

Praktikum 1

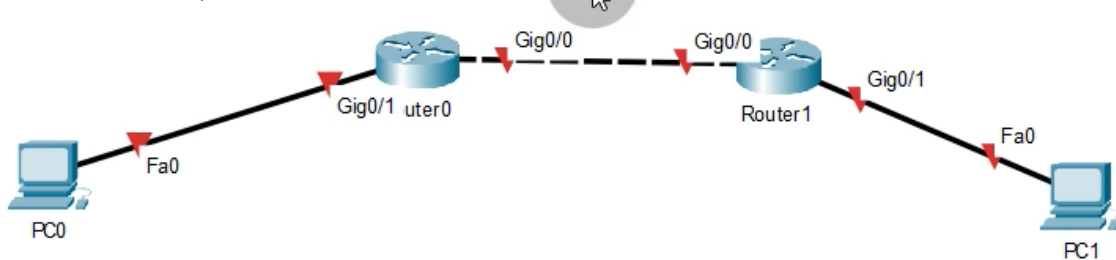
Routing Statis

NO	KETERANGAN																
1	Buatlah Topologi dengan Packet Tracer sebagai berikut																
2	Berikan IP kepada Router dan PC sebagai berikut																
ROUTER0 - GIG0/0 : 10.10.10.1 255.255.255.252 ROUTER0 - GIG0/1 : 192.168.0.1 255.255.255.0 ROUTER1 - GIG0/0 : 10.10.10.2 255.255.255.252 ROUTER1 - GIG0/1 : 192.168.1.1 255.255.255.0 PC0 : 192.168.0.2 255.255.255.0, GW: 192.168.0.1 PC1 : 192.168.1.2 255.255.255.0, GW: 192.168.1.1																	
3	Konfigurasi Static Routing																
ROUTER0 : 192.168.1.0 255.255.255.0 10.10.10.2 ROUTER1 : 192.168.0.0 255.255.255.0 10.10.10.1																	
4	Tes PING dari Ujung ke Ujung, dan Pastikan Sukses																
<table border="1"> <tbody> <tr> <td>Successful</td> <td>PC0</td> <td>PC1</td> <td>ICMP</td> <td></td> <td>0.000</td> <td>N</td> <td>0</td> </tr> <tr> <td>Successful</td> <td>PC0</td> <td>PC1</td> <td>ICMP</td> <td></td> <td>0.000</td> <td>N</td> <td>1</td> </tr> </tbody> </table>		Successful	PC0	PC1	ICMP		0.000	N	0	Successful	PC0	PC1	ICMP		0.000	N	1
Successful	PC0	PC1	ICMP		0.000	N	0										
Successful	PC0	PC1	ICMP		0.000	N	1										
5	Selesai																

Praktikum 2





Routing RIP

NO	KETERANGAN
1	Buatlah Topologi dengan Packet Tracer sebagai berikut



2	Berikan IP kepada Router 2911 dan PC sebagai berikut
Router0 - Gig0/0 : 10.10.10.1 255.255.255.252	
Router0 - Gig0/1 : 192.168.0.1 255.255.255.0	
Router1 - Gig0/0 : 10.10.10.2 255.255.255.252	
Router1 - Gig0/1 : 192.168.1.1 255.255.255.0	
PC0 : 192.168.0.2 255.255.255.0, GW: 192.168.0.1	
PC1 : 192.168.1.2 255.255.255.0, GW: 192.168.1.1	

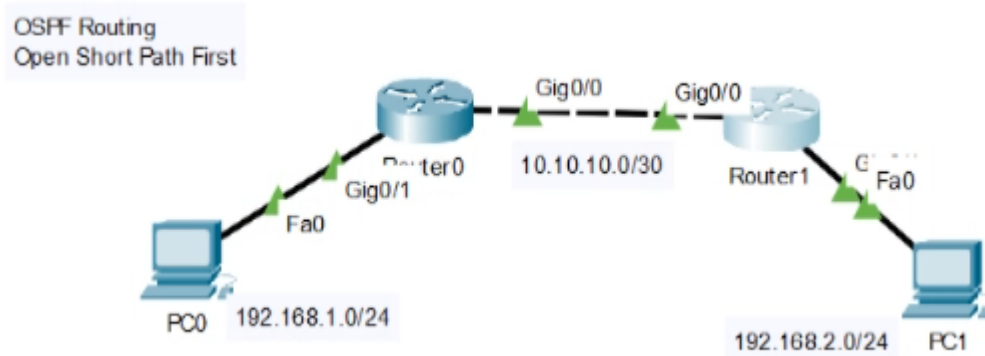
3	Konfigurasi RIPv2 Routing
<pre> router0 : router>enable router#config t router(config)#router rip router(config-router)#no auto-summary router(config-router)#network 192.168.0.0 router(config-router)#network 10.10.10.0 router(config-router)#version 2 router1 : router>enable router#config t router(config)#router rip router(config-router)#no auto-summary router(config-router)#network 192.168.1.0 router(config-router)#network 10.10.10.0 router(config-router)#version 2 </pre>	

4	Tes PING dari Ujung ke Ujung, dan Pastikan Sukses							
	Successful	PC0	PC1	ICMP		0.000	N	0
	Successful	PC0	PC1	ICMP		0.000	N	1
5	Selesai							

Praktikum 3

Routing Open Short Path First

NO	KETERANGAN
1	Buatlah Topologi dengan Packet Tracer sebagai berikut



2	Berikan IP kepada Router 2911 dan PC sebagai berikut
---	---

Router0 - Gig0/0 : 10.10.10.1 255.255.255.252
 Router0 – Gig0/1 : 192.168.1.1 255.255.255.0
 Router1 – Gig0/0 : 10.10.10.2 255.255.255.252
 Router1 – Gig0/1 : 192.168.2.1 255.255.255.0

PC0 : 192.168.1.2 255.255.255.0, GW: 192.168.1.1
 PC1 : 192.168.2.2 255.255.255.0, GW: 192.168.2.1

3	Konfigurasi OSPF Routing
---	--------------------------





```

router0 :
router>enable
router#config t
router(config)#router ospf 1
router(config-router)#network 192.168.1.0 0.0.0.255 area 1
router(config-router)#network 10.10.10.0 0.0.0.3 area 1
  
```

```

router1 :
router>enable
router#config t
router(config)#router ospf 1
router(config-router)#network 192.168.2.0 0.0.0.255 area 1
router(config-router)#network 10.10.10.0 0.0.0.3 area 1
  
```

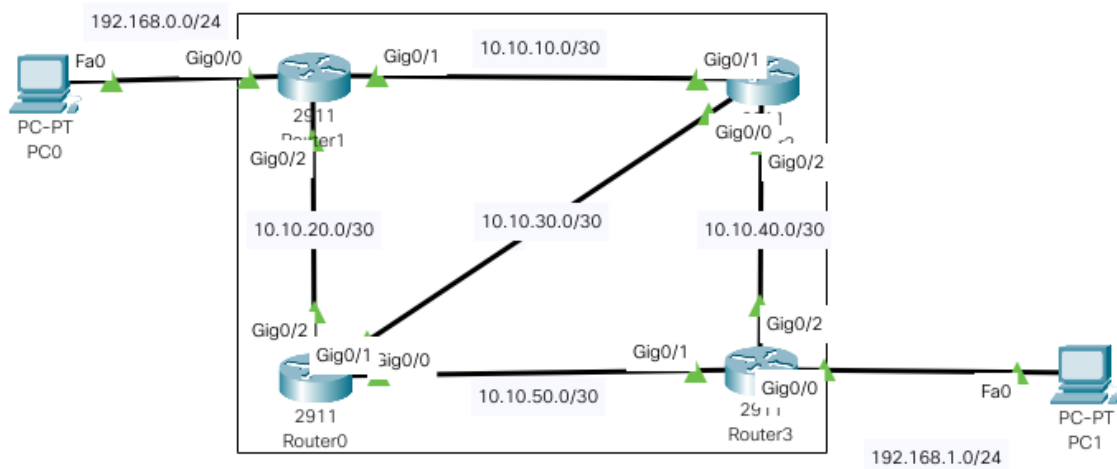
4	Tes PING dari Ujung ke Ujung, dan Pastikan Sukses
---	---

 Successful	PC0	PC1	ICMP		0.000	N	0
 Successful	PC0	PC1	ICMP		0.000	N	1
5	Selesai						

Praktikum 4

Routing Extended Interior Gateway Protocol

NO	KETERANGAN
1	Buatlah Topologi dengan Packet Tracer sebagai berikut



2	Berikan IP kepada Router 2911 dan PC sebagai berikut
----------	---

Router0:

GigabitEthernet0/0 - 10.10.30.2 255.255.255.252
 GigabitEthernet0/1 - 10.10.50.1 255.255.255.252
 GigabitEthernet0/2 - 10.10.20.2 255.255.255.252

Router1:

GigabitEthernet0/0 - 192.168.0.1 255.255.255.0
 GigabitEthernet0/1 - 10.10.10.1 255.255.255.252
 GigabitEthernet0/2 - 10.10.20.1 255.255.255.252

Router2:

GigabitEthernet0/0 - 10.10.30.1 255.255.255.252
 GigabitEthernet0/1 - 10.10.10.2 255.255.255.252
 GigabitEthernet0/2 - 10.10.40.1 255.255.255.252

Router3:

GigabitEthernet0/0 - 192.168.1.1 255.255.255.0
 GigabitEthernet0/1 - 10.10.50.2 255.255.255.252
 GigabitEthernet0/2 - 10.10.40.2 255.255.255.252

PC0 : 192.168.0.2 255.255.255.0, GW: 192.168.0.1
PC1 : 192.168.1.2 255.255.255.0, GW: 192.168.1.1

3 | Konfigurasi EIGRP Routing

Router0:

```
Router>ena
```

```
Router#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#router eigrp 1
```

```
Router(config-router)#net 10.10.20.0
```

```
Router(config-router)#net 10.10.30.0
```

```
Router(config-router)#net 10.10.50.0
```

Router1:

```
Router>ena
```

```
Router#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#router eigrp 1
```

```
Router(config-router)#net 10.10.10.0
```

```
Router(config-router)#net 10.10.20.0
```

```
Router(config-router)#net 192.168.0.0
```

Router2:

```
Router>ena
```

```
Router#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#router eigrp 1
```

```
Router(config-router)#net 10.10.10.0
```

```
Router(config-router)#net 10.10.30.0
```

```
Router(config-router)#net 10.10.40.0
```

Router3:

```
Router>ena
```

```
Router#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#router eigrp 1
```

```
Router(config-router)#net 10.10.40.0
```

```
Router(config-router)#net 10.10.50.0
```

```
Router(config-router)#net 192.168.1.0
```





4 | Cek Router Untuk Keberhasilan Routing, **show ip route**. Contoh: Router0

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks

- D 10.10.10.0/30 [90/3072] via 10.10.30.1, 00:14:47, GigabitEthernet0/0
[90/3072] via 10.10.20.1, 00:14:46, GigabitEthernet0/2
- C 10.10.20.0/30 is directly connected, GigabitEthernet0/2
- L 10.10.20.2/32 is directly connected, GigabitEthernet0/2
- C 10.10.30.0/30 is directly connected, GigabitEthernet0/0
- L 10.10.30.2/32 is directly connected, GigabitEthernet0/0
- D 10.10.40.0/30 [90/3072] via 10.10.50.2, 00:14:47, GigabitEthernet0/1
[90/3072] via 10.10.30.1, 00:14:47, GigabitEthernet0/0
- C 10.10.50.0/30 is directly connected, GigabitEthernet0/1
- L 10.10.50.1/32 is directly connected, GigabitEthernet0/1
- D 192.168.0.0/24 [90/5376] via 10.10.20.1, 00:14:46, GigabitEthernet0/2
- D 192.168.1.0/24 [90/5376] via 10.10.50.2, 00:14:47, GigabitEthernet0/1

5 Tes PING dari Ujung ke Ujung, dan Pastikan Sukses

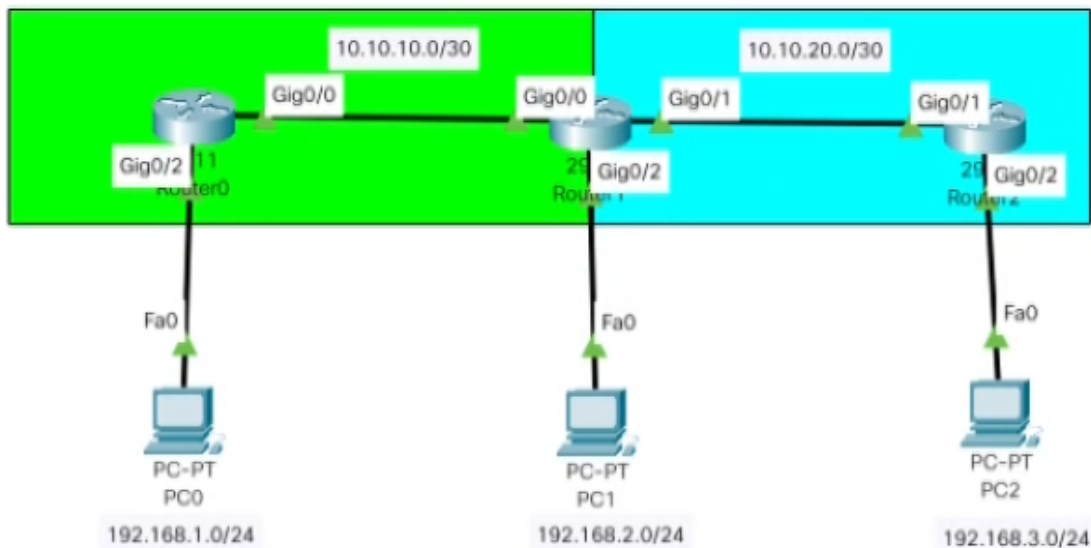
	Successful	PC0	PC1	ICMP		0.000	N	0
	Successful	PC0	PC1	ICMP		0.000	N	1

6 Selesai

Praktikum 5

Routing Campuran (EIGRP + Static)

NO	KETERANGAN
1	Buatlah Topologi dengan Packet Tracer sebagai berikut



2	Berikan IP kepada Router 2911 dan PC sebagai berikut
---	--

Router0:

GigabitEthernet0/0 - 10.10.10.1 255.255.255.252
 GigabitEthernet0/2 - 192.168.1.1 255.255.255.0 - Gateway

Router1:

GigabitEthernet0/0 - 10.10.10.2 255.255.255.252
 GigabitEthernet0/1 - 10.10.20.1 255.255.255.252
 GigabitEthernet0/2 - 192.168.2.1 255.255.255.0 - Gateway

Router2:

GigabitEthernet0/1 - 10.10.20.2 255.255.255.252
 GigabitEthernet0/2 - 192.168.3.1 255.255.255.0 - Gateway

PC0 : 192.168.1.2 255.255.255.0, GW: 192.168.1.1

PC1 : 192.168.2.2 255.255.255.0, GW: 192.168.2.1

PC2 : 192.168.3.2 255.255.255.0, GW: 192.168.3.1

3	Konfigurasi EIGRP Routing
---	---------------------------

Router0:

```
Router#config t
Router(config)#router eigrp 25
```

```
Router(config-router)#no auto
Router(config-router)#net 10.10.10.0
Router(config-router)#net 192.168.1.0
Router(config-router)#
```

Router1:

```
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router eigrp 25
Router(config-router)#no auto
Router(config-router)#net 10.10.20.0
Router(config-router)#net 192.168.2.0
```

4 | Konfigurasi Static Routing

Router1:

```
ip route 192.168.3.0 255.255.255.0 10.10.20.2
```

Router2:

```
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.1.0 255.255.255.0 10.10.20.1
Router(config)#ip route 192.168.2.0 255.255.255.0 10.10.20.1
Router(config)#ip route 10.10.10.0 255.255.255.0 10.10.20.1
```

5 | Konfigurasi Redistribute di Router Tengah (Antara EIGRP dan Static)

Router1:

```
Router(config)#router eigrp 25
Router(config-router)#redistri
Router(config-router)#redistribute static
4 Cek Router Untuk Keberhasilan Routing, show ip route. Contoh: Router0
ROUTER0:
```

```
10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C 10.10.10.0/30 is directly connected, GigabitEthernet0/0
L 10.10.10.1/32 is directly connected, GigabitEthernet0/0
D 10.10.20.0/30 [90/3072] via 10.10.10.2, 00:05:17, GigabitEthernet0/0
192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.168.1.0/24 is directly connected, GigabitEthernet0/2
L 192.168.1.1/32 is directly connected, GigabitEthernet0/2
D 192.168.2.0/24 [90/5376] via 10.10.10.2, 00:05:14, GigabitEthernet0/0
D EX 192.168.3.0/24 [170/5376] via 10.10.10.2, 00:01:03, GigabitEthernet0/0
```

ROUTER1:

```
10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C   10.10.10.0/30 is directly connected, GigabitEthernet0/0
L   10.10.10.2/32 is directly connected, GigabitEthernet0/0
C   10.10.20.0/30 is directly connected, GigabitEthernet0/1
L   10.10.20.1/32 is directly connected, GigabitEthernet0/1
D   192.168.1.0/24 [90/5376] via 10.10.10.1, 00:04:33, GigabitEthernet0/0
192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.2.0/24 is directly connected, GigabitEthernet0/2
L   192.168.2.1/32 is directly connected, GigabitEthernet0/2
S   192.168.3.0/24 [1/0] via 10.10.20.2
```

ROUTER2:

```
10.0.0.0/8 is variably subnetted, 3 subnets, 3 masks
S   10.10.10.0/24 [1/0] via 10.10.20.1
C   10.10.20.0/30 is directly connected, GigabitEthernet0/1
L   10.10.20.2/32 is directly connected, GigabitEthernet0/1
S   192.168.1.0/24 [1/0] via 10.10.20.1
S   192.168.2.0/24 [1/0] via 10.10.20.1
192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.3.0/24 is directly connected, GigabitEthernet0/2
L   192.168.3.1/32 is directly connected, GigabitEthernet0/2
```

5 Tes PING dari Ujung ke Ujung, dan Pastikan Sukses

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC0	PC2	IC...		0.000	N	0	(e...

6 Selesai

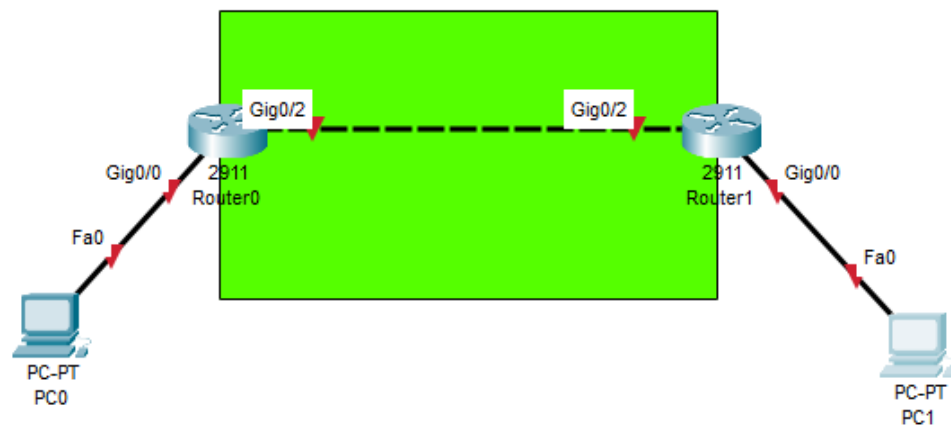
Praktikum 6

Routing RIP New Generation (IPv6)

N
O

KETERANGAN

1 Buatlah Topologi dengan Packet Tracer sebagai berikut



2 Konfigurasikan IPv6 sebagai berikut:

PC0 = 2000:AABB::2/64

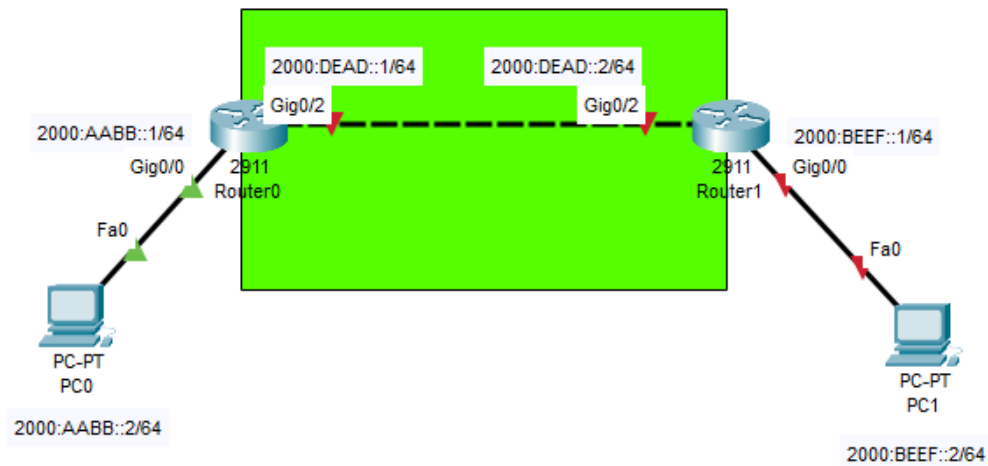
Router0 – Gig0/0 = 2000:AABB::2/64

PC1 = 2000:BEEF::2/64

Router1 – Gig0/0 = 2000:BEEF:1/64

Router0 – Gig0/2 = 2000:DEAD::1/64

Router1 – Gig0/2 = 2000:DEAD::2/64



3 Konfigurasi PC0

IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	2000:AABB::2 / 64
Link Local Address	FE80::201:42FF:FED8:2B42
Default Gateway	2000:AABB::1
DNS Server	
802.1X	

4 Konfigurasi PC1

IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	2000:BEEF::2 / 64
Link Local Address	FE80::201:63FF:FE79:3499
Default Gateway	2000:BEEF::1
DNS Server	
802.1X	

5 Buka Router0, masuk mode CLI, masukkan perintah-perintah berikut

```

Router>enable
Router#config terminal
Router(config)#interface Gig0/0
Router(config-if)#ipv6 addr 2000:AABB::1/64
Router(config-if)#no shutdown
Router(config)#int gig0/2
Router(config-if)#ipv6 addr 2000:DEAD::1/64
Router(config-if)#no shutdown

```

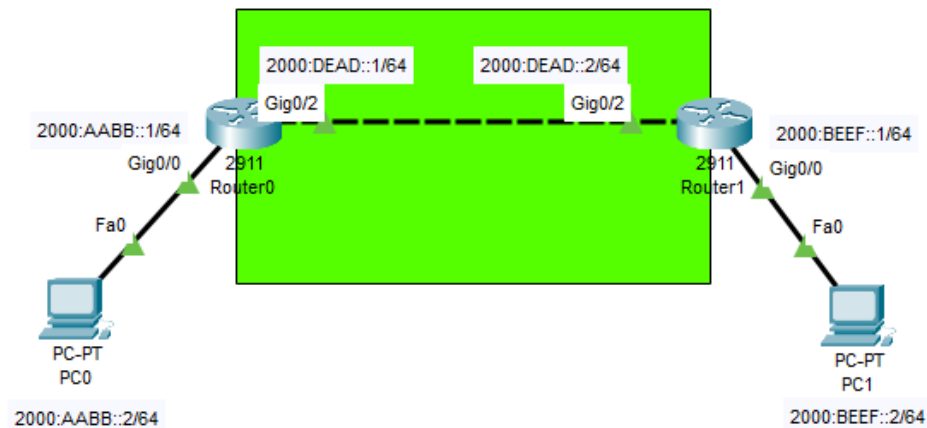
6 Buka Router1, masuk mode CLI, masukkan perintah-perintah berikut

```

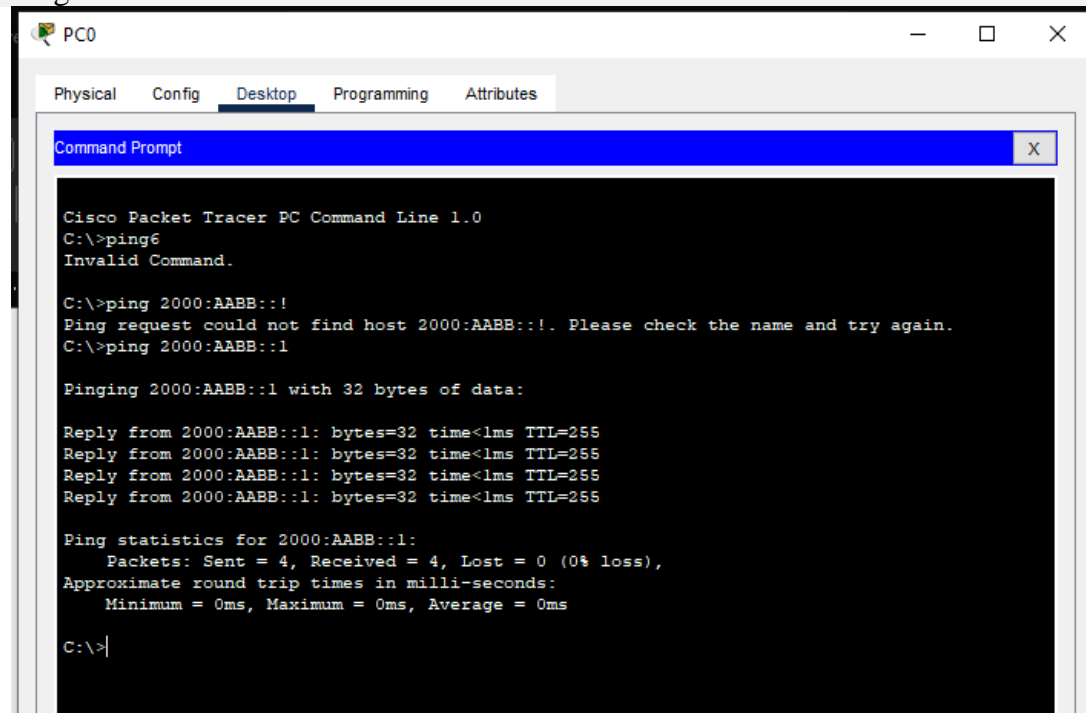
Router>enable
Router#config terminal
Router(config)#interface Gig0/0
Router(config-if)#ipv6 addr 2000:BEEF::1/64
Router(config-if)#no shutdown
Router(config)#int gig0/2
Router(config-if)#ipv6 addr 2000:DEAD::2/64
Router(config-if)#no shutdown

```

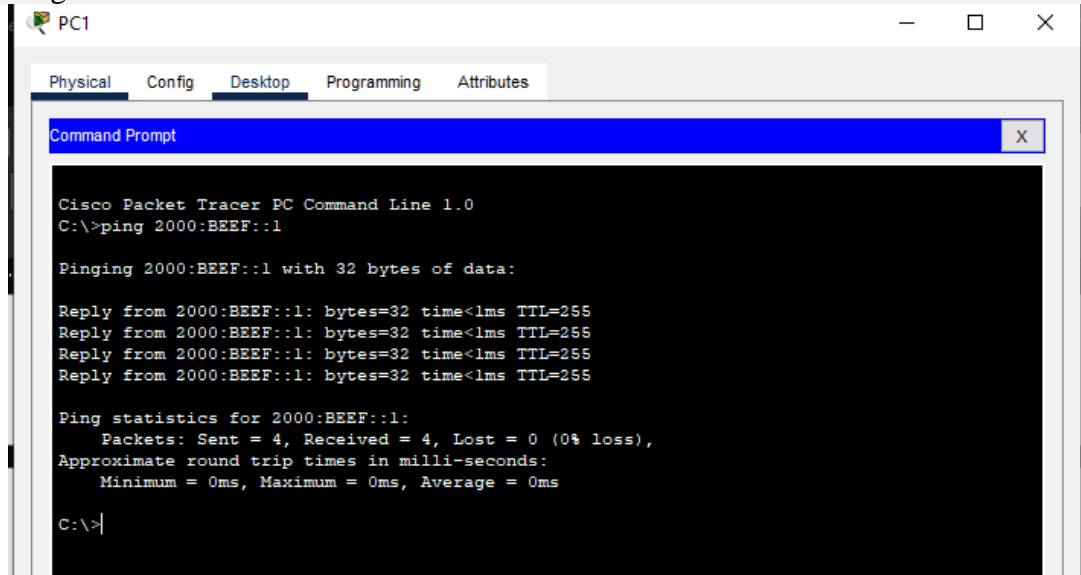
7 Perangkat sudah aktif dan bisa dicek dengan PING manual



8 Ping PC0 ke Router0



9 Ping PC1 ke Router1



```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 2000:BEEF::1

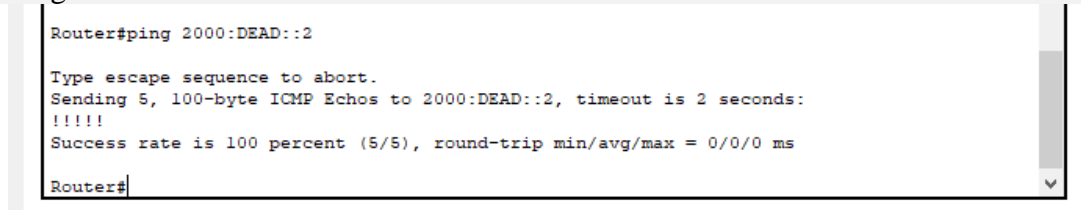
Pinging 2000:BEEF::1 with 32 bytes of data:

Reply from 2000:BEEF::1: bytes=32 time<lms TTL=255
Reply from 2000:BEEF::1: bytes=32 time<lms TTL=255
Reply from 2000:BEEF::1: bytes=32 time<lms TTL=255
Reply from 2000:BEEF::1: bytes=32 time<lms TTL=255

Ping statistics for 2000:BEEF::1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

10 Ping Router0 ke Router1



```
Router#ping 2000:DEAD::2

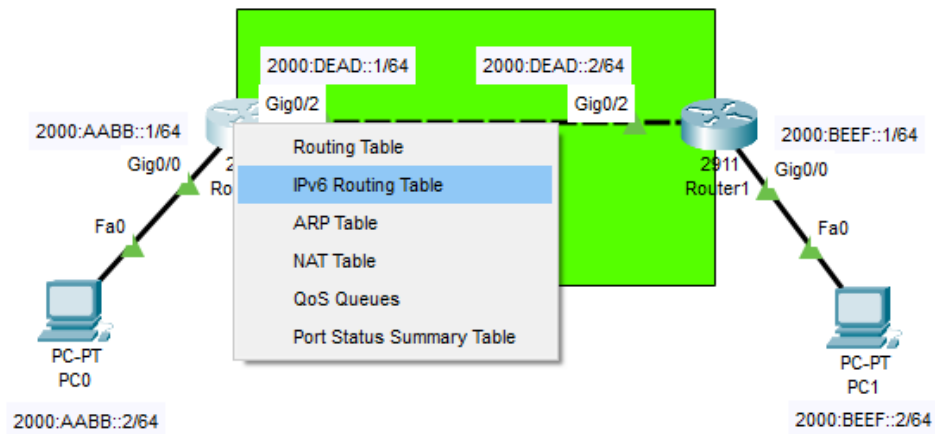
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2000:DEAD::2, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

Router#
```

11 Atur Routing ke RIPNG dari Router0 dan Router1. Gunakan perintah-perintah berikut

```
Router>enable
Router#config terminal
Router(config)# ipv6 unicast-routing
Router(config)# int gig0/0
Router(config-if)# ipv6 rip RIPNG enable
Router(config)# int gig0/2
Router(config-if)# ipv6 rip RIPNG enable
```

12 Cek apakah rute sudah dibuat dengan LUP



13 Jika benar, maka **SEMUA IP** akan terdaftar di window tersebut

IPv6 Routing Table for Router0

Type	Network	Port	Next Hop IP	Metric
C	2000:AABB::/64	GigabitEthernet0/0	---	0/0
L	2000:AABB::1/128	GigabitEthernet0/0	---	0/0
R	2000:BEEF::/64	GigabitEthernet0/2	FE80::201:43FF:FE70:5203	120/2
C	2000:DEAD::/64	GigabitEthernet0/2	---	0/0
L	2000:DEAD::1/128	GigabitEthernet0/2	---	0/0
L	FF00::/8	Null0	---	0/0

14 Test PING ujung ke ujung. Alat PING di Toolbar tidak bisa dipakai, gunakan manual. PC0 ke PC1

```
C:\>ping 2000:BEEF::2

Pinging 2000:BEEF::2 with 32 bytes of data:

Reply from 2000:BEEF::2: bytes=32 time=10ms TTL=126
Reply from 2000:BEEF::2: bytes=32 time<1ms TTL=126
Reply from 2000:BEEF::2: bytes=32 time<1ms TTL=126
Reply from 2000:BEEF::2: bytes=32 time<1ms TTL=126

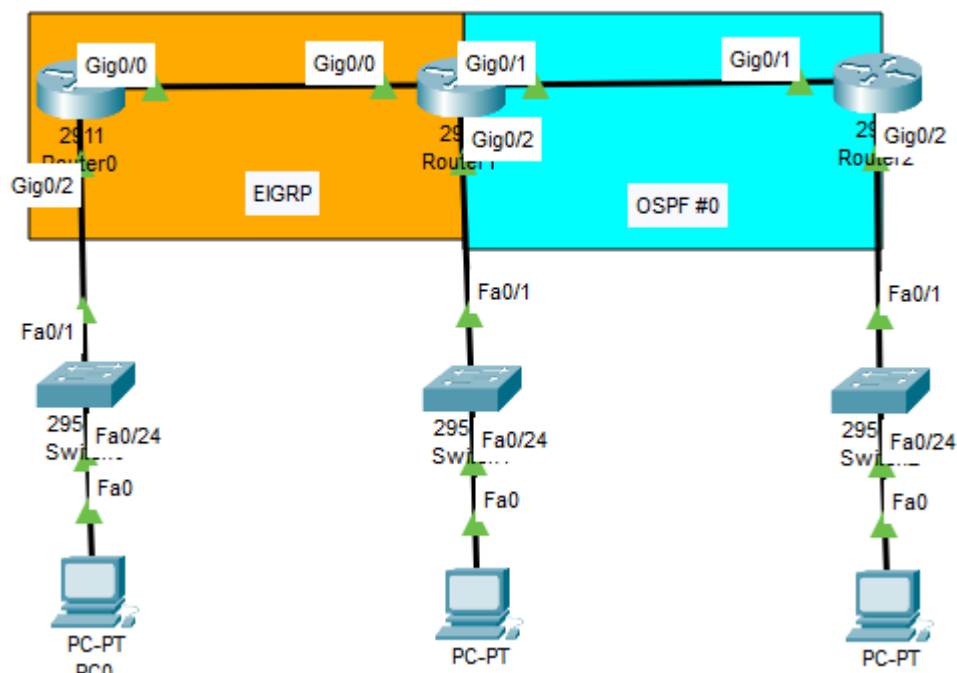
Ping statistics for 2000:BEEF::2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>
```


Praktikum 7

Redistribute EIGRP + OSPF Multi Area

NO	KETERANGAN
1	Buatlah topologi jaringan sepertiI berikut



Router : 2911
Switch : 2950-24

2 Masukkan IP sesuai dengan Router dan Komputernya

Router0 (Paling Kiri)

> **Gig0/0 : 10.10.10.1 - 255.255.255.252**
 > **Gig0/2 : 192.168.10.1 - 255.255.255.0**

Router1

> **Gig0/0 : 10.10.10.2 - 255.255.255.252**
 > **Gig0/1 : 20.20.20.1 - 255.255.255.252**
 > **Gig0/2 : 192.168.20.1 - 255.255.255.0**

Router2

> **Gig0/0 : 30.30.30.1 - 255.255.255.252**
 > **Gig0/1 : 20.20.20.2 - 255.255.255.252**

> Gig0/2 : 192.168.30.1 - 255.255.255.0

PC0

> ET : 192.168.10.2 – 255.255.255.0

> GW : 192.168.10.1

PC1

> ET : 192.168.20.2 – 255.255.255.0

> GW : 192.168.20.1

PC2

> ET : 192.168.30.2 – 255.255.255.0

> GW : 192.168.30.1

3 Cek PING Antar **Router-Router** dan **Router-Komputer**

Fire	Last Status	Source	Destination	Fire	Last Status	Source	Destination
	Successful	Router0	Router1		Successful	PC0	Router0
	Successful	Router1	Router2		Successful	PC1	Router1
	Successful	Router2	Router3		Successful	PC2	Router2

4 Masukkan Konfigurasi Routing untuk **EIGRP** di **Router0** dan **Router1**

Router0

```
Router(config-if)#router eigrp 1
Router(config-router)#no auto
Router(config-router)#net 10.10.10.0
Router(config-router)#net 192.168.10.0
```

Router1

```
Router(config-if)#router eigrp 1
Router(config-router)#no auto
Router(config-router)#net 10.10.10.0
Router(config-router)#net 20.20.20.0
Router(config-router)#net 192.168.20.0
```

5 **Router0** dan **Router1** dapat berkomunikasi satu sama lain melalui **PING**

Fire	Last Status	Source	Destination
	Successful	PC0	PC1

6 Berikutnya adalah mengkonfigurasi **OSPF #0** di **Router1** dan **Router2**. Pastikan Router dalam mode **Config : Router(config)#**


Router1

```
Router(config)#router ospf 1
Router(config-router)#net 20.20.20.0 0.0.0.3 area 0
Router(config-router)#net 192.168.20.0 0.0.0.255 area 0
```

Router2

```
Router(config)#router ospf 1
Router(config-router)#net 20.20.20.0 0.0.0.3 area 0
Router(config-router)#net 192.168.30.0 0.0.0.255 area 0
```

7 **Router1 dan Router2** dapat berkomunikasi satu sama lain melalui **PING**


Fire	Last Status	Source	Destination	Type
	Successful	PC1	PC2	ICMP

8 Berikutnya adalah melakukan **Redistribusi** melalui konfigurasi **EIGRP** dan **OSPF**. Buka **Router1** dan masukkan konfigurasi berikut

Router1

```
Router(config)#router eigrp 1
Router(config-router)#redistribute ospf 1 metric 1 1 1 1 1
Router(config-router)#exit
Router(config)#router ospf 1
Router(config-router)#redistribute eigrp 1
Router(config-router)#
```

9 **Test PING**

Fire	Last Status	Source	Destination	Type
	Successful	PC0	PC2	ICMP

10 **Hasil Konfigurasi Router0**

Type	Network	Port	Next Hop IP	Metric
C	10.10.10.0/30	GigabitEthernet0/0	---	0/0
L	10.10.10.1/32	GigabitEthernet0/0	---	0/0
D	20.20.20.0/30	GigabitEthernet0/0	10.10.10.2	90/3072
C	192.168.10.0/24	GigabitEthernet0/2	---	0/0
L	192.168.10.1/32	GigabitEthernet0/2	---	0/0
D	192.168.20.0/24	GigabitEthernet0/0	10.10.10.2	90/5376
D	192.168.30.0/24	GigabitEthernet0/0	10.10.10.2	170/2560000512

11 **Hasil Konfigurasi Router1**

Type	Network	Port	Next Hop IP	Metric
C	20.20.20.0/30	GigabitEthernet0/1	---	0/0
L	20.20.20.1/32	GigabitEthernet0/1	---	0/0
D	192.168.10.0/24	GigabitEthernet0/0	10.10.10.1	90/5376
C	192.168.20.0/24	GigabitEthernet0/2	---	0/0
L	192.168.20.1/32	GigabitEthernet0/2	---	0/0
O	192.168.30.0/24	GigabitEthernet0/1	20.20.20.2	110/2

12 Hasil Konfigurasi Router2. Router non-ASBR tidak menyimpan Router Sebelah

Type	Network	Port	Next Hop IP	Metric
C	20.20.20.0/30	GigabitEthernet0/1	---	0/0
L	20.20.20.2/32	GigabitEthernet0/1	---	0/0
O	192.168.10.0/24	GigabitEthernet0/1	20.20.20.1	110/20
O	192.168.20.0/24	GigabitEthernet0/1	20.20.20.1	110/2
C	192.168.30.0/24	GigabitEthernet0/2	---	0/0
L	192.168.30.1/32	GigabitEthernet0/2	---	0/0