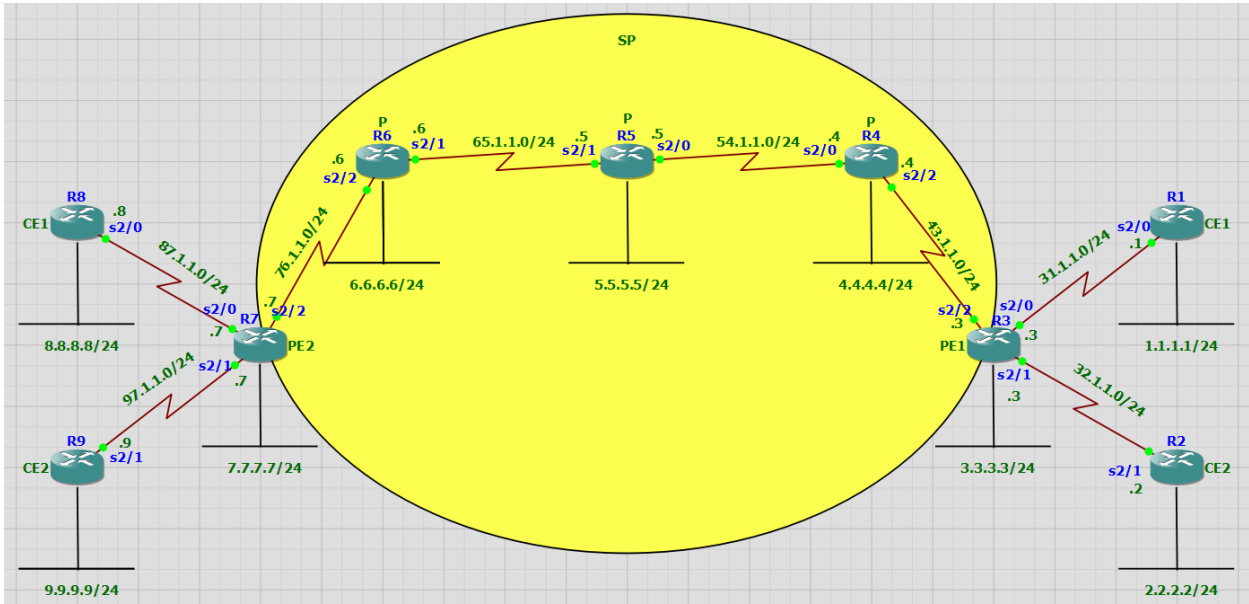


L3 VPN



R1

```
R1(config)#interface serial 2/0
R1(config-if)#no shutdown
R1(config-if)#ip address 31.1.1.1 255.255.255.0
R1(config-if)#ex

R1(config)#interface loopback 1
R1(config-if)#ip address 1.1.1.1 255.255.255.0
R1(config-if)#ex

R1(config)#router ospf 1
R1(config-router)#network 0.0.0.0 255.255.255.255 area 1
```

R2

```
R2(config)#interface serial 2/1
R2(config-if)#no shutdown
R2(config-if)#ip address 32.1.1.2 255.255.255.0
R2(config-if)#ex
```

```
R2(config)#interface loopback 2
R2(config-if)#no shutdown
R2(config-if)#ip address 2.2.2.2 255.255.255.0
R2(config-if)#ex
```

```
R2(config)#router ospf 2
R2(config-router)#network 0.0.0.0 255.255.255.255 area 2
```

R3

```
R3(config)#interface serial 2/0
R3(config-if)#no shutdown
R3(config-if)#ip address 31.1.1.3 255.255.255.0
R3(config-if)#ex
```

```
R3(config)#interface serial 2/1
R3(config-if)#no shutdown
R3(config-if)#ip address 32.1.1.3 255.255.255.0
R3(config-if)#ex
```

```
R3(config)#interface loopback 3
R3(config-if)#no shutdown
R3(config-if)#ip address 3.3.3.3 255.255.255.0
R3(config-if)#ex
```

```
R3(config)#interface serial 2/2
R3(config-if)#no shutdown
R3(config-if)#ip address 43.1.1.3 255.255.255.0
R3(config-if)#ex
```

```
R3(config)#router eigrp 100
R3(config-router)#no auto-summary
R3(config-router)#network 0.0.0.0 255.255.255.255
R3(config-router)#passive-interface default
R3(config-router)#no passive-interface serial 2/2
```

```
R3(config)#mpls ip
R3(config)#interface serial 2/2
R3(config-if)#mpls ip
```

```
R3(config)#router bgp 100
R3(config-router)#neighbor 7.7.7.7 remote-as 100
R3(config-router)#neighbor 7.7.7.7 update-source loopback 3
R3(config-router)#address-family vpnv4
R3(config-router-af)#neighbor 7.7.7.7 activate
R3(config-router-af)#neighbor 7.7.7.7 send-community extended
R3(config-router-af)#
```

```

R3(config)#ip vrf CE1
R3(config-vrf)#route-target both 1:1
R3(config-vrf)#rd 1:1
R3(config-vrf)#exit

R3(config)#interface serial 2/0
R3(config-if)#ip vrf forwarding CE1
% Interface Serial2/0 IP address 31.1.1.3 removed due to enabling VRF CE1
R3(config-if)#ip address 31.1.1.3 255.255.255.0
R3(config-if)#ex

R3(config)#ip vrf CE2
R3(config-vrf)#route-target both 2:2
R3(config-vrf)#rd 2:2
R3(config-vrf)#exit

R3(config)#interface serial 2/1
R3(config-if)#ip vrf forwarding CE2
% Interface Serial2/1 IP address 32.1.1.3 removed due to enabling VRF CE2
R3(config-if)#ip address 32.1.1.3 255.255.255.0
R3(config-if)#ex

R3(config)#router ospf 1 vrf CE1
R3(config-router)#network 0.0.0.0 255.255.255.255 area 1

R3(config)#router ospf 2 vrf CE2
R3(config-router)#network 0.0.0.0 255.255.255.255 area 2

R3(config)#router bgp 100
R3(config-router)#address-family ipv4
R3(config-router-af)#redistribute ospf 1 vrf CE1
R3(config-router-af)#redistribute ospf 2 vrf CE2
R3(config-router-af)#ex
R3(config-router)#ex

R3(config)#router ospf 1 vrf CE1
R3(config-router)#redistribute bgp 100 subnets
R3(config-router)#ex

R3(config)#router ospf 2 vrf CE2
R3(config-router)#redistribute bgp 100 subnets
R3(config-router)#ex

```

R4

```
R4(config)#interface serial 2/2
R4(config-if)#no shutdown
R4(config-if)#ip address 43.1.1.4 255.255.255.0
R4(config-if)#ex
```

```
R4(config)#interface loopback 4
R4(config-if)#no shutdown
R4(config-if)#ip address 4.4.4.4 255.255.255.0
R4(config-if)#ex
```

```
R4(config)#interface serial 2/0
R4(config-if)#no shutdown
R4(config-if)#ip address 54.1.1.4 255.255.255.0
R4(config-if)#ex
```

```
R4(config)#router eigrp 100
R4(config-router)#no auto-summary
R4(config-router)#network 0.0.0.0 255.255.255.255
```

```
R4(config)#mpls ip
```

```
R4(config)#interface serial 2/2
R4(config-if)#mpls ip
R4(config-if)#ex
```

```
R4(config)#interface serial 2/0
R4(config-if)#mpls ip
```

R5

```
R5(config)#interface serial 2/0
R5(config-if)#no shutdown
R5(config-if)#ip address 54.1.1.5 255.255.255.0
R5(config-if)#ex
```

```
R5(config)#interface loopback 5
R5(config-if)#no shutdown
R5(config-if)#ip address 5.5.5.5 255.255.255.0
R5(config-if)#ex
```

```
R5(config)#interface serial 2/1
R5(config-if)#no shutdown
R5(config-if)#ip address 65.1.1.5 255.255.255.0
R5(config-if)#ex
```

```
R5(config)#router eigrp 100
R5(config-router)#no auto-summary
R5(config-router)#network 0.0.0.0 255.255.255.255
```

```
R5(config)#mpls ip
R5(config)#interface serial 2/0
R5(config-if)#mpls ip
```

```
R5(config)#interface serial 2/1
R5(config-if)#mpls ip
```

R6

```
R6(config)#interface serial 2/1
R6(config-if)#no shutdown
R6(config-if)#ip address 65.1.1.6 255.255.255.0
R6(config-if)#ex
```

```
R6(config)#interface loopback 6
R6(config-if)#ip address 6.6.6.6 255.255.255.0
R6(config-if)#ex
```

```
R6(config)#interface serial 2/2
R6(config-if)#ip address 76.1.1.6 255.255.255.0
R6(config-if)#ex
```

```
R6(config)#router eigrp 100
R6(config-router)#no auto-summary
R6(config-router)#network 0.0.0.0 255.255.255.255
```

```
R6(config)#mpls ip
```

```
R6(config)#interface serial 2/1
R6(config-if)#mpls ip
```

```
R6(config)#interface serial 2/2
R6(config-if)#mpls ip
```

R7

```
R7(config)#interface serial 2/2
R7(config-if)#ip address 76.1.1.7 255.255.255.0
R7(config-if)#ex
```

```
R7(config)#interface loopback 7
R7(config-if)#ip address 7.7.7.7 255.255.255.0
R7(config-if)#ex
```

```
R7(config)#interface serial 2/0
R7(config-if)#no shutdown
R7(config-if)#ip address 87.1.1.7 255.255.255.0
R7(config-if)#ex
```

```
R7(config)#interface serial 2/1
R7(config-if)#no shutdown
R7(config-if)#ip address 97.1.1.7 255.255.255.0
R7(config-if)#ex
```

```
R7(config)#router eigrp 100
R7(config-router)#no auto-summary
R7(config-router)#network 0.0.0.0 255.255.255.255
R7(config-router)#passive-interface default
R7(config-router)#no passive-interface serial 2/2
R7(config-router)#
```

```
R7(config)#mpls ip
R7(config)#interface serial 2/2
R7(config-if)#mpls ip
```

```
R7(config)#router bgp 100
R7(config-router)#neighbor 3.3.3.3 remote-as 100
R7(config-router)#neighbor 3.3.3.3 update-source loopback 7
R7(config-router)#address-family vpnv4
R7(config-router-af)#neighbor 3.3.3.3 activate
R7(config-router-af)#neighbor 3.3.3.3 send-community extended
```

```
R7(config)#ip vrf CE1
R7(config-vrf)#route-target both 1:1
R7(config-vrf)#rd 1:1
R7(config-vrf)#exit
```



```
R7(config)#interface serial 2/0
R7(config-if)#ip vrf forwarding CE1
% Interface Serial2/0 IP address 87.1.1.7 removed due to enabling VRF CE1
R7(config-if)#ip address 87.1.1.7 255.255.255.0
R7(config-if)#ex
```

```
R7(config)#ip vrf CE2
R7(config-vrf)#route-target both 2:2
R7(config-vrf)#rd 2:2
R7(config-vrf)#exit
```

```
R7(config)#interface serial 2/1
R7(config-if)#ip vrf forwarding CE2
% Interface Serial2/1 IP address 97.1.1.7 removed due to enabling VRF CE2
R7(config-if)#ip address 97.1.1.7 255.255.255.0
R7(config-if)#ex
```

```
R7(config)#router ospf 1 vrf CE1
R7(config-router)#network 0.0.0.0 255.255.255.255 area 1
```

```
R7(config)#router ospf 2 vrf CE2
R7(config-router)#network 0.0.0.0 255.255.255.255 area 2
```

```
R7(config)#router bgp 100
R7(config-router)#address-family ipv4
R7(config-router-af)#redistribute ospf 1 vrf CE1
R7(config-router-af)#redistribute ospf 2 vrf CE2
```

```
R7(config)#router ospf 1 vrf CE1
R7(config-router)#redistribute bgp 100 subnets
```

```
R7(config)#router ospf 2 vrf CE2
R7(config-router)#redistribute bgp 100 subnets
```

R8

```
R8(config)#interface serial 2/0  
R8(config-if)#no shutdown  
R8(config-if)#ip address 87.1.1.8 255.255.255.0  
R8(config-if)#ex
```

```
R8(config)#interface loopback 8  
R8(config-if)#ip address 8.8.8.8 255.255.255.0  
R8(config-if)#ex
```

```
R8(config)#router ospf 1  
R8(config-router)#network 0.0.0.0 255.255.255.255 area 1
```

R9

```
R9(config)#interface serial 2/1
R9(config-if)#no shutdown
R9(config-if)#ip address 97.1.1.9 255.255.255.0
R9(config-if)#ex
```

```
R9(config)#interface loopback 9
R9(config-if)#ip address 9.9.9.9 255.255.255.0
R9(config-if)#ex
```

```
R9(config)#router ospf 2
R9(config-router)#network 0.0.0.0 255.255.255.255 area 2
```