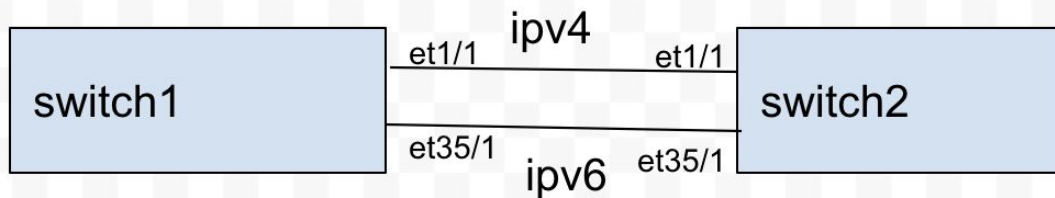


Lab Topology:



switch1(AS 1) is an eBGP neighbor to switch2(AS 2).

et1/1 is an ipv4 eBGP neighbor whereas et35/1 is an ipv6 eBGP neighbor under VRF TEST.

I am advertising routes 100.100.100.1/32 , 1.1.1.2/32 routes from switch2 to switch1 and prefix 1.1.1.1/32 from switch1 to switch2.

1) Route-target configurations under VRF TEST:

a) On switch1:

```
switch1(config-router-bgp-vrf-TEST)#sh run sec router bgp
```

```
router bgp 1
```

```
neighbor 1.1.1.2 maximum-routes 12000
```

```
!
```

```
address-family vpn-ipv4
```

```
neighbor 1.1.1.2 activate
```

```
!
```

```
vrf TEST
```

```
rd 1:1
```

```
route-target import vpn-ipv4 1:1
```

```
route-target import vpn-ipv6 1:1
```

```
route-target export vpn-ipv4 1:1
```

```
route-target export vpn-ipv6 1:1
```

```
neighbor 1.1.1.2 remote-as 2
```

```
neighbor 1.1.1.2 update-source Loopback1
```

```
neighbor 1.1.1.2 ebgp-multihop
```

```
neighbor 1.1.1.2 send-community
```

```
neighbor 1.1.1.2 maximum-routes 12000
```

```
neighbor 10.10.10.2 remote-as 2
```

```
neighbor 10.10.10.2 send-community
```

```
neighbor 10.10.10.2 maximum-routes 12000
```

```
neighbor 2001::2 remote-as 2
neighbor 2001::2 send-community
neighbor 2001::2 maximum-routes 12000
!
address-family ipv4
  network 1.1.1.1/32
!
address-family ipv6
  neighbor 2001::2 activate
```

b)On switch2:

```
switch2(config-router-bgp-vrf-TEST)#sh run sec router bgp
router bgp 2
  neighbor 1.1.1.1 maximum-routes 12000
  !
  address-family vpn-ipv4
    neighbor 1.1.1.1 activate
  !
  vrf TEST
  rd 1:1
  route-target import vpn-ipv4 1:1
  route-target export vpn-ipv4 1:1
  neighbor 1.1.1.1 remote-as 1
  neighbor 1.1.1.1 update-source Loopback1
  neighbor 1.1.1.1 ebgp-multihop
  neighbor 1.1.1.1 send-community
  neighbor 1.1.1.1 maximum-routes 12000
  neighbor 10.10.10.1 remote-as 1
  neighbor 10.10.10.1 send-community
  neighbor 10.10.10.1 maximum-routes 12000
  neighbor 2001::1 remote-as 1
  neighbor 2001::1 send-community
  neighbor 2001::1 maximum-routes 12000
  !
  address-family ipv4
    network 1.1.1.2/32
    network 100.100.100.1/32
  !
  address-family ipv6
    route-target import vpn-ipv6 1:1
    route-target export vpn-ipv6 1:1
    neighbor 2001::1 activate
    network 3001::/64
```

In this case for both the devices route-target commands are issued under vrf TEST.

2)Below are the lab outputs from both the devices:

a)on switch1:

```
switch1(config-router-bgp-vrf-TEST)#sh ip bgp summary vrf TEST
```

```
BGP summary information for VRF TEST
```

```
Router identifier 10.10.10.1, local AS number 1
```

```
Neighbor Status Codes: m - Under maintenance
```

| Neighbor | V AS | MsgRcvd | MsgSent | InQ | OutQ | Up/Down | State | PfxRcd | PfxAcc |
|------------|------|---------|---------|-----|------|----------|-------|--------|--------|
| 1.1.1.2 | 4 2 | 42 | 39 | 0 | 0 | 00:06:31 | Estab | 2 | 2 |
| 10.10.10.2 | 4 2 | 284 | 277 | 0 | 0 | 00:28:45 | Estab | 2 | 2 |

```
switch1(config-router-bgp-vrf-TEST)#sh ipv6 bgp summary vrf TEST
```

```
BGP summary information for VRF TEST
```

```
Router identifier 10.10.10.1, local AS number 1
```

```
Neighbor Status Codes: m - Under maintenance
```

| Neighbor | V AS | MsgRcvd | MsgSent | InQ | OutQ | Up/Down | State | PfxRcd | PfxAcc |
|----------|------|---------|---------|-----|------|----------|-------|--------|--------|
| 2001::2 | 4 2 | 88 | 85 | 0 | 0 | 01:08:02 | Estab | 1 | 1 |

```
switch1(conf)#sh bgp vpn-ipv4
```

| | Network | Next Hop | Metric | LocPref | Weight | Path |
|-----|--------------------------------------|----------|--------|---------|--------|------|
| * > | RD: 1:1 IPv4 prefix 1.1.1.1/32 | - | - | 0 | i | |
| * > | RD: 1:1 IPv4 prefix 1.1.1.2/32 | - | 100 | 0 | 2 i | |
| * | RD: 1:1 IPv4 prefix 1.1.1.2/32 | - | 100 | 0 | 2 i | |
| * > | RD: 1:1 IPv4 prefix 100.100.100.1/32 | - | 100 | 0 | 2 i | |
| * | RD: 1:1 IPv4 prefix 100.100.100.1/32 | - | 100 | 0 | 2 i | |

```
switch1(config-router-bgp)#sh bgp vpn-ipv6
```

| | Network | Next Hop | Metric | LocPref | Weight | Path |
|-----|-------------------------------|----------|--------|---------|--------|------|
| * > | RD: 1:1 IPv6 prefix 3001::/64 | - | 100 | 0 | 2 i | |

b)on switch2:

```
switch2(config-router-bgp-vrf-TEST)#sh ip bgp summary vrf TEST
```

```
BGP summary information for VRF TEST
```

```
Router identifier 10.10.10.2, local AS number 2
```

```
Neighbor Status Codes: m - Under maintenance
```

| Neighbor | V | AS | MsgRcvd | MsgSent | InQ | OutQ | Up/Down | State | PfxRcd | PfxAcc |
|------------|---|----|---------|---------|-----|------|----------|-------|--------|--------|
| 1.1.1.1 | 4 | 1 | 35 | 42 | 0 | 0 | 00:06:53 | Estab | 1 | 1 |
| 10.10.10.1 | 4 | 1 | 273 | 280 | 0 | 0 | 00:29:08 | Estab | 1 | 1 |

```
switch2(config-router-bgp-vrf-TEST)#sh ipv6 bgp summary vrf TEST
```

```
BGP summary information for VRF TEST
```

```
Router identifier 10.10.10.2, local AS number 2
```

```
Neighbor Status Codes: m - Under maintenance
```

| Neighbor | V | AS | MsgRcvd | MsgSent | InQ | OutQ | Up/Down | State | PfxRcd | PfxAcc |
|----------|---|----|---------|---------|-----|------|----------|-------|--------|--------|
| 2001::1 | 4 | 1 | 85 | 88 | 0 | 0 | 01:08:07 | Estab | 0 | 0 |

```
switch2(conf)#sh bgp vpn-ipv4
```

| Network | Next Hop | Metric | LocPref | Weight | Path |
|--|----------|--------|---------|--------|------|
| * > RD: 1:1 IPv4 prefix 1.1.1.1/32 | - | 100 | 0 | 1 | i |
| * RD: 1:1 IPv4 prefix 1.1.1.1/32 | - | 100 | 0 | 1 | i |
| * > RD: 1:1 IPv4 prefix 1.1.1.2/32 | - | - | 0 | | i |
| * > RD: 1:1 IPv4 prefix 100.100.100.1/32 | - | - | 0 | | i |

```
switch2(config-router-bgp)#sh bgp vpn-ipv6
```

| Network | Next Hop | Metric | LocPref | Weight | Path |
|-----------------------------------|----------|--------|---------|--------|------|
| * > RD: 1:1 IPv6 prefix 3001::/64 | - | - | 0 | | i |

Now I have changed the route-target configurations from VRF TEST to address-family ipv4 under VRF TEST on only one switch i.e on switch2 and I haven't changed any configuration under switch 1.

After route-target change on switch2 alone:

```
a)router bgp 2
  neighbor 1.1.1.1 maximum-routes 12000
  !
  address-family vpn-ipv4
    neighbor 1.1.1.1 activate
  !
  vrf TEST
    rd 1:1
    neighbor 1.1.1.1 remote-as 1
    neighbor 1.1.1.1 update-source Loopback1
    neighbor 1.1.1.1 ebgp-multihop
    neighbor 1.1.1.1 send-community
    neighbor 1.1.1.1 maximum-routes 12000
    neighbor 10.10.10.1 remote-as 1
    neighbor 10.10.10.1 send-community
    neighbor 10.10.10.1 maximum-routes 12000
    neighbor 2001::1 remote-as 1
    neighbor 2001::1 send-community
    neighbor 2001::1 maximum-routes 12000
  !
  address-family ipv4
    route-target import vpn-ipv4 1:1
    route-target export vpn-ipv4 1:1
    neighbor 10.10.10.1 activate
    network 1.1.1.2/32
    network 100.100.100.1/32
  !
  address-family ipv6
    route-target import vpn-ipv6 1:1
    route-target export vpn-ipv6 1:1
    neighbor 2001::1 activate
    network 3001::/64
```

I have cleared/reinitiated bgp neighborhood(clear ip bgp *) after the above change and I could see no change in outputs from both the switches. This is applicable for **address-family ipv6** as well.

Lab outputs after change:

a)On switch1:

```
switch1(conf)#sh bgp vpn-ipv4
```

| | Network | Next Hop | Metric | LocPref | Weight | Path |
|-----|--------------------------------------|----------|--------|---------|--------|------|
| * > | RD: 1:1 IPv4 prefix 1.1.1.1/32 | - | - | 0 | | i |
| * > | RD: 1:1 IPv4 prefix 1.1.1.2/32 | - | 100 | 0 | 2 | i |
| * | RD: 1:1 IPv4 prefix 1.1.1.2/32 | - | 100 | 0 | 2 | i |
| * > | RD: 1:1 IPv4 prefix 100.100.100.1/32 | - | 100 | 0 | 2 | i |
| * | RD: 1:1 IPv4 prefix 100.100.100.1/32 | - | 100 | 0 | 2 | i |

switch1(config-router-bgp)#sh ip route vrf TEST

VRF: TEST

Gateway of last resort is not set

```

C    1.1.1.1/32 is directly connected, Loopback1
B E  1.1.1.2/32 [200/0] via 10.10.10.2, Ethernet35/1
C    10.10.10.0/24 is directly connected, Ethernet35/1
B E  100.100.100.1/32 [200/0] via 10.10.10.2, Ethernet35/1

```

b)On switch2:

switch2(conf)#sh bgp vpn-ipv4

| | Network | Next Hop | Metric | LocPref | Weight | Path |
|-----|--------------------------------------|----------|--------|---------|--------|------|
| * > | RD: 1:1 IPv4 prefix 1.1.1.1/32 | - | 100 | 0 | 1 | i |
| * | RD: 1:1 IPv4 prefix 1.1.1.1/32 | - | 100 | 0 | 1 | i |
| * > | RD: 1:1 IPv4 prefix 1.1.1.2/32 | - | - | 0 | | i |
| * > | RD: 1:1 IPv4 prefix 100.100.100.1/32 | - | - | 0 | | i |

```
switch2(config-router-bgp-vrf-TEST# sh ip route vrf TEST
```

VRF: TEST

Gateway of last resort is not set

```
B E 1.1.1.1/32 [200/0] via 10.10.10.1, Ethernet35/1  
C    1.1.1.2/32 is directly connected, Loopback1  
C    10.10.10.0/24 is directly connected, Ethernet35/1  
C    100.100.100.1/32 is directly connected, Loopback10
```

So in summary we can issue route-target commands directly under VRF or under address-family ipv4|ipv6 for that VRF. There is no difference wrt outputs with both type of configs.