

The configuration of BGP4+ Load-balance In MSR Series

**Keywords:** MSR;BGP4+;IPv4;Load-Banance

**I Requirement for the diagram**

RTA connect RTB, RTC through EBGp, connect RouterD through IBGP. Import static routing of 9::/32 to RTB, RTC. There is load-balance between RTB and RTC.

Device List: 4 MSR;

CMW Version: Version 5.20, Beta 1105

**II Network topology**

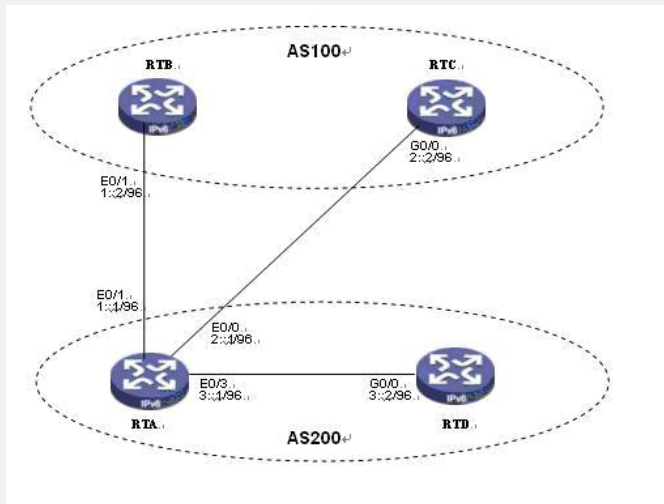


Figure 1 BGP4+ Static Equal Routing and Load-balance

**III Steps of configuration**

```

RTA
#
#
#
#
interface Ethernet0/0
port link-mode route
ipv6 address 2::1/96
#
interface Ethernet0/1
port link-mode route
ipv6 address 1::1/96
#
//change interface e0/3 to route mode of MSR20 - 21
interface Ethernet0/3
port link-mode route
ipv6 address 3::1/96
#
interface LoopBack0
ipv6 address 1:1:1::1/128
//set EBGp, IBGP
#
bgp 200
undo synchronization
#
ipv6-family
network 1:1:1::1 128
import-route direct
undo synchronization
//set load-balance number to 2
balance 2
peer 1::2 as-number 100
peer 2::2 as-number 100
peer 3::2 as-number 200
    
```

RTB

```

#
ipv6
#
interface Ethernet0/1
port link-mode route
ipv6 address 1::2/96
#
interface LoopBack0
ipv6 address 2:2:2::2/128
//EBGP
#
bgp 100
undo synchronization
#
ipv6-family
network 2:2:2::2 128
import-route static
undo synchronization
peer 1::1 as-number 200
//routing to NULL address
#
ipv6 route-static 9:: 32 NULL0

```

RTC

```

#
ipv6
#
interface LoopBack0
ipv6 address 3:3:3::3/128
#
interface GigabitEthernet0/0
port link-mode route
ipv6 address 2::2/96
#
bgp 100
undo synchronization
#
ipv6-family
network 3:3:3::3 128
import-route static
undo synchronization
peer 2::1 as-number 200
#
ipv6 route-static 9:: 32 NULL0
#
return

```

RTD

```

#
ipv6
#
interface LoopBack0
ipv6 address 4:4:4::4/128
#
interface GigabitEthernet0/0
port link-mode route
ipv6 address 3::2/96
#
bgp 200
undo synchronization
#
ipv6-family
network 4:4:4::4 128
import-route direct
undo synchronization
peer 3::1 as-number 200

```

#### IV Key notes in the configuration

After configuring BGP4+, config blow command on RTB and RTC:

```
ipv6 route-static 9:: 32 NULL0
```

Import this routing info to BGP.

#### V Result Check

After configuration, there is equal routing to 9::32, when other enviroment is equal, sy stem will choose the smaller address as next hop:

```
[RTA-2021-bgp-af-ipv6]dis ipv6
```

Routing Table :

```
Destinations : 14    Routes : 14
```

```
Destination: ::1/128
```

```
Protocol : Direct
```

```
NextHop : ::1
```

```
Preference: 0
```

```

Interface : InLoop0          Cost : 0

Destination: 1::/96          Protocol : Direct
NextHop : 1::1              Preference: 0
Interface : Eth0/1          Cost : 0

Destination: 1::1/128        Protocol : Direct
NextHop : ::1               Preference: 0
Interface : InLoop0         Cost : 0

Destination: 1:1:1::1/128    Protocol : Direct
NextHop : ::1               Preference: 0
Interface : InLoop0         Cost : 0

Destination: 2::/96          Protocol : Direct
NextHop : 2::1              Preference: 0
Interface : Eth0/0          Cost : 0

Destination: 2::1/128        Protocol : Direct
NextHop : ::1               Preference: 0
Interface : InLoop0         Cost : 0

Destination: 2:2:2::2/128    Protocol : BGP4+
NextHop : 1::2              Preference: 255
Interface : Eth0/1          Cost : 0

Destination: 3::/96          Protocol : Direct
NextHop : 3::1              Preference: 0
Interface : Eth0/3          Cost : 0

Destination: 3::1/128        Protocol : Direct
NextHop : ::1               Preference: 0
Interface : InLoop0         Cost : 0

Destination: 3:3:3::3/128    Protocol : BGP4+
NextHop : 2::2              Preference: 255
Interface : Eth0/0          Cost : 0

Destination: 4:4:4::4/128    Protocol : BGP4+
NextHop : 3::2              Preference: 255
Interface : Eth0/3          Cost : 0

Destination: 9::/32          Protocol : BGP4+
NextHop : 1::2              Preference: 255
Interface : Eth0/1          Cost : 0

Destination: FE80::/10       Protocol : Direct
NextHop : ::                Preference: 0
Interface : NULL0          Cost : 0

When set route of load-balance to 2, system will add 2 routing info to routing table:
[RTA-2021]dis bgp ipv routing-table

Total Number of Routes: 11

BGP Local router ID is 1.0.0.1
Status codes: * - valid, > - best, d - damped,
              h - history, i - internal, s - suppressed, S - Stale
              Origin : i - IGP, e - EGP, ? - incomplete
-----
When balance value is 2:
*> Network : 1::                PrefixLen : 96
   NextHop : 1::1                LocPrf :
   PrefVal : 0                    Label : NULL

```

```
MED : 0
Path/Ogn: ?

*> Network : 1:1:1::1          PrefixLen : 128
NextHop : ::1                LocPrf :
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: i

*> Network : 2::              PrefixLen : 96
NextHop : 2::1              LocPrf :
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: ?

*> Network : 2:2:2::2          PrefixLen : 128
NextHop : 1::2              LocPrf :
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: 100 i

*> Network : 3::              PrefixLen : 96
NextHop : 3::1              LocPrf :
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: ?

* i Network : 3::             PrefixLen : 96
NextHop : 3::2              LocPrf : 100
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: ?

*> Network : 3:3:3::3          PrefixLen : 128
NextHop : 2::2              LocPrf :
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: 100 i

*>i Network : 4:4:4::4          PrefixLen : 128
NextHop : 3::2              LocPrf : 100
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: i

*> Network : 9::              PrefixLen : 32
NextHop : 1::2              LocPrf :
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: 100 ?

*> Network : 9::              PrefixLen : 32
NextHop : 2::2              LocPrf :
PrefVal : 0                  Label : NULL
MED : 0
Path/Ogn: 100 ?
```