

**PRAKTIKUM
JARINGAN KOMPUTER
(Computer Networking)**

**LAPORAN TUGAS
MODUL 7**

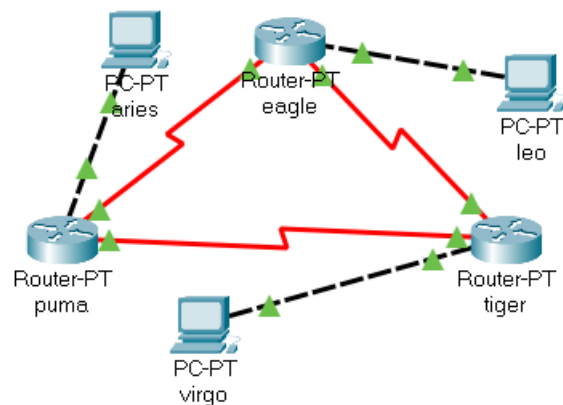


**Nama : Shafa Bani Saputra
NIM : L200190151
Kelas : D**

**PROGRAM STUDI INFORMATIKA
FAKULTAS KOMUNIKASI DAN INFORMATIKA
UNIVERSITAS MUHAMMADIYAH
SURAKARTA**

Kegiatan 1

Topologi



Konfigurasi masing masing router

Eagle

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa0/0
Router(config-if)#ip address 172.21.10.10 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#interface serial2/0
Router(config-if)#clock rate 2000000
Router(config-if)#ip address 172.21.1.100 255.255.255.0
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#interface serial3/0
Router(config-if)#clock rate 2000000
Router(config-if)#ip address 172.21.2.100 255.255.255.0
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#
Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
```

Puma

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial2/0
Router(config-if)#ip address 172.21.1.200 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#interface serial3/0
Router(config-if)#clock rate 2000000
Router(config-if)#ip address 172.21.3.2 255.255.255.0
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#
Router(config-if)#interface fa0/0
Router(config-if)#ip address 172.21.20.20 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
```

Tiger

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa0/0
Router(config-if)#ip address 172.21.30.30 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#interface serial2/0
Router(config-if)#ip address 172.21.2.3 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#i
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router(config-if)#interface serial3/0
Router(config-if)#ip address 172.21.3.3 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router(config-if)#
```

Cek Connection PING

Leo ke eagle

```
C:\>ping 172.21.10.10

Pinging 172.21.10.10 with 32 bytes of data:

Reply from 172.21.10.10: bytes=32 time=55ms TTL=255
Reply from 172.21.10.10: bytes=32 time<1ms TTL=255
Reply from 172.21.10.10: bytes=32 time<1ms TTL=255
Reply from 172.21.10.10: bytes=32 time<1ms TTL=255

Ping statistics for 172.21.10.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 55ms, Average = 13ms
```

Aries ke puma

```
C:\>ping 172.21.20.20

Pinging 172.21.20.20 with 32 bytes of data:

Reply from 172.21.20.20: bytes=32 time<1ms TTL=255
Reply from 172.21.20.20: bytes=32 time<1ms TTL=255
Reply from 172.21.20.20: bytes=32 time<1ms TTL=255
Reply from 172.21.20.20: bytes=32 time<1ms TTL=255

Ping statistics for 172.21.20.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Virgo ke tiger

```
C:\>ping 172.21.30.30

Pinging 172.21.30.30 with 32 bytes of data:

Reply from 172.21.30.30: bytes=32 time<1ms TTL=255
Reply from 172.21.30.30: bytes=32 time<1ms TTL=255
Reply from 172.21.30.30: bytes=32 time<1ms TTL=255
Reply from 172.21.30.30: bytes=32 time<1ms TTL=255

Ping statistics for 172.21.30.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Eagel ke puma

```
Router#ping 172.21.1.200

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.21.1.200, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/10/15 ms
```

Eagel ke tiger

```
Router#ping 172.21.2.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.21.2.3, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 5/10/19 ms
```

Puma ke tiger

```
Router#
Router#ping 172.21.3.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.21.3.2, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 7/15/22 ms
```

Show ip route (Tugas 7A)

Eagle

```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.21.0.0/24 is subnetted, 3 subnets
C       172.21.1.0 is directly connected, Serial0/0
C       172.21.2.0 is directly connected, Serial1/0
C       172.21.10.0 is directly connected, Ethernet2/0
```

Puma

```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.21.0.0/24 is subnetted, 3 subnets
C       172.21.1.0 is directly connected, Serial0/0
C       172.21.3.0 is directly connected, Serial1/0
C       172.21.20.0 is directly connected, Ethernet2/0
```

Tiger

```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.21.0.0/24 is subnetted, 3 subnets
C       172.21.2.0 is directly connected, Serial0/0
C       172.21.3.0 is directly connected, Serial1/0
C       172.21.30.0 is directly connected, Ethernet2/0
```

Tes koneksi router eagle dengan fastEthernet0/0 pada router puma dengan ip (172.21.20.20) (Tugas 8A)

ping menunjukan rto(request time out) karena jalur ip atau gateway yang digunakan tidak sesuai atau tidak sama, dan factor lain ada pada koneksi yang digunakan yaitu menggunakan serial port.

```
Router>en
Router#ping 172.21.20.20

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.21.20.20, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
```

Trace dari PC leo ke PC aries (Tugas 9A)

hasil trace menyatakan rto(request time out), karena posisi PC berbeda router dan juga memiliki jalur ip atau gateway yang berbeda pula.

```
C:\>tracert 172.21.20.2

Tracing route to 172.21.20.2 over a maximum of 30 hops:

  1  *          *          *          Request timed out.
  2  *          *          *          Request timed out.
  3  *          *          *          Request timed out.
  4  *          *          *          Request timed out.
  5  *          *          *          Request timed out.
  6  *          *          *          Request timed out.
  7  *          *          *          Request timed out.
  8  *          *          *          Request timed out.
  9  *          *          *          Request timed out.
 10  *          *          *          Request timed out.
 11  *          *          *          Request timed out.
 12  *          *          *          Request timed out.
 13  *          *          *          Request timed out.
 14  *          *          *          Request timed out.
 15  *          *          *          Request timed out.
 16  *          *          *          Request timed out.
 17  *          *          *          Request timed out.
 18  *          *          *          Request timed out.
 19  *          *          *          Request timed out.
 20  *          *          *          Request timed out.
 21  *          *          *          Request timed out.
 22  *          *          *          Request timed out.
 23  *          *          *          Request timed out.
 24  *          *          *          Request timed out.
 25  *          *          *          Request timed out.
 26  *          *          *          Request timed out.
 27  *          *          *          Request timed out.
 28  *          *          *          Request timed out.
 29  *          *          *          Request timed out.
 30  *          *          *          Request timed out.

Trace complete.
```

Trace dari PC Leo ke Serial0/0 Router Eagle (Tugas 10A)

```
C:\>tracert 172.21.1.1

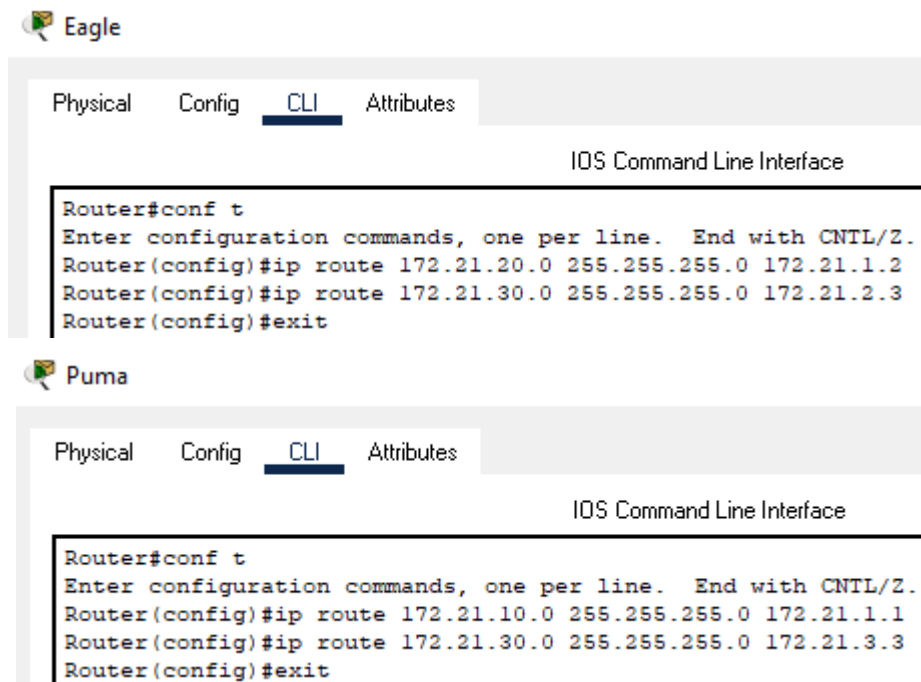
Tracing route to 172.21.1.1 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      172.21.1.1

Trace complete.
```

Hasil menunjukan adanya koneksi pada hops 1 (pertama), karena PC leo terhubung langsung dengan router eagle.

Menambahkan route table pada tiap network address yang tidak terhubung secara langsung dengan interface router (Tugas 11A)



Melakukan ping dan trace dari PC Leo ke PC Aries

(Tugas 12A)

```
C:\>ping 172.21.20.2

Pinging 172.21.20.2 with 32 bytes of data:

Reply from 172.21.20.2: bytes=32 time=15ms TTL=126
Reply from 172.21.20.2: bytes=32 time=2ms TTL=126
Reply from 172.21.20.2: bytes=32 time=1ms TTL=126
Reply from 172.21.20.2: bytes=32 time=2ms TTL=126

Ping statistics for 172.21.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 15ms, Average = 5ms
```

```
C:\>tracert 172.21.20.2

Tracing route to 172.21.20.2 over a maximum of 30 hops:

  1  0 ms    0 ms    0 ms    172.21.10.10
  2  1 ms    1 ms    1 ms    172.21.1.2
  3  1 ms    1 ms    7 ms    172.21.20.2

Trace complete.
```

Hasil dari ping dan trace mendapat tanggapan karena router Eagle sudah menambahkan IP route table router Puma dan Tiger yang berarti PC Leo dapat terhubung ke PC Aries meskipun berbeda gateway.

(Tugas 12B)

A. Network ID pada segmen Leo diubah menjadi 172.21.100.0/24

B. Bagaimana konfigurasi setiap router agar PC Leo dapat dihubungi oleh PC Aries dan PC Virgo?

C. Mengapa Langkah-langkah tersebut harus dilakukan

A. Mengubah network ID pada segmen Leo

Eagle

The screenshot shows the Eagle network simulator interface. The top tabs are Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the IOS Command Line Interface for router Leo. The commands entered are:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Ethernet2/0
Router(config-if)#ip address 172.21.100.10 255.255.255.0
Router(config-if)#exit
Router(config)#exit
```

To the right, the Leo router's configuration is shown. The Desktop tab is active, displaying the IP Configuration for Ethernet0. The configuration is set to Static with the following values:

Interface	Ethernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	172.21.100.1
Subnet Mask	255.255.0.0
Default Gateway	172.21.100.10
DNS Server	0.0.0.0

B. Menambahkan route table pada router Puma dan Tiger

Puma

The screenshot shows the Eagle network simulator interface for router Puma. The CLI tab is active, displaying the IOS Command Line Interface. The commands entered are:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 172.21.100.0 255.255.255.0 172.21.1.1
Router(config)#exit
```

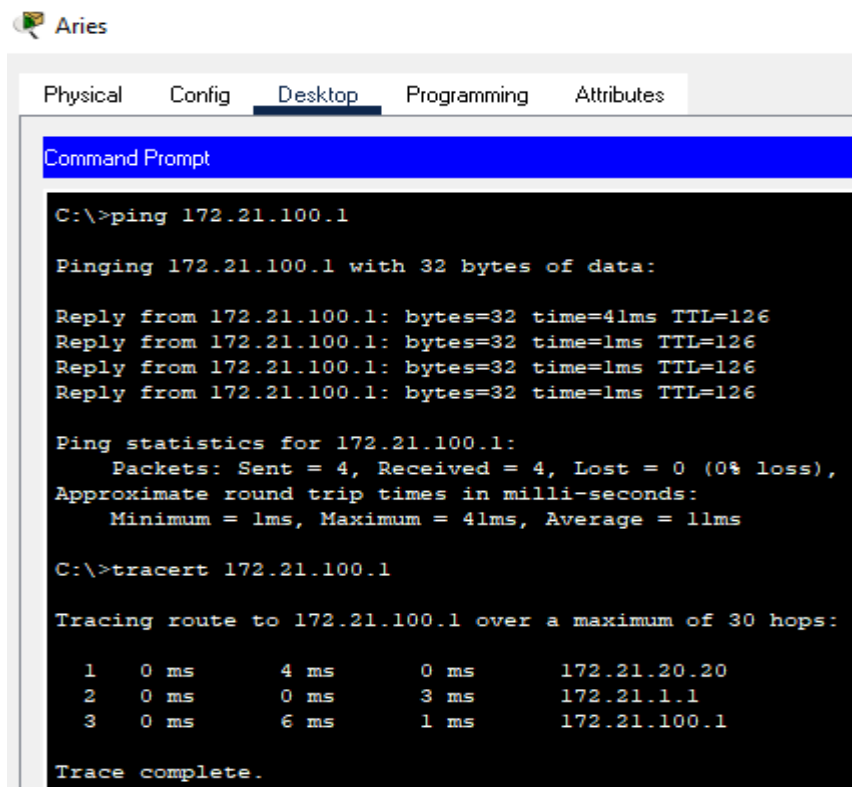
Tiger

The screenshot shows the Eagle network simulator interface for router Tiger. The CLI tab is active, displaying the IOS Command Line Interface. The commands entered are:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 172.21.20.0 255.255.255.0 172.21.3.2
Router(config)#ip route 172.21.100.0 255.255.255.0 172.21.2.1
Router(config)#exit
```


Melakukan ping dan trace dari PC Aries dan Virgo ke PC Leo

*Ping dan trace dari PC Aries ke PC Leo



Aries

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>ping 172.21.100.1

Pinging 172.21.100.1 with 32 bytes of data:

Reply from 172.21.100.1: bytes=32 time=41ms TTL=126
Reply from 172.21.100.1: bytes=32 time=1ms TTL=126
Reply from 172.21.100.1: bytes=32 time=1ms TTL=126
Reply from 172.21.100.1: bytes=32 time=1ms TTL=126

Ping statistics for 172.21.100.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 41ms, Average = 11ms

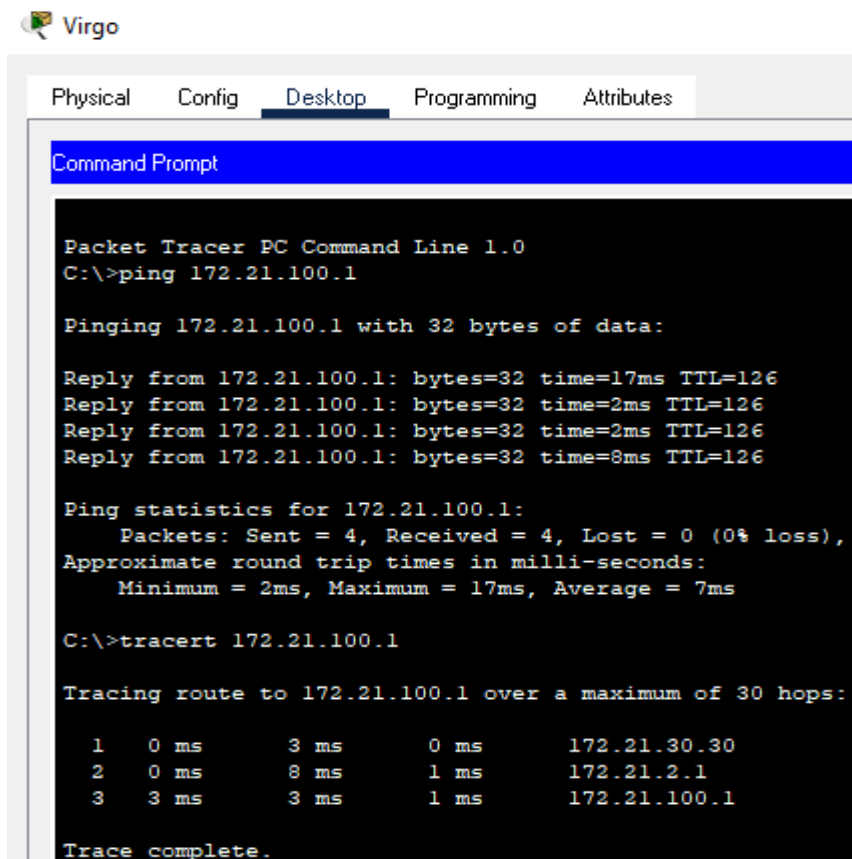
C:\>tracert 172.21.100.1

Tracing route to 172.21.100.1 over a maximum of 30 hops:

  0  0 ms    4 ms    0 ms    172.21.20.20
  1  0 ms    0 ms    3 ms    172.21.1.1
  2  0 ms    6 ms    1 ms    172.21.100.1

Trace complete.
```

*Ping dan trace dari PC Virgo ke PC Leo



Virgo

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 172.21.100.1

Pinging 172.21.100.1 with 32 bytes of data:

Reply from 172.21.100.1: bytes=32 time=17ms TTL=126
Reply from 172.21.100.1: bytes=32 time=2ms TTL=126
Reply from 172.21.100.1: bytes=32 time=2ms TTL=126
Reply from 172.21.100.1: bytes=32 time=8ms TTL=126

Ping statistics for 172.21.100.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 17ms, Average = 7ms

C:\>tracert 172.21.100.1

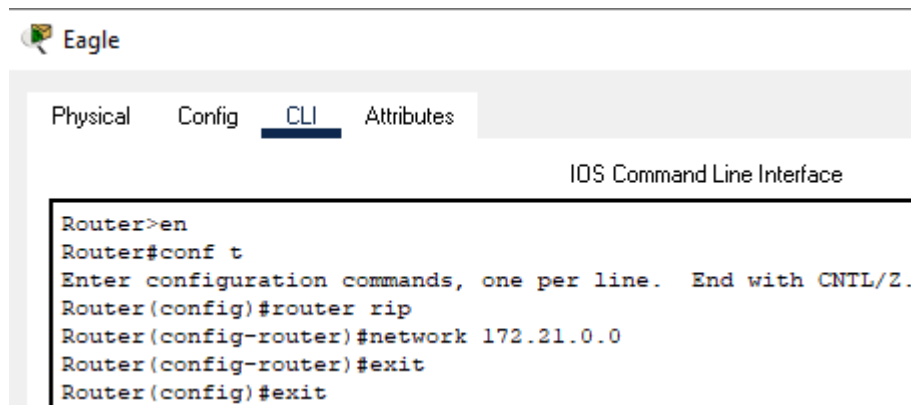
Tracing route to 172.21.100.1 over a maximum of 30 hops:

  0  0 ms    3 ms    0 ms    172.21.30.30
  1  0 ms    8 ms    1 ms    172.21.2.1
  2  3 ms    3 ms    1 ms    172.21.100.1

Trace complete.
```

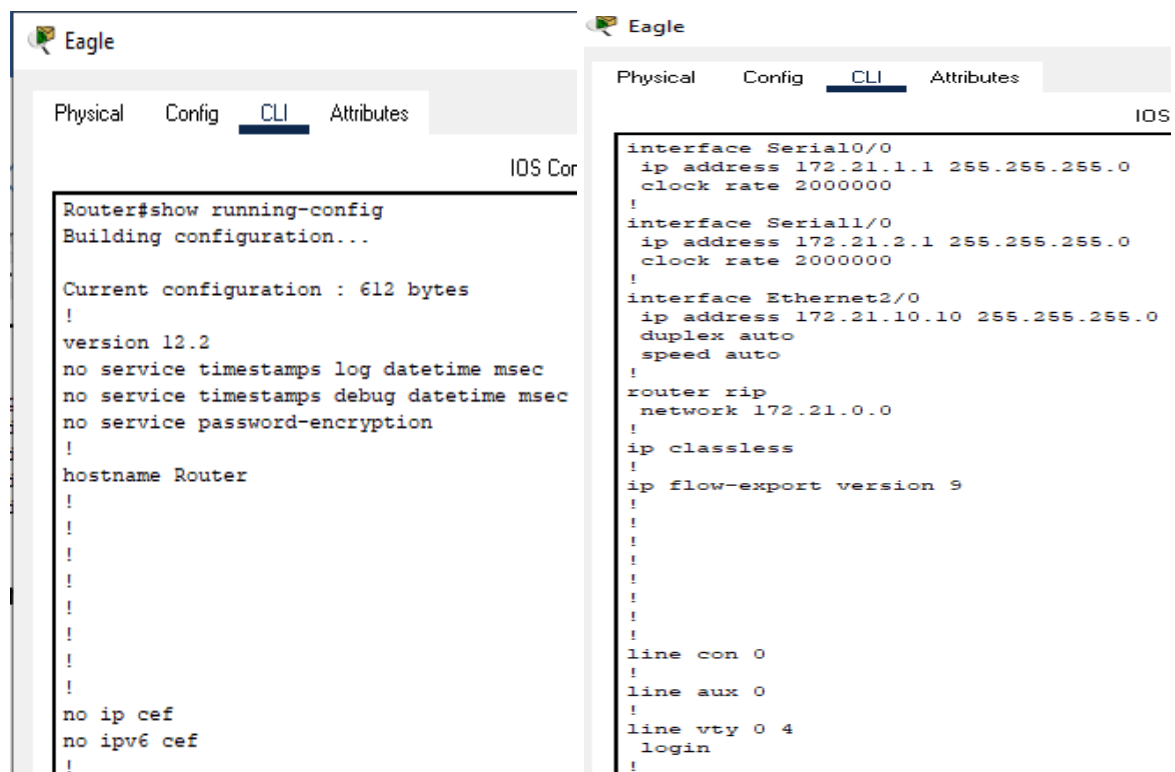
C. Langkah-langkah tersebut harus dilakukan supaya PC saling terhubung meskipun berbeda network ID maupun berada pada router atau gateway yang berbeda.

KEGIATAN 2. (Routing Information Protocol) Konfigurasi routing RIP pada router Eagle



```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.0.0
Router(config-router)#exit
Router(config)#exit
```

Melihat konfigurasi routing RIP



```
Router#show running-config
Building configuration...

Current configuration : 612 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
no ip cef
no ipv6 cef
!

interface Serial0/0
ip address 172.21.1.1 255.255.255.0
clock rate 2000000
!
interface Serial1/0
ip address 172.21.2.1 255.255.255.0
clock rate 2000000
!
interface Ethernet2/0
ip address 172.21.10.10 255.255.255.0
duplex auto
speed auto
!
router rip
network 172.21.0.0
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
```

(Tugas 4A) Berapa network ID yang terdaftar pada konfigurasi routing RIP?

* 172.21.0.0

(Tugas 4B) Mengapa network ID yang langsung terhubung tidak langsung didaftarkan ke konfigurasi routing RIP?

* Karena belum menambahkan konfigurasi network ID pada router yang lain.

Melihat proses update routing RIP

Eagle

Physical Config CLI Attributes

IOS Command Line Interface

```
RIP: sending v1 update to 255.255.255.255 via Ethernet2/0 (172.21.10.10)
RIP: build update entries
      network 172.21.1.0 metric 1
      network 172.21.2.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial0/0 (172.21.1.1)
RIP: build update entries
      network 172.21.2.0 metric 1
      network 172.21.10.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial1/0 (172.21.2.1)
RIP: build update entries
      network 172.21.1.0 metric 1
      network 172.21.10.0 metric 1
```

(Tugas 5A) Penjelasan :

* Indikasi bahwa setiap port pada router Eagle metric1 siap untuk difungsikan dengan router yang lain

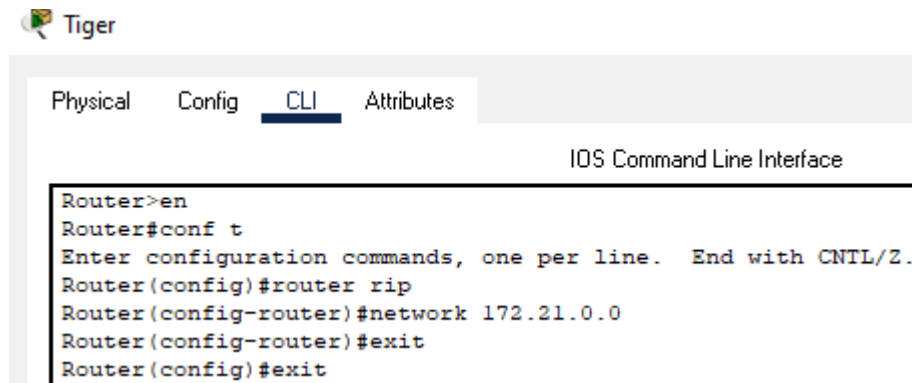
Setting konfigurasi routing RIP pada router Puma dan Tiger (Tugas 6A) Tuliskan Langkah konfigurasi:

Puma

Physical Config CLI Attributes

IOS Command Line Interface

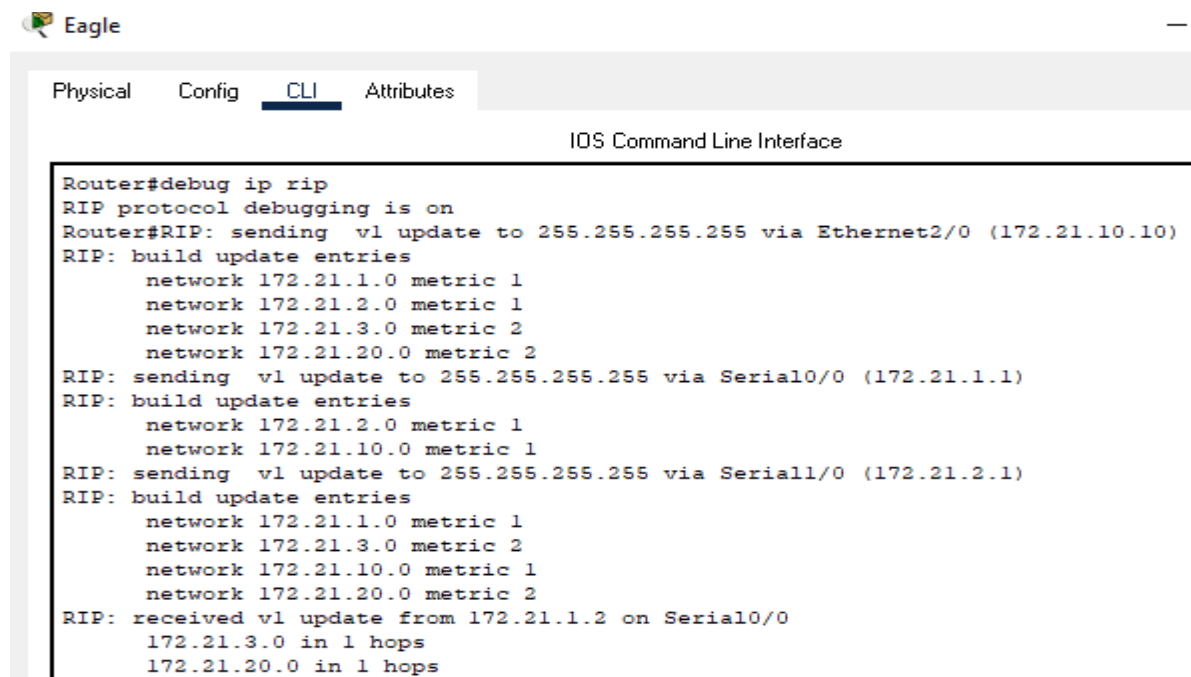
```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.0.0
Router(config-router)#RIP: sending v1 request to 255.255.255.255 via Serial0/0 (172.21.1.2)
RIP: sending v1 request to 255.255.255.255 via Serial1/0 (172.21.3.2)
RIP: sending v1 request to 255.255.255.255 via Ethernet2/0 (172.21.20.20)
RIP: sending v1 update to 255.255.255.255 via Serial0/0 (172.21.1.2)
RIP: build update entries
      network 172.21.3.0 metric 1
      network 172.21.20.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial1/0 (172.21.3.2)
RIP: build update entries
      network 172.21.1.0 metric 1
      network 172.21.20.0 metric 1
```



```
Tiger
Physical Config CLI Attributes
IOS Command Line Interface
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.0.0
Router(config-router)#exit
Router(config)#exit
```

(Tugas 6B) Penjelasan singkat yang terjadi update pada router Eagle setelah konfigurasi router puma dilakukan

* Terdapat tambahan koneksi dari Router Puma dimana router puma memiliki identitas metric 2



```
Eagle
Physical Config CLI Attributes
IOS Command Line Interface
Router#debug ip rip
RIP protocol debugging is on
Router#RIP: sending v1 update to 255.255.255.255 via Ethernet2/0 (172.21.10.10)
RIP: build update entries
    network 172.21.1.0 metric 1
    network 172.21.2.0 metric 1
    network 172.21.3.0 metric 2
    network 172.21.20.0 metric 2
RIP: sending v1 update to 255.255.255.255 via Serial0/0 (172.21.1.1)
RIP: build update entries
    network 172.21.2.0 metric 1
    network 172.21.10.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial1/0 (172.21.2.1)
RIP: build update entries
    network 172.21.1.0 metric 1
    network 172.21.3.0 metric 2
    network 172.21.10.0 metric 1
    network 172.21.20.0 metric 2
RIP: received v1 update from 172.21.1.2 on Serial0/0
    172.21.3.0 in 1 hops
    172.21.20.0 in 1 hops
```

(Tugas 6C) Jika Network ID pada segmen Leo diubah, apakah perlu dilakukan konfigurasi ulang pada tiap router agar PC Leo dapat dihubungi oleh PC Aries dan Virgo? Mengapa demikian?

* Tidak perlu dilakukan konfigurasi ulang karena secara otomatis debug rip akan mengupdate network ID apabila ada perubahan.

Melakukan trace dari PC Leo ke PC Aries

Leo

```
Physical  Config  Desktop  Programming  Attributes
Command Prompt

C:\>tracert 172.21.20.2

Tracing route to 172.21.20.2 over a maximum of 30 hops:

  0  0 ms    0 ms    0 ms    172.21.10.10
  1  1 ms    0 ms    0 ms    172.21.1.2
  2  *        1 ms    1 ms    172.21.20.2

Trace complete.
```

A.Disable antara router Eagle dan Puma

Puma

```
Physical  Config  CLI  Attributes
IOS Command Line Interface

Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Ethernet2/0
Router(config-if)#exit
Router(config)#interface Serial0/0
Router(config-if)#shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to down
```

(Tugas 8A) Penjelasan singkat

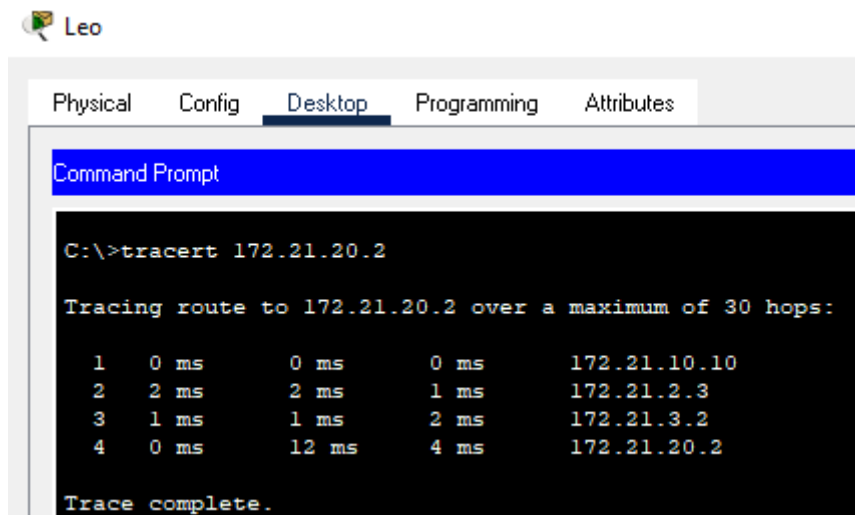
Eagle

```
Physical  Config  CLI  Attributes
IOS Command Line Interface

RIP: build update entries
  network 172.21.2.0 metric 1
  network 172.21.3.0 metric 2
  network 172.21.20.0 metric 3
  network 172.21.30.0 metric 2
RIP: sending v1 update to 255.255.255.255 via Serial1/0 (172.21.2.1)
RIP: build update entries
  network 172.21.10.0 metric 1
RIP: received v1 update from 172.21.2.3 on Serial1/0
  172.21.3.0 in 1 hops
  172.21.20.0 in 2 hops
  172.21.30.0 in 1 hops
```

* network ID 172.21.20.0 berubah menjadi 2 hops karena Serial0/0 penghubung antar router eagle dan puma telah nonaktif.

i. Melakukan trace dari PC Leo ke PC Aries



The screenshot shows a network simulation window titled "Leo". It has several tabs: "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". Inside the "Desktop" tab, there is a "Command Prompt" window. The command prompt shows the execution of the command `C:\>tracert 172.21.20.2`. The output of the command is as follows:

```
Tracing route to 172.21.20.2 over a maximum of 30 hops:

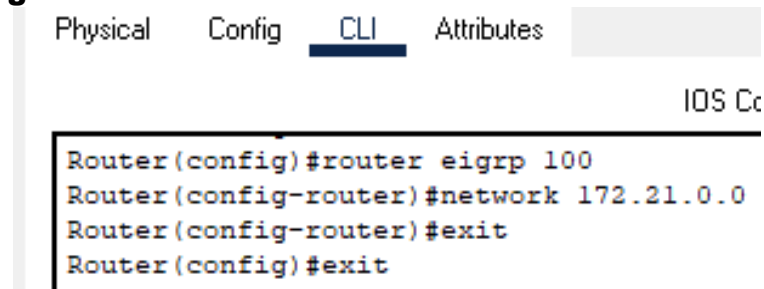
  1  0 ms    0 ms    0 ms    172.21.10.10
  2  2 ms    2 ms    1 ms    172.21.2.3
  3  1 ms    1 ms    2 ms    172.21.3.2
  4  0 ms    12 ms   4 ms    172.21.20.2

Trace complete.
```

(Tugas 9A) Penjelasan:

* Hasilnya beda dengan langkah F diatas, Dimana hasilnya terhubung melalui Router Tiger kemudian diteruskan ke router Puma dan disampaikan ke PC Aries

Kegiatan 3. IGRP(Interior Gateway Routing Protocol) Konfigurasi eagle 100

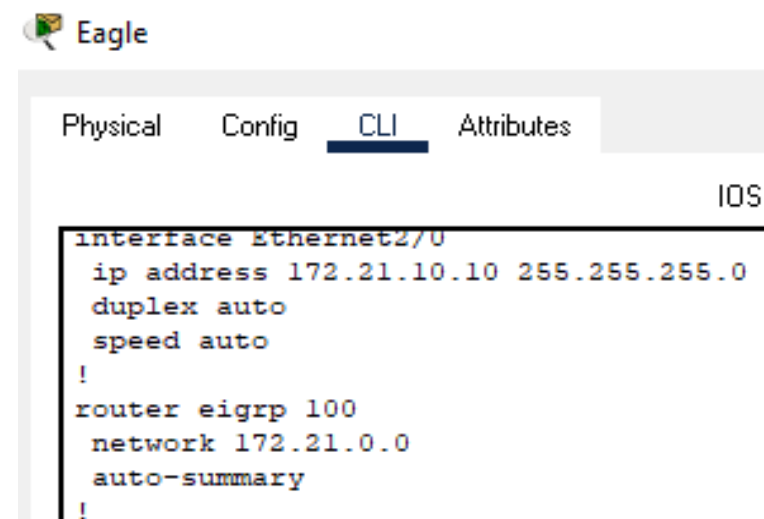


```
Physical  Config  CLI  Attributes

IOS Command Line Interface

Router(config)#router eigrp 100
Router(config-router)#network 172.21.0.0
Router(config-router)#exit
Router(config)#exit
```

Melihat hasil konfigurasi routing eagle



```
Eagle

Physical  Config  CLI  Attributes

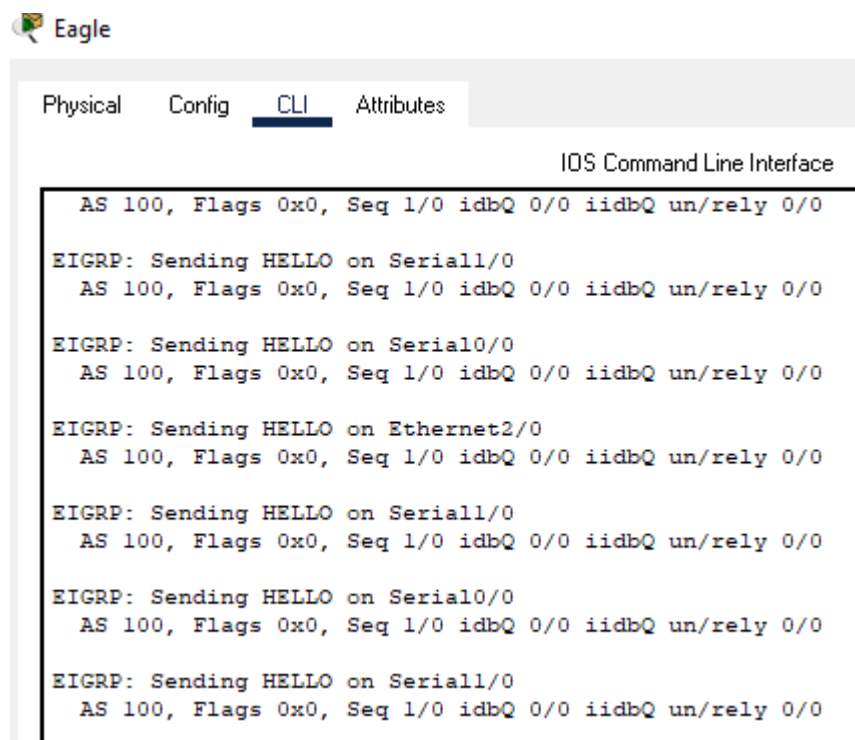
IOS Command Line Interface

interface Ethernet2/0
 ip address 172.21.10.10 255.255.255.0
 duplex auto
 speed auto
 !
router eigrp 100
 network 172.21.0.0
 auto-summary
 !
```

(Tugas 4A) Berapa nomor network id ?

* 172.21.0.0 (auto-summary)

Melihat proses routing eigrp pada Eagle



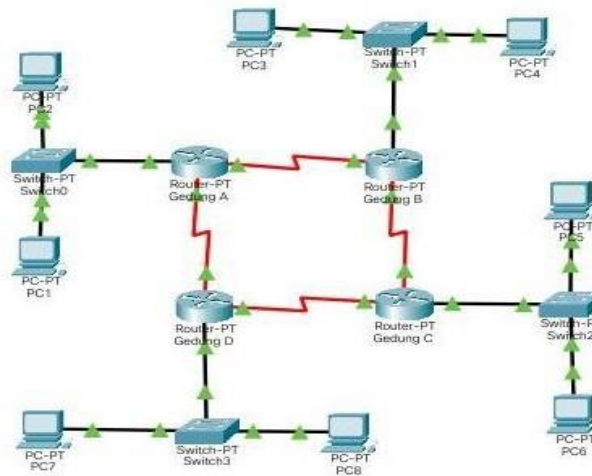
```
Eagle

Physical  Config  CLI  Attributes

IOS Command Line Interface

AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ un/rely 0/0
EIGRP: Sending HELLO on Serial1/0
AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ un/rely 0/0
EIGRP: Sending HELLO on Serial0/0
AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ un/rely 0/0
EIGRP: Sending HELLO on Ethernet2/0
AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ un/rely 0/0
EIGRP: Sending HELLO on Serial1/0
AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ un/rely 0/0
EIGRP: Sending HELLO on Serial0/0
AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ un/rely 0/0
EIGRP: Sending HELLO on Serial1/0
AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ un/rely 0/0
```

Tugas Static Routing



Konfigurasi IP address interface ethernet 0, serial 0 dan serial 1 (Gedung A):

```
IOS Command Line Interface
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.21.1.1 255.255.255.0
Router(config-if)#ip address 172.21.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up
Router(config-if)#exit
```

Konfigurasi IP address interface ethernet 0, serial 0 dan serial 1 (Gedung B):

```
IOS Command Line Interface
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.21.2.1 255.255.0.0
Router(config-if)#ip address 172.21.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#ip address 172.21.10.2 255.255.255.0
Router(config-if)#ip address 172.21.10.2 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to
up
clock rate 2000000
Router(config-if)#ip address 172.21.20.1 255.255.255.0
Router(config-if)#ip address 172.21.20.1 255.255.255.0
Router(config-if)#no shutdown
```


Konfigurasi IP address interface ethernet 0, serial 0 dan serial 1 (Gedung C):

```
IOS Command Line Interface
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.21.3.1 255.255.0.0
Router(config-if)#ip address 172.21.3.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

Konfigurasi IP address interface ethernet 0, serial 0 dan serial 1 (Gedung D):

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.21.4.1 255.255.0.0
Router(config-if)#ip address 172.21.4.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up

Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#ip address 172.21.11.2 255.255.255.0
Router(config-if)#ip address 172.21.11.2 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#clock rate 2000000
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to
up
ip address 172.21.21.1 255.255.255.0
Router(config-if)#ip address 172.21.21.1 255.255.255.0
Router(config-if)#no shutdown
```

Konfigurasi alamat IP PC

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.1.10

Subnet Mask 255.255.255.0

Default Gateway 172.21.1.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.1.20

Subnet Mask 255.255.255.0

Default Gateway 172.21.1.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.2.10

Subnet Mask 255.255.255.0

Default Gateway 172.21.2.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.2.20

Subnet Mask 255.255.255.0

Default Gateway 172.21.2.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.3.10

Subnet Mask 255.255.255.0

Default Gateway 172.21.3.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

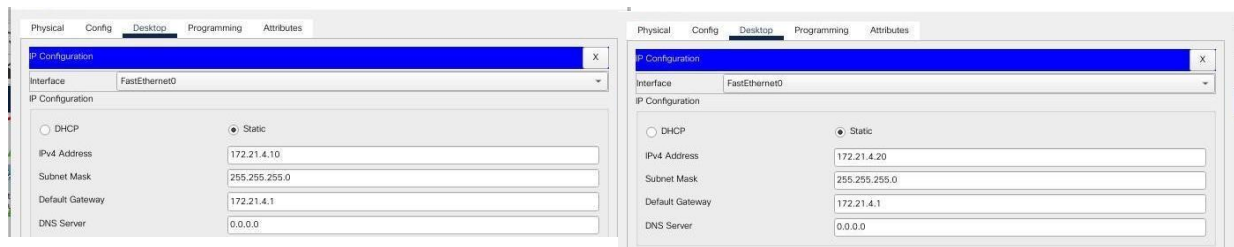
☐ DHCP ☒ Static

IPv4 Address 172.21.3.20

Subnet Mask 255.255.255.0

Default Gateway 172.21.3.1

DNS Server 0.0.0.0



Menambahkan route table pada masing-masing router :

Gedung A

```
Router(config)#ip route 172.21.2.0 255.255.255.0 172.21.10.2
Router(config)#ip route 172.21.3.0 255.255.255.0 172.21.10.2
Router(config)#ip route 172.21.4.0 255.255.255.0 172.21.21.1
```

Gedung B

```
Router(config)#ip route 172.21.3.0 255.255.255.0 172.21.20.2
Router(config)#ip route 172.21.4.0 255.255.255.0 172.21.20.2
Router(config)#ip route 172.21.1.0 255.255.255.0 172.21.10.1
```

Gedung C

```
Router(config)#ip route 172.21.4.0 255.255.255.0 172.21.11.2
Router(config)#ip route 172.21.1.0 255.255.255.0 172.21.11.2
Router(config)#ip route 172.21.2.0 255.255.255.0 172.21.20.1
```

Gedung D

```
Router(config)#ip route 172.21.1.0 255.255.255.0 172.21.21.2
Router(config)#ip route 172.21.2.0 255.255.255.0 172.21.21.2
Router(config)#ip route 172.21.3.0 255.255.255.0 172.21.11.1
```

* Periksa konektifitas dengan Ping dari PC1 ke PC4

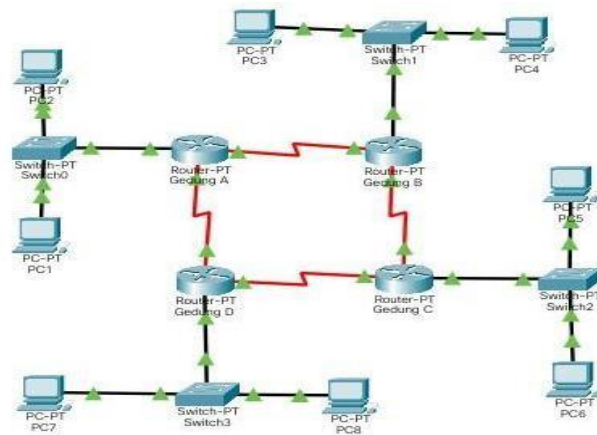
```
C:\>ping 172.21.2.20

Pinging 172.21.2.20 with 32 bytes of data:

Reply from 172.21.2.20: bytes=32 time=13ms TTL=126
Reply from 172.21.2.20: bytes=32 time=1ms TTL=126
Reply from 172.21.2.20: bytes=32 time=13ms TTL=126
Reply from 172.21.2.20: bytes=32 time=1ms TTL=126

Ping statistics for 172.21.2.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 13ms, Average = 6ms
```

Dynamic Routing



Konfigurasi alamat IP PC :

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.1.10

Subnet Mask 255.255.255.0

Default Gateway 172.21.1.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.1.20

Subnet Mask 255.255.255.0

Default Gateway 172.21.1.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.2.10

Subnet Mask 255.255.255.0

Default Gateway 172.21.2.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.2.20

Subnet Mask 255.255.255.0

Default Gateway 172.21.2.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.3.10

Subnet Mask 255.255.255.0

Default Gateway 172.21.3.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.3.20

Subnet Mask 255.255.255.0

Default Gateway 172.21.3.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.4.10

Subnet Mask 255.255.255.0

Default Gateway 172.21.4.1

DNS Server 0.0.0.0

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 172.21.4.20

Subnet Mask 255.255.255.0

Default Gateway 172.21.4.1

DNS Server 0.0.0.0

Konfigurasi IP address (Gedung A):

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.1.0
Router(config-router)#network 172.21.10.0
Router(config-router)#network 172.21.21.0
```

Konfigurasi IP address (Gedung B):

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.2.0
Router(config-router)#network 172.21.10.0
Router(config-router)#network 172.21.20.0
```

Konfigurasi IP address (Gedung C):

```
Router(config)#router rip
Router(config-router)#network 172.21.3.0
Router(config-router)#network 172.21.11.0
Router(config-router)#network 172.21.20.0
```

Konfigurasi IP address (Gedung D):

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.4.0
Router(config-router)#network 172.21.11.0
Router(config-router)#network 172.21.21.0
```

Periksa konektifitas dengan Ping dari PC3 ke PC

```
C:\>ping 172.21.3.20

Pinging 172.21.3.20 with 32 bytes of data:

Reply from 172.21.3.20: bytes=32 time=9ms TTL=124
Reply from 172.21.3.20: bytes=32 time=9ms TTL=124
Reply from 172.21.3.20: bytes=32 time=2ms TTL=124
Reply from 172.21.3.20: bytes=32 time=2ms TTL=124

Ping statistics for 172.21.3.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 9ms, Average = 5ms
```