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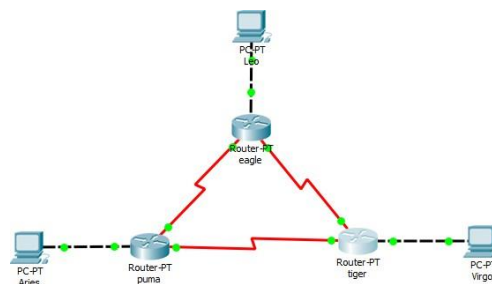
Kelas : C

Modul : 7

Kegiatan 1

Static routing

1. Rancangan Jaringan



2. Show ip route

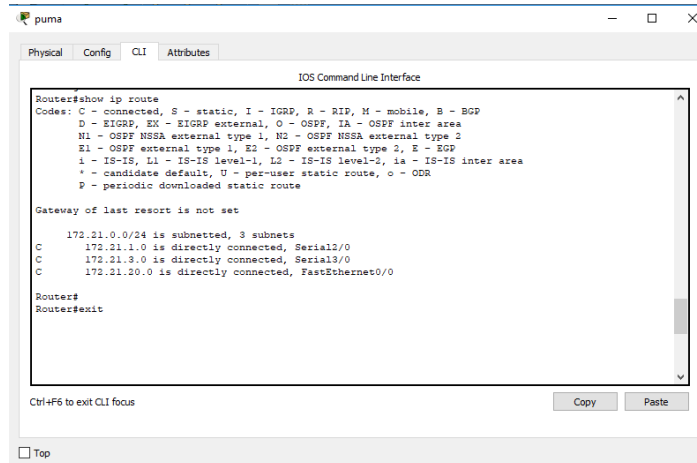
eagle

```
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

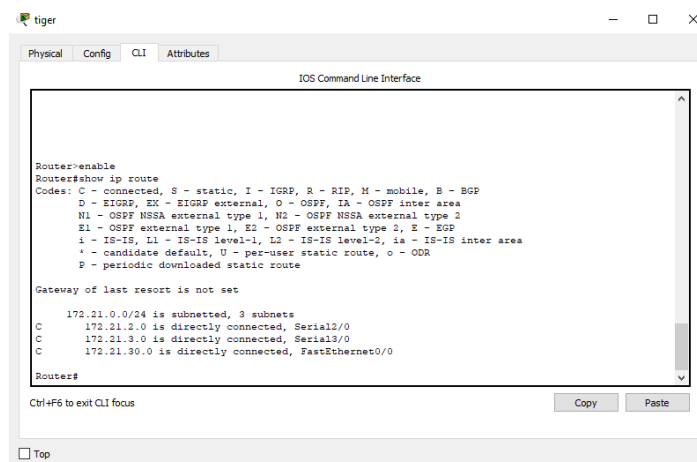
172.21.0.0/24 is subnetted, 3 subnets
C       172.21.1.0 is directly connected, Serial2/0
C       172.21.2.0 is directly connected, Serial3/0
C       172.21.10.0 is directly connected, FastEthernet0/0
Router#exit
```

puma



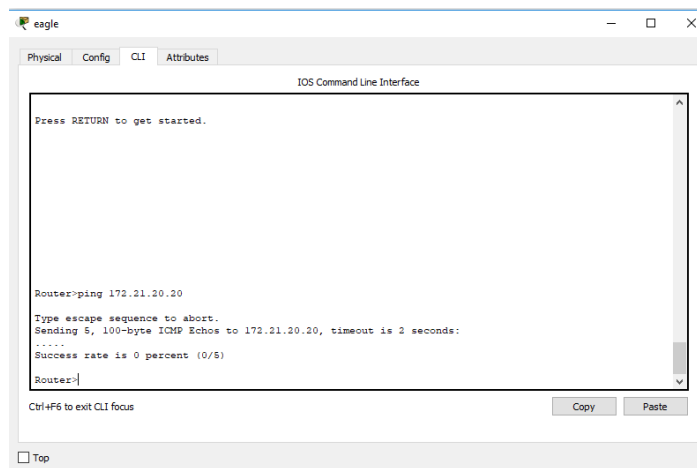
The screenshot shows the puma router's CLI interface. The command 'show ip route' has been executed, displaying the routing table. The output includes a legend for route codes (C, S, I, R, M, B, D, N1, N2, E1, E2, I1, I2, I3, I4, I5, I6, I7, I8, I9, I10, I11, I12, I13, I14, I15, I16, I17, I18, I19, I20, I21, I22, I23, I24, I25, I26, I27, I28, I29, I30, I31, I32, I33, I34, I35, I36, I37, I38, I39, I40, I41, I42, I43, I44, I45, I46, I47, I48, I49, I50, I51, I52, I53, I54, I55, I56, I57, I58, I59, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69, I70, I71, I72, I73, I74, I75, I76, I77, I78, I79, I80, I81, I82, I83, I84, I85, I86, I87, I88, I89, I90, I91, I92, I93, I94, I95, I96, I97, I98, I99, I100), a list of connected routes (172.21.0.0/24, 172.21.1.0, 172.21.3.0, 172.21.20.0), and a message indicating that the gateway of last resort is not set. The prompt 'Router#' is visible at the bottom.

tiger



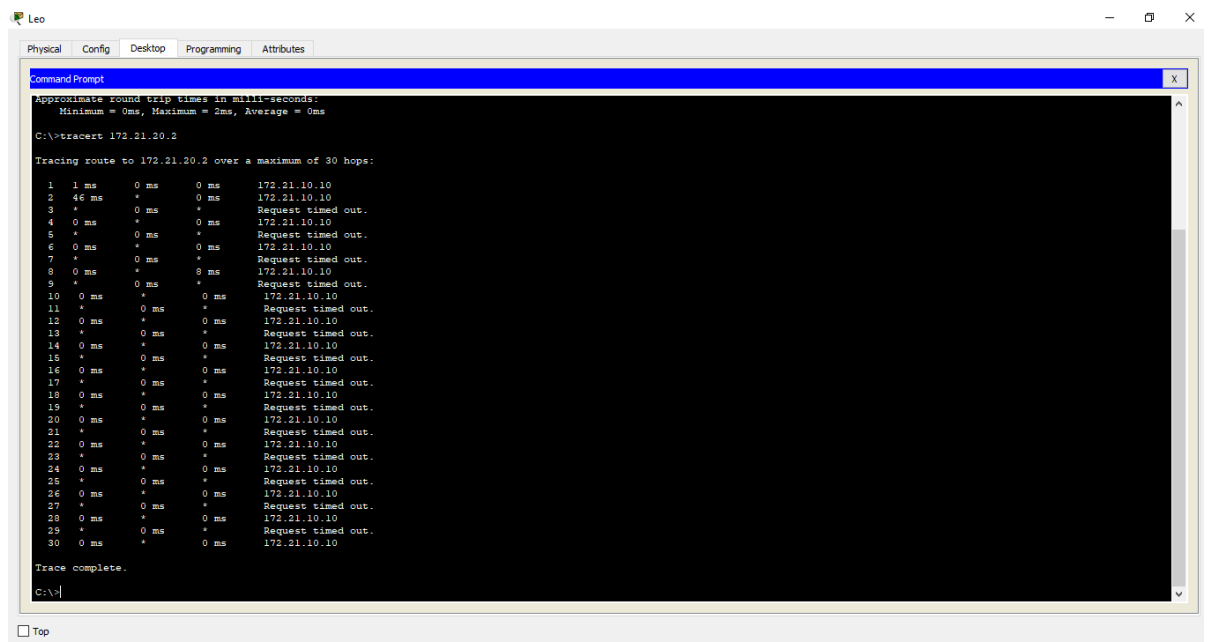
The screenshot shows the tiger router's CLI interface. The command 'show ip route' has been executed, displaying the routing table. The output includes a legend for route codes (C, S, I, R, M, B, D, N1, N2, E1, E2, I1, I2, I3, I4, I5, I6, I7, I8, I9, I10, I11, I12, I13, I14, I15, I16, I17, I18, I19, I20, I21, I22, I23, I24, I25, I26, I27, I28, I29, I30, I31, I32, I33, I34, I35, I36, I37, I38, I39, I40, I41, I42, I43, I44, I45, I46, I47, I48, I49, I50, I51, I52, I53, I54, I55, I56, I57, I58, I59, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69, I70, I71, I72, I73, I74, I75, I76, I77, I78, I79, I80, I81, I82, I83, I84, I85, I86, I87, I88, I89, I90, I91, I92, I93, I94, I95, I96, I97, I98, I99, I100), a list of connected routes (172.21.0.0/24, 172.21.2.0, 172.21.3.0, 172.21.20.0), and a message indicating that the gateway of last resort is not set. The prompt 'Router#' is visible at the bottom.

3. Melakukan ping dari router eagle ke router puma



The screenshot shows the eagle router's CLI interface. The command 'ping 172.21.20.20' has been executed, displaying the results of the ping test. The output indicates that the gateway of last resort is not set, and the ping test is in progress. The prompt 'Router#' is visible at the bottom.

4. Lakukan trace dari PC leo ke PC aries

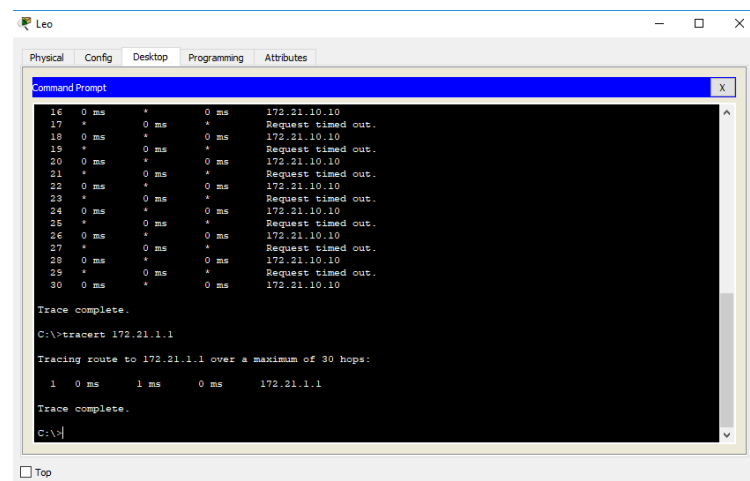


```
Leo
Physical Config Desktop Programming Attributes
Command Prompt
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 2ms, Average = 0ms
C:\>tracert 172.21.20.2

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  *  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  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

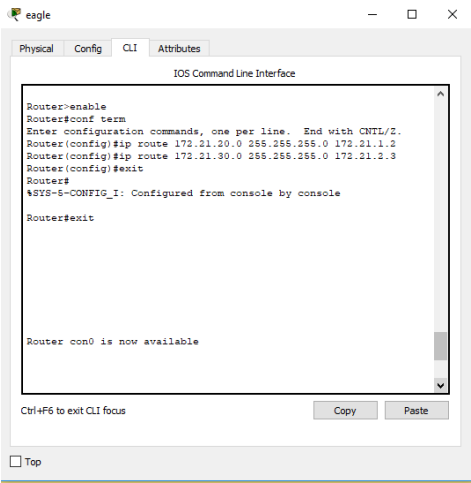
Trace complete.
C:\>tracert 172.21.1.1

Tracing route to 172.21.1.1 over a maximum of 30 hops:
  0  0 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 hob dan network pada router

6. Konfigurasi static routing pada masing masing router Eagle

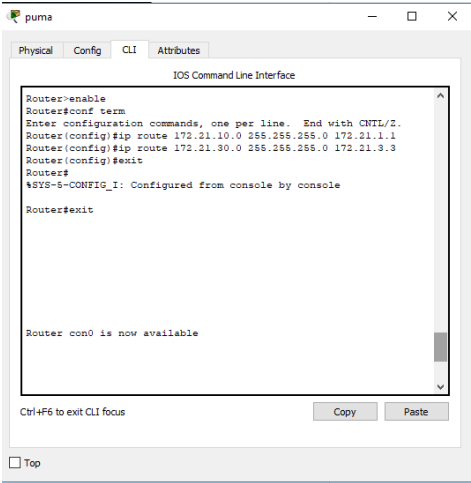


The screenshot shows the 'CLI' tab of the Eagle router configuration window. The terminal displays the following commands and output:

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
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)#exit
Router#
*SYS-6-CONFIG_I: Configured from console by console
Router#exit
```

Below the terminal, it says 'Router con0 is now available'. At the bottom, there are 'Copy' and 'Paste' buttons, and a 'Top' button.

Puma

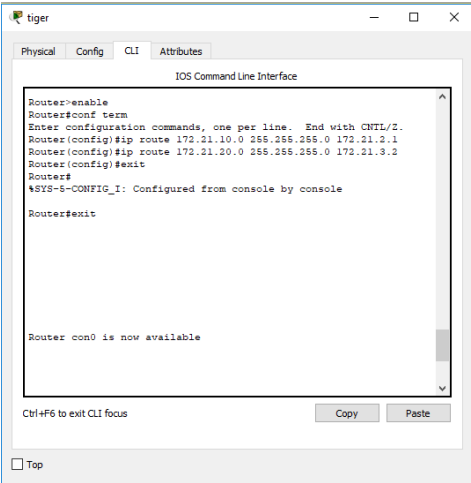


The screenshot shows the 'CLI' tab of the Puma router configuration window. The terminal displays the following commands and output:

```
Router>enable
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)#exit
Router#
*SYS-6-CONFIG_I: Configured from console by console
Router#exit
```

Below the terminal, it says 'Router con0 is now available'. At the bottom, there are 'Copy' and 'Paste' buttons, and a 'Top' button.

Tiger

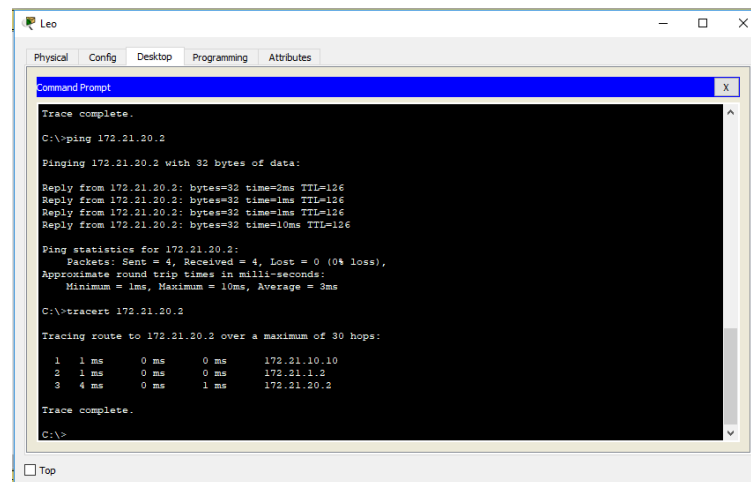


The screenshot shows the 'CLI' tab of the Tiger router configuration window. The terminal displays the following commands and output:

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 172.21.10.0 255.255.255.0 172.21.2.1
Router(config)#ip route 172.21.20.0 255.255.255.0 172.21.3.2
Router(config)#exit
Router#
*SYS-6-CONFIG_I: Configured from console by console
Router#exit
```

Below the terminal, it says 'Router con0 is now available'. At the bottom, there are 'Copy' and 'Paste' buttons, and a 'Top' button.

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=2ms 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:

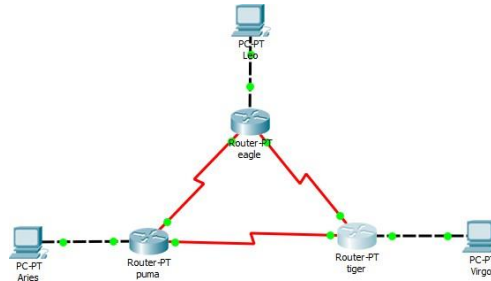
  0  0 ms     0 ms     0 ms     172.21.10.10
  1  1 ms     4 ms    13 ms    172.21.1.2
  2  13 ms    3 ms    10 ms    172.21.20.2

Trace complete.
C:\>
```

Kegiatan 2

RIP(Routing Information Protocol)

1. Rancangan Jaringan



2. Nomor alamat jaringan pada konfigurasi routing RIP

```
eagle
Physical Config CLI Attributes
IOS Command Line Interface
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 route 172.21.20.0 255.255.255.0 172.21.1.2
ip route 172.21.30.0 255.255.255.0 172.21.2.3
!
```

Nomor alamat route RIP adalah 172.21.0.0

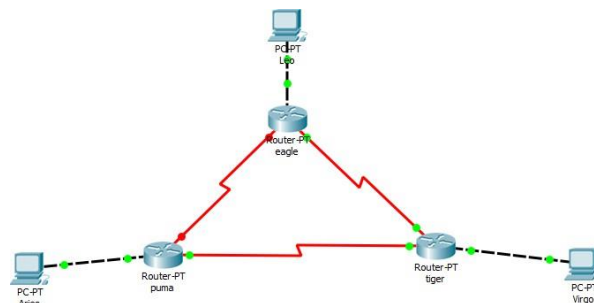
3. Melakukan perintah “debug ip rip” pada route eagle

```
Router#
Router#debug ip rip
RIP protocol debugging is on
Router#
```

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

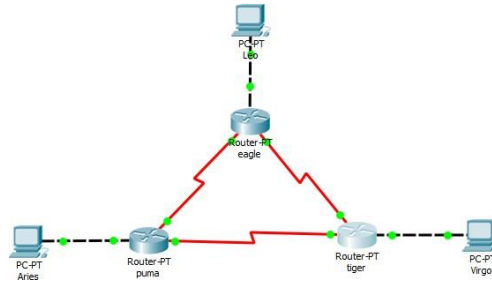


```
Leo
Physical Config Desktop Programming Attributes
Command Prompt
C:\>tracert 172.21.20.2
Tracing route to 172.21.20.2 over a maximum of 30 hops:
  1  0 ms  0 ms  0 ms  172.21.10.10
  2  0 ms  *      0 ms  172.21.10.10
  3  *      0 ms  *      Request timed out.
  4  0 ms  *      0 ms  172.21.10.10
  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

EIGRP

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 iadbQ un/rely 0/0

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

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

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

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

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

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

EIGRP: Sending HELLO on FastEthernet0/0
AS 100, Flags 0x0, Seq 1/0 idbQ 0/0 iadbQ 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 igrp 100
Router(config-router)#network 172.21.0.0
Router(config-router)#
%DUAL-5-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.

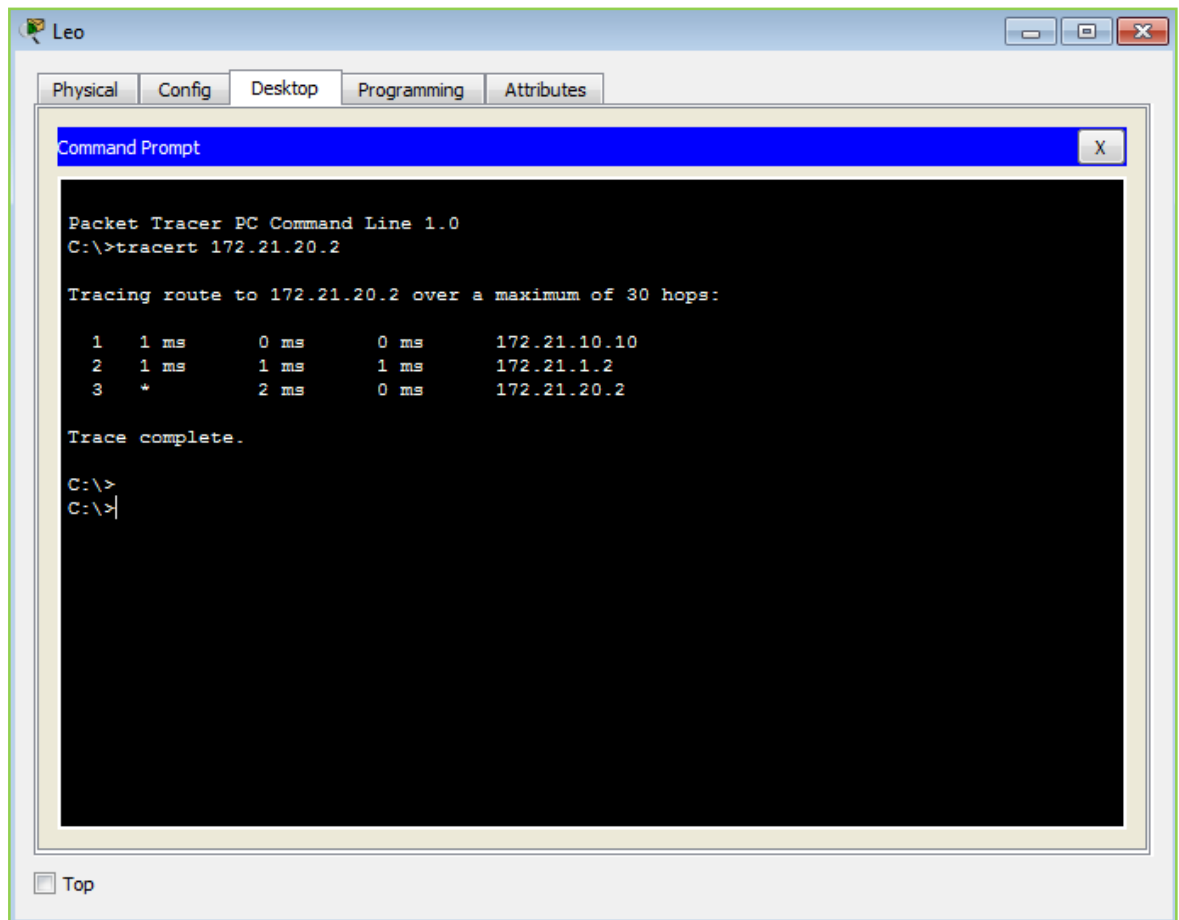
```
Router#debug eigrp packets
EIGRP Packets debugging is on
(UPDATE, REQUEST, QUERY, REPLY, HELLO, ACK )
Router#
EIGRP: Received HELLO on Serial2/0 nbr 172.21.2.1
      AS 100, Flags 0x0, Seq 9/0 idbQ 0/0

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:\>|
```