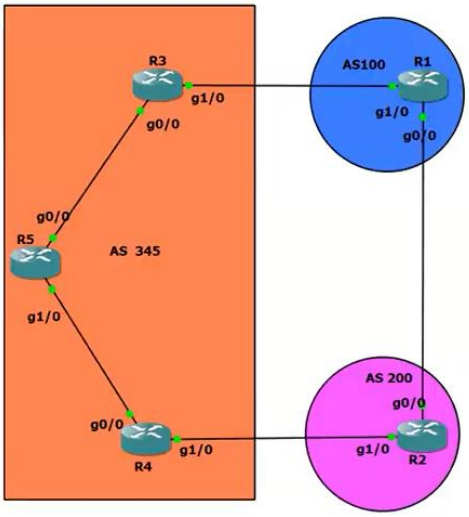


** configure the basic ip in all routers and config the BGP and along next-hop-self and route-reflector
(next-hop-self on R3 and R4 => R5 and route-reflector on R5 => R3,R4)

```
*>i 10.1.1.1/32      172.16.35.3              0    100      0 100 i
*>i 10.2.2.2/32      172.16.45.4              0    100      0 200 i
*>i 10.3.3.3/32      172.16.35.3              0    100      0 i
*>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   172.16.45.4              0    100      0 200 i
* i 172.16.12.0/24   172.16.45.4              0    100      0 200 i
*>i                  172.16.35.3              0    100      0 100 i
*>i 172.16.13.0/24   172.16.35.3              0    100      0 i
```

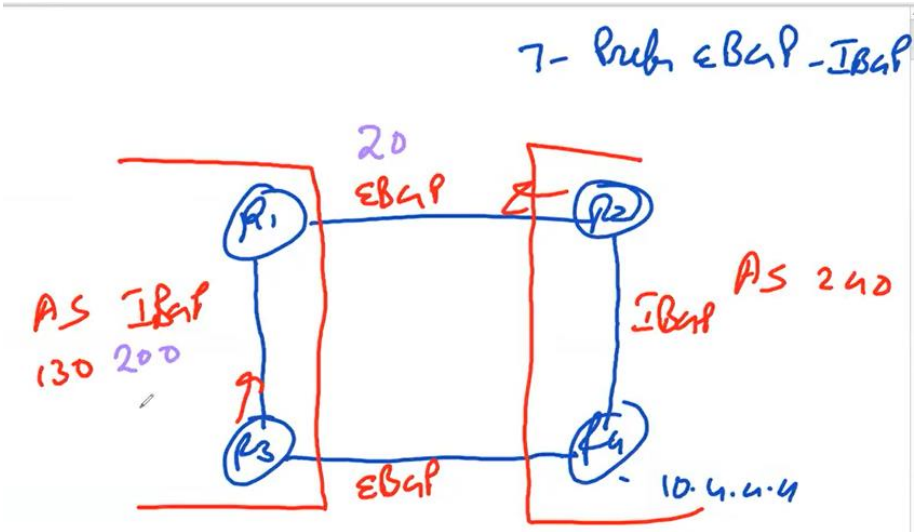
** origin code

** we r receiving this I at last ? (bcz we are advertising this network with the network command)

##Path-selection

Priority	Attribute
1.	Weight (highest)
2.	Local Preference (highest)
3.	Originate (local originate)
4.	AS Path (shortest)
5.	Origin Code (IGP < EGP < Incomplete)
6.	MED (lowest)
7.	Paths (external preferred over internal)
8.	Router ID (lowest)

We Love Oranges As Oranges Means Pure Refreshment



** when we r defining network statically (zero on AD-value)

```
      10.0.0.0/32 is subnetted, 7 subnets
B        10.1.1.1 [20/0] via 172.16.13.1, 00:33:21
B        10.2.2.2 [200/0] via 172.16.45.4, 00:30:39
B        10.4.4.4 [200/0] via 172.16.45.4, 00:30:39
B        10.5.5.5 [200/0] via 172.16.35.5, 00:30:33
B        10.11.11.11 [20/0] via 172.16.13.1, 00:33:21
B        10.22.22.22 [200/0] via 172.16.45.4, 00:30:39
      172.16.0.0/16 is variably subnetted, 7 subnets, 2 masks
B        172.16.12.0/24 [20/0] via 172.16.13.1, 00:33:21
B        172.16.24.0/24 [200/0] via 172.16.45.4, 00:30:39
B        172.16.45.0/24 [200/0] via 172.16.35.5, 00:30:41
R3#
```

Summarization In BGP

#R3

**config 3 loopbacks on r3 with 10.33.33.0 – 33.3

```
      33.0.0.0/32 is subnetted, 4 subnets
C        33.33.33.0 is directly connected, Loopback2
C        33.33.33.1 is directly connected, Loopback3
C        33.33.33.2 is directly connected, Loopback4
C        33.33.33.3 is directly connected, Loopback5
```

```
R3(config)#router bgp 345
R3(config-router)#net 33.33.33.0 mask 255.255.255.255
R3(config-router)#net 33.33.33.1 mask 255.255.255.255
R3(config-router)#net 33.33.3321 mask 255.255.255.255
                              ^
% Invalid input detected at '^' marker.

R3(config-router)#net 33.33.33.2 mask 255.255.255.255
R3(config-router)#net 33.33.33.3 mask 255.255.255.255
R3(config-router)#
R3(config-router)#exit
```

** we making all 3 address into one

```
R3(config)#router bgp 345
R3(config-router)#agg
R3(config-router)#aggregate-address 33.33.33.0 255.255.255.252 ?
  advertise-map   Set condition to advertise attribute
  as-confed-set   Generate AS confed set path information
  as-set          Generate AS set path information
  attribute-map   Set attributes of aggregate
  route-map       Set parameters of aggregate
  summary-only    Filter more specific routes from updates
  suppress-map    Conditionally filter more specific routes from updates
  <cr>

R3(config-router)#aggregate-address 33.33.33.0 255.255.255.252 summary-only
R3(config-router)#
```

```
 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
 s>  33.33.33.3/32    0.0.0.0                  0         32768 i
```

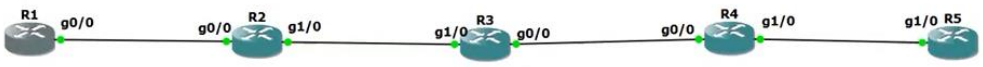
** now it is having suppressed into one (s = suppressed)

#R1

```
 *   33.33.33.0/30    172.16.12.2                        0 200 345 i
 *>                   172.16.13.3              0         0 345 i
```

** now it is having only one

BGP Neighborship with LOOPBACK



** config 2 loopbacks on each routers and don't config loopback on R3 and config some static routes

#R1

```
R1(config)#ip route 172.16.0.0 255.255.0.0 172.16.12.2
R1(config)#ip route 10.2.2.2 255.255.255.255 172.16.12.2
R1(config)#ip route 10.22.22.22 255.255.255.255 172.16.12.2
R1(config)#ip route 10.4.4.4 255.255.255.255 172.16.12.2
R1(config)#ip route 10.44.44.44 255.255.255.255 172.16.12.2
R1(config)#ip route 10.5.5.5 255.255.255.255 172.16.12.2
R1(config)#ip route 10.55.55.55 255.255.255.255 172.16.12.2
R1(config)#exit
```

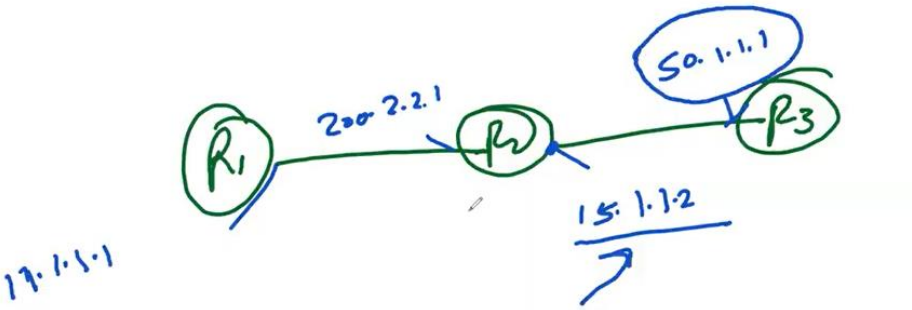
#R2

```
R2(config)#ip route 172.16.0.0 255.255.0.0 172.16.23.3
R2(config)#ip route 10.1.1.1 255.255.255.255 162.16.12.1
R2(config)#no ip route 10.1.1.1 255.255.255.255 162.16.12.1
R2(config)#ip route 10.1.1.1 255.255.255.255 172.16.12.1
R2(config)#ip route 10.11.11.11 255.255.255.255 172.16.12.1
R2(config)#do ping 10.1.1.1 source 10.22.22.22
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:
Packet sent with a source address of 10.22.22.22
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 28/33/44 ms
R2(config)#ip route 10.4.4.4 255.255.255.255 172.16.34.4
R2(config)#ip route 10.44.44.44 255.255.255.255 172.16.34.4
R2(config)#ip route 10.5.5.5 255.255.255.255 172.16.45.5
R2(config)#ip route 10.55.55.55 255.255.255.255 172.16.45.5
R2(config)#
```

#R3

```
R3(config)#do sh run | sec route
ip route 10.1.1.1 255.255.255.255 172.16.12.1
ip route 10.2.2.2 255.255.255.255 172.16.23.2
ip route 10.4.4.4 255.255.255.255 172.16.34.4
ip route 10.5.5.5 255.255.255.255 172.16.45.5
ip route 10.11.11.11 255.255.255.255 172.16.12.1
ip route 10.22.22.22 255.255.255.255 172.16.23.2
ip route 10.44.44.44 255.255.255.255 172.16.34.4
ip route 10.55.55.55 255.255.255.255 172.16.45.5
ip route 172.16.12.0 255.255.255.0 172.16.23.2
ip route 172.16.45.0 255.255.255.0 172.16.34.4
R3(config)#
```

NOTE=>



**** we are config df subnet on each interface of df routers that we doing to protect network from outsiders**

#R4

Ip route 172.16.0.0 255.255.0.0 172.16.34.3
Ip route 10.1.1.1 255.255.255.255 172.16.12.1
Ip route 10.11.11.11 255.255.255.255 172.16.12.1
Ip route 10.2.2.2 255.255.255.255 172.16.23.2
Ip route 10.22.22.22 255.255.255.255 172.16.23.2
Ip route 10.5.5.5 255.255.255.255 172.16.45.5
Ip route 10.55.55.55 255.255.255.255 172.16.45.5

#R5

```
R5(config)#ip route 172.16.0.0 255.255.0.0 172.16.45.4
R5(config)#do ping 172.16.12.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.12.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 104/121/128 ms
R5(config)#do ping 172.16.12.1 source 172.16.45.5
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.12.1, timeout is 2 seconds:
Packet sent with a source address of 172.16.45.5
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 108/116/128 ms
```

****we need one route for R5 and we have all reachability**

Ip route 172.16.0.0 255.255.0.0 172.16.34.3
Ip route 10.1.1.1 255.255.255.255 172.16.12.1
Ip route 10.11.11.11 255.255.255.255 172.16.12.1
Ip route 10.2.2.2 255.255.255.255 172.16.23.2
Ip route 10.22.22.22 255.255.255.255 172.16.23.2
Ip route 10.4.4.4 255.255.255.255 172.16.45.4

Ip route 10.44.44.44 255.255.255.255 172.16.45.4

##config the BGP with the LOOPBACK

#R1

```
R1(config)#router bgp 104
R1(config-router)#nei 10.55.55.55 remote-as 205
R1(config-router)#nei 10.55.55.55 update-source loop 2
R1(config-router)#nei 10.55.55.55 ebgp-multihop ?
  <1-255>  maximum hop count
  <cr>

R1(config-router)#nei 10.55.55.55 ebgp-multihop 7
R1(config-router)#nei 10.4.4.4 remote-as 104
R1(config-router)#nei 10.4.4.4 update-source loop 1
R1(config-router)#nei 10.4.4.4 next-hop-self
R1(config-router)#net 10.1.1.1 mask 255.255.255.255
R1(config-router)#net 10.11.11.11 mask 255.255.255.255
R1(config-router)#do sh run | sec
```

#R4

```
R4(config)#router bgp 104
R4(config-router)#nei 10.1.1.1 remote-as 104
R4(config-router)#nei 10.1.1.1 update-source loo
*Sep  4 21:39:59.555: %BGP-5-ADJCHANGE: neighbor 10.1.1.1 Up
R4(config-router)#nei 10.1.1.1 update-source loop 1
R4(config-router)#net 10.4.4.4 mask 255.255.255.255
R4(config-router)#net 10.44.44.44 mask 255.255.255.255
R4(config-router)#^Z
R4#
*Sep  4 21:40:15.303: %SYS-5-CONFIG_I: Configured from console by console
R4#
```

#R5

```
R5(config)#router bgp 205
R5(config-router)#nei 10.11.11.11 remote-as 104
R5(config-router)#nei 10.11.11.11 update-source loop 2
R5(config-router)#nei 10.11.11.11 ebgp-multihop 7
R5(config-router)#nei 10
*Sep  4 21:41:22.051: %BGP-5-ADJCHANGE: neighbor 10.11.11.11 Up
R5(config-router)#nei 10.2.2.2 remote-as 205
R5(config-router)#nei 10.2.2.2 update-source loop 1
R5(config-router)#nei 10.2.2.2 next-hop-self
R5(config-router)#net 10.5.5.5 mask 255.255.255.255
R5(config-router)#net 10.55.55.55 mask 255.255.255.255
R5(config-router)#^Z
```

#R2

```
R2(config)#router bgp 205
R2(config-router)#nei 10.5.5.5 remote-as 205
R2(config-router)#nei 10.5.5.5 update-source loop 1
R2(config-router)#net 10.2.2.2 mask 255.255
*Sep  4 21:42:45.711: %BGP-5-ADJCHANGE: neighbor 10.5.5.5 Up
R2(config-router)#net 10.2.2.2 mask 255.255.255.255
R2(config-router)#net 10.22.22.22 mask 255.255.255.255
R2(config-router)#^Z
R2#
```