

Full meshed

$n(n-1)/2$
N=no of routers.

$100(100-1)/2$
 $100 \times 99 / 2$
 $9900 / 2$
4950

1.Route Reflector
2.Confederation

ibgp

10.4.4.0
nexthop
origin
Originator-ID 4.4.4.4
Cluster-list 1.1.1.1

=====
IGP =Ospf

Non-Clients
R2/R3

Int range e0/0,lo0
ip ospf 1 area 0
exit

R2:
router bgp 100
bgp router-id 2.2.2.2
bgp log-neighbor-changes
network 10.2.2.0 mask 255.255.255.0
neighbor 1.1.1.1 remote-as 100
neighbor 1.1.1.1 password CISCOBGP
neighbor 1.1.1.1 update-source Loopback0
exit

R3:
router bgp 100
bgp router-id 3.3.3.3
bgp log-neighbor-changes
network 10.3.3.0 mask 255.255.255.0
neighbor 1.1.1.1 remote-as 100
neighbor 1.1.1.1 password CISCOBGP
neighbor 1.1.1.1 update-source Loopback0
exit

Clients

R4,R5

```
Int range e0/0-1,lo0
ip ospf 1 area 0
exit
```

```
R4
conf t
int e0/0
ip add 10.14.1.4 255.255.255.0
no sh
int lo0
ip add 4.4.4.4 255.255.255.0
int lo 1
Desc LAN
ip add 10.4.4.4 255.255.255.0
exit
```

```
Int range e0/0-1,lo0
ip ospf 1 area 0
exit
```

```
router bgp 100
bgp router-id 4.4.4.4
bgp log-neighbor-changes
network 10.4.4.0 mask 255.255.255.0
neighbor 1.1.1.1 remote-as 100
neighbor 1.1.1.1 password CISCOBGP
neighbor 1.1.1.1 update-source Loopback0
exit
```

```
R5:
conf t
int e0/0
ip add 10.15.1.5 255.255.255.0
no sh
int e0/1
ip add 10.56.1.5 255.255.255.0
no sh
int lo0
ip add 5.5.5.5 255.255.255.0
int lo 1
Desc LAN
ip add 10.5.5.5 255.255.255.0
exit
```

```
Int range e0/0-1,lo0
ip ospf 1 area 0
exit
```

```
bgp router-id 5.5.5.5
bgp log-neighbor-changes
network 10.5.5.0 mask 255.255.255.0
```

```
neighbor RR-Servers peer-group
neighbor RR-Servers remote-as 100
neighbor RR-Servers password CISCOBGP
neighbor RR-Servers update-source Loopback0
neighbor 1.1.1.1 peer-group RR-Servers
neighbor 6.6.6.6 peer-group RR-Servers
exit
```

```
R7:
Int range e0/0,lo0
ip ospf 1 area 0
exit
```

```
R8:Ebgp
Conf t
int e0/0
ip add 10.18.1.8 255.255.255.0
no sh
int lo0
ip add 8.8.8.8 255.255.255.0
exit
```

```
Router bgp 200
bgp router-id 8.8.8.8
neig 10.18.1.1 remote-as 100
net 8.8.8.0 m 255.255.255.0
exit
```

```
R6:
Ospf

int range e0/0-2,lo0
ip ospf 1 a 0
exit
```

```
router bgp 100
template peer-policy RR2-CLIENTS
route-reflector-client
maximum-prefix 100
exit-peer-policy
!
template peer-session RR-2-SESS
remote-as 100
password CISCOBGP
update-source Loopback0
timers 30 90
exit-peer-session
!
bgp router-id 6.6.6.6
bgp log-neighbor-changes
neighbor 1.1.1.1 inherit peer-session RR-2-SESS
neighbor 1.1.1.1 inherit peer-policy RR2-CLIENTS
neighbor 5.5.5.5 inherit peer-session RR-2-SESS
```

```
neighbor 5.5.5.5 inherit peer-policy RR2-CLIENTS
neighbor 7.7.7.7 inherit peer-session RR-2-SESS
exit
```

```
R1:
conf t
int e0/0
Desc conn to R2
ip add 10.12.1.1 255.255.255.0
no sh
int e0/1
Desc conn to R3
ip add 10.13.1.1 255.255.255.0
no sh
int e0/2
Desc conn to R4
ip add 10.14.1.1 255.255.255.0
no sh
int e0/3
Desc conn to R5
ip add 10.15.1.1 255.255.255.0
no sh
int e1/0
Desc conn to R6
ip add 10.16.1.1 255.255.255.0
no sh
int e1/1
Desc conn to R8
ip add 10.18.1.1 255.255.255.0
no sh
int lo0
ip add 1.1.1.1 255.255.255.0
int lo 1
Desc LAN
ip add 10.1.1.1 255.255.255.0
exit
```

```
Router ospf 1
net 10.0.0.0 0.255.255.255 area 0
net 1.1.1.1 0.0.0.0 area 0
exit
```

```
router bgp 100
template peer-policy NN-Clients
next-hop-self
maximum-prefix 100
exit-peer-policy
!
template peer-policy RR-CLIENTS
route-reflector-client
inherit peer-policy NN-Clients 1
exit-peer-policy
!
template peer-session RR1-SESSION-TEMP
remote-as 100
```

```
password CISCOBGP
update-source Loopback0
timers 30 90
exit-peer-session
!
bgp router-id 1.1.1.1
bgp log-neighbor-changes
network 10.1.1.0 mask 255.255.255.0
neighbor 2.2.2.2 inherit peer-session RR1-SESSION-TEMP
neighbor 2.2.2.2 inherit peer-policy NN-Clients
neighbor 3.3.3.3 inherit peer-session RR1-SESSION-TEMP
neighbor 3.3.3.3 inherit peer-policy NN-Clients
neighbor 4.4.4.4 inherit peer-session RR1-SESSION-TEMP
neighbor 4.4.4.4 inherit peer-policy RR-CLIENTS
neighbor 5.5.5.5 inherit peer-session RR1-SESSION-TEMP
neighbor 5.5.5.5 inherit peer-policy RR-CLIENTS
neighbor 6.6.6.6 inherit peer-session RR1-SESSION-TEMP
neighbor 6.6.6.6 inherit peer-policy RR-CLIENTS
neighbor 10.18.1.8 remote-as 200
```

=====
Summarization in bgp:

R1:

```
conf t
int e0/0
Desc conn to R2
ip add 10.12.1.1 255.255.255.0
no sh
int lo 0
ip add 20.1.0.1 255.255.255.0
int lo 1
ip add 20.1.1.1 255.255.255.0
int lo 2
ip add 20.1.2.2 255.255.255.0
exit
```

Router bgp 100

```
bgp router-id 1.1.1.1
neig 10.12.1.2 remote-as 200
net 20.1.0.0 m 255.255.255.0
net 20.1.1.0 m 255.255.255.0
net 20.1.2.0 m 255.255.255.0
exit
```

R2:

```
conf t
int e0/0
Desc conn to R1
ip add 10.12.1.2 255.255.255.0
no sh
int e0/1
Desc conn to R3
ip add 10.23.1.2 255.255.255.0
no sh
```

```
int lo 0
ip add 20.1.3.3 255.255.255.0
exit
```

```
Router bgp 200
bgp router-id 2.2.2.2
neig 10.12.1.1 remote-as 100
neig 10.23.1.3 remote-as 200
neig 10.23.1.3 next-hop-self
net 20.1.3.0 m 255.255.255.0
exit
```

```
R3:
conf t
int e0/0
Desc conn to R2
ip add 10.23.1.3 255.255.255.0
no sh
int e0/1
Desc conn to R4
ip add 10.34.1.3 255.255.255.0
no sh
exit
```

```
Router bgp 200
bgp router-id 3.3.3.3
neig 10.23.1.2 remote-as 200
neig 10.23.1.2 next-hop-self
neig 10.34.1.4 remote-as 300
exit
```

```
R4:
conf t
int e0/0
Desc conn to R3
ip add 10.34.1.4 255.255.255.0
no sh
int lo 1
ip add 10.4.4.4 255.255.255.0
exit
```

```
Router bgp 300
bgp router-id 4.4.4.4
neig 10.34.1.3 remote-as 200
net 10.4.4.0 m 255.255.255.0
exit
```

```
R3:
Router bgp 200
aggregate-address 20.1.0.0 255.255.252.0 ! Sends Summary/Specific routes
```

```
R4:
*> 20.1.0.0/24 10.34.1.3 0 200 100 i
*> 20.1.0.0/22 10.34.1.3 0 200 i
```

```
*> 20.1.1.0/24 10.34.1.3 0 200 100 i
*> 20.1.2.0/24 10.34.1.3 0 200 100 i
*> 20.1.3.0/24 10.34.1.3 0 200 i
```

```
R3:
Router bgp 200
aggregate-address 20.1.0.0 255.255.252.0 summary-only
```

```
R4:
*> 20.1.0.0/22 10.34.1.3 0 0 200 i
```

```
R3:
Router bgp 200
aggregate-address 20.1.0.0 255.255.252.0 as-set summary-only
exit
```

```
*> 20.1.0.0/22 10.34.1.3 0 0 200 100 i
```

=====
To leak a specific route along with summary

```
R3:
access-list 1 permit 20.1.3.0 0.0.0.255
```

```
route-map RM-UNSUPP permit 10
match ip address 1
exit
```

```
Router bgp 200
neighbor 10.34.1.4 unsuppress-map RM-UNSUPP
exit
```

```
*> 20.1.0.0/22 10.34.1.3 0 0 200 100 i
*> 20.1.3.0/24 10.34.1.3 0 200 i
```

Supress MAP:

To Supresses a specific route allows other specific rotues with summary

```
access-list 1 permit 20.1.3.0 0.0.0.255
```

```
route-map RM-SUPP permit 10
match ip address 1
exit
```

```
Router bgp 200
aggregate-address 20.1.0.0 255.255.252.0 as-set summary-only suppress-map RM-SUPP
exit
```

```
*> 20.1.0.0/24 10.34.1.3 0 200 100 i
```

*>	20.1.0.0/22	10.34.1.3	0	0 200 100 i
*>	20.1.1.0/24	10.34.1.3		0 200 100 i
*>	20.1.2.0/24	10.34.1.3		0 200 100 i