

```
R1
conf t
int e0/0
Desc conn to R2 in AS 200
ip add 10.12.1.1 255.255.255.0
no sh
int lo0
ip add 10.1.1.1 255.255.255.0
int lo1
ip add 10.2.2.2 255.255.255.0
int lo2
ip add 10.3.3.3 255.255.255.0
int lo3
ip add 10.4.4.4 255.255.255.0
exit
```

```
router bgp 100
  bgp router-id 1.1.1.1
  bgp log-neighbor-changes
  network 10.1.1.0 mask 255.255.255.0
  network 10.2.2.0 mask 255.255.255.0
  network 10.3.3.0 mask 255.255.255.0
  network 10.4.4.0 mask 255.255.255.0
  neighbor 10.12.1.2 remote-as 200
exit
```

```
R2:
conf t
int e0/0
DEsc conn to ebgp peer R1
ip add 10.12.1.2 255.255.255.0
no sh
int e0/1
Desc conn to member-As R3
ip add 10.23.1.2 255.255.255.0
no sh
exit
int lo0
ip add 2.2.2.2 255.255.255.0
exit
```

```
router bgp 65100
  bgp router-id 2.2.2.2
  bgp log-neighbor-changes
  bgp confederation identifier 200
  network 2.2.2.0 mask 255.255.255.0
  neighbor 10.12.1.1 remote-as 100
  neighbor 10.23.1.3 remote-as 65100
  neighbor 10.23.1.3 next-hop-self
exit
```

```
R3:
conf t
```

```
int e0/0
DEsc conn to member-As R2
ip add 10.23.1.3 255.255.255.0
no sh
int e0/1
Desc conn to Another member-As R4
ip add 10.34.1.3 255.255.255.0
no sh
exit
int lo0
ip add 3.3.3.3 255.255.255.0
exit
```

```
router bgp 65100
  bgp router-id 3.3.3.3
  bgp log-neighbor-changes
  bgp confederation identifier 200
  bgp confederation peers 65200
  network 3.3.3.0 mask 255.255.255.0
  neighbor 10.23.1.2 remote-as 65100
  neighbor 10.23.1.2 next-hop-self
  neighbor 10.34.1.4 remote-as 65200
  neighbor 10.34.1.4 next-hop-self all
exit
```

```
R4:
conf t
int e0/0
DEsc conn to Another member-As R3
ip add 10.34.1.4 255.255.255.0
no sh
int e0/1
Desc conn to Ebgp peer R5
ip add 10.45.1.4 255.255.255.0
no sh
exit
int lo0
ip add 4.4.4.4 255.255.255.0
exit
```

```
router bgp 65200
  bgp router-id 4.4.4.4
  bgp log-neighbor-changes
  bgp confederation identifier 200
  bgp confederation peers 65100
  network 4.4.4.0 mask 255.255.255.0
  neighbor 10.34.1.3 remote-as 65100
  neighbor 10.34.1.3 next-hop-self
  neighbor 10.45.1.5 remote-as 300
exit
```

```
R5:
conf t
```

```
int e0/0
Desc conn to Ebgp peer R4
ip add 10.45.1.5 255.255.255.0
no sh
exit
int lo0
ip add 5.5.5.5 255.255.255.0
exit
```

```
router bgp 300
  bgp router-id 5.5.5.5
  network 5.5.5.0 mask 255.255.255.0
  neighbor 10.45.1.4 remote-as 200
exit
```

```
=====
Well known Communities:
```

```
-----
access-list 1 permit 10.1.1.0 0.0.0.255
access-list 2 permit 10.2.2.0 0.0.0.255
access-list 3 permit 10.3.3.0 0.0.0.255
access-list 4 permit 10.4.4.0 0.0.0.255
```

```
route-map WELL-KNOWN-COMM permit 10
  match ip address 1
  set community internet
!
```

```
route-map WELL-KNOWN-COMM permit 20
  match ip address 1
  set community no-advertise
!
```

```
route-map WELL-KNOWN-COMM permit 30
  match ip address 3
  set community no-export
!
```

```
route-map WELL-KNOWN-COMM permit 40
  match ip address 4
  set community local-AS
!
```

```
route-map WELL-KNOWN-COMM permit 50
```

```
Router bgp 100
  neighbor 10.12.1.2 route-map WELL-KNOWN-COMM out
  neighbor 10.12.1.2 send-community both
exit
```

```
R2:
router bgp 65100
  neig 10.23.1.3 send-community both
exit
```

```
R3
router bgp 65100
neig 10.34.1.4 send-community both
```

```
R4:
Router bgp 65200
neig 10.45.1.5 send-community both
```

```
=====
user Defined communities
```

```
R1: Adding communities
```

```
router bgp 100
 network 20.1.1.0 mask 255.255.255.0
 network 20.1.2.0 mask 255.255.255.0
 neighbor 10.12.1.2 remote-as 100
 neighbor 10.12.1.2 send-community both
 neighbor 10.12.1.2 route-map RM-USER-COMM out
!
```

```
!
ip bgp-community new-format
!
```

```
route-map RM-USER-COMM permit 10
 match ip address 1
 set community internet 100:1
!
```

```
route-map RM-USER-COMM permit 20
 match ip address 2
 set community internet 200:2
!
```

```
route-map RM-USER-COMM permit 30
!
```

```
access-list 1 permit 20.1.1.0 0.0.0.255
access-list 2 permit 20.1.2.0 0.0.0.255
exit
```

```
R2:
```

```
-----
router bgp 100
 bgp router-id 2.2.2.2
 bgp log-neighbor-changes
 bgp bestpath as-path multipath-relax
 network 2.0.0.0
 neighbor 10.12.1.1 remote-as 100
 neighbor 10.12.1.1 next-hop-self
 neighbor 10.23.1.3 remote-as 200
 neighbor 10.23.1.3 send-community both
 neighbor 10.23.1.3 route-map RM-APPEND out
 neighbor 10.25.1.5 remote-as 300
 maximum-paths 2
```

```
ip bgp-community new-format
ip community-list 1 permit 100:1
!
```

```
route-map RM-APPEND permit 10
match community 1
set community 100:2 additive
!
route-map RM-APPEND permit 20
```

R3: Delete a comm

```
router bgp 200
bgp router-id 3.3.3.3
bgp log-neighbor-changes
network 20.1.3.0 mask 255.255.255.0
neighbor 10.23.1.2 remote-as 100
neighbor 10.34.1.4 remote-as 200
neighbor 10.34.1.4 next-hop-self
neighbor 10.34.1.4 send-community both
neighbor 10.34.1.4 route-map RM-COMM-DEL out
!
```

```
ip bgp-community new-format
ip community-list 1 permit 100:1
!
```

```
route-map RM-COMM-DEL permit 10
match community 1
set comm-list 1 delete
!
route-map RM-COMM-DEL permit 20
match ip address 1
set community no-export
!
route-map RM-COMM-DEL permit 30
!
!
access-list 1 permit 20.1.3.0 0.0.0.255
```

R4

```
router bgp 200
bgp router-id 4.4.4.4
bgp log-neighbor-changes
neighbor 10.34.1.3 remote-as 200
neighbor 10.34.1.3 next-hop-self
neighbor 10.34.1.3 route-map RM-DEL-ROUTE in
neighbor 10.47.1.7 remote-as 400
!
```

```
ip bgp-community new-format
ip community-list 2 permit no-export
!
```

```
route-map RM-DEL-ROUTE deny 10
  match community 2
!
route-map RM-DEL-ROUTE permit 20
!
```

R5: used in multipath

```
router bgp 300
  bgp router-id 5.5.5.5
  bgp log-neighbor-changes
  neighbor 10.25.1.2 remote-as 100
  neighbor 10.25.1.2 shutdown
  neighbor 10.56.1.6 remote-as 300
  neighbor 10.56.1.6 next-hop-self
```

R6: used in multipath

```
router bgp 300
  bgp router-id 6.6.6.6
  bgp log-neighbor-changes
  neighbor 10.56.1.5 remote-as 300
  neighbor 10.56.1.5 next-hop-self
  neighbor 10.67.1.7 remote-as 400
```

R7:

```
router bgp 400
  bgp router-id 7.7.7.7
  bgp log-neighbor-changes
  network 7.0.0.0
  neighbor 10.47.1.4 remote-as 200
  neighbor 10.67.1.6 remote-as 300
```

