02



****if we can to advertise all the networks at once (like loopback and networks all in once)**

 # net 0.0.0.0 255.255.255.255 area 0 (this is not a default route)

#R3

```
R3(config)#router ospf 10
R3(config-router)#net 0.0.0.0 255.255.255.255 area 0
R3(config-router)#
*Mar  1 00:45:20.647: %OSPF-5-ADJCHG: Process 10, Nbr 10.22.3.1 on FastEthernet0/1 from LOADING to FULL, Loading
Done
R3(config-router)#
```

**** on router we won't advertise 10.77 networks other than that we redistribute connected subnets command to make them external. (they won't join multicast group and advertise externally)**

#R7

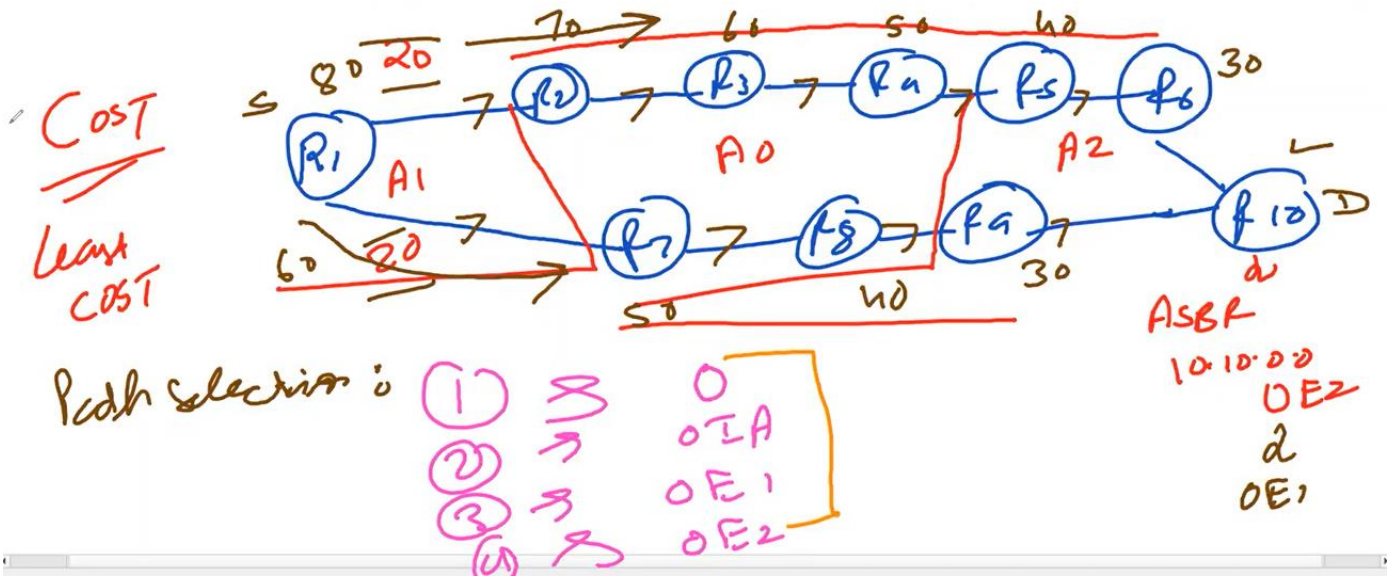
```
R7#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R7(config)#
R7(config)#router ospf 10
R7(config-router)#router-id 10.7.1.1
R7(config-router)#net 172.16.57.0 0.0.0.255 area 2
R7(config-router)#
*Mar  1 00:47:54.087: %OSPF-5-ADJCHG: Process 10, Nbr 10.5.3.1 on FastEthernet0/0 from LOADING to FULL, Loading Don
e
R7(config-router)#net 10.7.0.0 0.0.3.255 area 2
R7(config-router)#redistribute connected subnets
R7(config-router)#
```

```
R7(config-router)#do sh ip pro
Routing Protocol is "ospf 10"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 10.7.1.1
  It is an autonomous system boundary router
  Redistributing External Routes from,
    connected, includes subnets in redistribution
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    10.7.0.0 0.0.3.255 area 2
    172.16.57.0 0.0.0.255 area 2
 Reference bandwidth unit is 100 mbps
```

```
R2#sh ip rou | in O E
O E2    10.77.3.0/24 [110/20] via 172.16.23.3, 00:03:00, FastEthernet0/1
O E2    10.77.2.0/24 [110/20] via 172.16.23.3, 00:03:00, FastEthernet0/1
O E2    10.77.1.0/24 [110/20] via 172.16.23.3, 00:03:00, FastEthernet0/1
O E2    10.77.0.0/24 [110/20] via 172.16.23.3, 00:03:00, FastEthernet0/1
R2#
```

 # anywhere u verify you get path cost 20

#OE1 and OE2



** on apply summarization it wont take as one route it will take as individual routes

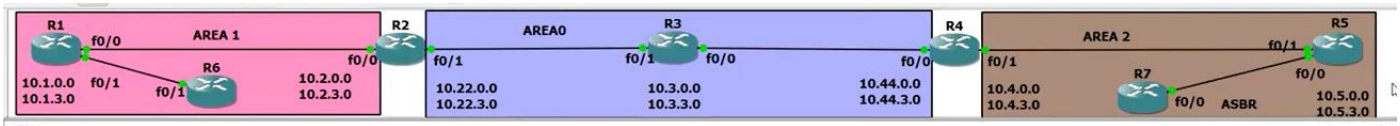
```
R1#sh ip rou os
     172.16.0.0/24 is subnetted, 6 subnets
O IA    172.16.57.0 [110/50] via 172.16.12.2, 00:13:35, FastEthernet0/0
O IA    172.16.45.0 [110/40] via 172.16.12.2, 00:14:35, FastEthernet0/0
O IA    172.16.34.0 [110/30] via 172.16.12.2, 00:15:49, FastEthernet0/0
O IA    172.16.23.0 [110/20] via 172.16.12.2, 00:18:09, FastEthernet0/0
     10.0.0.0/8 is variably subnetted, 40 subnets, 2 masks
O IA    10.3.0.1/32 [110/21] via 172.16.12.2, 00:15:49, FastEthernet0/0
O       10.2.1.1/32 [110/11] via 172.16.12.2, 00:17:59, FastEthernet0/0
O IA    10.3.1.1/32 [110/21] via 172.16.12.2, 00:15:49, FastEthernet0/0
O       10.2.0.1/32 [110/11] via 172.16.12.2, 00:17:59, FastEthernet0/0
O IA    10.3.2.1/32 [110/21] via 172.16.12.2, 00:15:49, FastEthernet0/0
O       10.2.3.1/32 [110/11] via 172.16.12.2, 00:17:59, FastEthernet0/0
O IA    10.3.3.1/32 [110/21] via 172.16.12.2, 00:15:49, FastEthernet0/0
O       10.2.2.1/32 [110/11] via 172.16.12.2, 00:17:59, FastEthernet0/0
O IA    10.7.0.1/32 [110/51] via 172.16.12.2, 00:12:27, FastEthernet0/0
O       10.6.1.1/32 [110/11] via 172.16.16.6, 00:19:19, FastEthernet0/1
O IA    10.5.2.1/32 [110/41] via 172.16.12.2, 00:13:37, FastEthernet0/0
O IA    10.4.3.1/32 [110/31] via 172.16.12.2, 00:14:17, FastEthernet0/0
O IA    10.7.1.1/32 [110/51] via 172.16.12.2, 00:12:27, FastEthernet0/0
O       10.6.0.1/32 [110/11] via 172.16.16.6, 00:19:19, FastEthernet0/1
O IA    10.5.3.1/32 [110/41] via 172.16.12.2, 00:13:37, FastEthernet0/0
O IA    10.4.2.1/32 [110/31] via 172.16.12.2, 00:14:17, FastEthernet0/0
O IA    10.7.2.1/32 [110/51] via 172.16.12.2, 00:12:27, FastEthernet0/0
O       10.6.3.1/32 [110/11] via 172.16.16.6, 00:19:19, FastEthernet0/1
O IA    10.5.0.1/32 [110/41] via 172.16.12.2, 00:13:37, FastEthernet0/0
O IA    10.4.1.1/32 [110/31] via 172.16.12.2, 00:14:17, FastEthernet0/0
O IA    10.7.3.1/32 [110/51] via 172.16.12.2, 00:12:27, FastEthernet0/0
```

```
R2#sh run int loop 1
Building configuration...

Current configuration : 62 bytes
!
interface Loopback1
 ip address 10.2.1.1 255.255.255.0
end

R2#sh ip os int loop 4
Loopback4 is up, line protocol is up
  Internet Address 10.22.0.1/24, Area 0
  Process ID 10, Router ID 10.22.3.1, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
R2#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#int range loop 0 -7
R2(config-if-range)#ip ospf network point-to-point
R2(config-if-range)#
```

** on using p2p CMD we will get all routes as /24 on other routers

OSPF Summarization

#R2




```
R2
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#int range loop 0 -7
R2(config-if-range)#ip ospf network point-to-point
R2(config-if-range)#^Z
R2#
*Mar  1 01:04:25.035: %SYS-5-CONFIG_I: Configured from console by console
R2#
*Mar  1 01:05:35.111: %OSPF-5-ADJCHG: Process 10, Nbr 10.1.3.1 on FastEthernet0/0 from LOADING to FULL, Loading Do
ne
R2#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#
R2(config)#router ospf 10
R2(config-router)#area 1 range 10.6.0.0 255.255.252.0
R2(config-router)#area 1 range 10.1.0.0 255.255.252.0
R2(config-router)#area 1 range 10.2.0.0 255.255.252.0
R2(config-router)#area 0 range 10.22.0.0 255.255.252.0
R2(config-router)#area 0 range 10.3.0.0 255.255.252.0
R2(config-router)#area 0 range 10.44.0.0 255.255.252.0
R2(config-router)#^Z
```

** summarize all routes 10.1,10.2,10.6,10.22,10.3,10.44

(** we use only wild card on advertise not on summarization**)

#R7

```
R7(config-router)#
R7(config-router)#summary-address 10.77.0.0 255.255.252.0
R7(config-router)#
```

** verify all the routes on OSPF routing table

#R3 (we can't apply summarization on OWN area)

```
R3#sh ip rou os
     172.16.0.0/24 is subnetted, 6 subnets
O IA    172.16.57.0 [110/30] via 172.16.34.4, 00:25:15, FastEthernet0/0
O IA    172.16.45.0 [110/20] via 172.16.34.4, 00:26:15, FastEthernet0/0
O IA    172.16.16.0 [110/30] via 172.16.23.2, 00:07:55, FastEthernet0/1
O IA    172.16.12.0 [110/20] via 172.16.23.2, 00:27:29, FastEthernet0/1
     10.0.0.0/8 is variably subnetted, 19 subnets, 3 masks
O IA    10.2.0.0/22 [110/11] via 172.16.23.2, 00:02:46, FastEthernet0/1
O IA    10.1.0.0/22 [110/21] via 172.16.23.2, 00:02:51, FastEthernet0/1
O IA    10.6.0.0/22 [110/31] via 172.16.23.2, 00:02:56, FastEthernet0/1
O IA    10.7.0.0/22 [110/31] via 172.16.34.4, 00:01:43, FastEthernet0/0
O IA    10.4.0.0/22 [110/11] via 172.16.34.4, 00:01:35, FastEthernet0/0
O IA    10.5.0.0/22 [110/21] via 172.16.34.4, 00:01:38, FastEthernet0/0
O       10.22.0.0/24 [110/11] via 172.16.23.2, 00:09:30, FastEthernet0/1
O       10.22.1.0/24 [110/11] via 172.16.23.2, 00:09:30, FastEthernet0/1
O       10.22.2.0/24 [110/11] via 172.16.23.2, 00:09:32, FastEthernet0/1
O       10.22.3.0/24 [110/11] via 172.16.23.2, 00:09:32, FastEthernet0/1
O       10.44.3.1/32 [110/11] via 172.16.34.4, 00:26:01, FastEthernet0/0
O       10.44.2.1/32 [110/11] via 172.16.34.4, 00:26:01, FastEthernet0/0
O       10.44.1.1/32 [110/11] via 172.16.34.4, 00:26:01, FastEthernet0/0
O       10.44.0.1/32 [110/11] via 172.16.34.4, 00:26:01, FastEthernet0/0
O E1    10.77.0.0/22 [110/50] via 172.16.34.4, 00:00:42, FastEthernet0/0
R3#
```