Labák 3

4. Na smerovačoch nakonfigurujte smerovací protokol BGP (AS 100). Susedstvo medzi všetkými smerovačmi vytvárajte pomocou Router ID (Loop 0). Dostupnosť Router ID zabezpečte pomocou OSPF

```
R1(config)#route bgp 100
R1(config-router)#bgp router-id 1.1.1.1
R1(config-router)#neighbor 2.2.2.2 remote-as 100
R1(config-router)#neighbor 2.2.2.2 update-source loop0
R1(config-router)#neighbor 3.3.3.3 remote-as 100
R1(config-router)#neighbor 3.3.3.3 update-source loop0

R2(config)#router bgp 100
R2(config-router)#bgp router-id 2.2.2.2
R2(config-router)#neighbor 1.1.1.1 remote-as 100
R2(config-router)#neighbor 1.1.1.1 update-source loop0
R2(config-router)#neighbor 4.4.4.4 remote-as 100
R2(config-router)#neighbor 4.4.4.4 update-source loop0

R3(config)#router bgp 100
R3(config-router)#bgp router-id 3.3.3.3
R3(config-router)#neighbor 1.1.1.1 remote-as 100
R3(config-router)#neighbor 1.1.1.1 update-source loop0
R3(config-router)#neighbor 4.4.4.4 remote-as 100
R3(config-router)#neighbor 4.4.4.4 update-source loop0

R4(config)#router bgp 100
R4(config-router)#bgp router-id 4.4.4.4
R4(config-router)#neighbor 3.3.3.3 remote-as 100
R4(config-router)#neighbor 3.3.3.3 update-source loop0
R4(config-router)#neighbor 2.2.2.2 remote-as 100
R4(config-router)#neighbor 2.2.2.2 update-source loop0


R1(config)#router ospf 1
R1(config-router)#network 12.12.12.0 255.255.255.252 area 0
R1(config-router)#network 13.13.13.0 255.255.255.252 area 0
R1(config-router)#network 1.1.1.1 255.255.255.255 area 0

R2(config)#router ospf 1
R2(config-router)#network 12.12.12.0 255.255.255.252 area 0
R2(config-router)#network 24.24.24.0 255.255.255.252 area 0
R2(config-router)#network 2.2.2.2 255.255.255.255 area 0

R3(config)#router ospf 1
R3(config-router)#network 13.13.13.0 255.255.255.252 area 0
R3(config-router)#network 34.34.34.0 255.255.255.252 area 0
R3(config-router)#network 3.3.3.3 255.255.255.255 area 0

R4(config)#router ospf 1
R4(config-router)#network 34.34.34.0 255.255.255.252 area 0
R4(config-router)#network 24.24.24.0 255.255.255.252 area 0
R4(config-router)#network 4.4.4.4 255.255.255.255 area 0
```

5. Cez BGP oznamujte Loop 1 sietea skontrolujte, či sa korektne prešírili v sieti. Koľko iBGP susedstiev je na to potrebných?
    - siete pridane cez prikaz network
6. Na smerovačoch R2, R3, R4 odstráňte všetkých susedov okrem R1, ktorý bude slúžiť ako reflektor ciest. Na R1 nastavte každého suseda ako „route-reflector-client“.
    - Susedstva budu medzi:

$$R4 \rightarrow R1$$
$$R3 \rightarrow R1$$
$$R2 \rightarrow R1$$

R1 nema susedstva, len route reflectory (R2,R3,R4)

```
R1(config-router)#neighbor 2.2.2.2 route-reflector-client
R1(config-router)#neighbor 3.3.3.3 route-reflector-client
R1(config-router)#neighbor 4.4.4.4 route-reflector-client
```

Pre kontrolu na R2 napriklad nam zostane nakonfigurovane:

```
R2(config-router)#do sh runn | i neig
bgp log-neighbor-changes
neighbor 1.1.1.1 remote-as 100
neighbor 1.1.1.1 update-source Loopback0
```

7. Skontrolujte, či sa aj vtomto prípade prešírili všetky oznamované prefixy (Loop1siete). Koľko susedstiev nám teraz stačí?
   - Presirili, stacia 3 susesdstva
8. Vymažte zo smerovačov proces BGP AS 100. Na R1 aR2 nakonfigurujte BGP AS 101, na R3 aR4 BGP AS 102. Nakonfigurujte číslo konfederácie 100 (navonok sa budú tváriť ako AS 100).Nakonfigurujte chýbajúce číslo AS ako spoločníka konfederácie (confederation peer). Vytvorte BGP susedstvo s priamo pripojenými smerovačmi a oznamujte Loop1 siete.

```
no router bgp as_num //vymazanie nakonfiguravanego bgp

R1(config)#router bgp 101
R1(config-router)#bgp confederation identifier 100
R1(config-router)#bgp confederation peer 102
R1(config-router)#neighbor 13.13.13.2 remote-as 102
R1(config-router)#neighbor 12.12.12.2 remote-as 101
R1(config-router)#network 10.10.10.0 mask 255.255.255.0

R2(config)#router bgp 101
R2(config-router)#bgp confederation identifier 100
R2(config-router)#bgp confederation peer 102
R2(config-router)#neighbor 12.12.12.1 remote-as 101
R2(config-router)#neighbor 24.24.24.2 remote-as 102
R2(config-router)#network 20.20.20.0 mask 255.255.255.0

R3(config)#router bgp 102
R3(config-router)#bgp confederation identifier 100
R3(config-router)#bgp confederation peer 101
R3(config-router)#neighbor 13.13.13.1 remote-as 101
R3(config-router)#neighbor 34.34.34.2 remote-as 102
R3(config-router)#network 30.30.30.0 mask 255.255.255.0

R4(config)#router bgp 102
R4(config-router)#bgp confederation identifier 100
R4(config-router)#bgp confederation peer 101
R4(config-router)#neighbor 24.24.24.1 remote-as 101
R4(config-router)#neighbor 34.34.34.1 remote-as 102
R4(config-router)#network 40.40.40.0 mask 255.255.255.0
```

9. Skontrolujte prešírenie prefixov aspočítajte množstvo potrebných susedstiev.Na R4 zobrazte detailné informácie oprefixe 10.10.10.0 vBGP databáze avšimnite si údaje o konfederácii.

```
R4(config)#do sh ip bgp 10.10.10.0
BGP routing table entry for 10.10.10.0/24, version 2
Paths: (2 available, best #2, table default)
Flag: 0x100
  Advertised to update-groups:
     2
  Refresh Epoch 1
  (101)
    13.13.13.1 (metric 2) from 34.34.34.1 (30.30.30.1)
      Origin IGP, metric 0, localpref 100, valid, confed-internal
      rx pathid: 0, tx pathid: 0
  Refresh Epoch 1
  (101)
    12.12.12.1 (metric 2) from 24.24.24.1 (20.20.20.1)
      Origin IGP, metric 0, localpref 100, valid, confed-external, best
      rx pathid: 0, tx pathid: 0x0
```