**Topologi Praktikum Routing**

[Diagram

Description automatically generated](https://3.bp.blogspot.com/-jTma5_z3Bbc/WJAzZ71UcOI/AAAAAAAACcE/mzaf2xa0ZSoQSQjc7TGD1JUC_yPy1gI6wCLcB/s1600/screenshot.png)

**Materi Lab**

* BGP
  + Route-Reflector
  + Filtering (Scope, Target Scope)
* Recursive Gateway
* OSPF
* RIP
* Static Routing
* Redistribute

**Tujuan Lab**

Seluruh Router dapat berkomunikasi menggunakan Routing Protocol BGP, OSPF, dan RIP sisanya menggunakan Static Routing. untuk mengurangi jumlah iBGP Peering maka kita menggunakan Route-Reflector pada R1, informasi yang didapat dari BGP yang masuk juga akan kita filter untuk memodifikasi nilai Scope dan Target scope agar menjadi Recrusive Gateway.

Antar Routing protocol juga melakukan Redistribute.

**Konfigurasi RIP (R2, R8, R7)**

[Diagram

Description automatically generated](https://2.bp.blogspot.com/-xZW73V4zrHg/WJEthsEEyQI/AAAAAAAACcU/XRNASMM1IWIqodoCvUVCEmGji5ArQ9BowCLcB/s1600/2017-02-01_073435.png)

**IP Address**

Pertama kita berikan alamat IP pada setiap Interface ketiga Router tersebut

**R2**

/ip address

add address=12.12.12.2/24 interface=ether1 network=12.12.12.0

add address=27.27.27.2/24 interface=ether2 network=27.27.27.0

add address=28.28.28.2/24 interface=ether3 network=28.28.28.0

**R8**

/interface bridge

add name=lo0

/ip address

add address=28.28.28.8/24 interface=ether1 network=28.28.28.0

add address=80.80.80.80 interface=lo0 network=80.80.80.80

**R7**

/interface bridge

add name=lo0

/ip address

add address=27.27.27.7/24 interface=ether1 network=27.27.27.0

add address=70.70.70.70 interface=lo0 network=70.70.70.70

**Routing RIP**

Konfigurasi Routing RIP agar antar Router dapat bertukar informasi Routing, masukan network yang ingin di advertise pada Router lainnya.

**R2**

Pada Router ini juga menjalankan BGP, maka konfigurasi redistribute dari RIP menjadi BGP pada Router R2 ini

/routing rip

set redistribute-bgp=yes redistribute-connected=yes

/routing rip network

add network=27.27.27.0/24

add network=28.28.28.0/24

**R8**

/routing rip network

add network=28.28.28.0/24

add network=80.80.80.80/32

**R7**

/routing rip network

add network=27.27.27.0/24

add network=70.70.70.70/32

**Konfigurasi OSPF (R3, R5, R6)**

[Diagram

Description automatically generated](https://3.bp.blogspot.com/--oX1RYqwda8/WJE1ACXizaI/AAAAAAAACco/T2mt0XNKUCUp5beoFTtNgwShlfO1q8AFQCLcB/s1600/2017-02-01_080644.png)

**IP Address**

**R3**

/ip address

add address=13.13.13.3/24 interface=ether1 network=13.13.13.0

add address=36.36.36.3/24 interface=ether2 network=36.36.36.0

add address=35.35.35.3/24 interface=ether3 network=35.35.35.0

**R5**

/interface bridge

add name=lo0

/ip address

add address=35.35.35.5/24 interface=ether1 network=35.35.35.0

add address=50.50.50.50 interface=lo0 network=50.50.50.50

**R6**

/interface bridge

add name=lo0

/ip address

add address=36.36.36.6/24 interface=ether1 network=36.36.36.0

add address=60.60.60.60 interface=lo0 network=60.60.60.60

**Routing OSPF**

**R3**

Pada Router ini akan melakukan redistribute OSPF ke BGP dan sebaliknya.

/routing ospf area

set [ find default=yes ] disabled=yes

/routing ospf instance

set [ find default=yes ] disabled=yes

add name=lab-ospf redistribute-bgp=as-type-2 redistribute-connected=as-type-2 \

router-id=3.3.3.3

/routing ospf area

add instance=lab-ospf name=backbone-lab

/routing ospf network

add area=backbone-lab network=35.35.35.0/24

add area=backbone-lab network=36.36.36.0/24

**R5**

/routing ospf area

set [ find default=yes ] disabled=yes

/routing ospf instance

set [ find default=yes ] disabled=yes

add name=lab-ospf router-id=5.5.5.5

/routing ospf area

add instance=lab-ospf name=backbone-lab

/routing ospf network

add area=backbone-lab network=35.35.35.0/24

add area=backbone-lab network=50.50.50.50/32

**R6**

/routing ospf area

set [ find default=yes ] disabled=yes

/routing ospf instance

set [ find default=yes ] disabled=yes

add name=lab-ospf router-id=6.6.6.6

/routing ospf area

add instance=lab-ospf name=backbone-lab

/routing ospf network

add area=backbone-lab network=36.36.36.0/24

add area=backbone-lab network=60.60.60.60/32

**Konfigurasi Static**

Pada daerah ini hanya menggunakan Static Routing

[Diagram

Description automatically generated](https://3.bp.blogspot.com/-gId2skDXXgs/WJFBgO1hmHI/AAAAAAAACc4/C28VphezPLEbGzNtqpUhmVQ3wkwFqAJQQCLcB/s1600/2017-02-01_090120.png)

**IP Address**

**R4**

/ip address

add address=14.14.14.4/24 interface=ether1 network=14.14.14.0

add address=41.41.41.4/24 interface=ether2 network=41.41.41.0

add address=49.49.49.4/24 interface=ether3 network=49.49.49.0

**R9**

/interface bridge

add name=lo0

/ip address

add address=49.49.49.9/24 interface=ether1 network=49.49.49.0

add address=90.90.90.90 interface=lo0 network=90.90.90.90

**R10**

/interface bridge

add name=lo0

/ip address

add address=41.41.41.10/24 interface=ether1 network=41.41.41.0

add address=100.100.100.100 interface=lo0 network=100.100.100.100

**Static Routing**

**R4**

/ip route

add distance=1 dst-address=90.90.90.90/32 gateway=49.49.49.9

add distance=1 dst-address=100.100.100.100/32 gateway=41.41.41.10

**R9**

/ip route

add distance=1 gateway=49.49.49.4

**R10**

/ip route

add distance=1 gateway=41.41.41.4

**Konfigurasi BGP AS 1234 (R1, R2, R3 & R4)**

[Diagram

Description automatically generated](https://2.bp.blogspot.com/-QAXsyiTJa-A/WJFBowPj20I/AAAAAAAACc8/NJnVSSBdx04MUYPSdwH3c-bHbybh__GEwCLcB/s1600/2017-02-01_090200.png)

Seluruh Router peering iBGP pada satu Router yang sama yaitu R1 yang akan bertindak sebagai Route Reflector Server. Pada R1 konfigurasikan IP Address terlebih dahulu :

**R1**

/ip address

add address=14.14.14.1/24 interface=ether2 network=14.14.14.0

add address=13.13.13.1/24 interface=ether3 network=13.13.13.0

add address=12.12.12.1/24 interface=ether4 network=12.12.12.0

**BGP Filter**

Kita akan melakukan filtering terhadap informasi rute BGP yang masuk, informasi yang masuk tersebut akan diubah nilai scopenya agar menjadi recrusive.

**R2**

/routing filter

add chain=bgp-scope-in **set-scope=30 set-target-scope=40**

**R3**

/routing filter

add chain=bgp-scope-in **set-scope=30 set-target-scope=40**

**R4**

/routing filter

add chain=bgp-scope-in **set-scope=30 set-target-scope=40**

Setelah itu kembali cek di Routing table apakah sudah menjadi aktif

[admin@R4] > ip route print

Flags: X - disabled, A - active, D - dynamic,

C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,

B - blackhole, U - unreachable, P - prohibit

# DST-ADDRESS PREF-SRC GATEWAY DISTANCE

**0 ADb 12.12.12.0/24 14.14.14.1 200**

**1 ADb 13.13.13.0/24 14.14.14.1 200**

2 ADC 14.14.14.0/24 14.14.14.4 ether1 0

3 Db 14.14.14.0/24 14.14.14.1 200

**4 ADb 27.27.27.0/24 12.12.12.2 200**

**5 ADb 28.28.28.0/24 12.12.12.2 200**

**6 ADb 35.35.35.0/24 13.13.13.3 200**

**7 ADb 36.36.36.0/24 13.13.13.3 200**

8 ADC 41.41.41.0/24 41.41.41.4 ether2 0

9 ADC 49.49.49.0/24 49.49.49.4 ether3 0

**10 ADb 50.50.50.50/32 13.13.13.3 200**

**11 ADb 60.60.60.60/32 13.13.13.3 200**

**12 ADb 70.70.70.70/32 12.12.12.2 200**

**13 ADb 80.80.80.80/32 12.12.12.2 200**

14 A S 90.90.90.90/32 49.49.49.9 1

15 A S 100.100.100.100/32 41.41.41.10 1

**BGP Peering**

Konfigurasi BGP Peering pada setiap Router agar terbentuk koneksi BGP antar Router

**R1**

Router R1 ini berperan sebagai Route-Reflector Server

/routing bgp instance

set default disabled=yes

add **as=1234** name=lab-bgp router-id=1.1.1.1

/routing bgp network

add network=12.12.12.0/24

add network=13.13.13.0/24

add network=14.14.14.0/24

/routing bgp peer

add instance=lab-bgp name=peer1 nexthop-choice=force-self remote-address=\

12.12.12.2 remote-as=1234 **route-reflect=yes**

add instance=lab-bgp name=peer2 nexthop-choice=force-self remote-address=\

13.13.13.3 remote-as=1234 **route-reflect=yes**

add instance=lab-bgp name=peer3 nexthop-choice=force-self remote-address=\

14.14.14.4 remote-as=1234 **route-reflect=yes**

**R2**

Tambahkan in-filter untuk melakukan fitering terhadap informasi yang masuk

/routing bgp instance

set default disabled=yes

add as=1234 name=lab-bgp redistribute-connected=yes redistribute-rip=yes \

router-id=2.2.2.2

/routing bgp network

add network=12.12.12.0/24

/routing bgp peer

add **in-filter=bgp-scope-in** instance=lab-bgp name=peer1 remote-address=\

12.12.12.1 remote-as=1234

**R3**

/routing bgp instance

set default disabled=yes

add as=1234 name=lab-bgp redistribute-connected=yes redistribute-ospf=yes \

router-id=3.3.3.3

/routing bgp network

add network=13.13.13.0/24

/routing bgp peer

add **in-filter=bgp-in-scope** instance=lab-bgp name=peer1 remote-address=\

13.13.13.1 remote-as=1234

**R4**

/routing bgp instance

set default disabled=yes

add as=1234 name=lab-bgp redistribute-connected=yes redistribute-static=yes \

router-id=4.4.4.4

/routing bgp network

add network=14.14.14.0/24

/routing bgp peer

add in-filter=bgp-in-scope instance=lab-bgp name=peer1 remote-address=\

14.14.14.1 remote-as=1234

Setelah itu coba cek salah satu Routing table ROuter dan lihat apa yang terjadi

[admin@R4] > ip route print

Flags: X - disabled, A - active, D - dynamic,

C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,

B - blackhole, U - unreachable, P - prohibit

# DST-ADDRESS PREF-SRC GATEWAY DISTANCE

0 ADb 12.12.12.0/24 14.14.14.1 200

1 ADb 13.13.13.0/24 14.14.14.1 200

2 ADC 14.14.14.0/24 14.14.14.4 ether1 0

**3 Db 14.14.14.0/24 14.14.14.1 200**

**4 Db 27.27.27.0/24 12.12.12.2 200**

**5 Db 28.28.28.0/24 12.12.12.2 200**

**6 Db 35.35.35.0/24 13.13.13.3 200**

**7 Db 36.36.36.0/24 13.13.13.3 200**

8 ADC 41.41.41.0/24 41.41.41.4 ether2 0

9 ADC 49.49.49.0/24 49.49.49.4 ether3 0

**10 Db 50.50.50.50/32 13.13.13.3 200**

**11 Db 60.60.60.60/32 13.13.13.3 200**

**12 Db 70.70.70.70/32 12.12.12.2 200**

**13 Db 80.80.80.80/32 12.12.12.2 200**

14 A S 90.90.90.90/32 49.49.49.9 1

15 A S 100.100.100.100/32 41.41.41.10 1

Seperti yang kita lihat rute yang didapatkan BGP belum aktif, karena apa? rute tersebut bersifat recrusive dan seperti yang kita ketahui untuk mengaktifkan recrusive maka kita harus mengubah nilai scope dan target scopenya. jadi solusinya kita filter rute yang masuk untuk mengubah nilai scope dan target scope nya