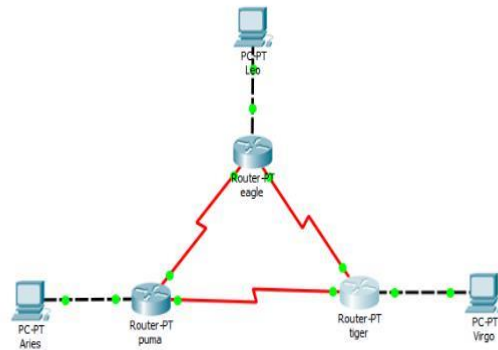


Kegiatan 1. Static routing

1. Rancangan Jaringan



2. Show ip route

eagle

```
eagle
Physical Config CLI Attributes
IOS Command Line Interface

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

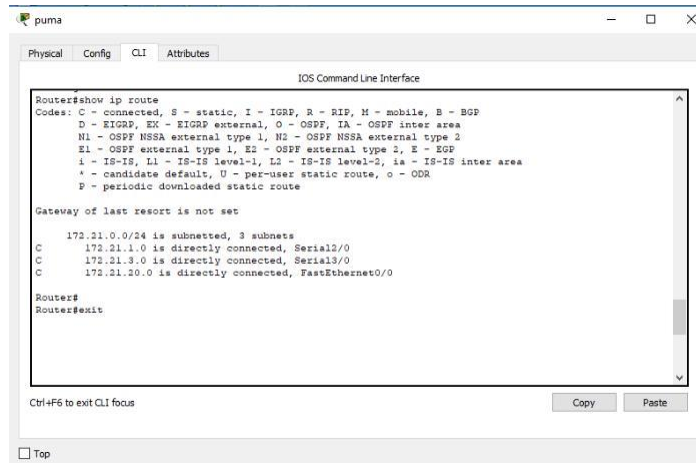
Gateway of last resort is not set

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#exit

Ctrl+F6 to exit CLI focus
Copy Paste
Top
```

puma



The screenshot shows a window titled 'puma' with a tabbed interface. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The prompt is 'Router#'. The command 'show ip route' has been entered, and the output is displayed. The output includes a legend for route codes (C, D, N1, E1, I, *, P), a message 'Gateway of last resort is not set', and a list of routes: '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', and 'C 172.21.20.0 is directly connected, FastEthernet0/0'. The prompt returns to 'Router#'. At the bottom, there is a 'Ctrl+F6 to exit CLI focus' message and 'Copy' and 'Paste' buttons.

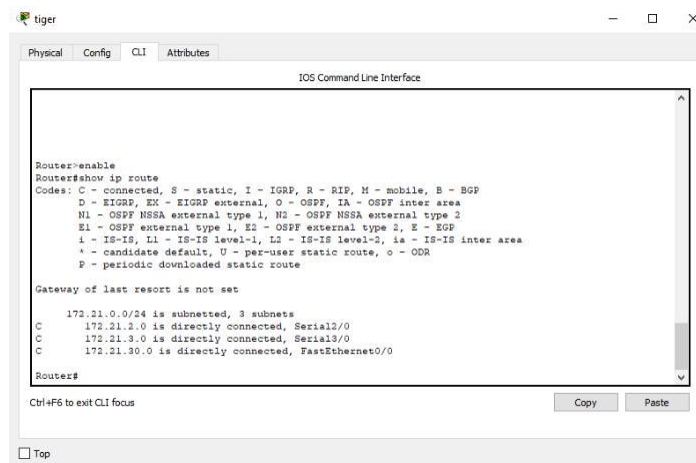
```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, 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#
Router#exit
```

tiger



The screenshot shows a window titled 'tiger' with a tabbed interface. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The prompt is 'Router#'. The command 'show ip route' has been entered, and the output is displayed. The output is identical to the one in the 'puma' window. At the bottom, there is a 'Ctrl+F6 to exit CLI focus' message and 'Copy' and 'Paste' buttons.

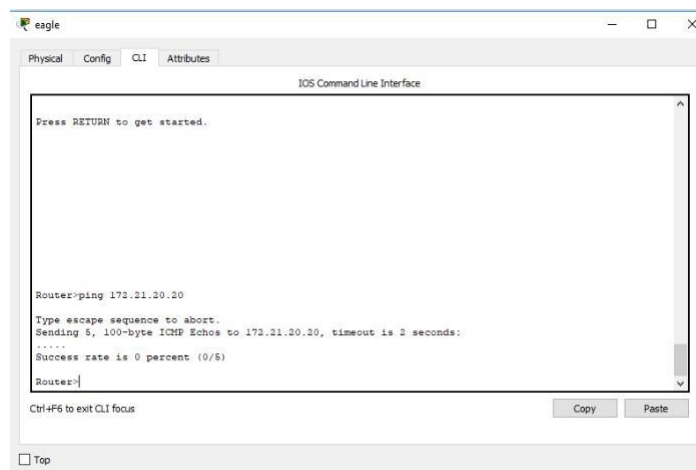
```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, 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#
```

3. Melakukan ping dari router eagle ke router puma

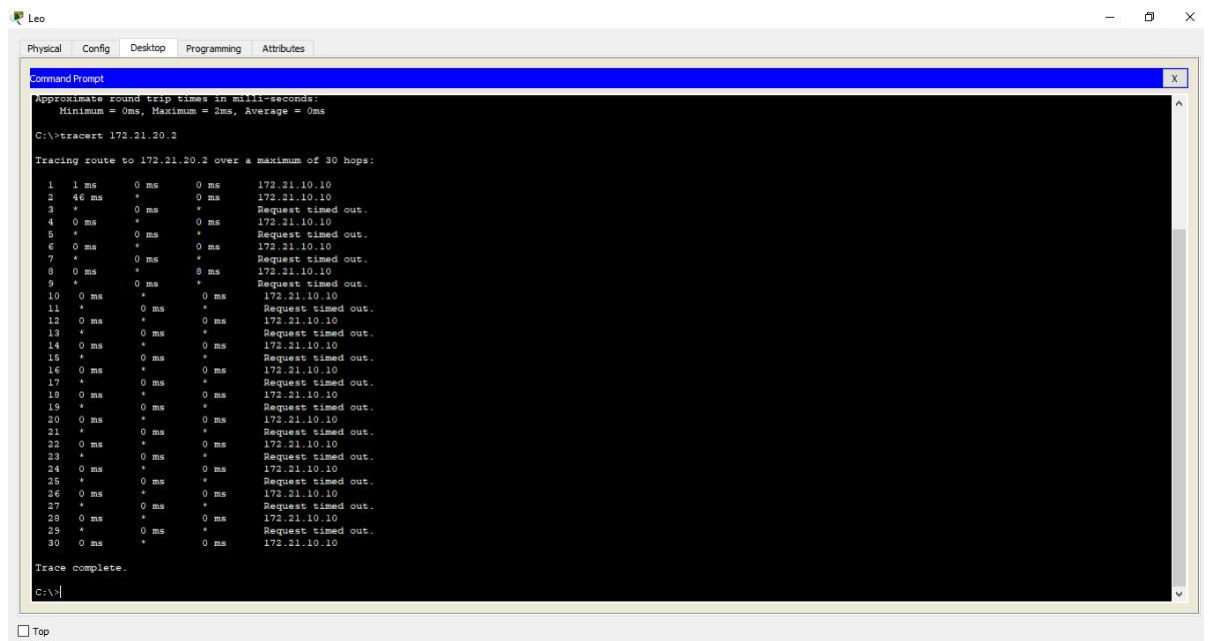


The screenshot shows a window titled 'eagle' with a tabbed interface. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The prompt is 'Router#'. The command 'ping 172.21.20.20' has been entered, and the output is displayed. The output shows the command being executed, a message to 'Type escape sequence to abort.', and the results of the ping: 'Sending 5, 100-byte ICMP Echoes to 172.21.20.20, timeout is 2 seconds:, Success rate is 0 percent (0/5)'. The prompt returns to 'Router#'. At the bottom, there is a 'Ctrl+F6 to exit CLI focus' message and 'Copy' and 'Paste' buttons.

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

Router#
```

4. Lakukan trace dari PC leo ke PC aries

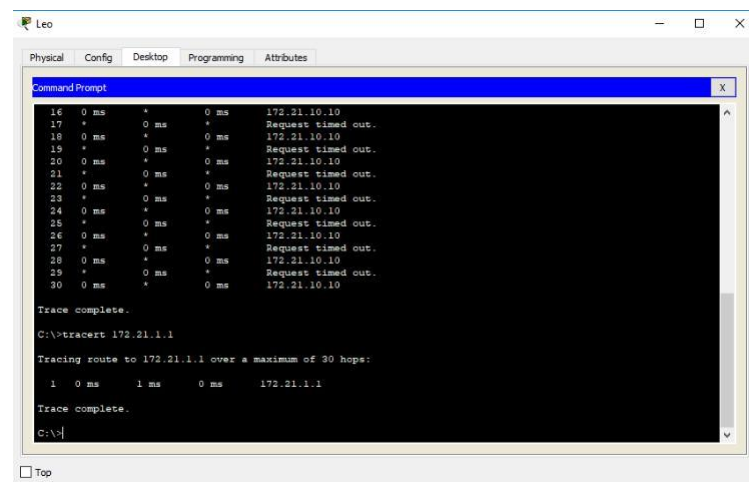


```
Leo
Physical Config Desktop Programming Attributes
Command Prompt
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 2ms, Average = 0ms
C:\>tracert 172.21.20.2

Tracing route to 172.21.20.2 over a maximum of 30 hops:
  0  1 ms  0 ms  0 ms  172.21.10.10
  1  46 ms  *  0 ms  172.21.10.10
  2  *  0 ms  *  Request timed out.
  3  0 ms  *  0 ms  172.21.10.10
  4  *  0 ms  *  Request timed out.
  5  0 ms  *  0 ms  172.21.10.10
  6  *  0 ms  *  Request timed out.
  7  0 ms  *  0 ms  172.21.10.10
  8  *  0 ms  *  Request timed out.
  9  0 ms  *  0 ms  172.21.10.10
 10  *  0 ms  *  Request timed out.
 11  0 ms  *  0 ms  172.21.10.10
 12  *  0 ms  *  Request timed out.
 13  *  0 ms  *  Request timed out.
 14  0 ms  *  0 ms  172.21.10.10
 15  *  0 ms  *  Request timed out.
 16  0 ms  *  0 ms  172.21.10.10
 17  *  0 ms  *  Request timed out.
 18  0 ms  *  0 ms  172.21.10.10
 19  *  0 ms  *  Request timed out.
 20  0 ms  *  0 ms  172.21.10.10
 21  *  0 ms  *  Request timed out.
 22  0 ms  *  0 ms  172.21.10.10
 23  *  0 ms  *  Request timed out.
 24  0 ms  *  0 ms  172.21.10.10
 25  *  0 ms  *  Request timed out.
 26  0 ms  *  0 ms  172.21.10.10
 27  *  0 ms  *  Request timed out.
 28  0 ms  *  0 ms  172.21.10.10
 29  *  0 ms  *  Request timed out.
 30  0 ms  *  0 ms  172.21.10.10

Trace complete.
C:\>
```

5. Lakukan trace dari PC loe ke router eagle



```
Leo
Physical Config Desktop Programming Attributes
Command Prompt
16  0 ms  *  0 ms  172.21.10.10
17  *  0 ms  *  Request timed out.
18  0 ms  *  0 ms  172.21.10.10
19  *  0 ms  *  Request timed out.
20  0 ms  *  0 ms  172.21.10.10
21  *  0 ms  *  Request timed out.
22  0 ms  *  0 ms  172.21.10.10
23  *  0 ms  *  Request timed out.
24  0 ms  *  0 ms  172.21.10.10
25  *  0 ms  *  Request timed out.
26  0 ms  *  0 ms  172.21.10.10
27  *  0 ms  *  Request timed out.
28  0 ms  *  0 ms  172.21.10.10
29  *  0 ms  *  Request timed out.
30  0 ms  *  0 ms  172.21.10.10

Trace complete.
C:\>tracert 172.21.1.1

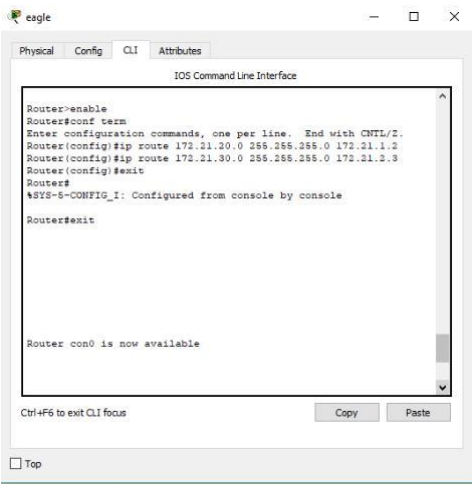
Tracing route to 172.21.1.1 over a maximum of 30 hops:
  0  1 ms  1 ms  0 ms  172.21.1.1

Trace complete.
C:\>
```

Pada langkah no 3-5 belum ada ROUTING STATIC dan kita harus melakukan konfigurasi STATIC ROUTING dengan menembakkan next hop dan network pada router

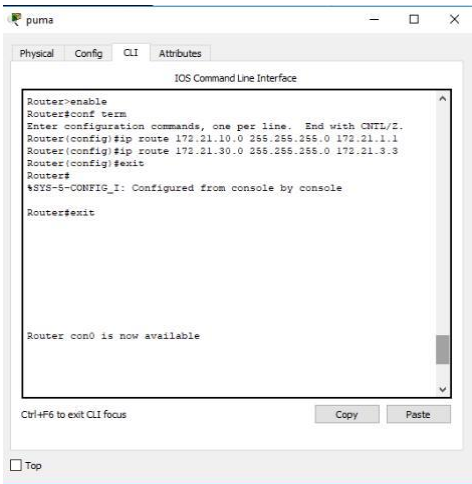
6. Konfigurasi static routing pada masing masing router

Eagle



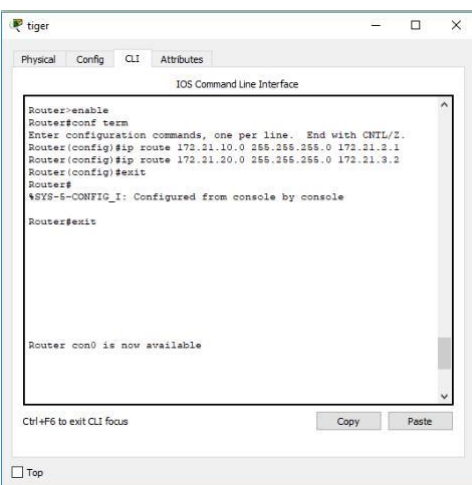
The screenshot shows the 'eagle' window with the 'CLI' tab selected. The 'IOS Command Line Interface' text area contains the following commands: `Router>enable`, `Router#conf term`, `Router(config)#ip route 172.21.20.0 255.255.255.0 172.21.1.2`, `Router(config)#ip route 172.21.30.0 255.255.255.0 172.21.3.3`, `Router(config)#exit`, and `Router#`. Below the text area, a status message reads '%SYS-S-CONFIG_I: Configured from console by console'. At the bottom, it says 'Router con0 is now available'. A 'Copy' button and a 'Paste' button are located at the bottom right of the text area.

Puma



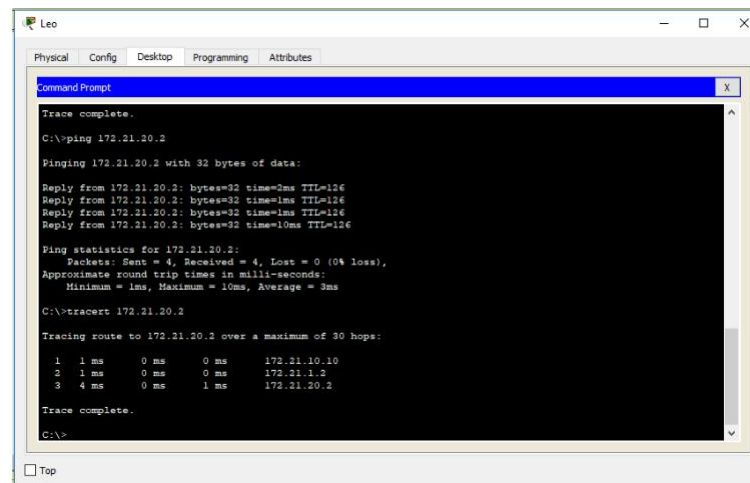
The screenshot shows the 'puma' window with the 'CLI' tab selected. The 'IOS Command Line Interface' text area contains the following commands: `Router>enable`, `Router#conf term`, `Router(config)#ip route 172.21.10.0 255.255.255.0 172.21.1.1`, `Router(config)#ip route 172.21.30.0 255.255.255.0 172.21.3.3`, `Router(config)#exit`, and `Router#`. Below the text area, a status message reads '%SYS-S-CONFIG_I: Configured from console by console'. At the bottom, it says 'Router con0 is now available'. A 'Copy' button and a 'Paste' button are located at the bottom right of the text area.

Tiger



The screenshot shows the 'tiger' window with the 'CLI' tab selected. The 'IOS Command Line Interface' text area contains the following commands: `Router>enable`, `Router#conf term`, `Router(config)#ip route 172.21.10.0 255.255.255.0 172.21.3.1`, `Router(config)#ip route 172.21.20.0 255.255.255.0 172.21.3.2`, `Router(config)#exit`, and `Router#`. Below the text area, a status message reads '%SYS-S-CONFIG_I: Configured from console by console'. At the bottom, it says 'Router con0 is now available'. A 'Copy' button and a 'Paste' button are located at the bottom right of the text area.

7. Lakukan ping dari PC leo ke PC aries dan tracert dari leo ke aries



```
Leo
Physical Config Desktop Programming Attributes
Command Prompt
Trace complete.
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=3ms TTL=126
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=10ms 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 = 10ms, Average = 3ms
C:\>tracert 172.21.20.2
Tracing route to 172.21.20.2 over a maximum of 30 hops:
  0  1 ms    0 ms    0 ms    172.21.10.10
  1  1 ms    0 ms    0 ms    172.21.1.2
  2  4 ms    0 ms    1 ms    172.21.20.2
Trace complete.
C:\>
```

```
C:\>tracert 172.21.20.2

Tracing route to 172.21.20.2 over a maximum of 30 hops:

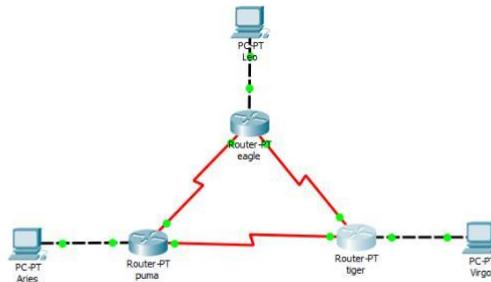
  0  0 ms    0 ms    0 ms    172.21.10.10
  1  1 ms    4 ms    13 ms   172.21.1.2
  2  13 ms   3 ms    10 ms   172.21.20.2

Trace complete.

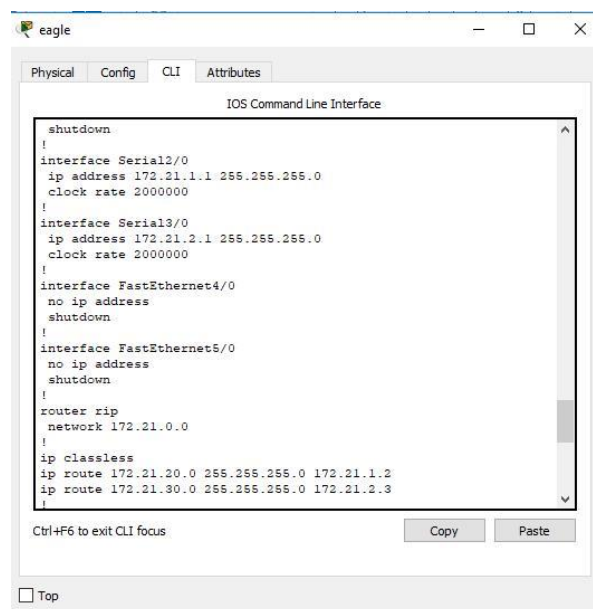
C:\>
```

Kegiatan 2. RIP(Routing Information Protocol)

1. Rancangan Jaringan

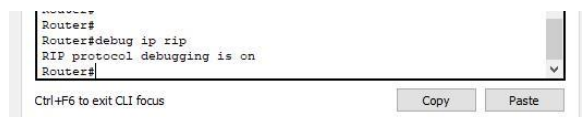


2. Nomor alamat jaringan pada konfigurasi routing RIP



Nomor alamat route RIP adalah 172.21.0.0

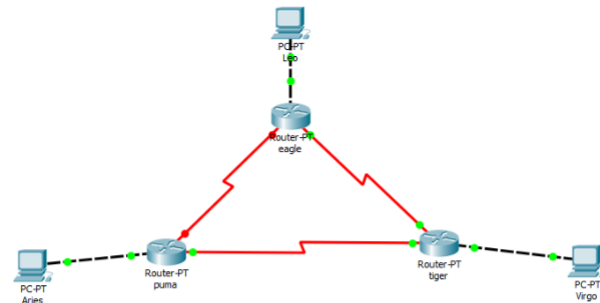
3. Melakukan perintah “debug ip rip” pada route eagle



4. Trace dari PC leo ke PC aries sebelum memutus router eagle ke router puma

```
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:
  1  3 ms  0 ms  0 ms  172.21.10.10
  2  1 ms  1 ms  1 ms  172.21.1.2
  3  *      3 ms  3 ms  172.21.20.2
Trace complete.
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  0 ms  *      0 ms  172.21.10.10
  3  *      0 ms  *      Request timed out.
  4  0 ms  *      0 ms  172.21.10.10
  5  *      0 ms  *      Request timed out.
  6  0 ms  *      0 ms  172.21.10.10
  7  *      0 ms  *      Request timed out.
  8  0 ms  *      0 ms  172.21.10.10
  9  *      0 ms  *      Request timed out.
 10  0 ms  *      0 ms  172.21.10.10
 11  *      0 ms  *      Request timed out.
 12  0 ms  *      0 ms  172.21.10.10
 13  *      0 ms  *      Request timed out.
```

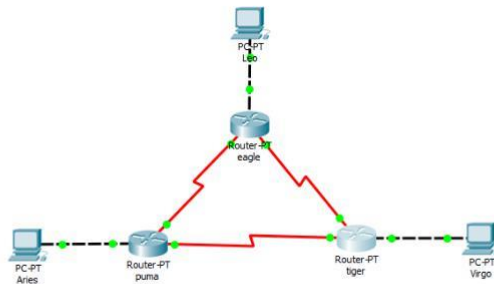
5. Trace dari PC leo ke PC aries setelah diputus antara router eagle ke router puma



```
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:
  1  0 ms  0 ms  0 ms  172.21.10.10
  2  0 ms  *      0 ms  172.21.10.10
  3  *      0 ms  *      Request timed out.
  4  0 ms  *      0 ms  172.21.10.10
  5  *      0 ms  *      Request timed out.
  6  0 ms  *      0 ms  172.21.10.10
  7  *      0 ms  *      Request timed out.
  8  0 ms  *      0 ms  172.21.10.10
  9  *      0 ms  *      Request timed out.
 10  0 ms  *      0 ms  172.21.10.10
 11  *      0 ms  *      Request timed out.
 12  0 ms  *      0 ms  172.21.10.10
 13  *      0 ms  *      Request timed out.
 14  0 ms  *      0 ms  172.21.10.10
 15  *      0 ms  *      Request timed out.
 16  0 ms  *      0 ms  172.21.10.10
 17  *      0 ms  *      Request timed out.
 18  1 ms  *      0 ms  172.21.10.10
 19  *      0 ms  *      Request timed out.
 20  0 ms  *      0 ms  172.21.10.10
 21  *      0 ms  *      Request timed out.
 22  0 ms  *      0 ms  172.21.10.10
 23  *      0 ms  *      Request timed out.
```

Kegiatan 3. IGRP

1. Rancangan jaringan



2. Konfigurasi routing RIP pada router eagle.

```
Router>en
Router#conf term
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)#ex
Router(config)#ex
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

3. Lakukan perintah "show running-config" pada mode user.

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

Current configuration : 815 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
!
!
--More--
```


4. Lakukan perintah "debug ip igrp transactions" pada mode user dan di router eagle. Tunggu beberapa saat untuk melihat informasi transaksi routing EIGRP yang terjadi.

```
EIGRP: Sending HELLO on Serial2/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on FastEthernet0/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial3/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial2/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on FastEthernet0/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial3/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial2/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on FastEthernet0/0
  AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial2/0
```

6. Melakukan konfigurasi routing EIGRP pada router puma dan tiger

Router Puma :

- Konfigurasi routing EIGRP pada router puma :

```
changed state to up

Router>en
Router#conf term
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
```

- Melihat konfigurasi routing EIGRP yang telah dibuat

```
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
!
!
--More-- |
```

- Melihat proses transaksi routing EIGRP pada router puma.

```
Router#debug eigrp packets
EIGRP Packets debugging is on
  (UPDATE, REQUEST, QUERY, REPLY, HELLO, ACK )
Router#
EIGRP: Received HELLO on Serial2/0 nbr 172.21.1.1
      AS 100, Flags 0x0, Seq 6/0 idbQ 0/0

EIGRP: Sending HELLO on FastEthernet0/0
      AS 100, Flags 0x0, Seq 6/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial3/0
      AS 100, Flags 0x0, Seq 6/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial2/0
      AS 100, Flags 0x0, Seq 6/0 idbQ 0/0 iidbQ un/rely 0/0
```

Router Tiger :

- Konfigurasi routing EIGRP pada router tiger.

```
Router>en
Router#conf term
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-5-NBRCHANGE: IP-EIGRP 100: Neighbor 172.21.3.2 (Serial3/0)
is up: new adjacency

%DUAL-5-NBRCHANGE: IP-EIGRP 100: Neighbor 172.21.2.1 (Serial2/0)
is up: new adjacency
|
```

- Melihat konfigurasi routing EIGRP yang telah dibuat.

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

Current configuration : 775 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
!
!
--More-- |
```

- Melihat proses transaksi routing EIGRP pada router tiger.

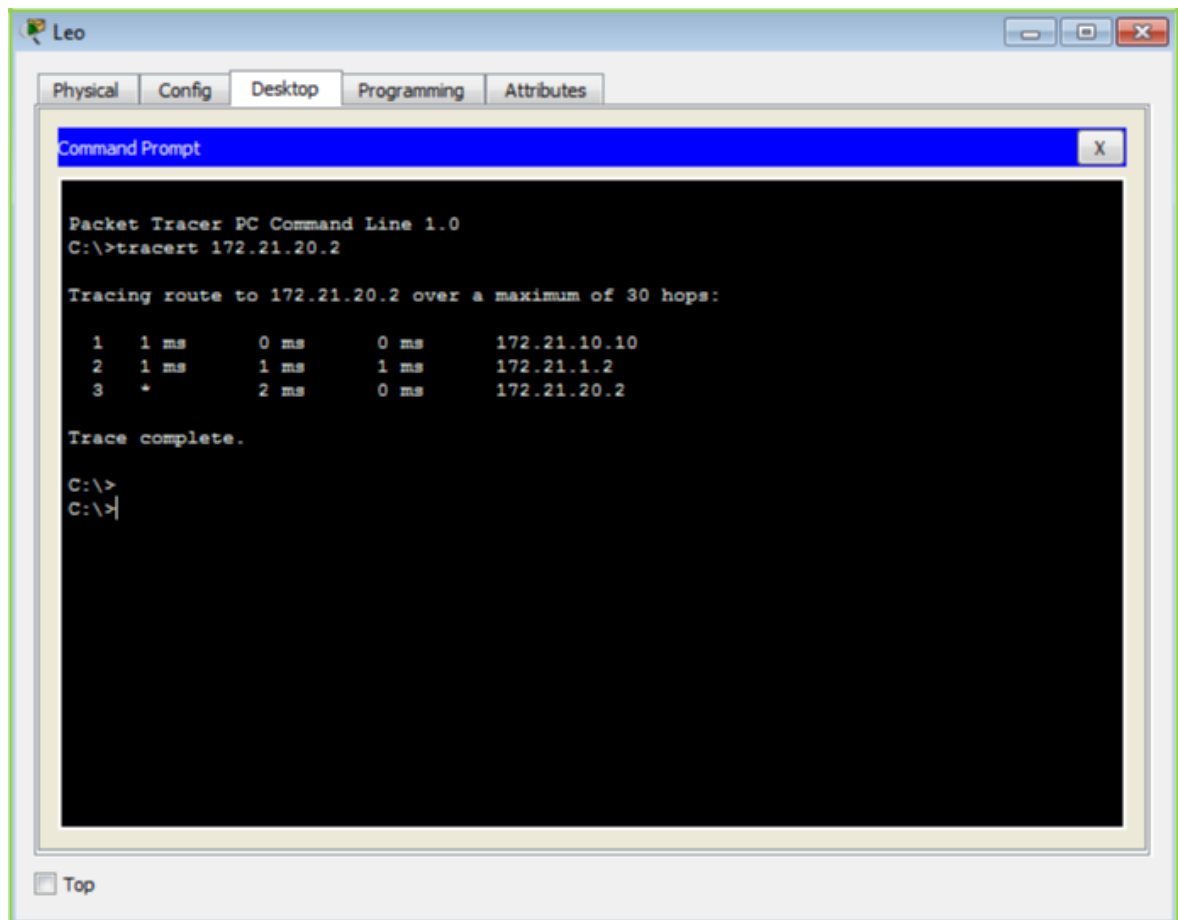
```
Router#debug eigrp packets
EIGRP Packets debugging is on
(UPDATE, REQUEST, QUERY, REPLY, HELLO, ACK )
Router#
EIGRP: Received HELLO on Serial2/0 nbr 172.21.2.1
AS 100, Flags 0x0, Seq 9/0 idbQ 0/0

EIGRP: Sending HELLO on Serial3/0
AS 100, Flags 0x0, Seq 11/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Received HELLO on Serial3/0 nbr 172.21.3.2
AS 100, Flags 0x0, Seq 9/0 idbQ 0/0

EIGRP: Sending HELLO on FastEthernet0/0
AS 100, Flags 0x0, Seq 11/0 idbQ 0/0 iidbQ un/rely 0/0
|
```

7. Melakukan tracert dari PC Leo ke PC aries



8. Membuat hubungan antara router eagle dan puma terputus

```
Router#no debug eigrp packets
EIGRP Packets debugging is off
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int se2/0
Router(config-if)#shutdown

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

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

%DUAL-5-NBRCHANGE: IP-EIGRP 100: Neighbor 172.21.1.1 (Serial2/0)
is down: interface down
|
```

9. Melakukan trace dari PC leo ke PC Aries.

```
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      0 ms      172.21.2.3
  3  1 ms      2 ms      0 ms      172.21.3.2
  4  1 ms      0 ms      0 ms      172.21.20.2

Trace complete.

C:\>|
```