

## **R1:**

### VRF

```
config t
vrf definition RED-VPN-R13
rd 192.168.13.1:1
route-target export 192.168.13.1:1
route-target import 192.168.15.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding RED-VPN-R13
ip address 172.16.11.1 255.255.255.252
exit
exit
wr
```

### Add Neighbour in VRF

```
config t
router bgp 17821
address-family ipv4 vrf RED-VPN-R13
neighbor 172.16.11.2 remote-as 65001
neighbor 172.16.11.2 activate
neighbor 172.16.11.2 as-override
neighbor 172.16.11.2 default-originate
exit
exit
exit
wr
```

### Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.2 activate
neighbor 172.16.15.3 activate
neighbor IPV4-iBGP-REG1 send-community both
exit
exit
exit
wr
```

## **R2:**

Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.1 activate
neighbor 172.16.15.3 activate
neighbor IPV4-iBGP-REG1 send-community both
neighbor 172.16.15.5 activate
neighbor 172.16.15.8 activate
neighbor 172.16.15.11 activate
neighbor IPV4-iBGP-TRCORE send-community both
exit
exit
exit
wr
```

Configure RR for vpnv4 prefixes

```
config t
router bgp 17821
address-family vpnv4
neighbor IPV4-iBGP-REG1 route-reflector-client
exit
exit
exit
wr
```

### **R3:**

#### **VRF**

```
config t
vrf definition GREEN-VPN-R14
rd 192.168.14.1:1
route-target export 192.168.14.1:1
route-target import 192.168.16.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding GREEN-VPN-R14
ip address 172.16.11.33 255.255.255.252
exit
exit
wr
```

#### **Add Neighbour in VRF**

```
config t
router bgp 17821
address-family ipv4 vrf GREEN-VPN-R14
neighbor 172.16.11.34 remote-as 65002
neighbor 172.16.11.34 activate
neighbor 172.16.11.34 as-override
neighbor 172.16.11.34 default-originate
exit
exit
exit
wr
```

#### **Activate VPNv4 address-family**

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.1 activate
neighbor 172.16.15.2 activate
neighbor IPV4-iBGP-REG1 send-community both
exit
exit
exit
wr
```

#### **R4:**

##### VRF

```
config t
vrf definition RED-VPN-R15
rd 192.168.15.1:1
route-target export 192.168.15.1:1
route-target import 192.168.13.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding RED-VPN-R15
ip address 172.16.11.65 255.255.255.252
exit
exit
wr
```

##### Add Neighbour in VRF

```
config t
router bgp 17821
address-family ipv4 vrf RED-VPN-R15
neighbor 172.16.11.66 remote-as 65001
neighbor 172.16.11.66 activate
neighbor 172.16.11.66 as-override
neighbor 172.16.11.66 default-originate
exit
exit
exit
wr
```

##### Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.5 activate
neighbor 172.16.15.6 activate
neighbor IPV4-iBGP-REG2 send-community both
exit
exit
exit
wr
```

## **R5:**

Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.4 activate
neighbor 172.16.15.6 activate
neighbor IPV4-iBGP-REG2 send-community both
neighbor 172.16.15.2 activate
neighbor 172.16.15.8 activate
neighbor 172.16.15.11 activate
neighbor IPV4-iBGP-TRCORE send-community both
exit
exit
exit
wr
```

Configure RR for vpnv4 prefixes

```
config t
router bgp 17821
address-family vpnv4
neighbor IPV4-iBGP-REG2 route-reflector-client
exit
exit
exit
wr
```

## **R6:**

### VRF

```
config t
vrf definition GREEN-VPN-R16
rd 192.168.16.1:1
route-target export 192.168.16.1:1
route-target import 192.168.14.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding GREEN-VPN-R16
ip address 172.16.11.97 255.255.255.252
exit
exit
wr
```

### Add Neighbour in VRF

```
config t
router bgp 17821
address-family ipv4 vrf GREEN-VPN-R16
neighbor 172.16.11.98 remote-as 65002
neighbor 172.16.11.98 activate
neighbor 172.16.11.98 as-override
neighbor 172.16.11.98 default-originate
exit
exit
exit
wr
```

### Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.4 activate
neighbor 172.16.15.5 activate
neighbor IPV4-iBGP-REG2 send-community both
exit
exit
exit
wr
```

## **R7:**

### **VRF**

```
config t
vrf definition BLUE-VPN-R17
rd 192.168.17.1:1
route-target export 192.168.17.1:1
route-target import 192.168.19.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding BLUE-VPN-R17
ip address 172.16.11.129 255.255.255.252
exit
exit
wr
```

### **Add Neighbour in VRF**

```
config t
router bgp 17821
address-family ipv4 vrf BLUE-VPN-R17
neighbor 172.16.11.130 remote-as 65003
neighbor 172.16.11.130 activate
neighbor 172.16.11.130 as-override
neighbor 172.16.11.130 default-originate
exit
exit
exit
wr
```

### **Activate VPNv4 address-family**

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.8 activate
neighbor 172.16.15.9 activate
neighbor IPV4-iBGP-REG3 send-community both
exit
exit
exit
wr
```

**R8:**

Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.7 activate
neighbor 172.16.15.9 activate
neighbor IPV4-iBGP-REG3 send-community both
neighbor 172.16.15.2 activate
neighbor 172.16.15.5 activate
neighbor 172.16.15.11 activate
neighbor IPV4-iBGP-TRCORE send-community both
exit
exit
exit
wr
```

Configure RR for vpnv4 prefixes

```
config t
router bgp 17821
address-family vpnv4
neighbor IPV4-iBGP-REG3 route-reflector-client
exit
exit
exit
wr
```



## **R9:**

### VRF

```
config t
vrf definition BLACK-VPN-R18
rd 192.168.18.1:1
route-target export 192.168.18.1:1
route-target import 192.168.20.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding BLACK-VPN-R18
ip address 172.16.11.161 255.255.255.252
exit
exit
wr
```

### Add Neighbour in VRF

```
config t
router bgp 17821
address-family ipv4 vrf BLACK-VPN-R18
neighbor 172.16.11.162 remote-as 65004
neighbor 172.16.11.162 activate
neighbor 172.16.11.162 as-override
neighbor 172.16.11.162 default-originate
exit
exit
exit
wr
```

### Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.7 activate
neighbor 172.16.15.8 activate
neighbor IPV4-iBGP-REG3 send-community both
exit
exit
exit
wr
```

## **R10:**

### VRF

```
config t
vrf definition BLUE-VPN-R19
rd 192.168.19.1:1
route-target export 192.168.19.1:1
route-target import 192.168.17.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding BLUE-VPN-R19
ip address 172.16.11.193 255.255.255.252
exit
exit
wr
```

### Add Neighbour in VRF

```
config t
router bgp 17821
address-family ipv4 vrf BLUE-VPN-R19
neighbor 172.16.11.194 remote-as 65003
neighbor 172.16.11.194 activate
neighbor 172.16.11.194 as-override
neighbor 172.16.11.194 default-originate
exit
exit
exit
wr
```

### Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.11 activate
neighbor 172.16.15.12 activate
neighbor IPV4-iBGP-REG4 send-community both
exit
exit
exit
wr
```

## **R11:**

Activate VPNv4 address-family

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.10 activate
neighbor 172.16.15.12 activate
neighbor IPV4-iBGP-REG4 send-community both
neighbor 172.16.15.2 activate
neighbor 172.16.15.5 activate
neighbor 172.16.15.8 activate
neighbor IPV4-iBGP-TRCORE send-community both
exit
exit
exit
wr
```

Configure RR for vpnv4 prefixes

```
config t
router bgp 17821
address-family vpnv4
neighbor IPV4-iBGP-REG4 route-reflector-client
exit
exit
exit
wr
```

## **R12:**

### **VRF**

```
config t
vrf definition BLACK-VPN-R20
rd 192.168.20.1:1
route-target export 192.168.20.1:1
route-target import 192.168.18.1:1
address-family ipv4
exit
exit
interface fa0/0
vrf forwarding BLACK-VPN-R20
ip address 172.16.11.225 255.255.255.252
exit
exit
wr
```

### **Add Neighbour in VRF**

```
config t
router bgp 17821
address-family ipv4 vrf BLACK-VPN-R20
neighbor 172.16.11.226 remote-as 65004
neighbor 172.16.11.226 activate
neighbor 172.16.11.226 as-override
neighbor 172.16.11.226 default-originate
exit
exit
exit
wr
```

### **Activate VPNv4 address-family**

```
config t
router bgp 17821
address-family vpnv4
neighbor 172.16.15.10 activate
neighbor 172.16.15.11 activate
neighbor IPV4-iBGP-REG4 send-community both
exit
exit
exit
wr
```

**R13:**

Regular BGP configuration

```
config t
router bgp 65001
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.1 remote-as 17821
neighbor 172.16.11.1 activate
network 192.168.13.0 mask 255.255.255.0
exit
exit
ip route 192.168.13.0 255.255.255.0 null 0 permanent
exit
wr
```

**R14:**

```
config t
router bgp 65002
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.33 remote-as 17821
neighbor 172.16.11.33 activate
network 192.168.14.0 mask 255.255.255.0
exit
exit
ip route 192.168.14.0 255.255.255.0 null 0 permanent
exit
wr
```

**R15:**

Regular BGP configuration

```
config t
router bgp 65001
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.65 remote-as 17821
neighbor 172.16.11.65 activate
network 192.168.15.0 mask 255.255.255.0
exit
exit
ip route 192.168.15.0 255.255.255.0 null 0 permanent
exit
wr
```

**R16:**

Regular BGP configuration

```
config t
router bgp 65002
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.97 remote-as 17821
neighbor 172.16.11.97 activate
network 192.168.16.0 mask 255.255.255.0
exit
exit
ip route 192.168.16.0 255.255.255.0 null 0 permanent
exit
wr
```

**R17:**

Regular BGP configuration

```
config t
router bgp 65003
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.129 remote-as 17821
neighbor 172.16.11.129 activate
network 192.168.17.0 mask 255.255.255.0
exit
exit
ip route 192.168.17.0 255.255.255.0 null 0 permanent
exit
wr
```

**R18:**

Regular BGP configuration

```
config t
router bgp 65004
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.161 remote-as 17821
neighbor 172.16.11.161 activate
network 192.168.18.0 mask 255.255.255.0
exit
exit
ip route 192.168.18.0 255.255.255.0 null 0 permanent
```

```
exit
wr
```

### **R19:**

Regular BGP configuration

```
config t
router bgp 65003
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.193 remote-as 17821
neighbor 172.16.11.193 activate
network 192.168.19.0 mask 255.255.255.0
exit
exit
ip route 192.168.19.0 255.255.255.0 null 0 permanent
exit
wr
```

### **R20:**

Regular BGP configuration

```
config t
router bgp 65004
no bgp default ipv4-unicast
address-family ipv4
neighbor 172.16.11.225 remote-as 17821
neighbor 172.16.11.225 activate
network 192.168.20.0 mask 255.255.255.0
exit
exit
ip route 192.168.20.0 255.255.255.0 null 0 permanent
exit
wr
```