

LAPORAN PRAKTIKUM JARINGAN KOMPUTER

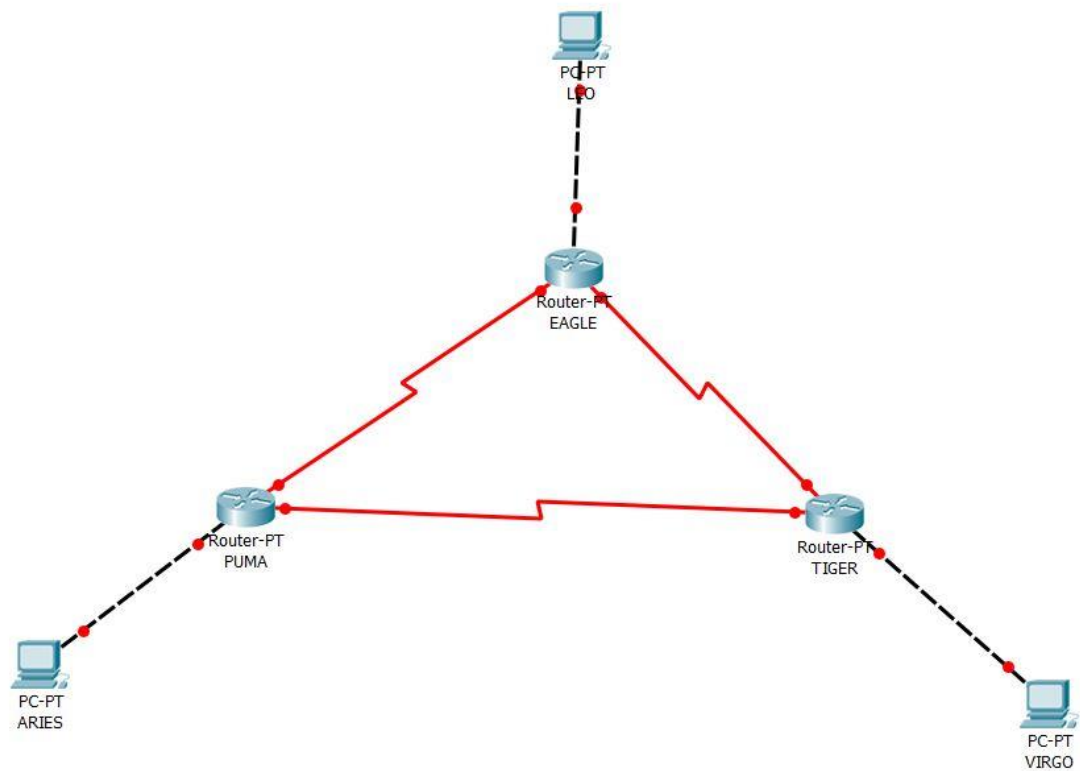
MODUL 7 (KEGIATAN 1)

Nama : Hafidz Al Afaf

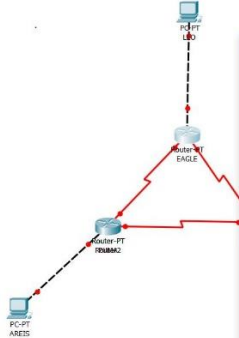
NIM : L200170134

Kelas : C

1. Gambar topologi jaringan. Dan memberi nama masing masing PC dan Router.



2. Konfigurasi interface pada tiap router



The diagram shows a central Router EAGLE connected to three other routers: Router-PT (PUMA2), Router-TIGER, and Router-PT (PUMA2). Each router is connected to a PC-PT (ARE5, ARE6, and VIR60 respectively).

Router EAGLE Configuration (PUMA):

- Serial2/0:**
 - Port Status: On
 - Duplex: Full Duplex
 - Clock Rate: 1200
 - IP Configuration:
 - IP Address: 172.21.2.1
 - Subnet Mask: 255.255.255.0
 - Tx Ring Limit: 10

Router PUMA2 Configuration (PUMA):

- FastEthernet0/0:**
 - Port Status: On
 - Bandwidth: 100 Mbps
 - Duplex: Full Duplex
 - MAC Address: 0010.1195.65ED
 - IP Configuration:
 - IP Address: 172.21.20.20
 - Subnet Mask: 255.255.255.0
 - Tx Ring Limit: 10

Router PUMA2 Configuration (PUMA):

- Serial2/0:**
 - Port Status: On
 - Duplex: Full Duplex
 - Clock Rate: 1200
 - IP Configuration:
 - IP Address: 172.21.1.2
 - Subnet Mask: 255.255.255.0
 - Tx Ring Limit: 10

Router PUMA2 Configuration (PUMA):

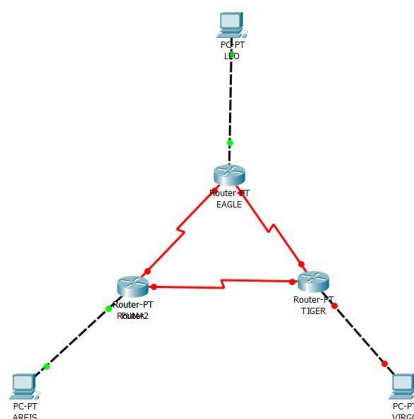
- Serial3/0:**
 - Port Status: On
 - Duplex: Full Duplex
 - Clock Rate: 1200
 - IP Configuration:
 - IP Address: 172.21.3.2
 - Subnet Mask: 255.255.255.0
 - Tx Ring Limit: 10

Equivalent IOS Commands:

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#ip address 172.21.1.2 255.255.255.0
Router(config-if)#ip address 172.21.1.2 255.255.255.0
Router(config-if)#ip address 172.21.1.2 255.255.255.0
Router(config-if)#
```

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#ip address 172.21.3.2 255.255.255.0
Router(config-if)#ip address 172.21.3.2 255.255.255.0
Router(config-if)#ip address 172.21.3.2 255.255.255.0
Router(config-if)#
```

Langkah konfigurasi IP address



The diagram shows a central Router EAGLE connected to three other routers: Router-PT (PUMA2), Router-TIGER, and Router-PT (PUMA2). Each router is connected to a PC-PT (ARE5, ARE6, and VIR60 respectively).

Router PUMA2 Configuration (PUMA):

- Serial2/0:**
 - Port Status: On
 - Duplex: Full Duplex
 - Clock Rate: 1200
 - IP Configuration:
 - IP Address: 172.21.1.2
 - Subnet Mask: 255.255.255.0
 - Tx Ring Limit: 10

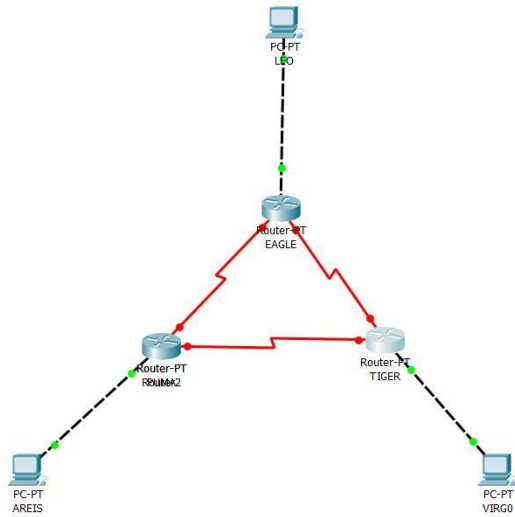
Router PUMA2 Configuration (PUMA):

- Serial3/0:**
 - Port Status: On
 - Duplex: Full Duplex
 - Clock Rate: 1200
 - IP Configuration:
 - IP Address: 172.21.3.2
 - Subnet Mask: 255.255.255.0
 - Tx Ring Limit: 10

Equivalent IOS Commands:

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#ip address 172.21.1.2 255.255.255.0
Router(config-if)#ip address 172.21.1.2 255.255.255.0
Router(config-if)#ip address 172.21.1.2 255.255.255.0
Router(config-if)#
```

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#ip address 172.21.3.2 255.255.255.0
Router(config-if)#ip address 172.21.3.2 255.255.255.0
Router(config-if)#ip address 172.21.3.2 255.255.255.0
Router(config-if)#
```



TIGER

Physical Config CLI Attributes

IOS Command Line Interface

```

Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#ip address 172.21.3.3 255.255.255.0
Router(config-if)#ip address 172.21.3.3 255.255.255.0
Router(config-if)#ip address 172.21.3.3 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
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)#
  
```

Ctrl+F6 to exit CLI focus

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EAGLE

Physical Config CLI Attributes

IOS Command Line Interface

```

Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
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)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#clock rate 2000000
Router(config-if)#ip address 172.21.1.1
% Incomplete command.
Router(config-if)#ip address 172.21.1.1 255.255.255.0
Router(config-if)#
  
```

Ctrl+F6 to exit CLI focus

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TIGER

Physical Config CLI Attributes

IOS Command Line Interface

```

Router(config)#interface Serial2/0
Router(config-if)#no shutdown

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

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0,
changed state to up

Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#no shutdown

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

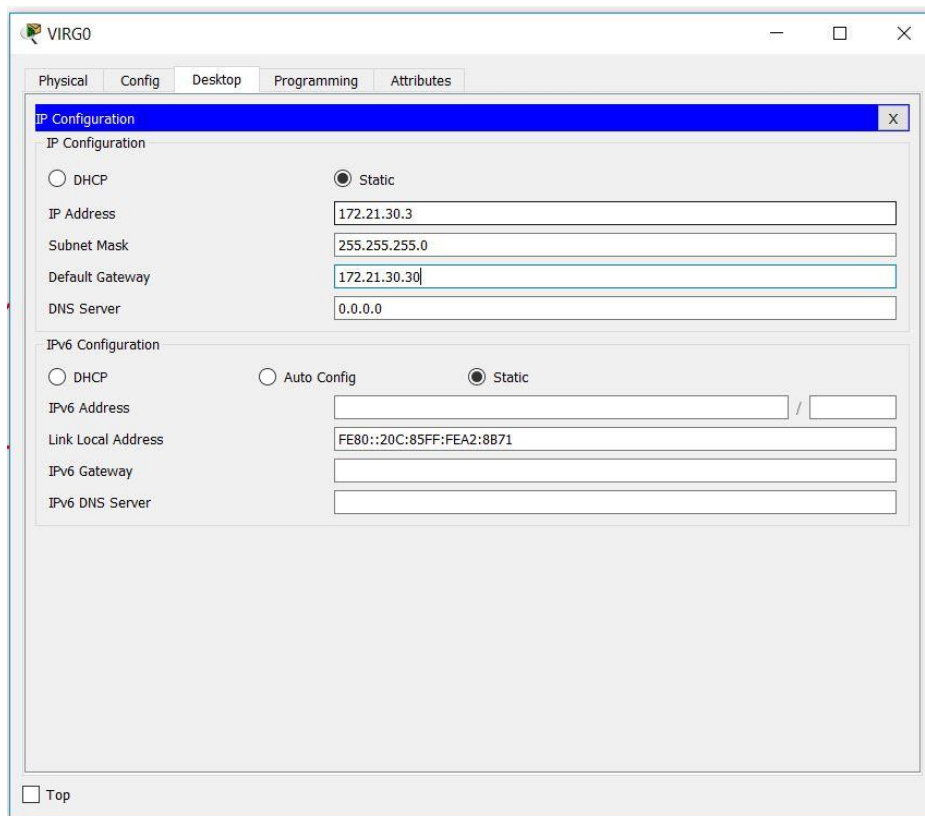
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0,
changed state to up
  
```

Ctrl+F6 to exit CLI focus

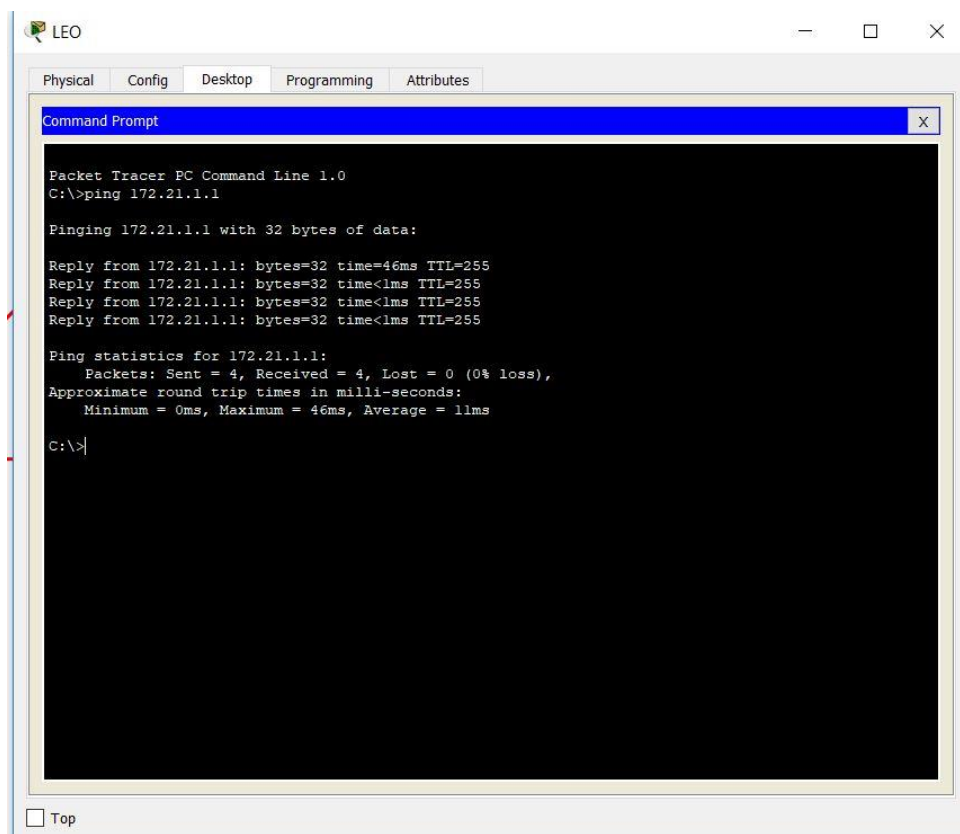
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3. Mengkonfigurasi PC disini saya menggunakan VIRGO



4. Lakukan tes koneksi antara LEO dengan EAGLE



5. Pada mode user, lakukan show ip route.

```
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, Serial2/0
C       172.21.2.0 is directly connected, Serial3/0
C       172.21.10.0 is directly connected, FastEthernet0/0

Router#
```

Ctrl+F6 to exit CLI focus

```
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, Serial2/0
C       172.21.3.0 is directly connected, Serial3/0
C       172.21.20.0 is directly connected, FastEthernet0/0

Router#
```

Ctrl+F6 to exit CLI focus

```
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

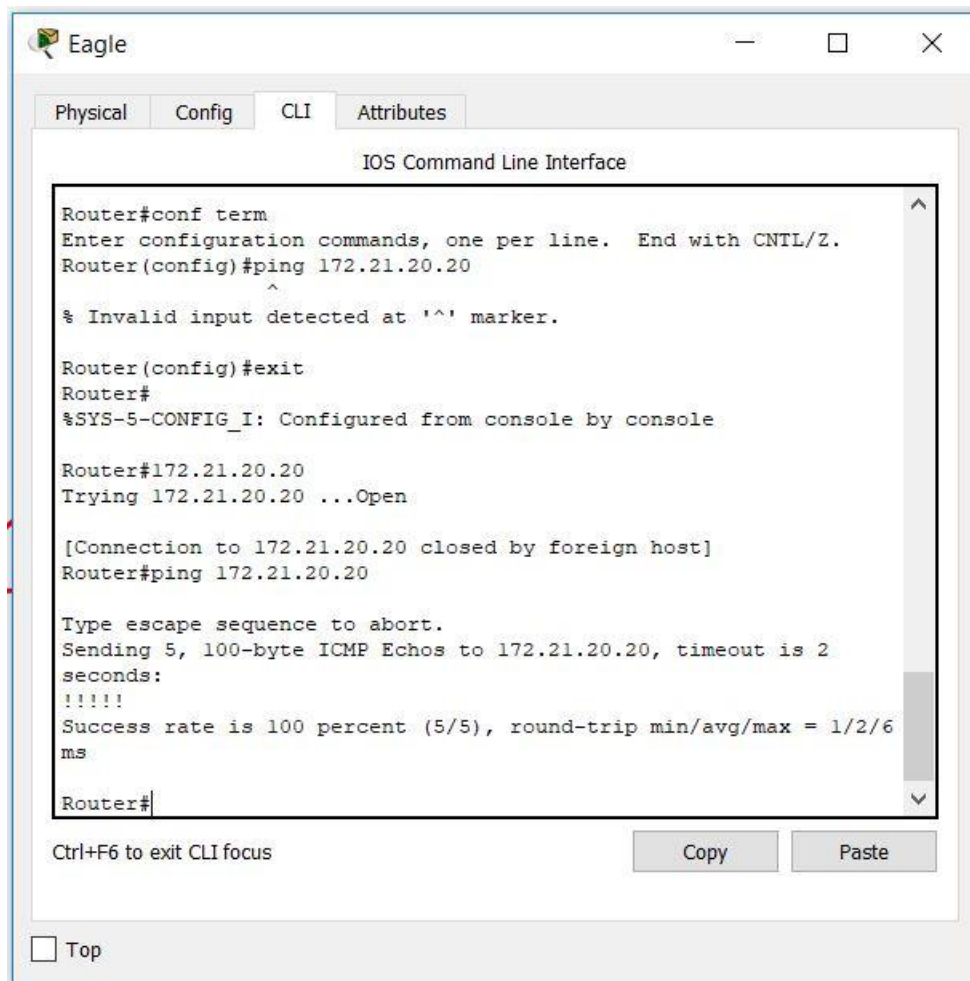
Gateway of last resort is not set

    172.21.0.0/24 is subnetted, 3 subnets
C       172.21.2.0 is directly connected, Serial2/0
C       172.21.3.0 is directly connected, Serial3/0
C       172.21.30.0 is directly connected, FastEthernet0/0

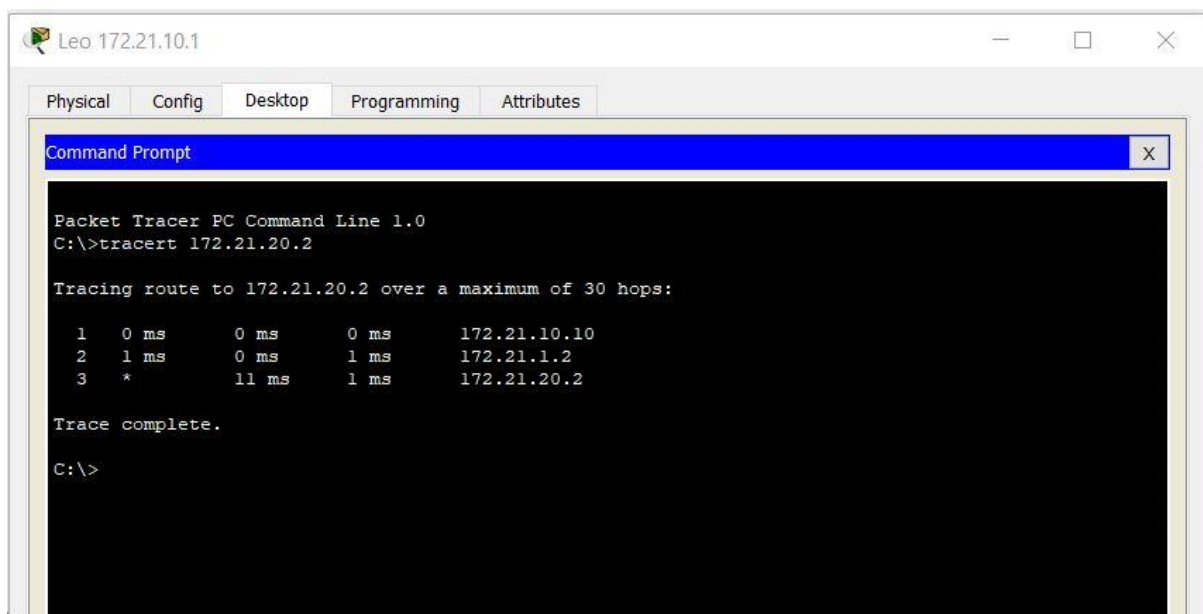
Router#
```

Ctrl+F6 to exit CLI focus

6. Tes koneksi dari eagle ke e0 puma (172.21.20.20)



7. Trace dari Leo ke aries



8. Dari PC Leo trace ke s0 eagle (172.21.1.1)

```
C:\>tracert 127.21.1.1

Tracing route to 127.21.1.1 over a maximum of 30 hops:

  1  0 ms      4 ms      11 ms     127.21.1.1

Trace complete.

C:\>|
```

9. Menambahkan route table pada masing-masing router

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 172.21.30.0 255.255.255.0 172.21.2.3
Router(config)#ip route 172.21.10.0 255.255.255.0 172.21.1.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#|
```

Ctrl+F6 to exit CLI focus

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10. Dari PC Leo ping ke PC Aries

Leo 172.21.10.1

Physical Config Desktop Programming Attributes

Command Prompt

```
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=1ms TTL=126
Reply from 172.21.20.2: bytes=32 time=11ms TTL=126
Reply from 172.21.20.2: bytes=32 time=11ms TTL=126
Reply from 172.21.20.2: bytes=32 time=5ms 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 = 11ms, Average = 7ms
```

11. Trace dari Leo ke Aries

```
C:\>tracert 172.21.20.2

Tracing route to 172.21.20.2 over a maximum of 30 hops:

  1  1 ms    0 ms    0 ms    172.21.10.10
  2  1 ms    1 ms    0 ms    172.21.1.2
  3  11 ms   1 ms    0 ms    172.21.20.2

Trace complete.

C:\>
```

☐ Top

12B. Langkah-langkah konfigurasi router puma dan tiger ketika alamat router eagle diubah menjadi (172.21.100.0/24)

1. Tambahkan route tabel baru ke router puma dan tiger.
(172.21.100.0 255.255.255.0 172.21.1.1) untuk puma
(172.21.100.0 255.255.255.0 172.21.2.1) untuk tiger

```
Router(config)#
Router(config)#
Router(config)#ip route 172.21.100.0 255.255.255.0 172.21.1.1
Router(config)#
```

Ctrl+F6 to exit CLI focus

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```
Router(config)#
Router(config)#
Router(config)#ip route 172.21.100.0 255.255.255.0 172.21.2.1
Router(config)#
```

Ctrl+F6 to exit CLI focus

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Kenapa hal ini dilakukan ? Karena dengan mengubah alamat dari router eagle yang baru maka router puma dan tiger tidak mengenali eagle karena konfigurasi alamat sebelumnya berbeda. Agar eagle kembali dimengerti maka harus membuat route tabel yang baru dengan alamat baru dari router eagle.

Kegiatan 2

1. Konfigurasi routing RIP pada router eagle

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.0.0
```

Ctrl+F6 to exit CLI focus

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2. Ketik perintah "show running-config"

Tugas 4A : terdapat 1 router RIP yaitu 172.21.0.0

Tugas 4B : Dikarenakan pada pengoperasian hanya di tambahkan network 172.21.0.0

The top screenshot shows the initial state of the router configuration in the CLI window. The output of the 'show running-config' command is displayed, indicating the current configuration size (795 bytes) and listing basic settings such as version 12.2, timestamps, hostname Router, and CEF enabled.

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

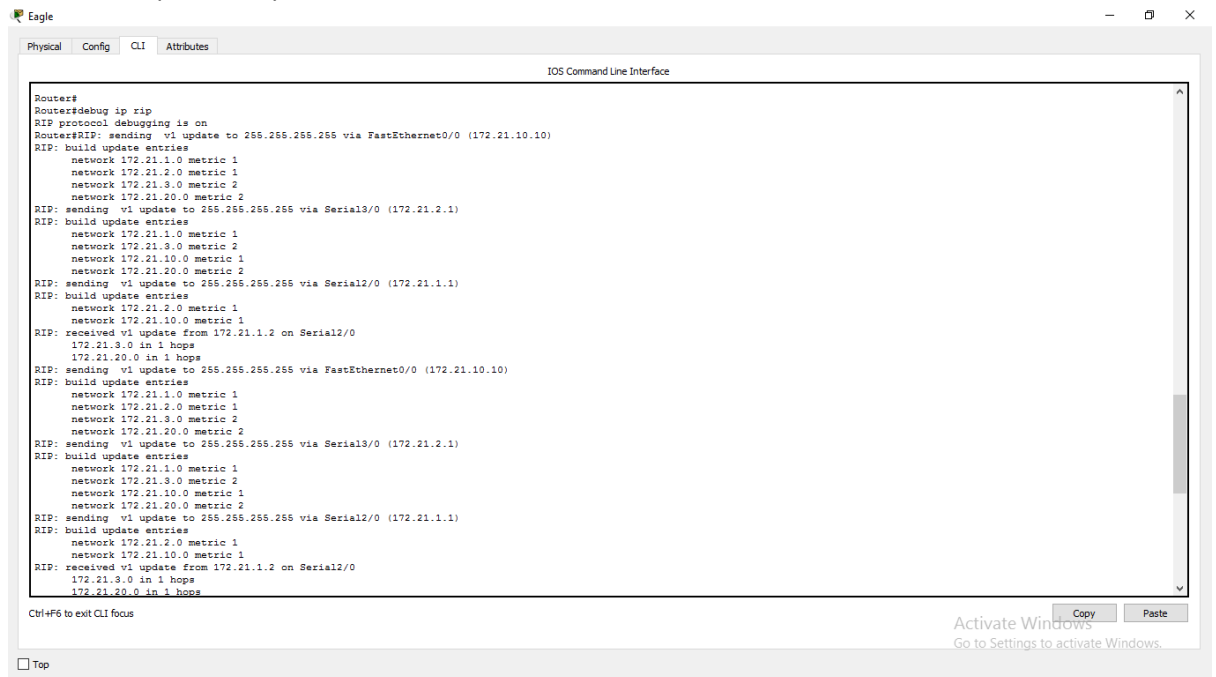
Current configuration : 795 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
ip cef
no ipv6 cef
!
```

The bottom screenshot shows the configuration after several interfaces have been added and configured. It includes FastEthernet0/0 with an IP address, and several other interfaces (FastEthernet1/0, Serial2/0, Serial3/0, FastEthernet4/0, and FastEthernet5/0) that are currently shut down. Additionally, a RIP routing protocol is configured with a single network.

```
!
!
!
!
!
interface FastEthernet0/0
 ip address 172.21.10.10 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial2/0
 ip address 172.21.1.1 255.255.255.0
 clock rate 2000000
!
interface Serial3/0
 ip address 172.21.2.1 255.255.255.0
 clock rate 2000000
!
interface FastEthernet4/0
 no ip address
 shutdown
!
interface FastEthernet5/0
 no ip address
 shutdown
!
router rip
 network 172.21.0.0
!
ip classless
!
ip flow-export version 9
!
!
```

3. Ketik perintah “debug ip rip”

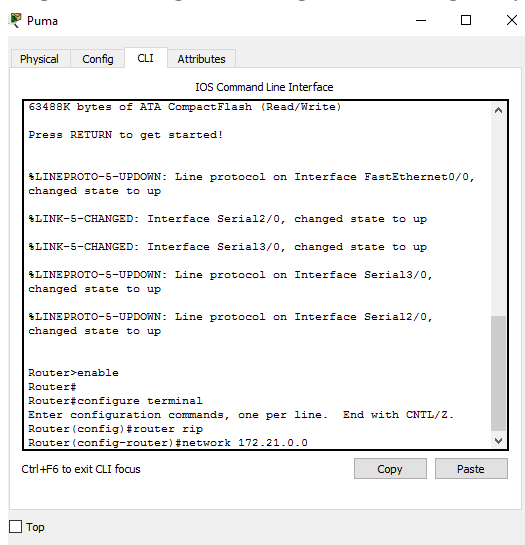
Tugas 5A : pada proses update routing RIP, maka alamat jaringan yang terdaftar akan terus Update tanpa henti



```
Router#
Router#debug ip rip
RIP protocol debugging is on
Router#RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (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 172.21.10.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial3/0 (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: sending v1 update to 255.255.255.255 via Serial2/0 (172.21.1.1)
RIP: build update entries
  network 172.21.2.0 metric 1
  network 172.21.10.0 metric 1
  network 172.21.10.0 metric 1
RIP: received v1 update from 172.21.1.2 on Serial2/0
  172.21.3.0 in 1 hops
  172.21.20.0 in 1 hops
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (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 Serial3/0 (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: sending v1 update to 255.255.255.255 via Serial2/0 (172.21.1.1)
RIP: build update entries
  network 172.21.2.0 metric 1
  network 172.21.10.0 metric 1
  network 172.21.10.0 metric 1
RIP: received v1 update from 172.21.1.2 on Serial2/0
  172.21.3.0 in 1 hops
  172.21.20.0 in 1 hops
```

4. Tugas 6A : langkah konfigurasi routing RIP pada router Puma

Tugas 6B : langkah konfigurasi routing RIP pada router Tiger



```
63498K bytes of ATA CompactFlash (Read/Write)
Press RETURN to get started!

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

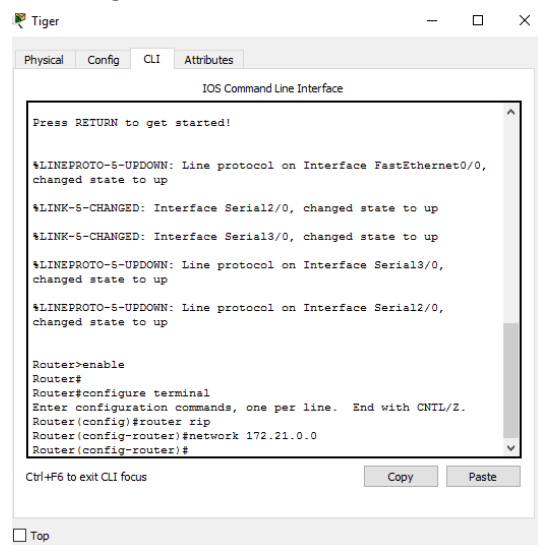
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINK-5-CHANGED: Interface Serial3/0, changed state to up

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

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

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 172.21.0.0
```



```
Press RETURN to get started!

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

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

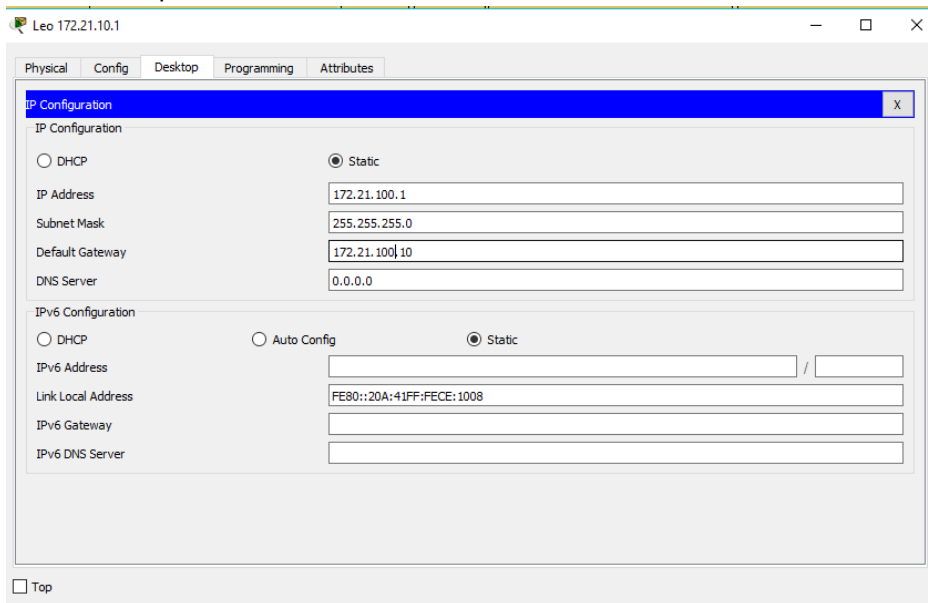
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

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

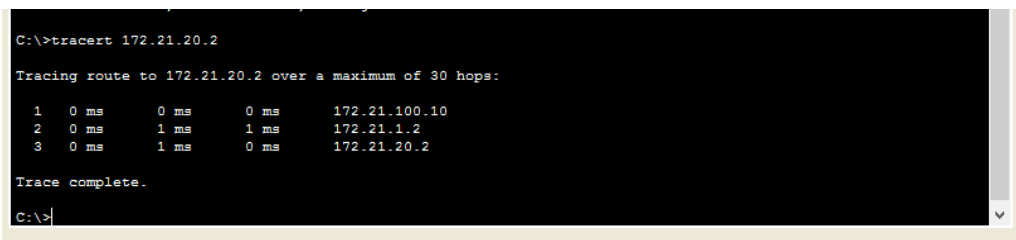
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0,
changed state to up

Router>enable
Router#
Router#configure terminal
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)#
```

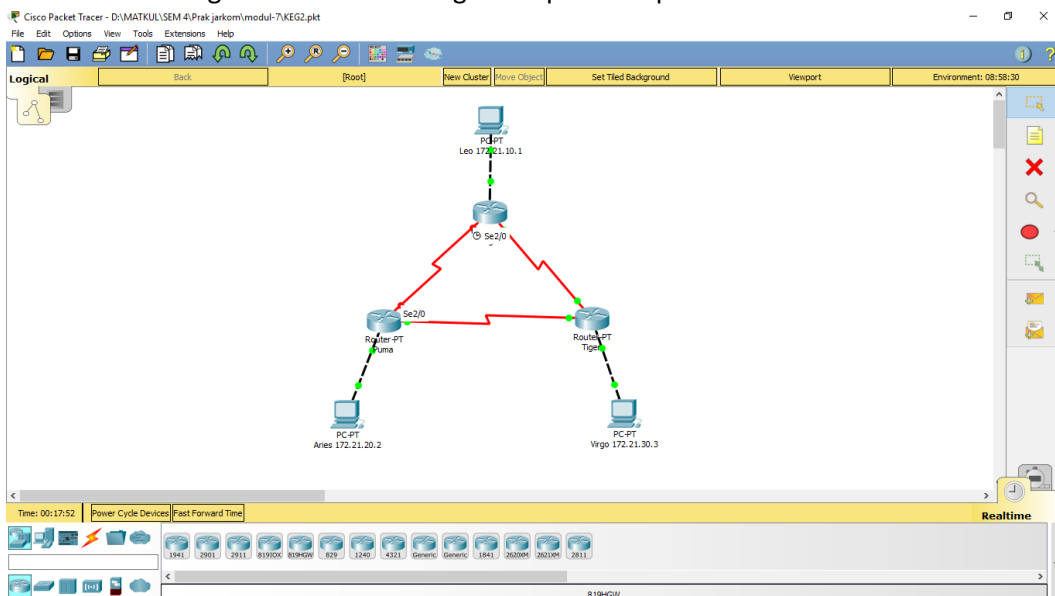
Tugas 6C : Alamat jaringan pada segmen Leo di ubah dari 172.21.10.0 / 24 menjadi 172.21.100.0 / 24. Perlu di lakukan perubahan konfigurasi pada router eagle agar dapat tracert



Tracert PC Leo ke PC Aries

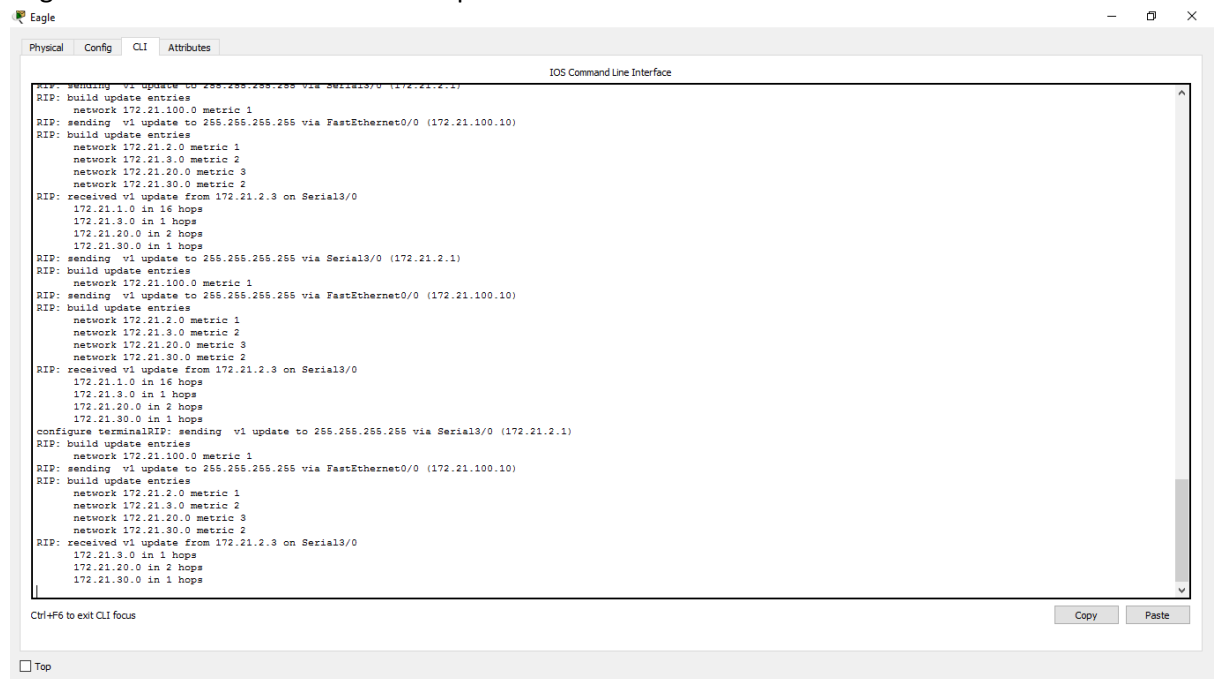


5. Membuat hubungan antara router eagle dan puma terputus



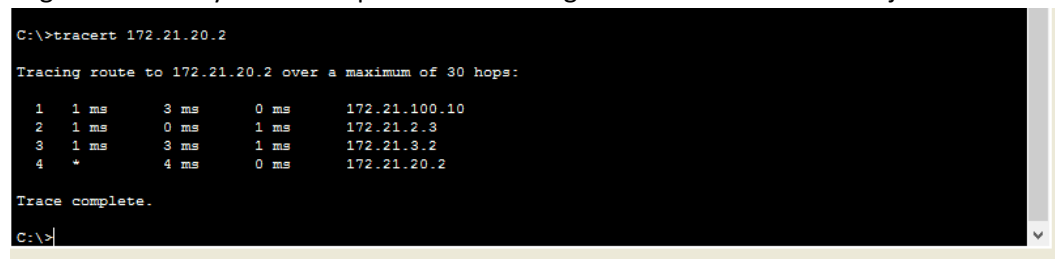
Melakukan “debug ip rip”

Tugas 8A : *Subnet* 172.21.20.0 in 2 hops



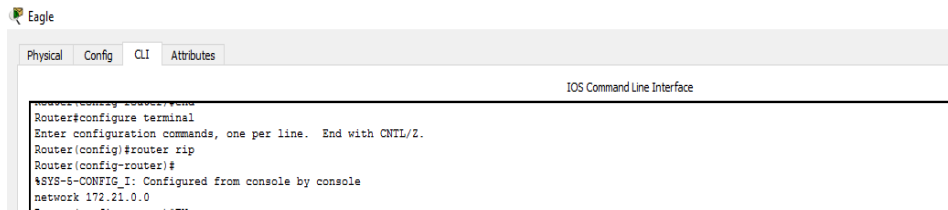
6. Tracert PC Leo ke PC Aries

Tugas 9A : Hasilnya akan tetap sama ketika langkah 8 belum dan sudah di jalankan



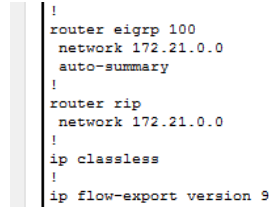
Kegiatan 3

1. Menambahkan alamat jaringan pada routing RIP 172.21.0.0



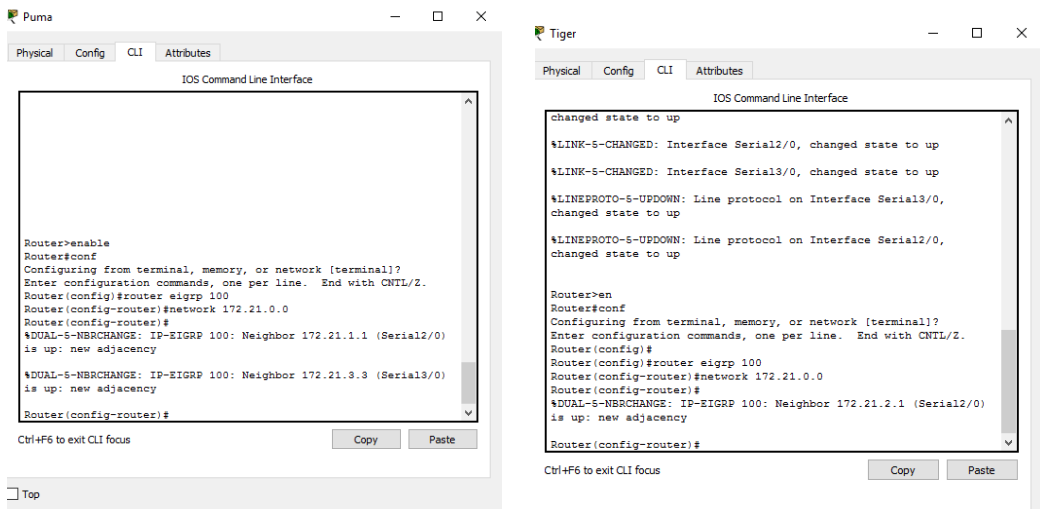
```
Router>configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#
%SYS-5-CONFIG_I: Configured from console by console
network 172.21.0.0
```

2. Tugas 4A : Alamat jaringan yang terdaftar pada konfigurasi routing IGRP : 172.21.0.0



```
!
router eigrp 100
network 172.21.0.0
auto-summary
!
router rip
network 172.21.0.0
!
ip classless
!
ip flow-export version 9
!
```

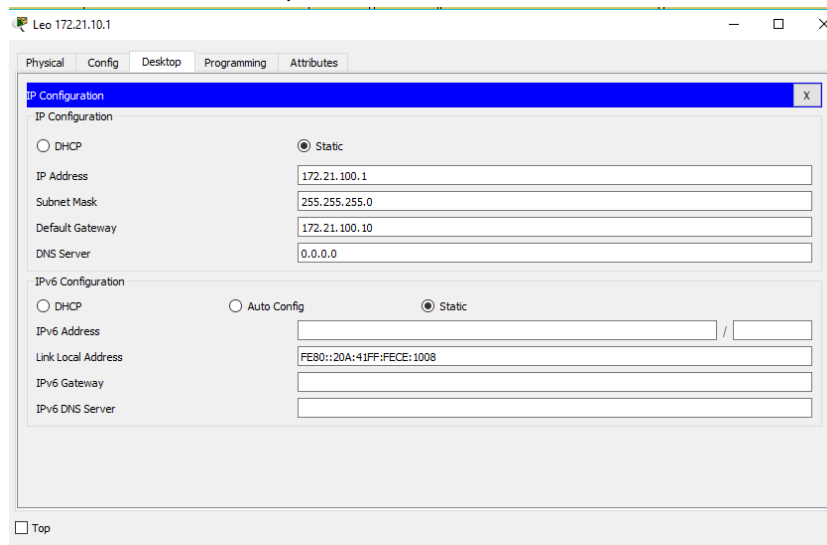
3. Tugas 7A : langkah konfigurasi routing IGRP pada puma dan tiger



```
Router>enable
Router>conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router eigrp 100
Router(config-router)#network 172.21.0.0
Router(config-router)#
%DUAL-S-NBRCHANGE: IP-EIGRP 100: Neighbor 172.21.1.1 (Serial2/0)
is up: new adjacency
%DUAL-S-NBRCHANGE: IP-EIGRP 100: Neighbor 172.21.3.3 (Serial3/0)
is up: new adjacency
Router(config-router)#

Router>en
Router>conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#router eigrp 100
Router(config-router)#network 172.21.0.0
Router(config-router)#
%DUAL-S-NBRCHANGE: IP-EIGRP 100: Neighbor 172.21.2.1 (Serial2/0)
is up: new adjacency
Router(config-router)#
```

- Tugas 7C : alamat jaringan pada segmen leo di ubah dari 172.21.10.0 / 24 menjadi 172.21.100.0 / 24



Leo 172.21.10.1

Physical Config Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address: 172.21.100.1

Subnet Mask: 255.255.255.0

Default Gateway: 172.21.100.10

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::20A:41FF:FECE:1008

IPv6 Gateway:

IPv6 DNS Server:

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- Konfigurasi ip baru pada router eagle

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.21.100.10 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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- Konfigurasi ip baru pada router puma

```
Router>en
Router#conf
Configuring from terminal, memory, or network [terminal]?
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)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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- Konfigurasi ip baru pada router tiger

```
Router>en
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 172.21.100.0 255.255.255.0 172.21.2.1
Router(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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4. Ping dan tracert dari Leo ke Aries

Leo 172.21.10.1

```
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 172.21.20.2

Pinging 172.21.20.2 with 32 bytes of data:

Request timed out.
Reply from 172.21.20.2: bytes=32 time=1ms TTL=126
Reply from 172.21.20.2: bytes=32 time=1ms TTL=126
Reply from 172.21.20.2: bytes=32 time=4ms TTL=126

Ping statistics for 172.21.20.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 4ms, Average = 2ms

C:\>
```

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