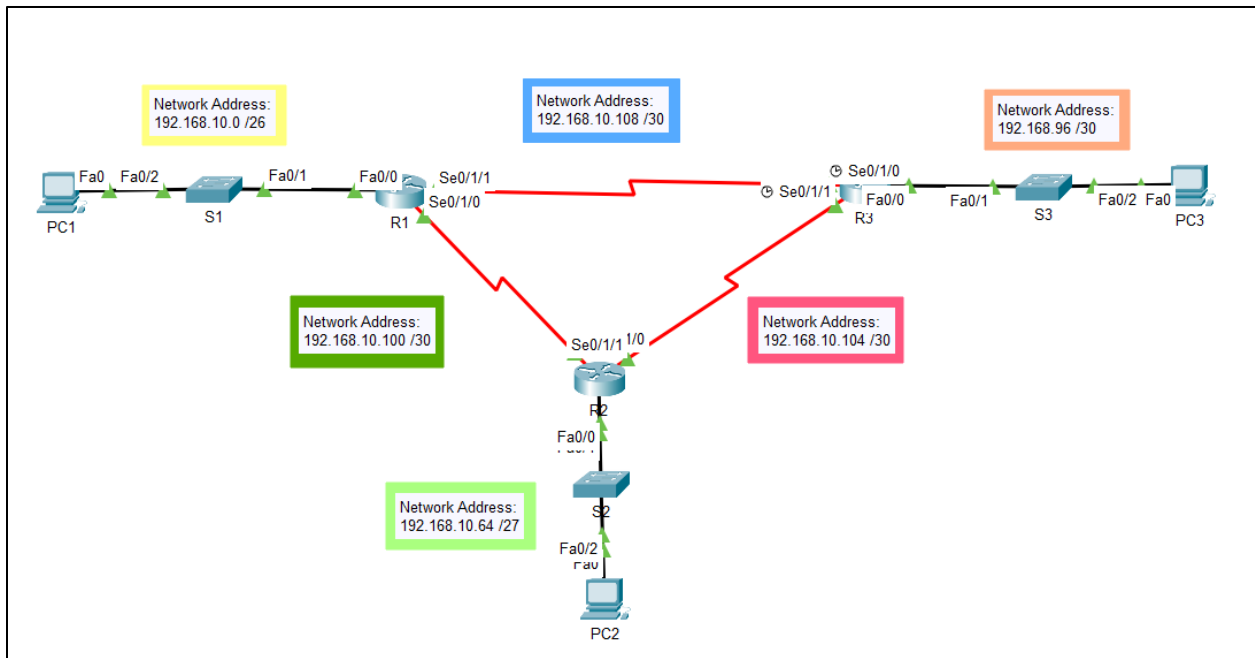


## Lab 4: Routing Protocols



Network Area	Device Name	IP Address	Subnet Mask
LAN 1	R1	192.168.10.1	255.255.255.192
	PC1	192.168.10.2	255.255.255.192
LAN 2	R2	192.168.10.65	255.255.255.224
	PC2	192.168.10.66	255.255.255.224
LAN 3	R3	192.168.10.97	255.255.255.252
	PC3	192.168.10.98	255.255.255.252
WAN 1	R1	192.168.10.101	255.255.255.252
	R2	192.168.10.102	255.255.255.252
WAN 2	R3	192.168.10.105	255.255.255.252
	R2	192.168.10.106	255.255.255.252
WAN 3	R1	192.168.10.109	255.255.255.252
	R3	192.168.10.110	255.255.255.252

### R1 OSPF Configuration:

```

R1(config)#router ospf 10
R1(config-router)#network 192.168.10.0 0.0.0.63 area 0
R1(config-router)#network 192.168.10.100 0.0.0.3 area 0
R1(config-router)#network 192.168.10.108 0.0.0.3 area 0
R1(config-router)#exit
R1(config)#exit
R1#

```

## R2 OSPF Configuration:

```
R2(config)#router ospf 10
R2(config-router)#network 192.168.10.64 0.0.0.31 area 0
R2(config-router)#network 192.168.10.100 0.0.0.3 area 0
R2(config-router)#network 192.168.10.100 0.0.0.3 area 0
00:04:39: %OSPF-5-ADJCHG: Process 10, Nbr 192.168.10.109 on Serial0/1/
R2(config-router)#network 192.168.10.104 0.0.0.3 area 0
R2(config-router)#exit
R2(config)#
```

## R3 OSPF Configuration:

```
R3(config)#router ospf 10
R3(config-router)#network 192.168.10.96 0.0.0.3 area 0
R3(config-router)#network 192.168.10.104 0.0.0.3 area 0
R3(config-router)#
00:06:46: %OSPF-5-ADJCHG: Process 10, Nbr 192.168.10.106 on Serial0/1/1 from LOADING to FULL,
Loading Done

R3(config-router)#network 192.168.10.108 0.0.0.3 area 0
R3(config-router)#exit
R3(config)#exit
R3#
```

## Verifying OSPF Configuration in R1:

```
R1#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

    192.168.10.0/24 is variably subnetted, 6 subnets, 3 masks
C       192.168.10.0/26 is directly connected, FastEthernet0/0
O       192.168.10.64/27 [110/65] via 192.168.10.102, 00:00:22, Serial0/1/1
O       192.168.10.96/30 [110/65] via 192.168.10.110, 00:00:22, Serial0/1/0
C       192.168.10.100/30 is directly connected, Serial0/1/1
O       192.168.10.104/30 [110/128] via 192.168.10.110, 00:00:22, Serial0/1/0
        [110/128] via 192.168.10.102, 00:00:22, Serial0/1/1
C       192.168.10.108/30 is directly connected, Serial0/1/0

R1#
```

## Verifying OSPF Configuration in R2:

```
R2#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

    192.168.10.0/24 is variably subnetted, 6 subnets, 3 masks
O       192.168.10.0/26 [110/65] via 192.168.10.101, 00:00:31, Serial0/1/1
C       192.168.10.64/27 is directly connected, FastEthernet0/0
R       192.168.10.96/30 [120/1] via 192.168.10.105, 00:00:12, Serial0/1/0
C       192.168.10.100/30 is directly connected, Serial0/1/1
C       192.168.10.104/30 is directly connected, Serial0/1/0
O       192.168.10.108/30 [110/128] via 192.168.10.101, 00:00:31, Serial0/1/1
```

## Verifying OSPF Configuration in R3:

```
R3#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

    192.168.10.0/24 is variably subnetted, 6 subnets, 3 masks
O       192.168.10.0/26 [110/65] via 192.168.10.109, 00:00:05, Serial0/1/0
O       192.168.10.64/27 [110/65] via 192.168.10.106, 00:00:15, Serial0/1/1
C       192.168.10.96/30 is directly connected, FastEthernet0/0
O       192.168.10.100/30 [110/128] via 192.168.10.106, 00:00:05, Serial0/1/1
           [110/128] via 192.168.10.109, 00:00:05, Serial0/1/0
C       192.168.10.104/30 is directly connected, Serial0/1/1
C       192.168.10.108/30 is directly connected, Serial0/1/0
```