Border Gateway Protocol (BGP)

Descrição: O Border Gateway Protocol (BGP) é um protocolo EGP que permite aos sistemas autônomos trocar informações de roteamento entre si. O Roteadores que troca a Informação de BGP é chamado bgp peer. Um roteador pode ter peers externos em outros ASs, e peers internos em seu próprio AS. Quando o BGP é executado entre os roteadores que pertencem a dois AS diferentes, este é chamado BGP exterior (eBGP). Quando o BGP é executado entre roteadores nos mesmo AS, este é chamado iBGP.

Configuração: Necessário prévia configuração de IP nos hosts e roteamento, como trata-se de redes totalmente distintas, é necessário criar uma rota estática entre elas antes de configurar o BGP, utilize os seguintes comandos:
Ex:
Router (config-if) # ip route 10.0.0.0 ***(rede destino) 255.255.255.252(netmask) se0/1/1(rede/interface origem)***

```
Router>
Router>en
Router#confi
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route
Router(config)#ip route 190.8.3.0 255.255.255.0 se0/1/1
```

Após a configuração da rota estática, faremos a configuração do BGP, esta configuração é feita em cada um dos routers.
Router (config-if) # router bgp 10 (número para o bgp)
Router (config-router) # neighbor 10.0.0.1 (rede destino) remote-as 20 (número AS destino)
Router (config-router) # network 10.0.0.2 (ip de cada rede conectada ao router)

```
Router(config)#router
Router(config)#router bgp
Router(config)#router bgp 10
Router(config-router)#nei
Router(config-router)#neighbor 190.8.3.2 remo
Router(config-router)#neighbor 190.8.3.2 remote-as 20
```

```
Router(config-router)#net
Router(config-router)#network 110.0.0.1
```

Verificando a configuração

- Abaixo seguem os comandos para verificar a configuração do BGP.

Router# show ip bgp
Router# show ip bgp summary
Router# show ip bgp neighbors

```
Router#show ip bgp
BGP table version is 12, local router ID is 200.8.3.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 192.168.1.0/24    0.0.0.0                  0     0 32768 i
*  192.168.2.0/24    120.0.0.2                0     0     0 40 30 20 i
*>                   190.8.3.2                0     0     0 20 i
*> 192.168.3.0/24    120.0.0.2                0     0     0 40 30 i
*                    190.8.3.2                0     0     0 20 30 i
*> 192.168.4.0/24    120.0.0.2                0     0     0 40 i
*                    190.8.3.2                0     0     0 20 30 40 i

Router#
```

```
Router#show ip bgp summary
BGP router identifier 200.8.3.1, local AS number 10
BGP table version is 12, main routing table version 6
7 network entries using 924 bytes of memory
7 path entries using 364 bytes of memory
6/6 BGP path/bestpath attribute entries using 1104 bytes of memory
4 BGP AS-PATH entries using 96 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 1) using 32 bytes of memory
BGP using 2520 total bytes of memory
BGP activity 4/0 prefixes, 7/0 paths, scan interval 60 secs

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
190.8.3.2       4    20      44      41       12    0    0 00:33:06        4
120.0.0.2       4    40      50      37       12    0    0 00:35:10        4
```

```
Router#show ip bgp neighbors
BGP neighbor is 190.8.3.2,  remote AS 20, external link
  BGP version 4, remote router ID 192.168.2.1
  BGP state = Established, up for 00:33:06
  Last read 00:33:06, last write 00:33:06, hold time is 180, keepalive interval is 60
seconds
  Neighbor capabilities:
    Route refresh: advertised and received(new)
    Address family IPv4 Unicast: advertised and received
  Message statistics:
    InQ depth is 0
    OutQ depth is 0

                         Sent       Rcvd
    Opens:                  2          2
    Notifications:          1          0
    Updates:                6          7
    Keepalives:            38         35
    Route Refresh:          0          1
    Total:                 47         45
  Default minimum time between advertisements runs is 30 seconds

 For address family: IPv4 Unicast
  BGP table version 12, neighbor version 6/0
 --More--
```

- Para verificar as rotas estáticas criadas, utiliza-se o seguinte comando:

Router# show ip route

```
Router#sho ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     110.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       110.0.0.0/30 is directly connected, Serial0/1/0
L       110.0.0.1/32 is directly connected, Serial0/1/0
     120.0.0.0/30 is subnetted, 1 subnets
S       120.0.0.0/30 is directly connected, Serial0/1/0
     190.8.0.0/30 is subnetted, 1 subnets
S       190.8.3.0/30 is directly connected, Serial0/1/1
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, GigabitEthernet0/0/0
L       192.168.1.1/32 is directly connected, GigabitEthernet0/0/0
B    192.168.2.0/24 [20/0] via 190.8.3.2, 00:00:00
B    192.168.3.0/24 [20/0] via 120.0.0.2, 00:00:00
B    192.168.4.0/24 [20/0] via 120.0.0.2, 00:00:00
     200.8.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       200.8.3.0/30 is directly connected, Serial0/1/1
L       200.8.3.1/32 is directly connected, Serial0/1/1
```