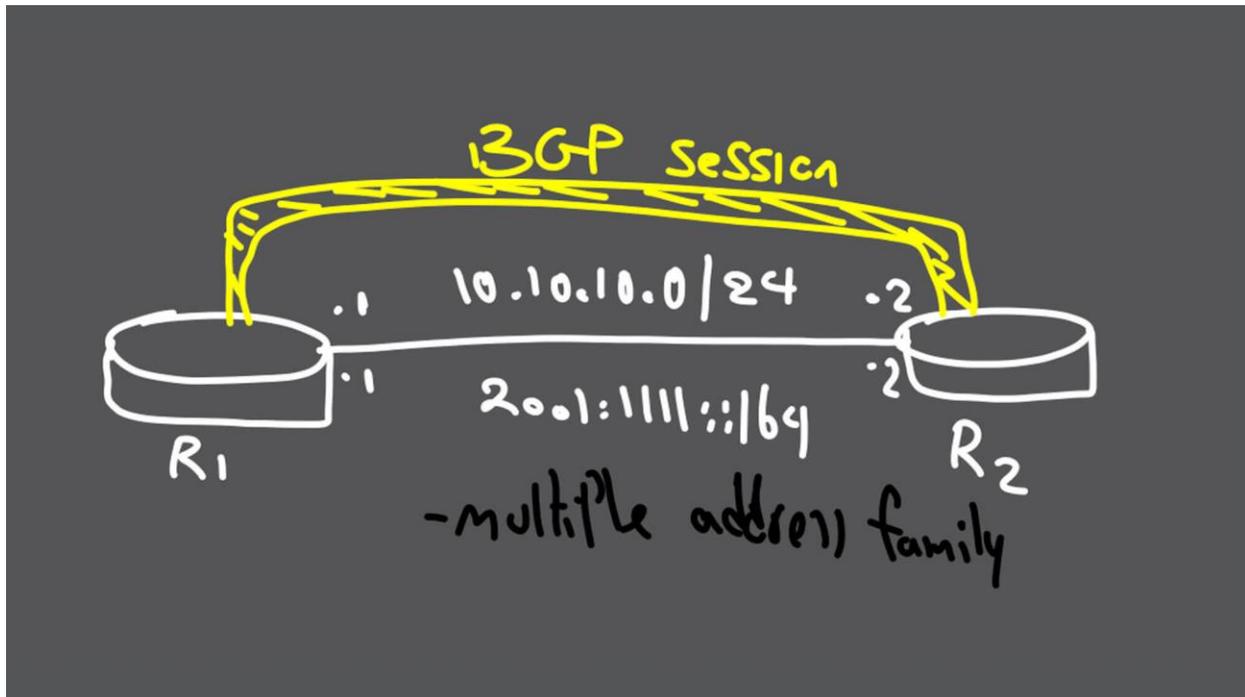


Single BGP Session - Multi Address Families

In this article, I want to show you how we can use one BGP session to carry both ipv4 and ipv6!



As you can see in our topology, we have two routers. They connected with one link. We have here two IPs. One IPV4, one IPV6.

Here I show you configuration under interface gig0/1 on both routers:

```
!
interface GigabitEthernet0/1
  ip address 10.10.10.1 255.255.255.0
  duplex auto
  speed auto
  media-type rj45
  ipv6 address 2001:1111::1/64
end

R1#
```

```
interface GigabitEthernet0/1
 ip address 10.10.10.2 255.255.255.0
 duplex auto
 speed auto
 media-type rj45
 ipv6 address 2001:1111::2/64
end
```

R2#

Now we are going to create BGP (eBGP) between R1 and R2

First command that we have to issue is:

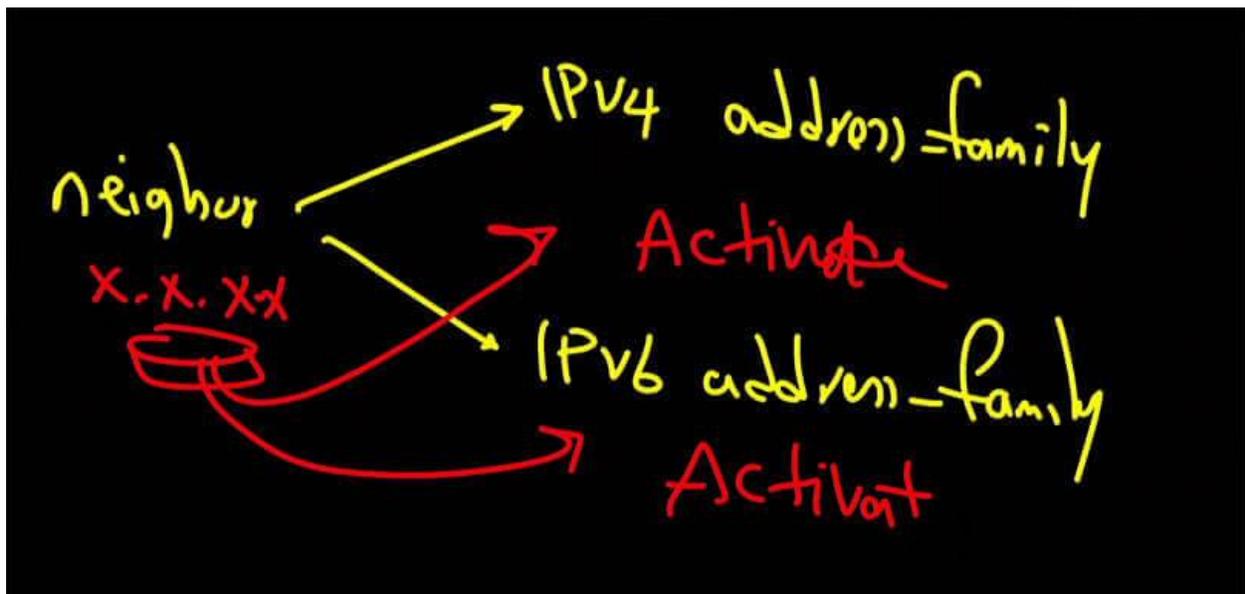
no BGP default ipv4-unicast

With this command, BGP is getting ready for multiprotocol function.

BGP, by default, is using ipv4 unicast peering session establishment.

But we have also ipv6 in our demo.

After this command, we have to add every defined neighbor to each intended address family using activate command.



To continue, we define neighbor and remote-as.

Next, we create two address-family,

One for ipv4 and one for ipv6, and finally, with neighbor activate command we assign neighbor to related AF(address-family)

Check the configuration:

```
router bgp 20
  bgp router-id 2.2.2.2
  bgp log-neighbor-changes
  no bgp default ipv4-unicast
  neighbor 10.10.10.1 remote-as 10
  neighbor 2001:1111::1 remote-as 10
  !
  address-family ipv4
    neighbor 10.10.10.1 activate
  exit-address-family
  !
  address-family ipv6
    neighbor 2001:1111::1 activate
  exit-address-family
```

Now BGP session is established (two individual sessions).

Let's see the verification:

```
R1#show ip bgp summary
BGP router identifier 1.1.1.1, local AS number 10
BGP table version is 1, main routing table version 1

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.10.10.2    4       20     36     37       1     0     0 00:29:49    0
R1#
```

```

R1#show bgp ipv6 unicast neighbors
BGP neighbor is 2001:1111::2, remote AS 20, external link
  BGP version 4, remote router ID 2.2.2.2
  BGP state = Established, up for 00:29:47
  Last read 00:00:47, last write 00:00:35, hold time is 180, keepalive interval is 60 s
  Neighbor sessions:
    1 active, is not multisession capable (disabled)
  Neighbor capabilities:
    Route refresh: advertised and received(new)

```

Based on verification, we have two BGP session between R1 and R2

Single BGP Session for both Ipv4 and Ipv6

Now to reduce overhead and make it more convenient we want to merge two BGP sessions between R1 and R2 into only one session!

Solution – configuration

- **Step 1- we have to create a route-map**

In this route-map, we set the next-hop to our self ipv6 address.

So please pay attention. Our ipv6 address (int g0/1)!

```

R2#sh run | sec route-map
  neighbor 10.10.10.1 route-map ehsan out
route-map ehsan permit 10
  set ipv6 next-hop 2001:1111::2
R2#

```

- **Step 2- address-family ipv6**

Change the neighbor ipv6 into neighbor ipv4 address and bind the route-map to it.

See the configuration:

```

router bgp 20
  bgp router-id 2.2.2.2
  bgp log-neighbor-changes
  no bgp default ipv4-unicast
  neighbor 10.10.10.1 remote-as 10
  neighbor 2001:1111::1 remote-as 10
  !
  address-family ipv4
    neighbor 10.10.10.1 activate
  exit-address-family
  !
  address-family ipv6 ←
    neighbor 10.10.10.1 activate
    neighbor 10.10.10.1 route-map ehsan out
  exit-address-family

```

Last step is verification:

```
R2#sh ip bgp sum
BGP router identifier 2.2.2.2, local AS number 20
BGP table version is 1, main routing table version 1

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.10.10.1    4      10     73     74       1     0     0 01:02:40      0
R2#
```

```
R2#sh bgp ipv6 unicast neighbors
BGP neighbor is 10.10.10.1, remote AS 10, external link
  BGP version 4, remote router ID 1.1.1.1
  BGP state = Established, up for 01:02:52
  Last read 00:00:25, last write 00:00:13, hold time is 180, keepalive interval is 60 seconds
  Neighbor sessions:
    1 active, is not multisession capable (disabled)
```

So now we have only one BGP session for both ipv4 and ipv6.

Thank you very much and waiting for your feedback!