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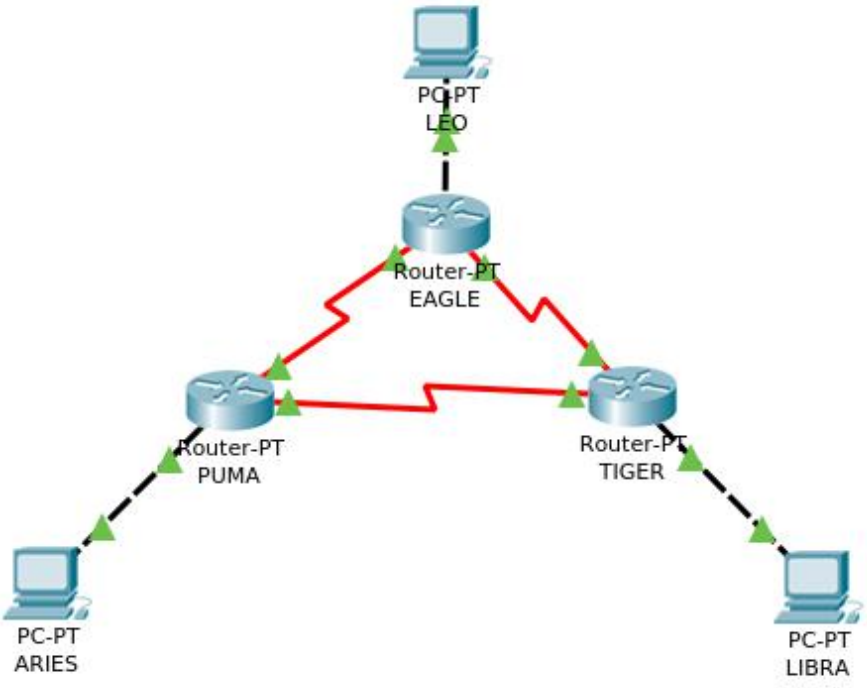
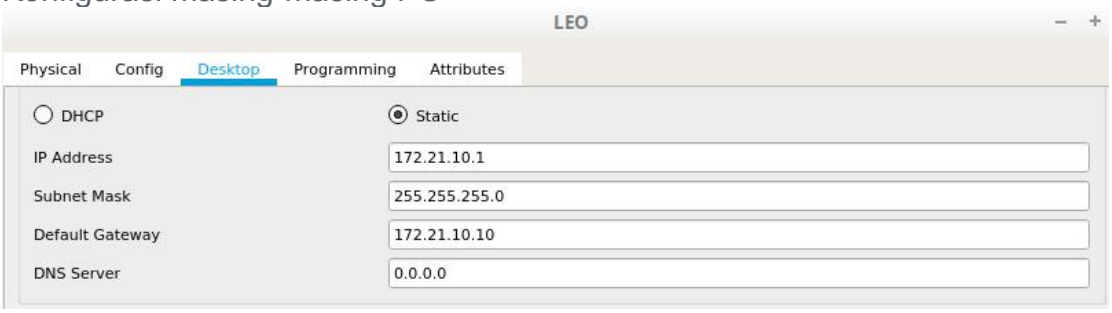
NIM : L200170149
Kelas : D

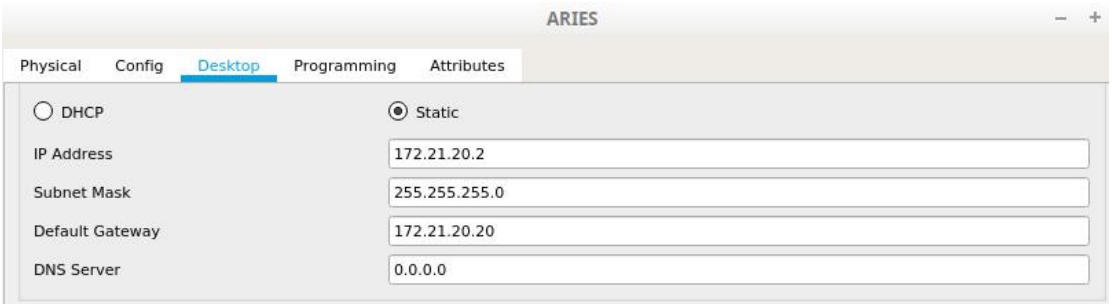
LAPORAN PRAKTIKUM JARINGAN KOMPUTER
MODUL 7

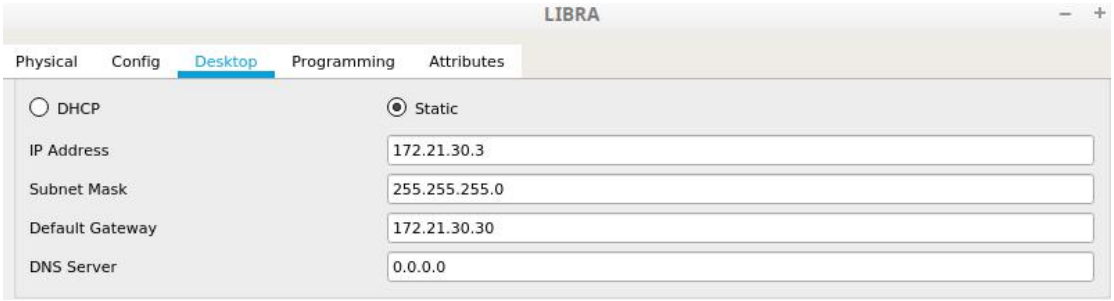
Kegiatan 1. Topologi 1 (Static Routing)



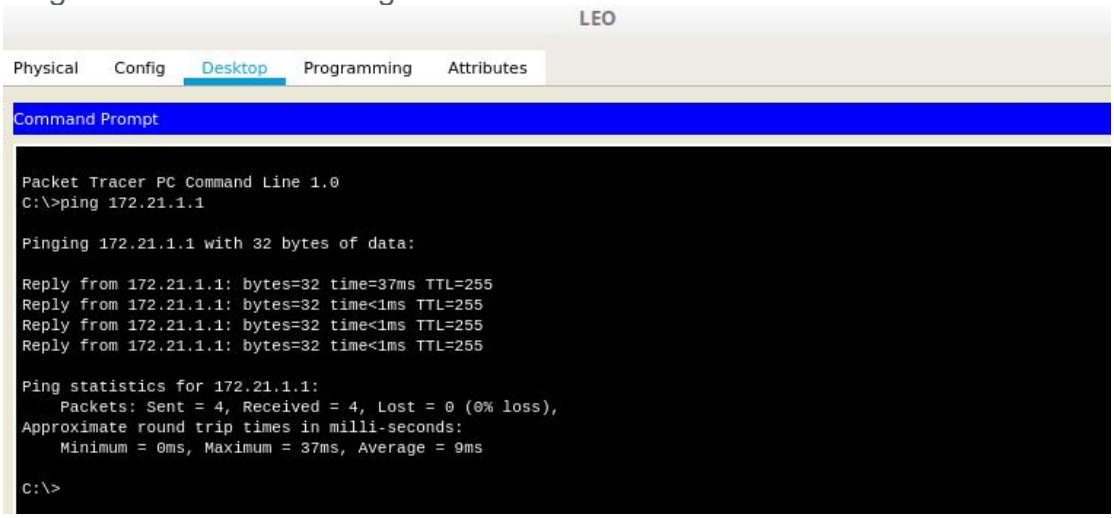
Konfigurasi masing-masing PC



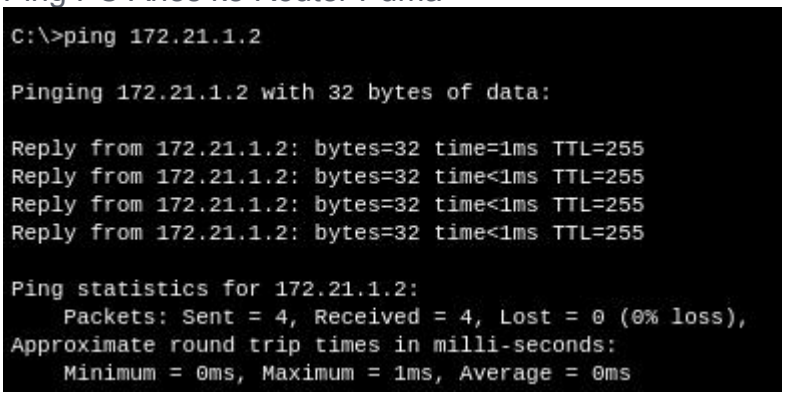




Ping PC Leo ke Router Eagle



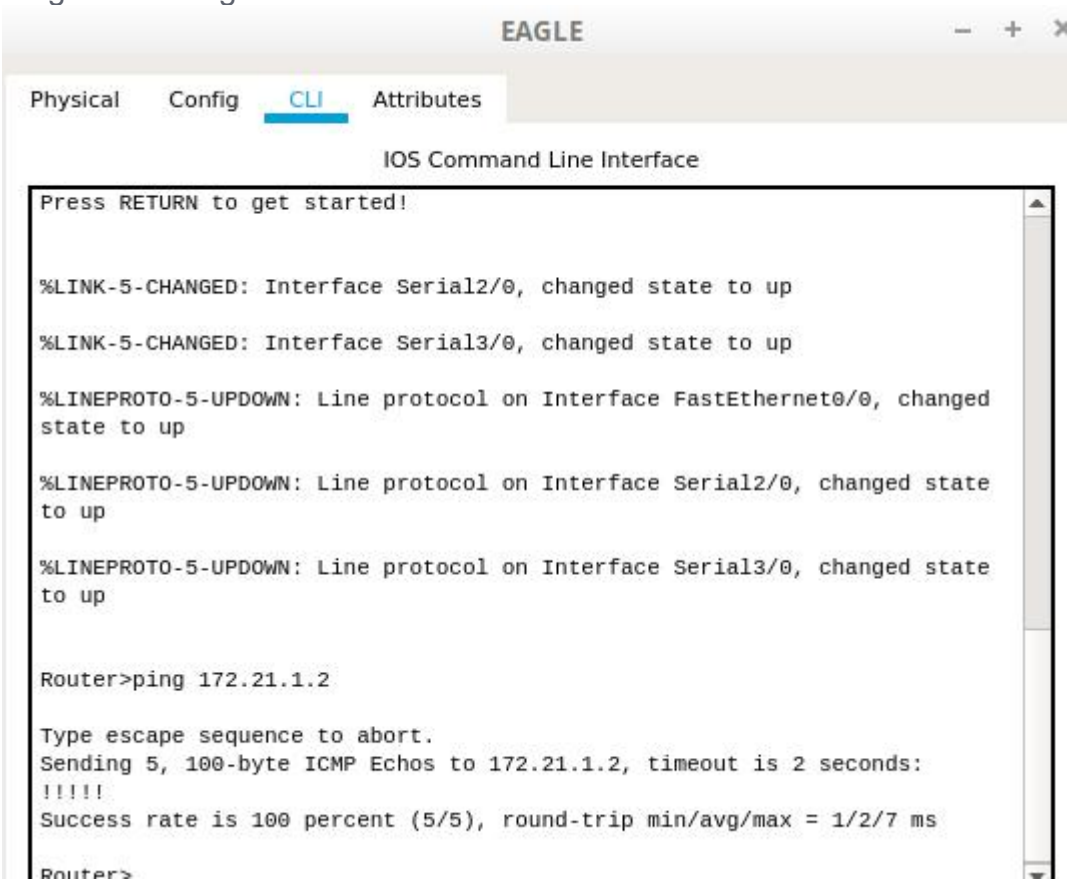
Ping PC Aries ke Router Puma



Ping PC Libra ke Router Tiger

```
Pinging 172.21.3.3 with 32 bytes of data:

Reply from 172.21.3.3: bytes=32 time=1ms TTL=255
Reply from 172.21.3.3: bytes=32 time<1ms TTL=255
Reply from 172.21.3.3: bytes=32 time<1ms TTL=255
Reply from 172.21.3.3: bytes=32 time<1ms TTL=255

Ping statistics for 172.21.3.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Ping Router Eagle ke Router Puma



Ping Router Eagle ke Router Tiger

```
Router>
Router>ping 172.21.1.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.21.1.3, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
```

Ping Router Puma ke Router Tiger

PUMA

Physical Config CLI Attributes

IOS Command Line Interface

```
%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>
Router>ping 172.21.3.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.21.3.3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/10 ms
```

Lihat route table pada masing-masing router

EAGLE

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>
Router>
Router>
Router>
Router>
Router>
Router>
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>
```

PUMA

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>
Router>
Router>
Router>
Router>
Router>
Router>
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>
```

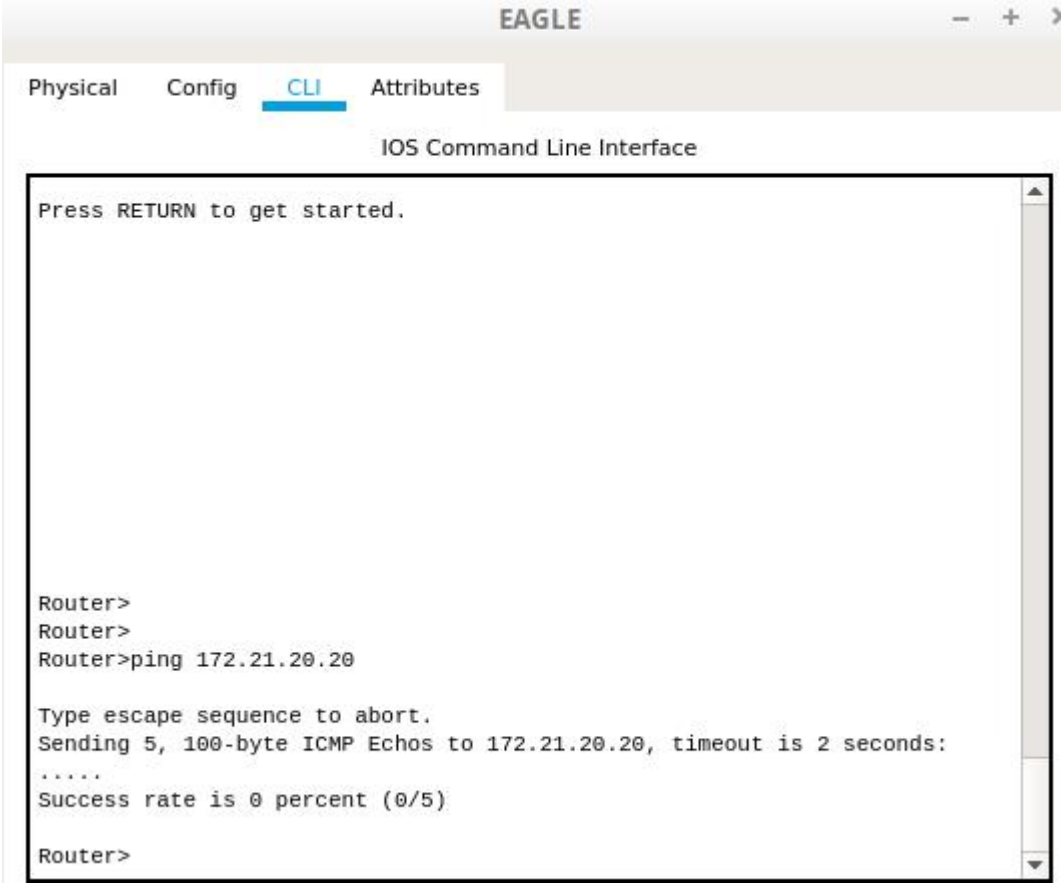
TIGER

Physical Config CLI Attributes

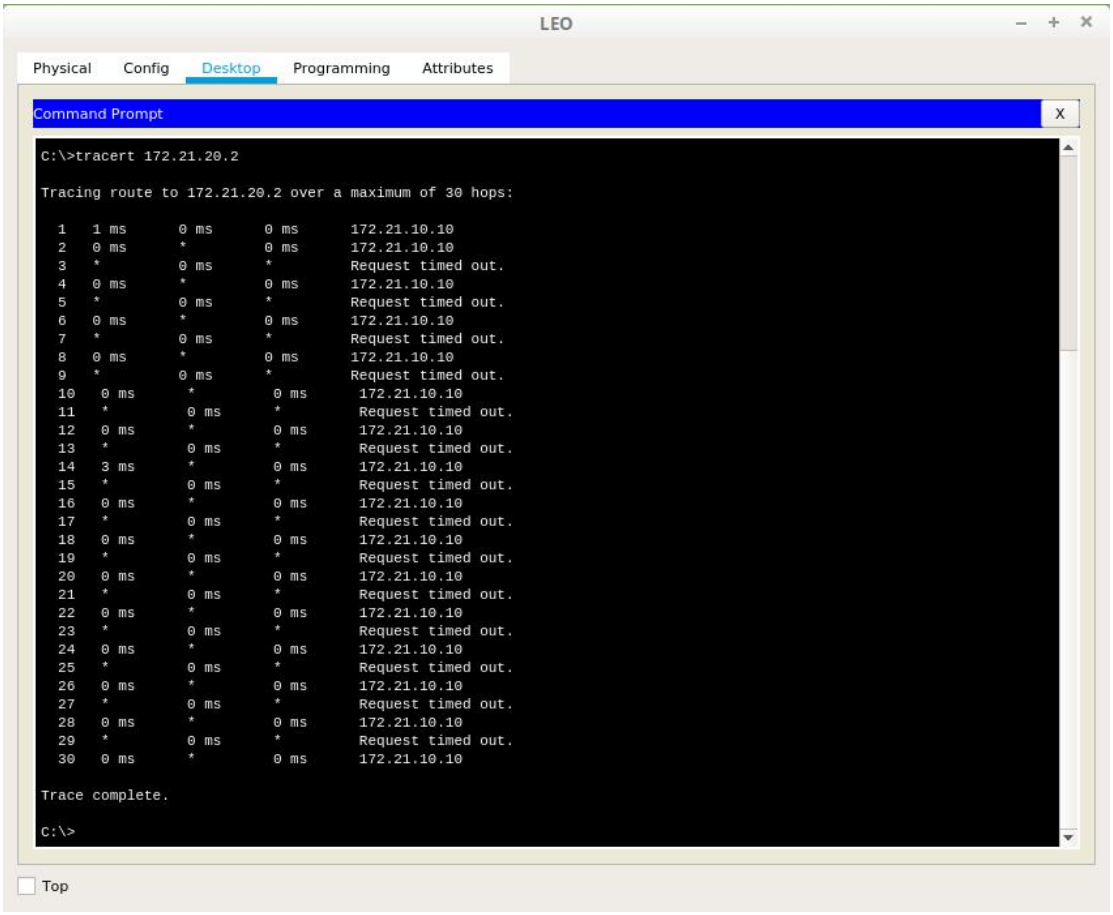
IOS Command Line Interface

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


Router>
Router>
Router>
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>
```

Dari Router Eagle lakukan ping ke alamat interface e0 router Puma



Dari PC Leo lakukan trace ke PC Aries



Dari PC Leo lakukan trace ke alamat interface s0 router Eagle

```
C:\>tracert 172.21.1.1

Tracing route to 172.21.1.1 over a maximum of 30 hops:

  1   1 ms      0 ms      0 ms      172.21.1.1

Trace complete.
```

Pada mode user atau mode privileged, tambahkan route table pada masing-masing router untuk setiap alamat jaringan yang tidak terhubung secara langsung dengan interface router

```
Router(config)#ip route 172.21.20.0 255.255.255.0 172.21.1.2
Router(config)#ip route 172.21.30.0 255.255.255.0 172.21.2.3
Router(config)#
```

```
Router>en
Router#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
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)#
```

```
Router(config)#ip route 172.21.10.0 255.255.255.0 172.21.2.1
Router(config)#ip route 172.21.20.0 255.255.255.0 172.21.3.2
```

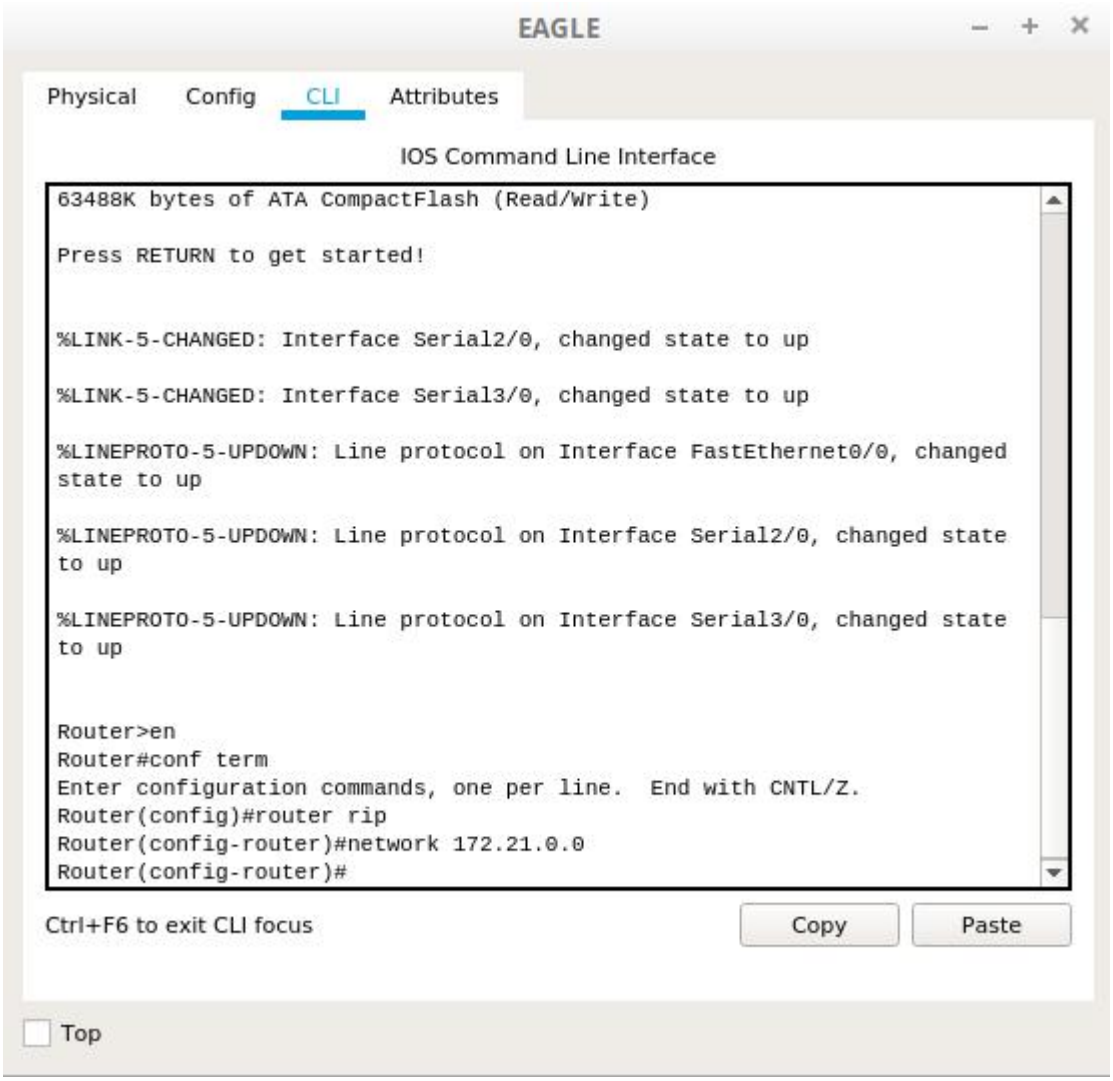
Dari PC Leo lakukan ping ke PC Aries, dan lakukan pula trace dari PC Leo ke Aries

```
C:\>
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=67ms TTL=126
Reply from 172.21.20.2: bytes=32 time=1ms TTL=126
Reply from 172.21.20.2: bytes=32 time=3ms TTL=126
Reply from 172.21.20.2: bytes=32 time=1ms 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 = 67ms, Average = 18ms
```

```
C:\>
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      0 ms      172.21.1.2
  3    3 ms      3 ms      0 ms      172.21.20.2

Trace complete.
```

Kegiatan 2. RIP (Routing Information Protocol)

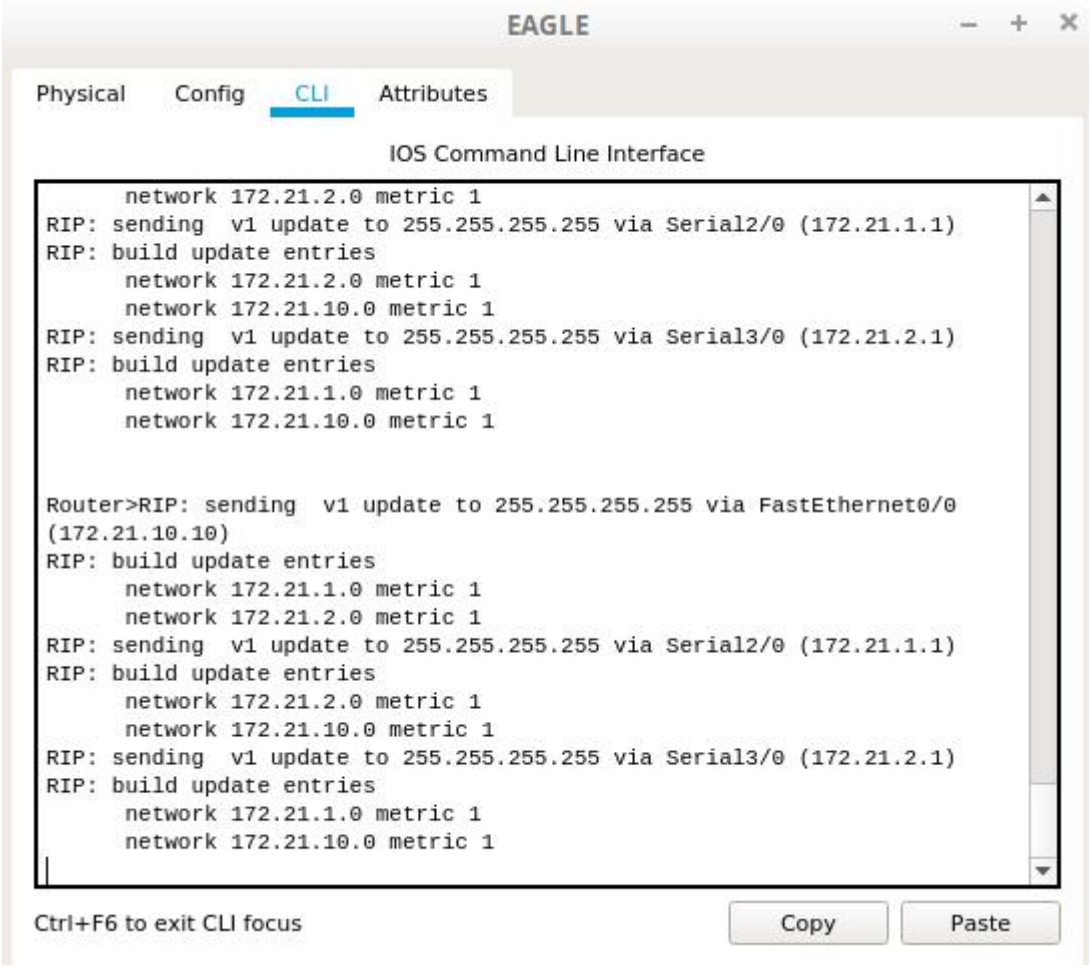
Pada mode configuration, konfigurasi routing RIP pada router Eagle.



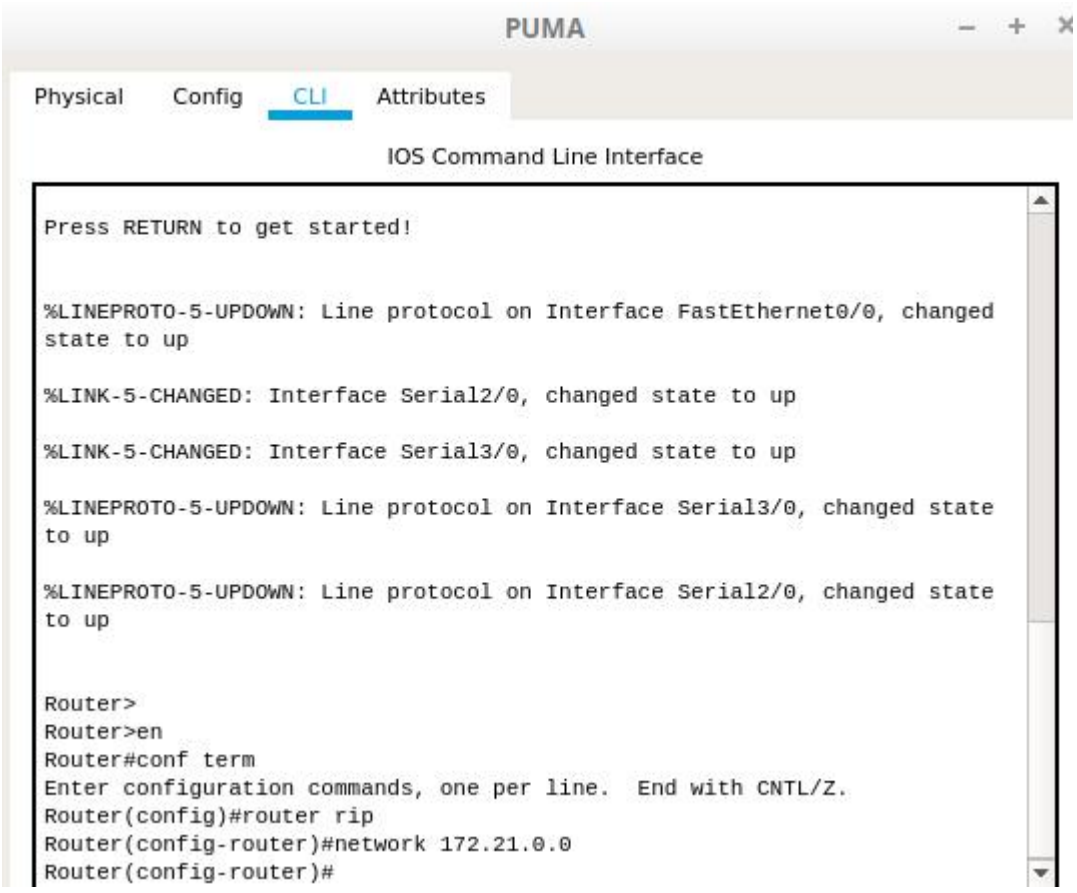
Lihat Konfigurasi routing RIP yang telah dibuat dengan perintah "**show running-config**" pada mode user. Perhatikan konfigurasi pada bagian "router rip".

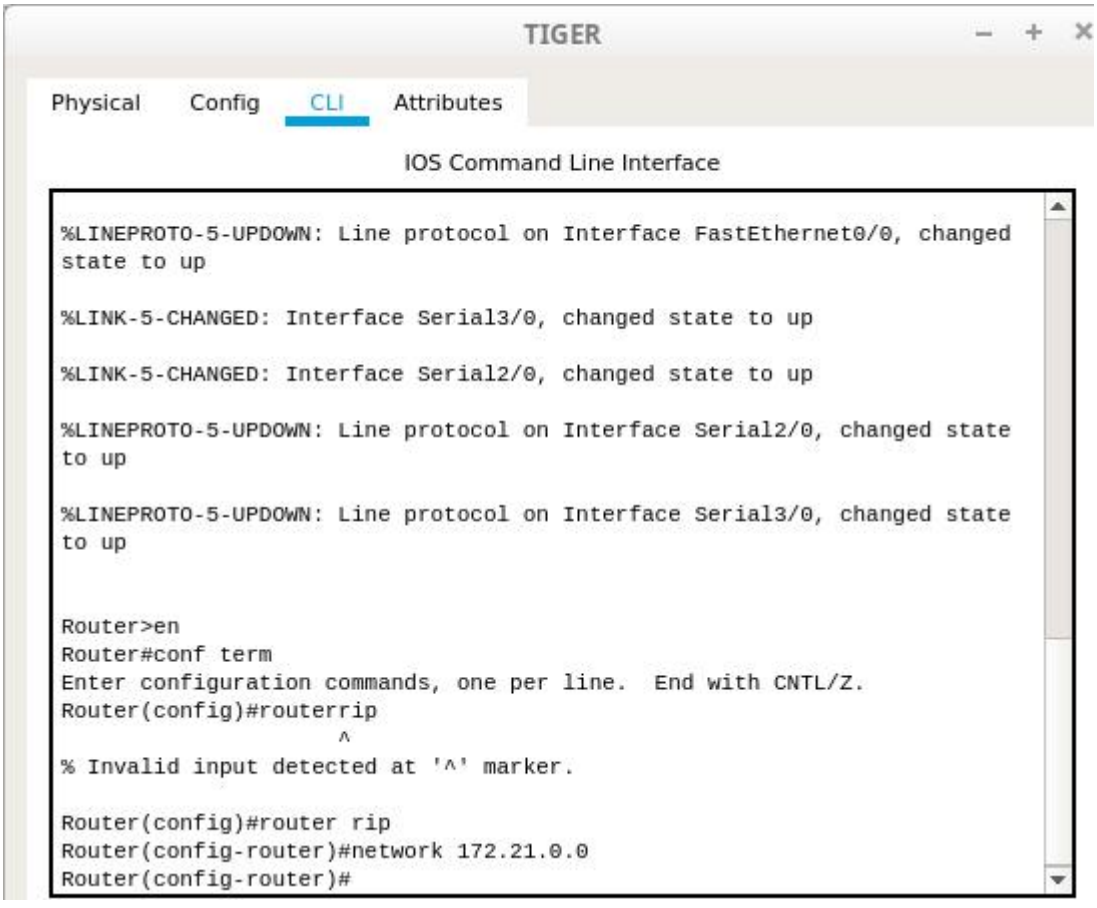
```
Router#show running-config
Building configuration...

Current configuration : 777 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
!
```

Lihat proses update routing RIP pada router eagle dengan perintah “**debug ip rip**” pada mode user. Tunggu beberapa saat untuk melihat proses yang terjadi.

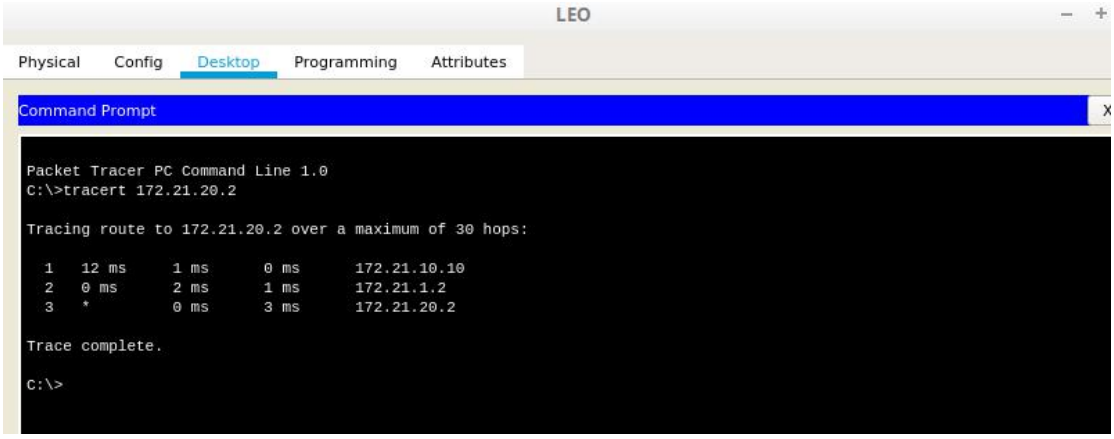


Lakukan konfigurasi routing RIP pada router puma dan tiger. Perhatikan proses update routing RIP pada router eagle ketika konfigurasi router puma dan tiger dilakukan.

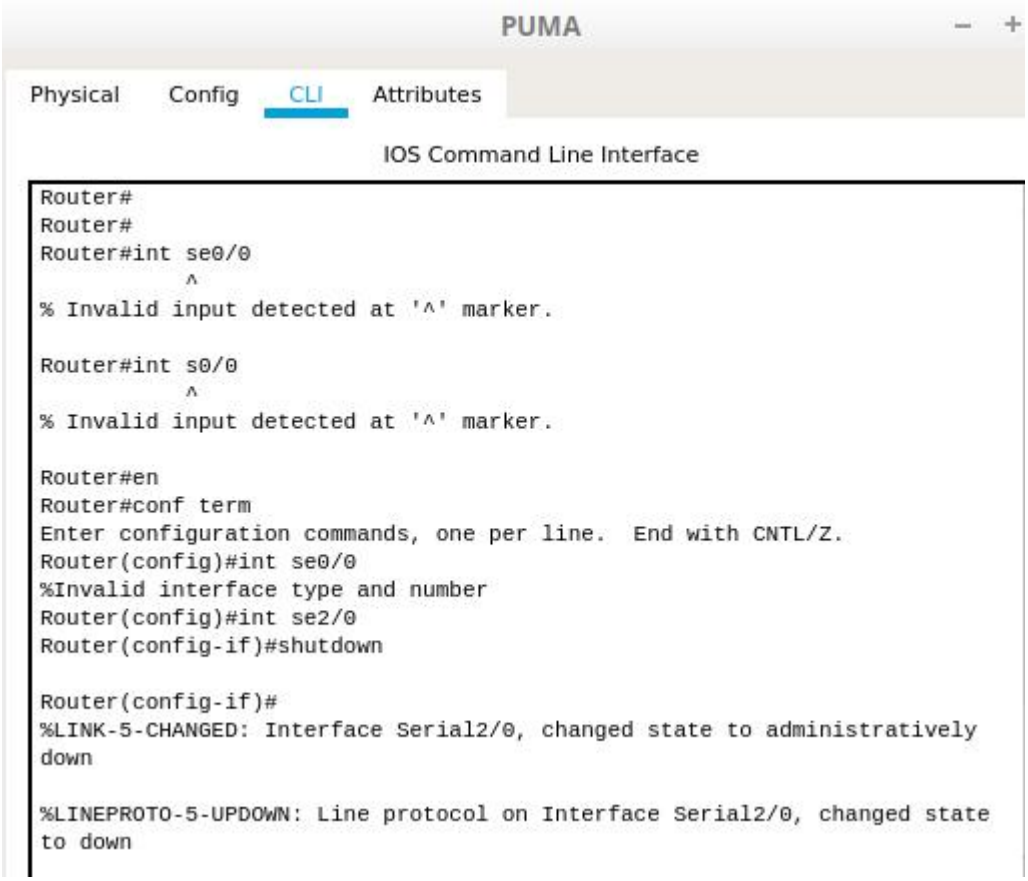

PUMA
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started!
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router>
Router>en
Router#conf term
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)#


TIGER
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
Router>en
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#routerrip
^
% Invalid input detected at '^' marker.
Router(config)#router rip
Router(config-router)#network 172.21.0.0
Router(config-router)#

Dari PC Leo lakukan trace ke PC Aries



Buat hubungan antara router eagle dan puma terputus dan perhatikan proses update routing RIP yang terjadi.

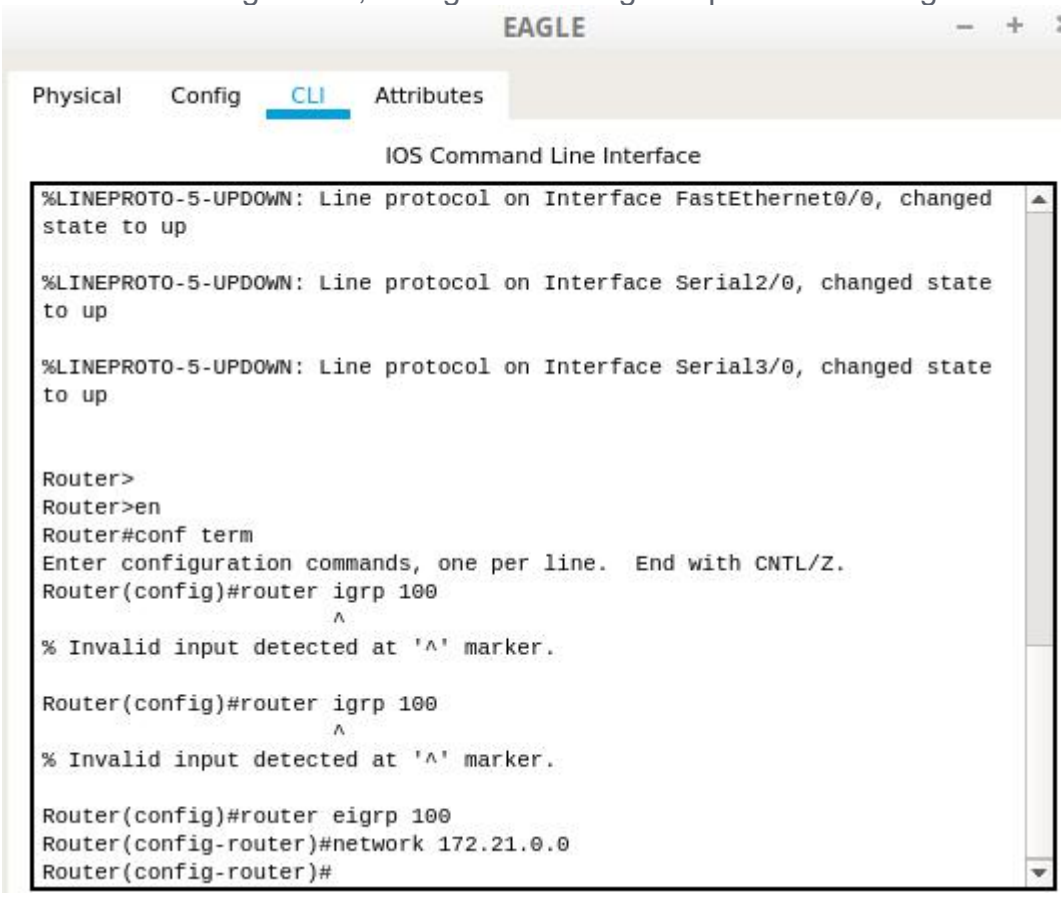


Dari PC Leo lakukan trace ke PC Aries

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

Trace complete.

C:\>
```

Kegiatan 3. IGRP (Internet Gateway Routing Protocol)

Pada mode configuration, konfigurasi routing RIP pada router Eagle



Lihat konfigurasi routing IGRP yang telah dibuat dengan perintah “**show running-config**” pada mode user. Perhatikan konfigurasi pada bagian “router rip”

EAGLE

Physical Config CLI Attributes

IOS Command Line Interface

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

Current configuration : 810 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--
```

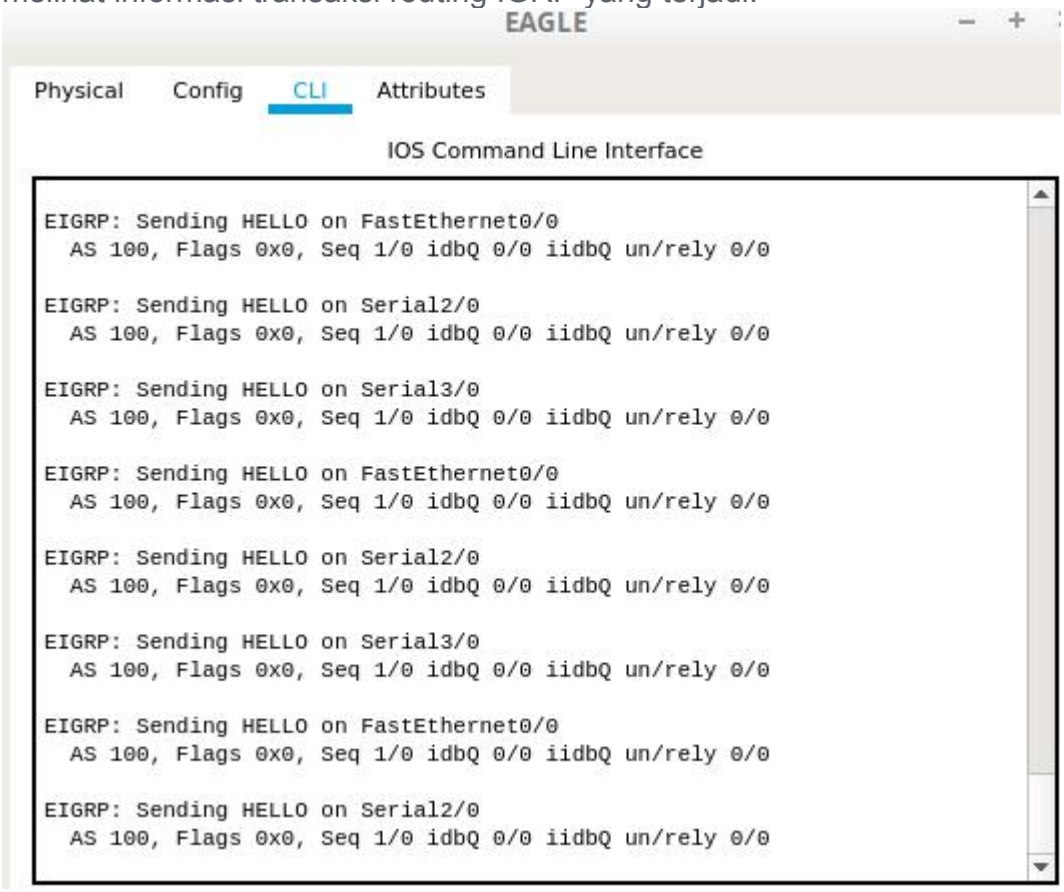
EAGLE

Physical Config CLI Attributes

IOS Command Line Interface

```
!
interface Serial3/0
 ip address 172.21.2.1 255.255.255.0
!
interface FastEthernet4/0
 no ip address
 shutdown
!
interface FastEthernet5/0
 no ip address
 shutdown
!
router eigrp 100
 network 172.21.0.0
 auto-summary
!
router rip
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
```

Lihat proses transaksi routing IGRP pada router eagle dengan perintah "**debug ip igrp transactions**" pada mode user. Tunggu beberapa saat untuk melihat informasi transaksi routing IGRP yang terjadi.



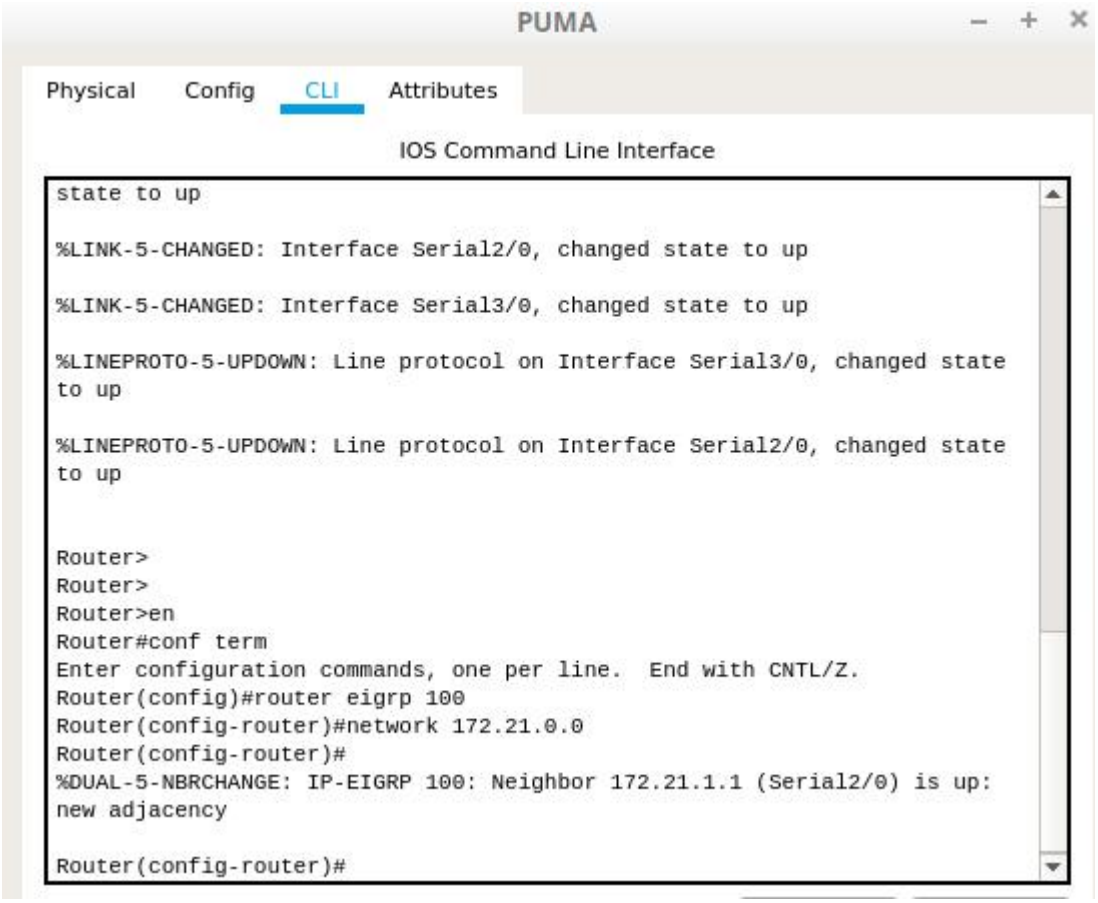
Lihat proses transaksi routing IGRP pada router eagle dengan perintah "**debug ip igrp transactions**" pada mode user. Tunggu beberapa saat untuk melihat informasi transaksi routing IGRP yang terjadi.

Catatan: Hasil tampilan perintah "**debug ip igrp transactions**" memperlihatkan informasi update routing IGRP secara detail. Untuk melihat informasi update routing IGRP secara lebih ringkas digunakan perintah "**debug ip igrp events**" (dengan lebih dahulu menonaktifkan "**debug ip igrp transaction**" dengan perintah "**no debug ip igrp transactions**")

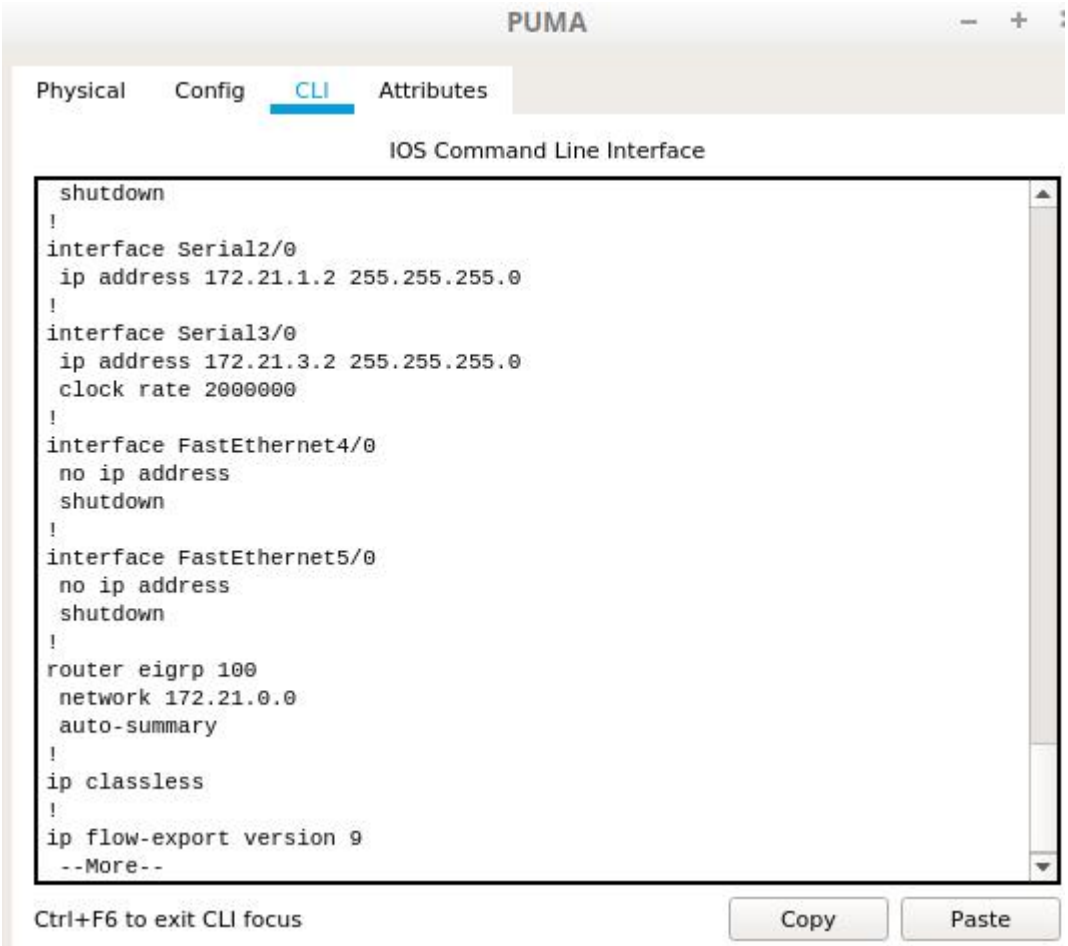
Lakukan konfigurasi ruting IGRP pada router puma dan tiger. Perhatikan proses update routing IGRP pada router eagle (secara detail) ketika konfigurasi router puma dan tiger dilakukan.

Router Puma:

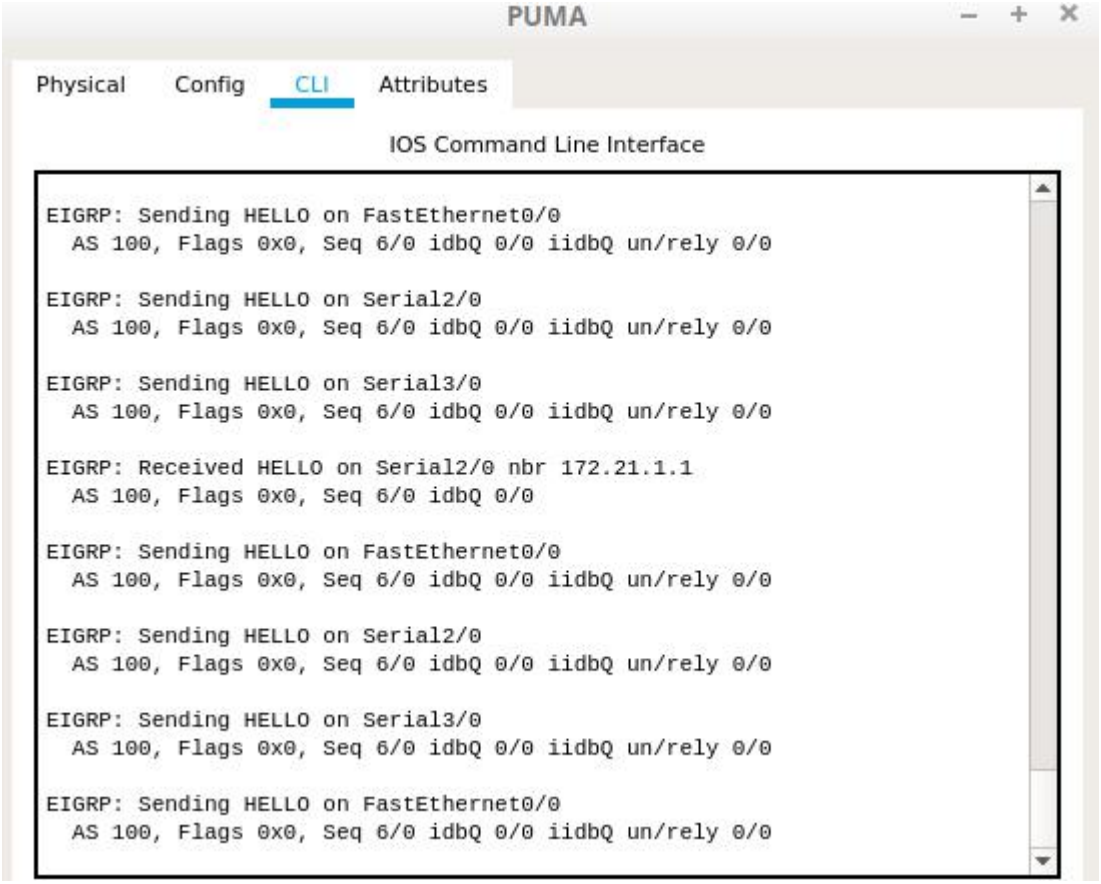
- Konfigurasi routing EIGRP pada router Puma



- Melihat konfigurasi EIGRP yang telah dibuat

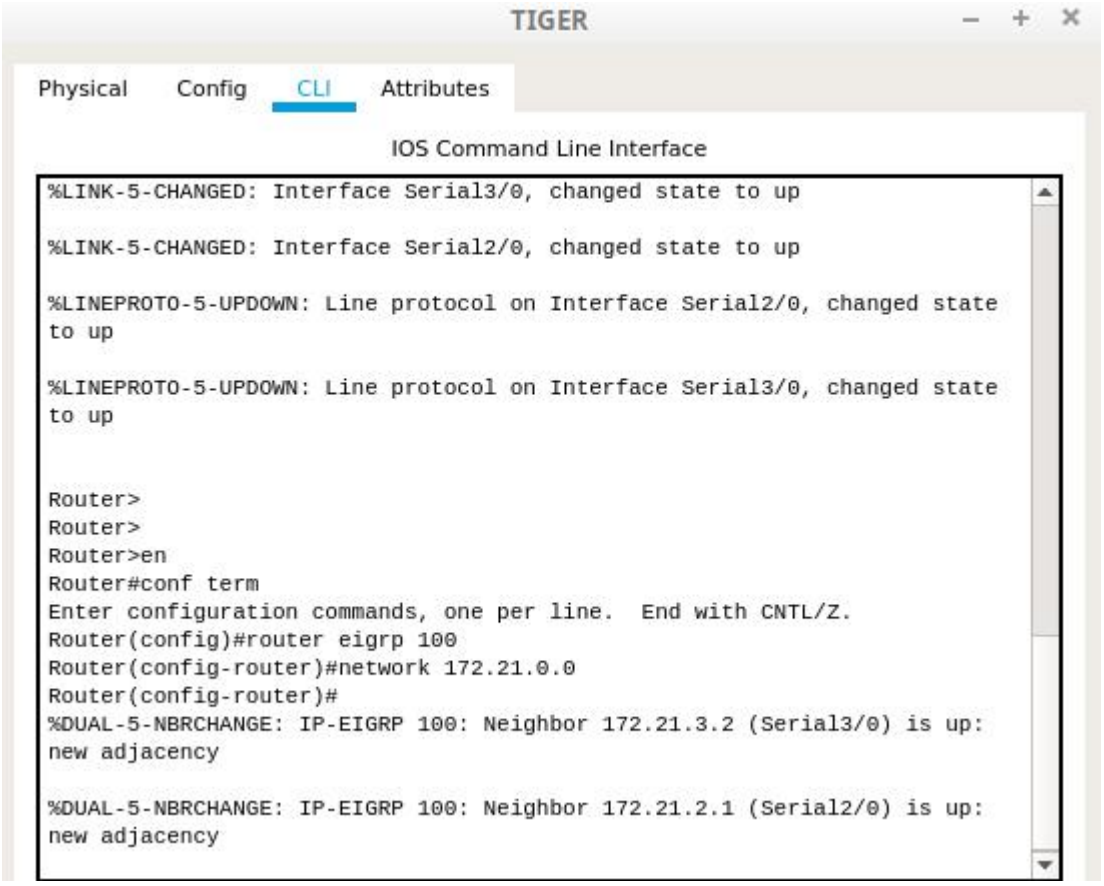


- Melihat proses transaksi routing EIGRP pada router Puma

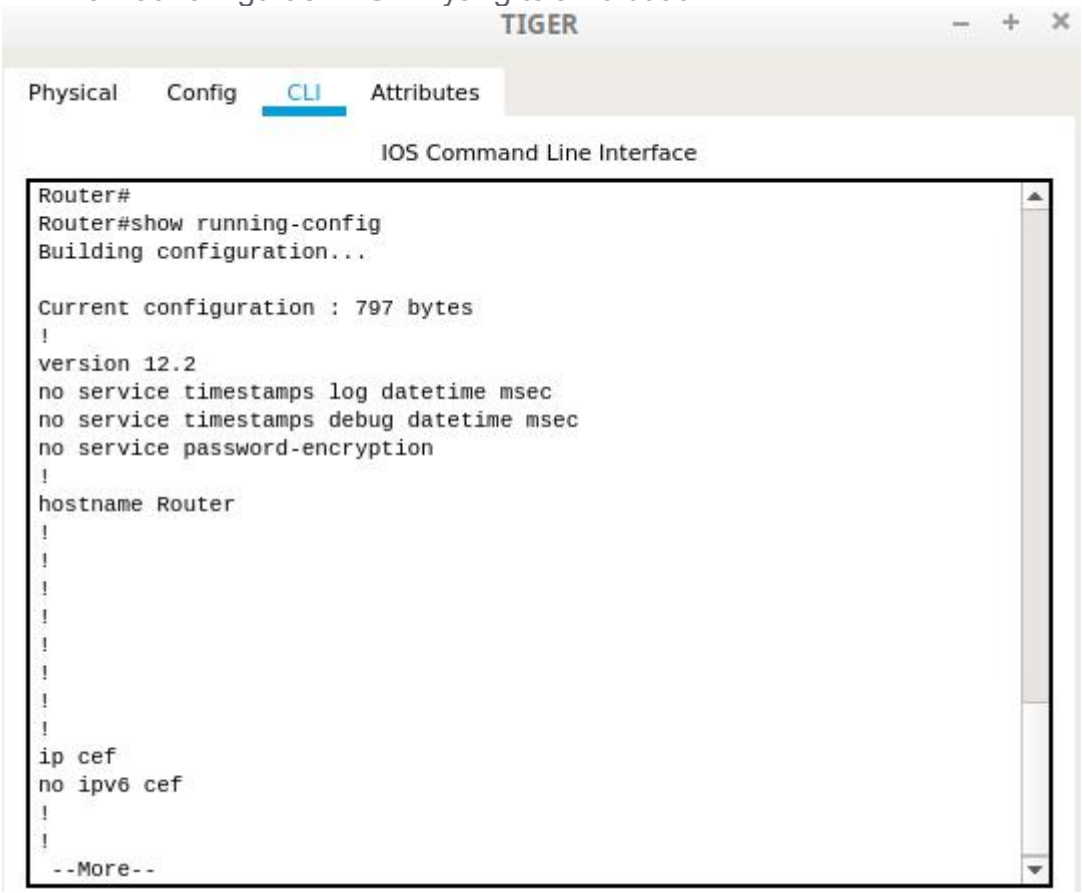


Router Tiger:

- Konfigurasi routing EIGRP pada router Tiger



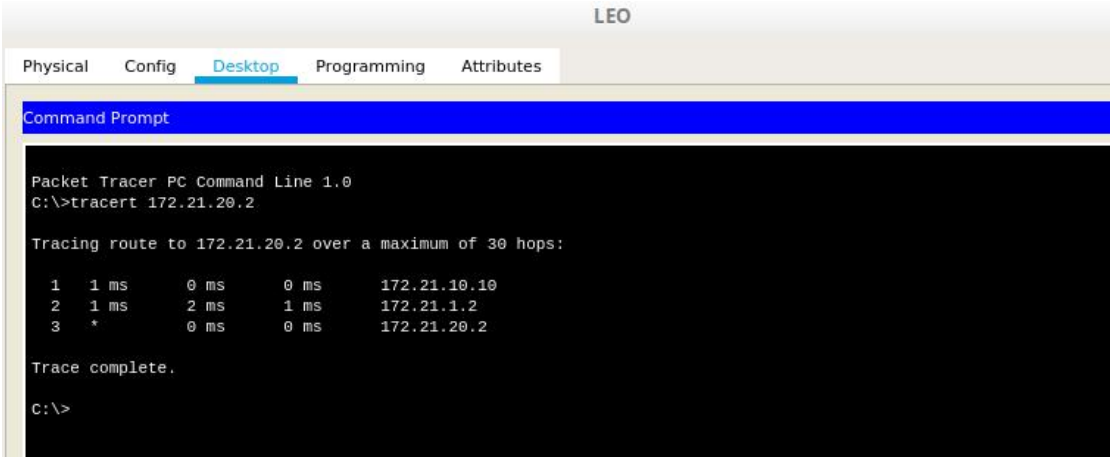
- Melihat konfigurasi EIGRP yang telah dibuat



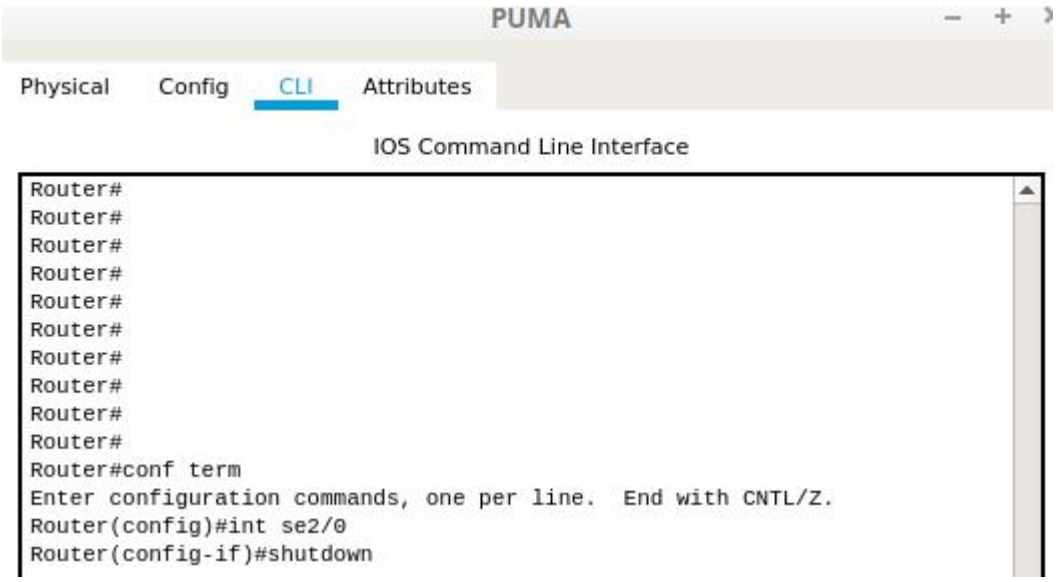
- Melihat proses transaksi routing EIGRP pada router Tiger

```
EIGRP: Sending HELLO on FastEthernet0/0
  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 Serial3/0
  AS 100, Flags 0x0, Seq 11/0 idbQ 0/0 iidbQ un/rely 0/0

EIGRP: Sending HELLO on Serial2/0
  AS 100, Flags 0x0, Seq 11/0 idbQ 0/0 iidbQ un/rely 0/0

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 FastEthernet0/0
  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 Serial3/0
  AS 100, Flags 0x0, Seq 11/0 idbQ 0/0 iidbQ un/rely 0/0
```

Dari PC Leo lakukan trace ke PC Aries



Buat hubungan antara router eagle dan puma terputus dan perhatikan proses update routing RIP yang terjadi



Dari PC Leo lakukan trace ke PC Aries.