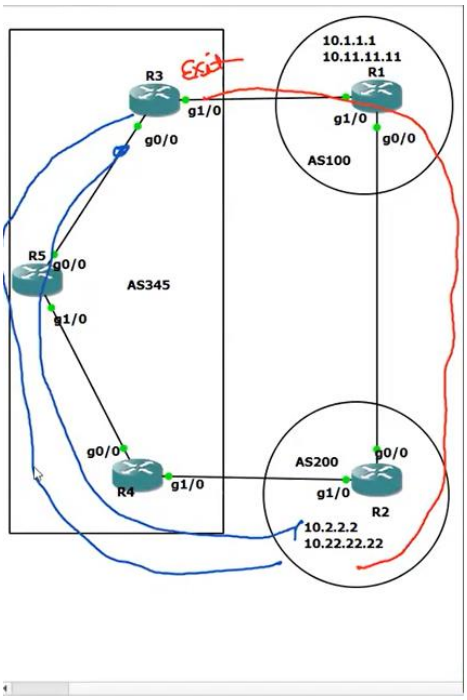
BGP Attribute And UnSupp



** we are filtering the routes to reduce burden on only one path

** when we are changing the Local-preference (like increase the LP value) the enter route-map will change

```
    Network          Next Hop            Metric LocPrf Weight Path
 *>  10.1.1.1/32      172.16.13.1              0             0 100 i
 *>i 10.2.2.2/32      172.16.45.4              0    100      0 200 i
 *                    172.16.13.1                           0 100 200 i
 *>  10.3.3.3/32      0.0.0.0                  0         32768 i
 *>i 10.4.4.4/32      172.16.45.4              0    100      0 i
 *>i 10.5.5.5/32      172.16.35.5              0    100      0 i
 *>  10.11.11.11/32   172.16.13.1              0             0 100 i
 *>i 10.22.22.22/32   172.16.45.4              0    100      0 200 i
 *                    172.16.13.1                           0 100 200 i
 *>i 10.44.44.44/32   172.16.45.4              0    100      0 i
 s>  33.33.33.0/32    0.0.0.0                  0         32768 i
 *>  33.33.33.0/30    0.0.0.0                           32768 i
 s>  33.33.33.1/32    0.0.0.0                  0         32768 i
 s>  33.33.33.2/32    0.0.0.0                  0         32768 i
    Network          Next Hop            Metric LocPrf Weight Path
 s>  33.33.33.3/32    0.0.0.0                  0         32768 i
 * i 172.16.12.0/24   172.16.45.4              0    100      0 200 i
 *>                   172.16.13.1              0             0 100 i
 *   172.16.13.0/24   172.16.13.1              0             0 100 i
 *>                   0.0.0.0                  0         32768 i
 *>i 172.16.24.0/24   172.16.45.4              0    100      0 i
 *                    172.16.13.1                           0 100 200 i
 * i 172.16.35.0/24   172.16.35.5              0    100      0 i
 *>                   0.0.0.0                  0         32768 i
 *>i 172.16.45.0/24   172.16.35.5              0    100      0 i
R3#co
```

** 10.22.22.22 is having 2 routes due to LP

#R3

```
R3(config)#access-list 20 permit 10.22.22.22
R3(config)#route-map LP permit ?
  <0-65535>  Sequence to insert to/delete from existing route-map entry
  <cr>

R3(config)#route-map LP permit 5
R3(config-route-map)#match ip add 20
R3(config-route-map)#set local-preference ?
  <0-4294967295>  Preference value

R3(config-route-map)#set local-preference 200
R3(config-route-map)#route-map LP permit 7
R3(config-route-map)#do sh run | sec route-map
route-map LP permit 5
 match ip address 20
 set local-preference 200
route-map LP permit 7
```

```
R3(config)#router bgp 345
R3(config-router)#nei 172.16.13.1 route-map LP in
R3(config-router)#
R3(config-router)#do clear ip bgp 172.16.13.1 soft
```

*now its as 13.1 route

```
    Network          Next Hop            Metric LocPrf Weight Path
 *>  10.1.1.1/32      172.16.13.1              0             0 100 i
 *>i 10.2.2.2/32      172.16.45.4              0    100      0 200 i
 *                    172.16.13.1                           0 100 200 i
 *>  10.3.3.3/32      0.0.0.0                  0         32768 i
 *>i 10.4.4.4/32      172.16.45.4              0    100      0 i
 *>i 10.5.5.5/32      172.16.35.5              0    100      0 i
 *>  10.11.11.11/32   172.16.13.1              0             0 100 i
 *>  10.22.22.22/32   172.16.13.1                   200      0 100 200 i
 *>i 10.44.44.44/32   172.16.45.4              0    100      0 i
 s>  33.33.33.0/32    0.0.0.0                  0         32768 i
 *>  33.33.33.0/30    0.0.0.0                           32768 i
```

#R5

```
 *>i 10.4.4.4/32      172.16.45.4              0    100      0 i
 *>  10.5.5.5/32      0.0.0.0                  0         32768 i
 *>i 10.11.11.11/32   172.16.35.3              0    100      0 100 i
 *>i 10.22.22.22/32   172.16.35.3              0    200      0 100 200 i
 *>i 10.44.44.44/32   172.16.45.4              0    100      0 i
 *>i 33.33.33.0/30    172.16.35.3              0    100      0 i
 * i 172.16.12.0/24   172.16.35.3              0    100      0 100 i
```

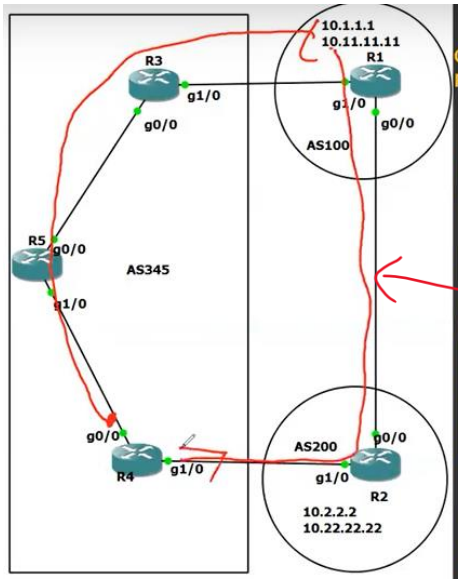
** previously it was receiving from 45.4 (now its changed due to High LP)

#R3

```
R3(config-router)#do trace 10.2.2.2 source 10.3.3.3
Type escape sequence to abort.
Tracing the route to 10.2.2.2
VRF info: (vrf in name/id, vrf out name/id)
  1 172.16.35.5 48 msec 24 msec 28 msec
  2 172.16.45.4 60 msec 24 msec 76 msec
  3 172.16.24.2 88 msec 108 msec 72 msec
R3(config-router)#
R3(config-router)#do trace 10.22.22.22 source 10.3.3.3
Type escape sequence to abort.
Tracing the route to 10.22.22.22
VRF info: (vrf in name/id, vrf out name/id)
  1 172.16.13.1 16 msec 32 msec 32 msec
  2 172.16.12.2 [AS 100] 64 msec 88 msec 72 msec
R3(config-router)#
```

** we applied inbound ➔ it will convert to outbound filtering

#R4




```
                x best-external, a additional-path, c RIB-compressed,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

    Network          Next Hop            Metric LocPrf Weight Path
 *>i 10.1.1.1/32     172.16.35.3              0    100      0 100 i
 *                   172.16.24.2                           0 200 100 i
 *>  10.2.2.2/32     172.16.24.2              0             0 200 i
 *>i 10.3.3.3/32     172.16.35.3              0    100      0 i
 *>  10.4.4.4/32     0.0.0.0                  0         32768 i
 *>i 10.5.5.5/32     172.16.45.5              0    100      0 i
 *>i 10.11.11.11/32  172.16.35.3              0    100      0 100 i
 *                   172.16.24.2                           0 200 100 i
 *>i 10.22.22.22/32  172.16.35.3              0    200      0 100 200 i
 *                   172.16.24.2              0             0 200 i
 *>  10.44.44.44/32  0.0.0.0                  0         32768 i
 *>i 33.33.33.0/30   172.16.35.3              0    100      0 i
 *>  172.16.12.0/24  172.16.24.2              0             0 200 i
 *>i 172.16.13.0/24  172.16.35.3              0    100      0 i
    Network          Next Hop            Metric LocPrf Weight Path
 *                   172.16.24.2                           0 200 100 i
 *   172.16.24.0/24  172.16.24.2              0             0 200 i
 *>                  0.0.0.0                  0         32768 i
```

It should take 45.0

** 10.1.1.1 has 2 paths and 10.11.11.11 also having 2 paths (we want 10.1.1.1 should take ..this path)

** we are going to apply WEIGHT attribute

#R4

```
R4(config)#access-list 25 permit 10.1.1.1
R4(config)#
R4(config)#route-map WGT permit 4
R4(config-route-map)#match ip add 25
R4(config-route-map)#set weight ?
  <0-65535>  Weight value

R4(config-route-map)#set weight 50
R4(config-route-map)#route-map WGT permit 6
R4(config-route-map)#router bgp 345
R4(config-router)#nei 172.16.24.2 route-map WGT in
R4(config-router)#
R4(config-router)#do clear ip bgp 172.16.24.2 soft
```

** weight parameters will change and it will prefer high weight

```
Tracing the route to 10.11.11.11
VRF info: (vrf in name/id, vrf out name/id)
  1 172.16.45.5 20 msec 24 msec 28 msec
  2 172.16.35.3 28 msec 88 msec 48 msec
  3 172.16.13.1 104 msec 88 msec 92 msec
R4(config-router)#
R4(config-router)#do trace 10.1.1.1 source 10.4.4.4
Type escape sequence to abort.
Tracing the route to 10.1.1.1
VRF info: (vrf in name/id, vrf out name/id)
  1 172.16.24.2 20 msec 28 msec 28 msec
  2 172.16.12.1 [AS 200] 72 msec 72 msec 60 msec
```

#R4

```
R4(config-router)#no nei 172.16.24.2 route-map WGT in
R4(config-router)#no access-list 25
R4(config)#no route-map WGT permit 4
R4(config)#no route-map WGT permit 6
R4(config)#do clear ip
```

** remove all route map from R4

#R3

```
R3(config)#do sh run | sec route-map
 neighbor 172.16.13.1 route-map LP in
route-map LP permit 5
 match ip address 20
 set local-preference 200
route-map LP permit 7
R3(config)#no access-list 20
R3(config)#no route-map LP permit 5
R3(config)#no route-map LP permit 7
R3(config)#router bgp 345
R3(config-router)#no nei 172.16.13.1 route-map LP in
R3(config-router)#
R3(config-router)#exit
R3(config)#
R3(config)#do clear ip bg
```

** remove all route map from R3

MED and AS path (applied to receiving side and self generated path)

#R1

```
    Network          Next Hop            Metric LocPrf Weight Path
*>  10.1.1.1/32      0.0.0.0                  0         32768 i
*   10.2.2.2/32      172.16.13.3                            0 345 200 i
*>                   172.16.12.2              0             0 200 i
*   10.3.3.3/32      172.16.12.2                            0 200 345 i
*>                   172.16.13.3              0             0 345 i
*>  10.4.4.4/32      172.16.13.3                            0 345 i
*                    172.16.12.2                            0 200 345 i
*   10.5.5.5/32      172.16.12.2                            0 200 345 i
*>                   172.16.13.3                            0 345 i
*>  10.11.11.11/32   0.0.0.0                  0         32768 i
*   10.22.22.22/32   172.16.13.3                            0 345 200 i
*>                   172.16.12.2              0             0 200 i
*>  10.44.44.44/32   172.16.13.3                            0 345 i
*                    172.16.12.2                            0 200 345 i
```

** every ip is having 2 path based on the AS path value (it consider least as path 1ST) we apply in for R1 and Out for R2

** now R1 which is having g1/0 interface we will change to g0/0 int

#R1

```
R1(config)#access-list 30 permit 10.3.3.3
R1(config)#
R1(config)#route-map AS-PATH permit 4
R1(config-route-map)#match ip add 30
R1(config-route-map)#set as-path prepend 20 30 40
R1(config-route-map)#route-map AS-PATH permit 7
R1(config-route-map)#router bgp 100
R1(config-router)#nei 172.16.13.3 route-map  AS-PATH  in
R1(config-router)#
R1(config-router)#do clear ip bgp 172.16.13.3 soft
```

#result

```
*>  10.3.3.3/32      172.16.12.2                        0 200 345 i
*                    172.16.13.3              0         0 20 30 40 345 i
*>  10.4.4.4/32      172.16.13.3                        0 345 i
```

**** now 10.3.3.3 is having more as paths**

#R2

```
*   10.2.2.2/32      172.16.13.3                        0 345 200 i
*>                   172.16.12.2              0         0 200 i
```

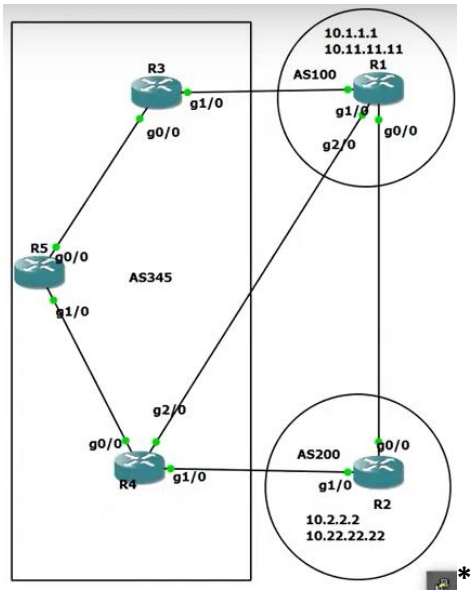
**** 10.2.2.2 & 10.22.22.22 is receiving directly from 12.2 (its have over burden)**

```
R2(config)#access-list 20 permit 10.2.2.2
R2(config)#route-map NH permit 2
R2(config-route-map)#match ip add 20
R2(config-route-map)#set as-path prepend 30 40 50
R2(config-route-map)#route-map NH permit 5
R2(config-route-map)#router bgp 200
R2(config-router)#nei 172.16.12.1 route-map NH out
```

**** now path will change for the 10.2.2.2**

**** remove access-list and route-map settings and BGP config (everything must be in default state)**

MED



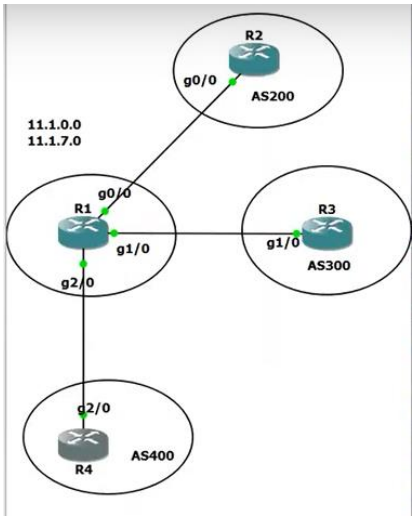
**** connect the R4 and R1 (config the ip add & and advertise In BGP)**

```
R1(config-if)#router bgp 100
R1(config-router)#nei 172.16.14.4 remote-as 345
R1(config-router)#net 172.16.14.0 mask 255.255.255.0
```

#MED on R1

```
R1(config)#access-list 15 permit 10.4.4.4
R1(config)#route-map MED permit 5
R1(config-route-map)#match ip add 15
R1(config-route-map)#set metric 75
R1(config-route-map)#route-map MED permit 8
R1(config-route-map)#router bgp 100
R1(config-router)#nei 172.16.14.4 route-map MED in
R1(config-router)#
R1(config-router)#do clear ip bgp 172.16.14.4 soft
R1(config-router)#do clear ip bgp 172.16.14.4 soft
```

SUPPRESS-MAP



** config the basic ip and bgp along with one one loopbacks

#R1

```
config t
int gig0/0
ip add 172.16.12.1 255.255.255.0
no shut
int gig1/0
ip add 172.16.13.1 255.255.255.0
no shut
int gig2/0
ip add 172.16.14.1 255.255.255.0
no shut
int loop 0
ip add 11.1.0.1 255.255.255.0
int loop 1
ip add 11.1.1.1 255.255.255.0
int loop 2
ip add 11.1.2.1 255.255.255.0
int loop 3
ip add 11.1.3.1 255.255.255.0
int loop 4
ip add 11.1.4.1 255.255.255.0
int loop 5
ip add 11.1.5.1 255.255.255.0
int loop 6
ip add 11.1.6.1 255.255.255.0
int loop 7
ip add 11.1.7.1 255.255.255.0
```

```
     Network          Next Hop            Metric LocPrf Weight Path
 *>  2.2.2.2/32       0.0.0.0                  0         32768 i
 *>  3.3.3.3/32       172.16.12.1                            0 100 300 i
 *>  11.1.0.0/24      172.16.12.1              0             0 100 i
 *>  11.1.1.0/24      172.16.12.1              0             0 100 i
 *>  11.1.2.0/24      172.16.12.1              0             0 100 i
 *>  11.1.3.0/24      172.16.12.1              0             0 100 i
 *>  11.1.4.0/24      172.16.12.1              0             0 100 i
 *>  11.1.5.0/24      172.16.12.1              0             0 100 i
 *>  11.1.6.0/24      172.16.12.1              0             0 100 i
 *>  11.1.7.0/24      172.16.12.1              0             0 100 i
 *>  44.44.44.44/32   172.16.12.1                            0 100 400 i
 *   172.16.12.0/24   172.16.12.1              0             0 100 i
 *>                   0.0.0.0                  0         32768 i
 *>  172.16.13.0/24   172.16.12.1              0             0 100 i
     Network          Next Hop            Metric LocPrf Weight Path
 *>  172.16.14.0/24   172.16.12.1              0             0 100 i
R2#
```

** we want summary entry along with the 3.0,1.0,5.0 individually (we are implementing via through Suppress-map)

** we need to apply both summarization and suppress-map and define prefix-list.

#R1

```
R1(config)#ip prefix-list NH permit 11.0.1.0/24
R1(config)#ip prefix-list NH permit 11.0.3.0/24
R1(config)#ip prefix-list NH permit 11.0.5.0/24
R1(config)#
R1(config)#route-map UN-SUPP permit 10
R1(config-route-map)#match ip add pref
R1(config-route-map)#match ip add prefix-list NH
R1(config-route-map)#exit
R1(config)#
R1(config)#router bgp 100
R1(config-router)#agg
R1(config-router)#aggregate-address 11.1.0.0 255.255.248.0 summary-only
R1(config-router)#nei 172.16.12.2 unsu
R1(config-router)#nei 172.16.12.2 unsuppress-map UN-SUPP
R1(config-router)#do clear  ip bgp 172.16.12.2 soft
```

It should 11.1.1.0, 11.1.3.0, 11.1.5.0

#R2

```
     Network          Next Hop            Metric LocPrf Weight Path
 *>  2.2.2.2/32       0.0.0.0                  0         32768 i
 *>  3.3.3.3/32       172.16.12.1                            0 100 300 i
 *>  11.1.0.0/21      172.16.12.1              0             0 100 i
 *>  11.1.1.0/24      172.16.12.1              0             0 100 i
 *>  11.1.3.0/24      172.16.12.1              0             0 100 i
 *>  11.1.5.0/24      172.16.12.1              0             0 100 i
 *>  44.44.44.44/32   172.16.12.1                            0 100 400 i
 *   172.16.12.0/24   172.16.12.1              0             0 100 i
 *>                   0.0.0.0                  0         32768 i
 *>  172.16.13.0/24   172.16.12.1              0             0 100 i
 *>  172.16.14.0/24   172.16.12.1              0             0 100 i
R2#
```

**** we have summary-route along with individual routes on R2**