

LAPORAN
PRAKTIKUM JARINGAN DAN KOMPUTER
(MODUL 11)
“PERANCANGAN JARINGAN LABORATORIUM SEDERHANA
MENGGUNAKAN PACKET TRACER”



Disusun oleh :

NAMA : CINDI DILA APRILIANA

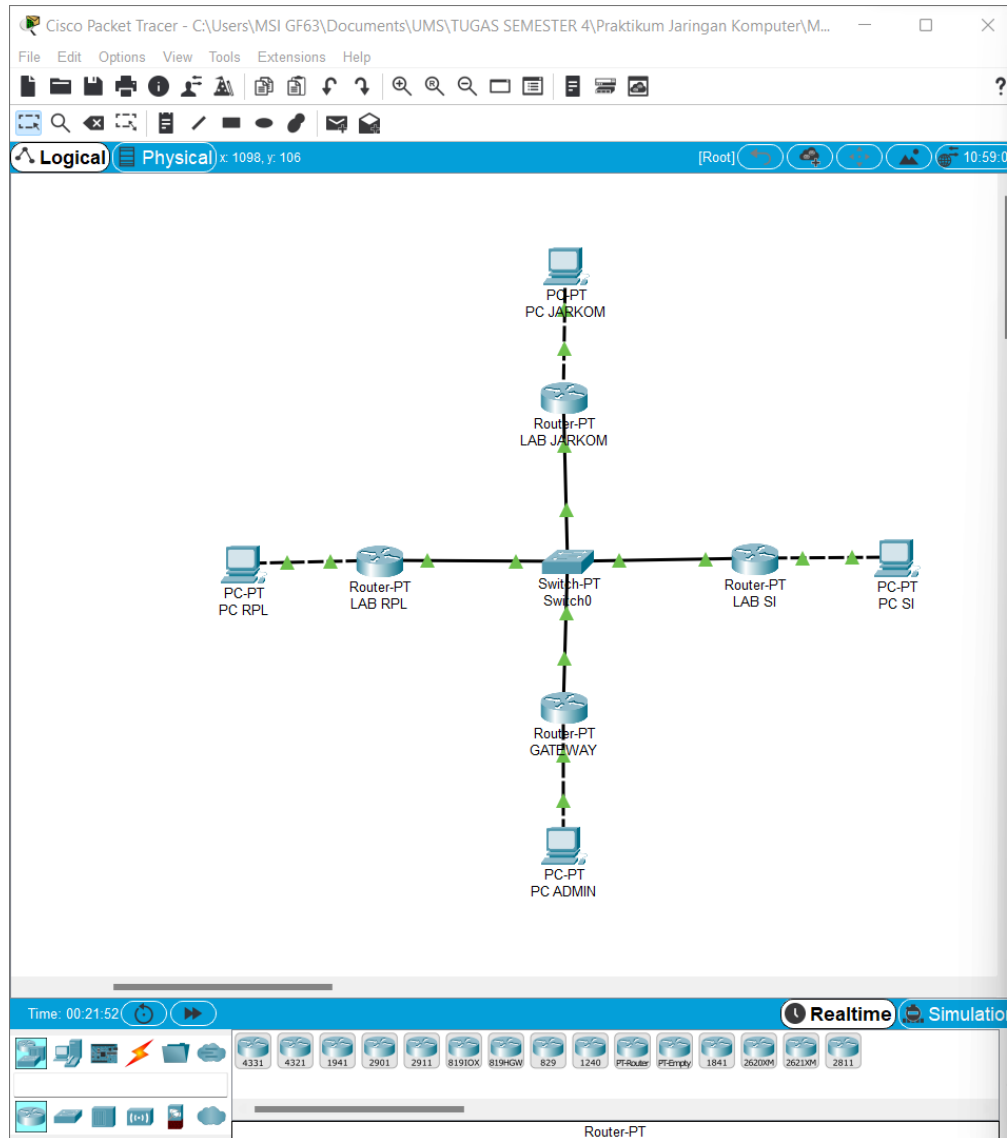
NIM : L200200106

KELAS : C

INFORMATIKA
FAKULTAS KOMUNIKASI DAN INFORMATIKA
UNIVERSITAS MUHAMMADIYAH SURAKARTA
TAHUN 2021/2022

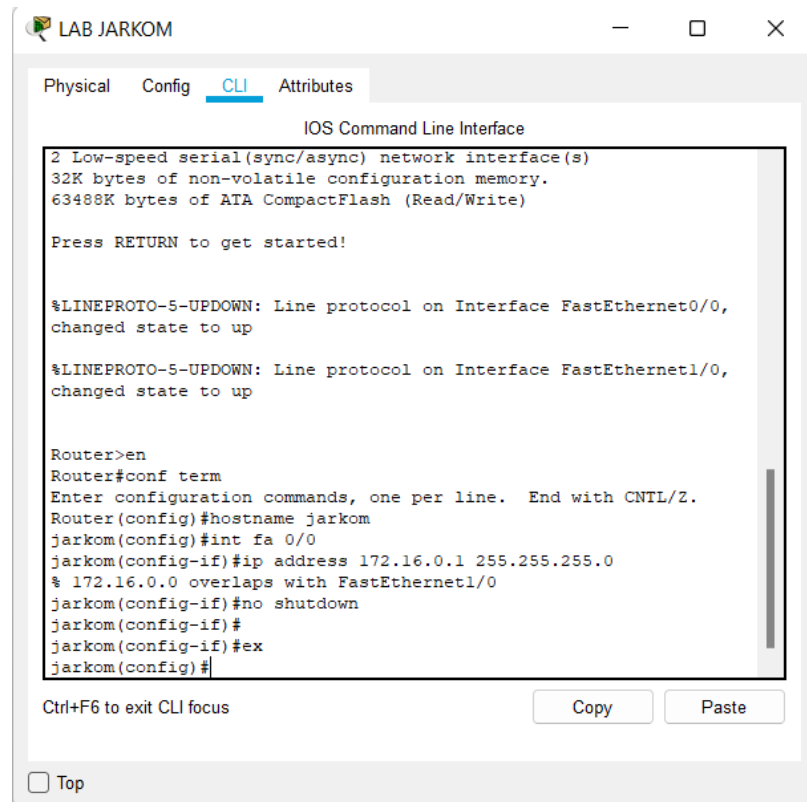
Kegiatan Praktikum

1. Desain Jaringan

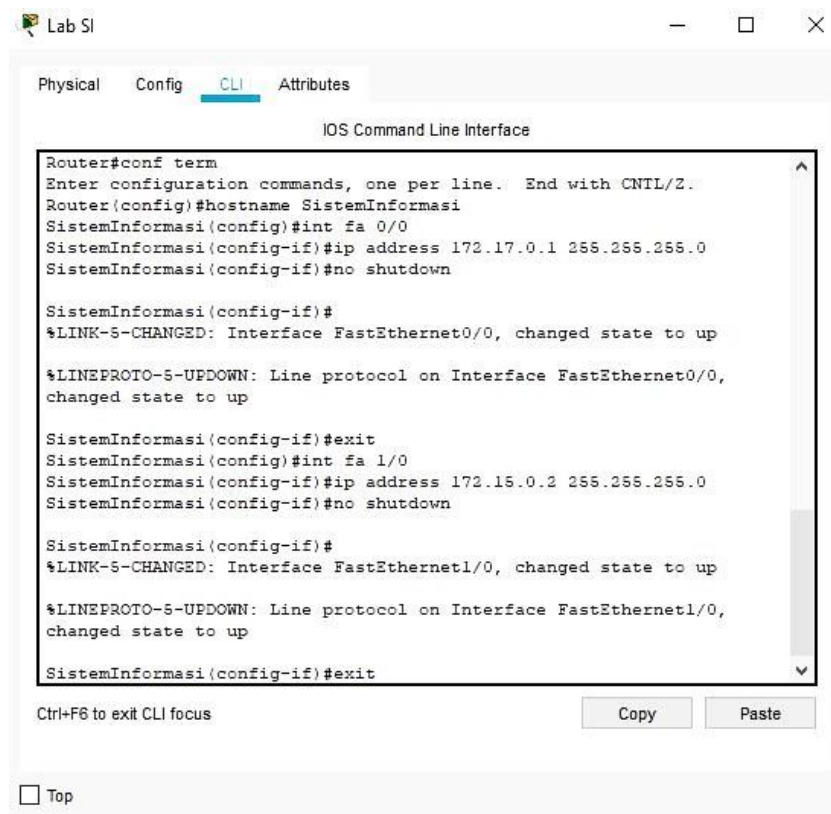


2. Konfigurasi router

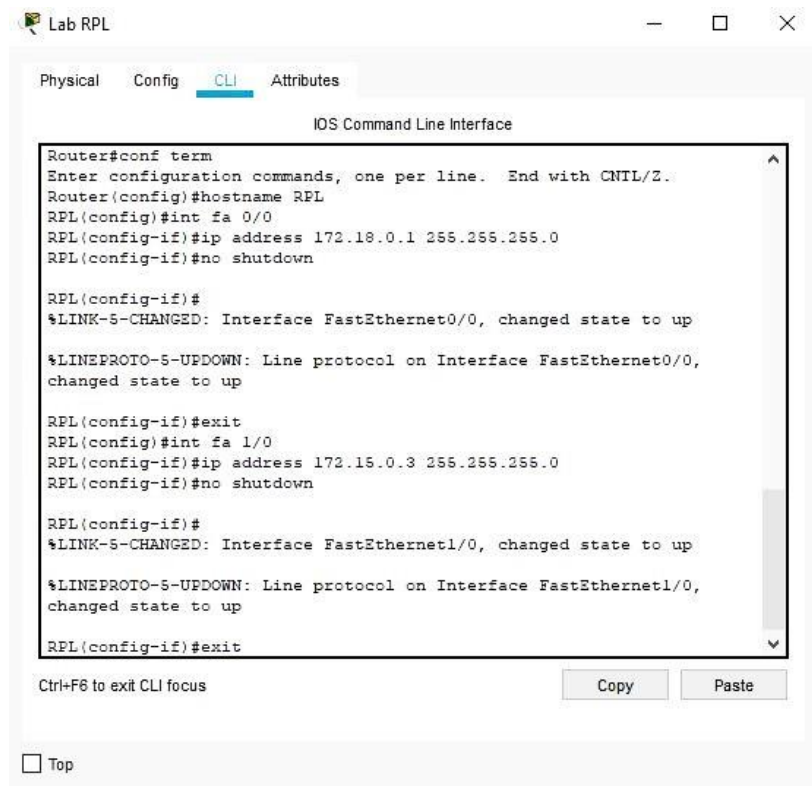
- Router 1



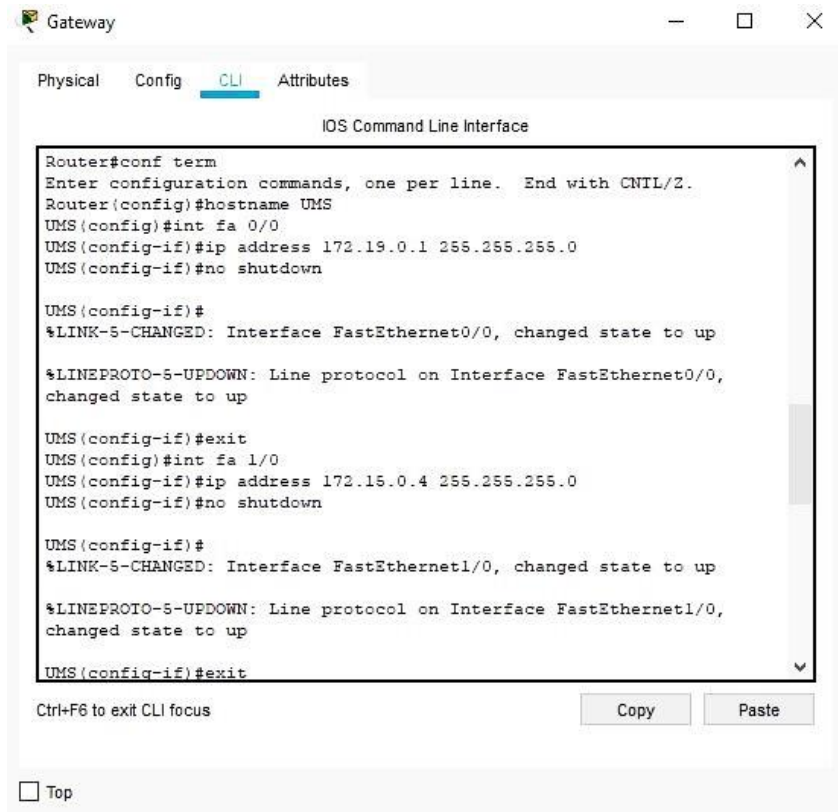
- Router 2



- Router 3

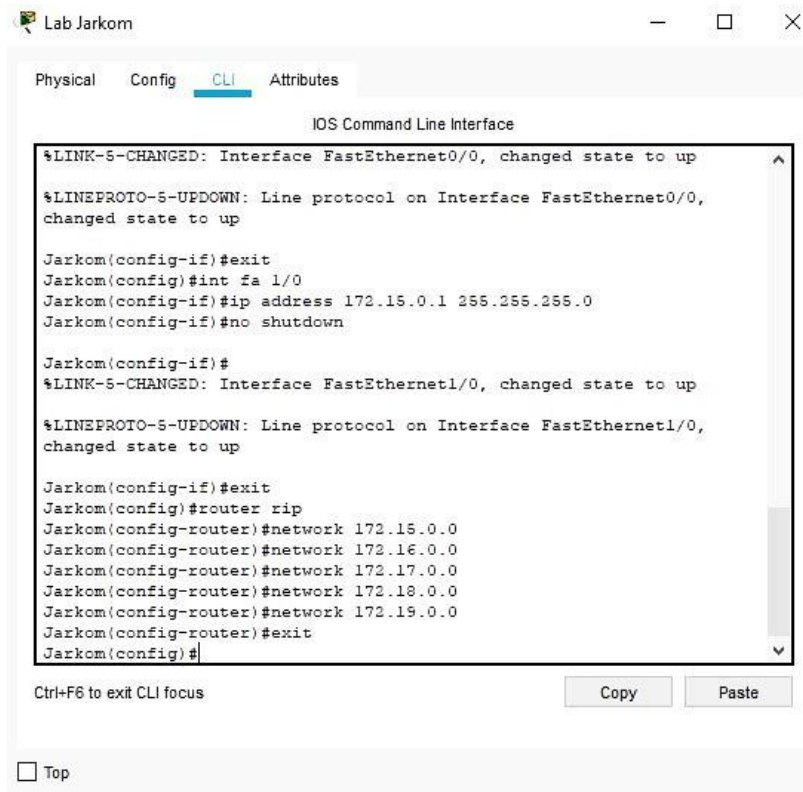


- Router 4



3. Konfigurasi routing table pada 4 router

- Membuat Routing Table pada router1 / Jarkom



The screenshot shows the CLI window for 'Lab Jarkom'. The 'CLI' tab is selected. The window displays the following commands and their outputs:

```
IOS Command Line Interface

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

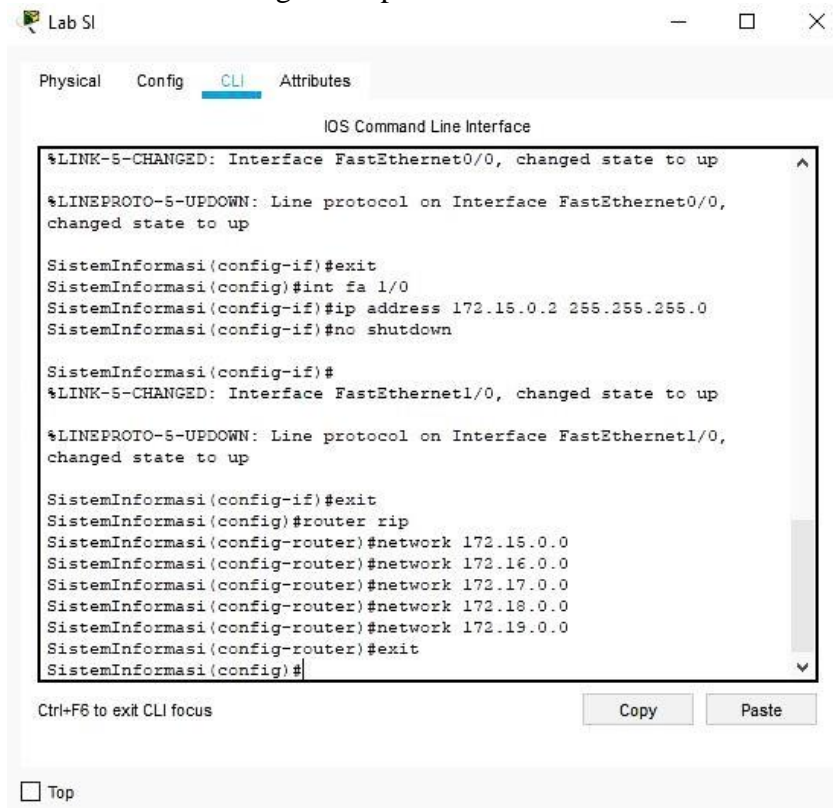
Jarkom(config-if)#exit
Jarkom(config)#int fa 1/0
Jarkom(config-if)#ip address 172.15.0.1 255.255.255.0
Jarkom(config-if)#no shutdown

Jarkom(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up

Jarkom(config-if)#exit
Jarkom(config)#router rip
Jarkom(config-router)#network 172.15.0.0
Jarkom(config-router)#network 172.16.0.0
Jarkom(config-router)#network 172.17.0.0
Jarkom(config-router)#network 172.18.0.0
Jarkom(config-router)#network 172.19.0.0
Jarkom(config-router)#exit
Jarkom(config)#
```

At the bottom of the window, there is a 'Top' button and a 'Copy' button.

- Membuat Routing Table pada router2 / SistemInformasi



The screenshot shows the CLI window for 'Lab SI'. The 'CLI' tab is selected. The window displays the following commands and their outputs:

```
IOS Command Line Interface

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

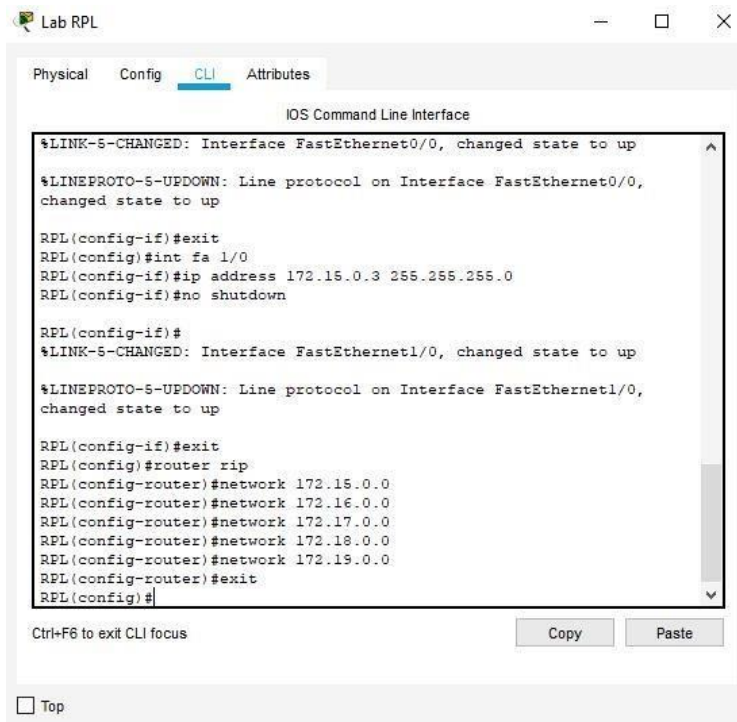
SistemInformasi(config-if)#exit
SistemInformasi(config)#int fa 1/0
SistemInformasi(config-if)#ip address 172.15.0.2 255.255.255.0
SistemInformasi(config-if)#no shutdown

SistemInformasi(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up

SistemInformasi(config-if)#exit
SistemInformasi(config)#router rip
SistemInformasi(config-router)#network 172.15.0.0
SistemInformasi(config-router)#network 172.16.0.0
SistemInformasi(config-router)#network 172.17.0.0
SistemInformasi(config-router)#network 172.18.0.0
SistemInformasi(config-router)#network 172.19.0.0
SistemInformasi(config-router)#exit
SistemInformasi(config)#
```

At the bottom of the window, there is a 'Top' button and a 'Copy' button.

- Membuat Routing Table pada router3 / RPL



Lab RPL

Physical Config **CLI** Attributes

IOS Command Line Interface

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

RPL(config-if)#exit
RPL(config)#int fa 1/0
RPL(config-if)#ip address 172.16.0.3 255.255.255.0
RPL(config-if)#no shutdown

RPL(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up

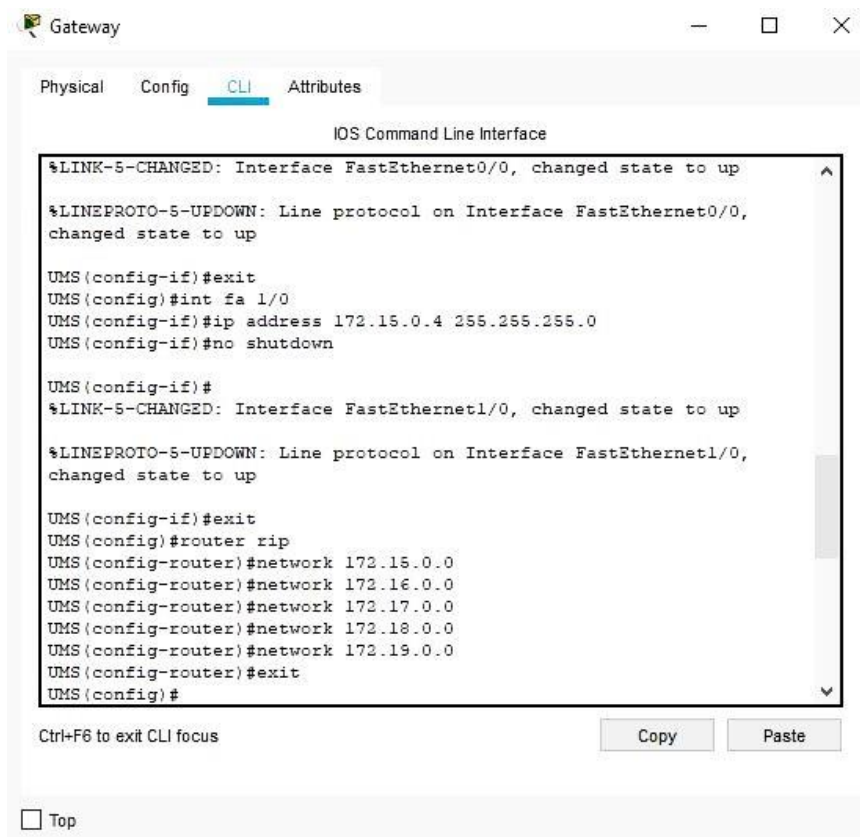
RPL(config-if)#exit
RPL(config)#router rip
RPL(config-router)#network 172.16.0.0
RPL(config-router)#network 172.16.0.0
RPL(config-router)#network 172.17.0.0
RPL(config-router)#network 172.18.0.0
RPL(config-router)#network 172.19.0.0
RPL(config-router)#exit
RPL(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

- Membuat Routing Table pada router4 / gateway UMS



Gateway

Physical Config **CLI** Attributes

IOS Command Line Interface

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

UMS(config-if)#exit
UMS(config)#int fa 1/0
UMS(config-if)#ip address 172.16.0.4 255.255.255.0
UMS(config-if)#no shutdown

UMS(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up

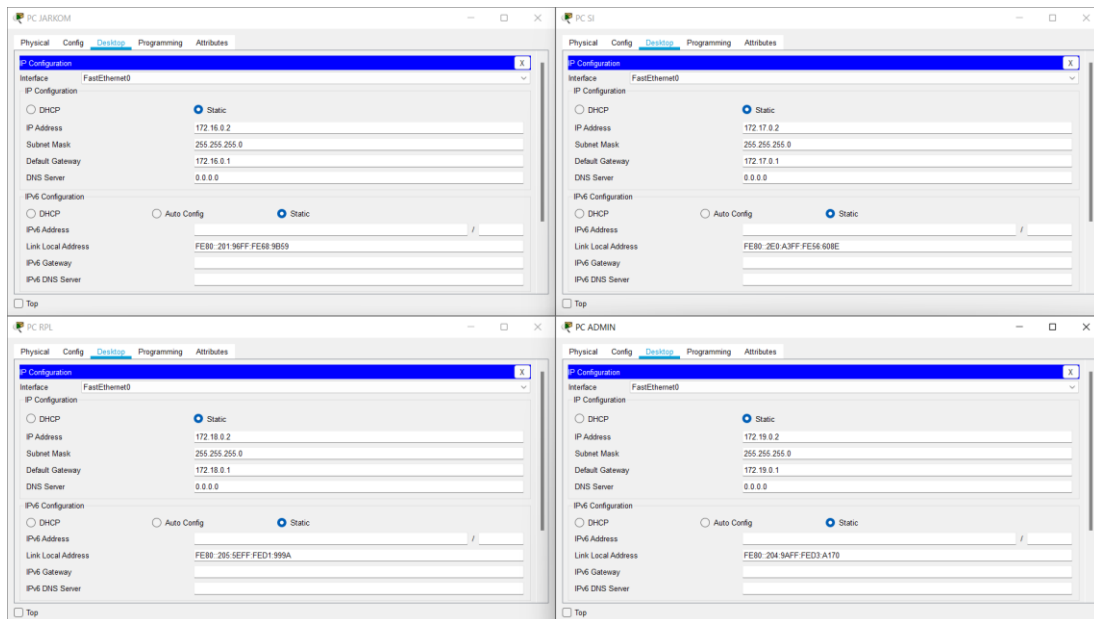
UMS(config-if)#exit
UMS(config)#router rip
UMS(config-router)#network 172.16.0.0
UMS(config-router)#network 172.16.0.0
UMS(config-router)#network 172.17.0.0
UMS(config-router)#network 172.18.0.0
UMS(config-router)#network 172.19.0.0
UMS(config-router)#exit
UMS(config)#
```

Ctrl+F6 to exit CLI focus

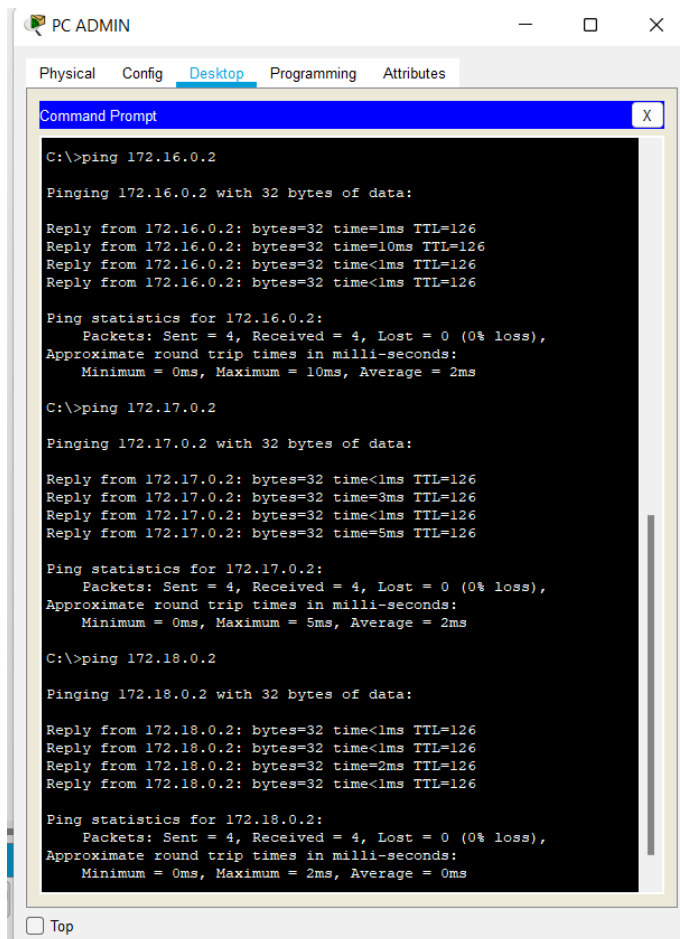
Copy Paste

☐ Top

4. Konfigurasi masing-masing PC

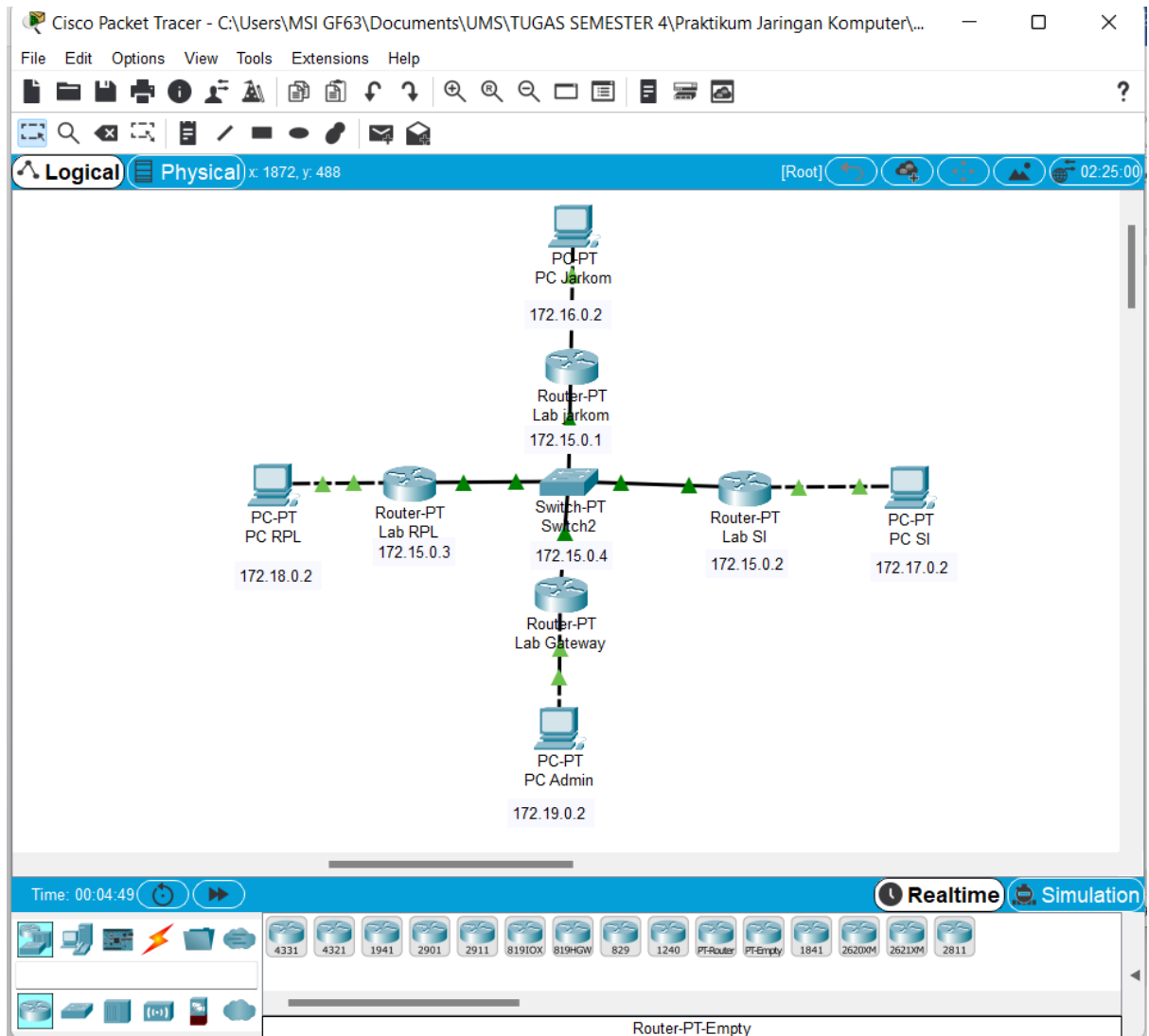


5. Lakukan pengujian ICMP request (ping)



Tugas

1. Buatlah topologi jaringan serupa dengan gambar 10.1, namun metode routing yang digunakan adalah routing statis
 - a. Buatlah tabel routing statis dari soal no 1



Petunjuk tabel routing statis pada router cisco

#ip route <ip network ID tujuan><subnet mask network tujuan><ip next hop-interface tetangga terdekat>

- Konfigurasi masing-masing router

Lab Jarkom

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>en
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname jarkom
jarkom(config)#int fa 0/0
jarkom(config-if)#ip address 172.16.0.1 255.255.255.0
jarkom(config-if)#no shutdown

jarkom(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

jarkom(config-if)#exit
jarkom(config)#int fa 1/0
jarkom(config-if)#ip address 172.15.0.1 255.255.255.0
jarkom(config-if)#no shutdown

jarkom(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up

jarkom(config-if)#exit
```

Ctrl+F6 to exit CLI focus

Copy Paste

Lab SI

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>en
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname SI
SI(config)#int fa 0/0
SI(config-if)#ip address 172.17.0.1 255.255.255.0
% 172.17.0.0 overlaps with FastEthernet1/0
SI(config-if)#no shutdown
SI(config-if)#ex
SI(config)#int fa 1/0
SI(config-if)#ip address 172.15.0.2 255.255.255.0
% 172.15.0.0 overlaps with FastEthernet0/0
SI(config-if)#no shutdown
SI(config-if)#ex
SI(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,  
changed state to up
```

```
Router>en  
Router#conf term  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#hostname rpl  
rpl(config)#int fa 0/0  
rpl(config-if)#ip address 172.18.0.1 255.255.255.0  
% 172.18.0.0 overlaps with FastEthernet1/0  
rpl(config-if)#no shutdown  
rpl(config-if)#exit  
rpl(config)#int fa 1/0  
rpl(config-if)#ip address 172.15.0.3 255.255.255.0  
% 172.15.0.0 overlaps with FastEthernet0/0  
rpl(config-if)#no shutdown  
rpl(config-if)#exit  
rpl(config)#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

☐ Top

Lab Gateway

Physical Config CLI Attributes

IOS Command Line Interface

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

Router>en
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname ums
ums(config)#ip address 172.19.0.1 255.255.255.0
      ^
% Invalid input detected at '^' marker.

ums(config)#int fa 0/0
ums(config-if)#ip address 172.19.0.1 255.255.255.0
% 172.19.0.0 overlaps with FastEthernet1/0
ums(config-if)#no shutdown
ums(config-if)#exit
ums(config)#int fa 0/1
%Invalid interface type and number
ums(config)#int fa 1/0
ums(config-if)#ip address 172.15.0.4 255.255.255.0
% 172.15.0.0 overlaps with FastEthernet0/0
ums(config-if)#exit
ums(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

PC Jarkom

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 172.16.0.2

Subnet Mask 255.255.255.0

Default Gateway 172.16.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80:20C:CFFF:FEE3:6AA1

IPv6 Gateway

IPv6 DNS Server

☐ Top

PC SI

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 172.17.0.2

Subnet Mask 255.255.255.0

Default Gateway 172.17.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80:201:6AFF:FE51:350B

IPv6 Gateway

IPv6 DNS Server

☐ Top

PC Admin

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 172.19.0.2

Subnet Mask 255.255.255.0

Default Gateway 172.19.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80:20C:05FF:F5C5:13B

IPv6 Gateway

IPv6 DNS Server

☐ Top

PC RPL

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 172.18.0.2

Subnet Mask 255.255.255.0

Default Gateway 172.18.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

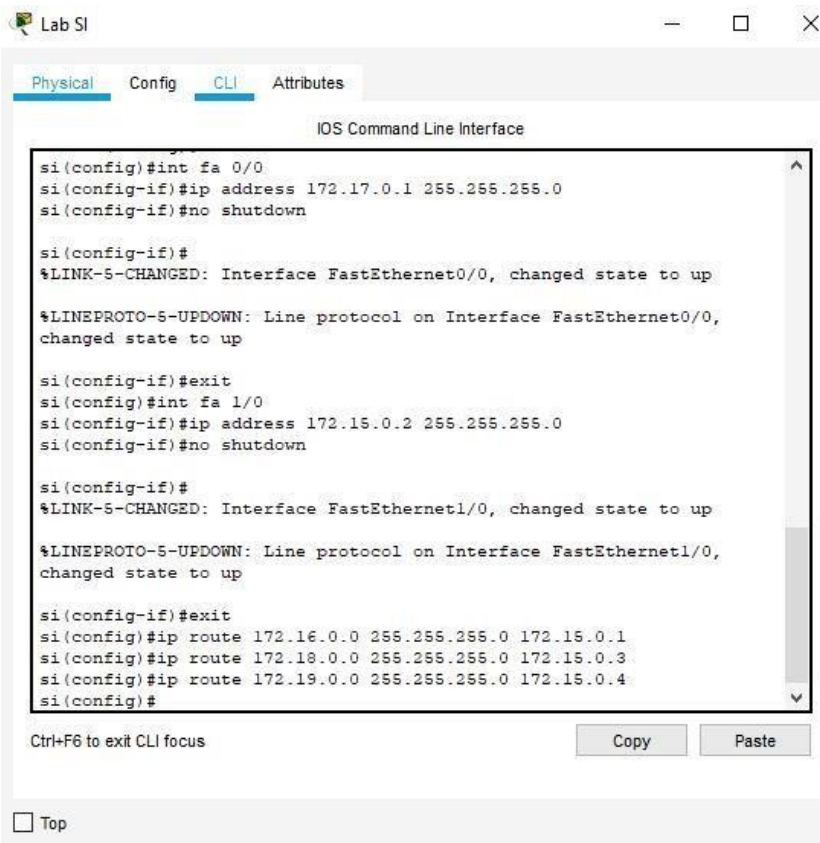
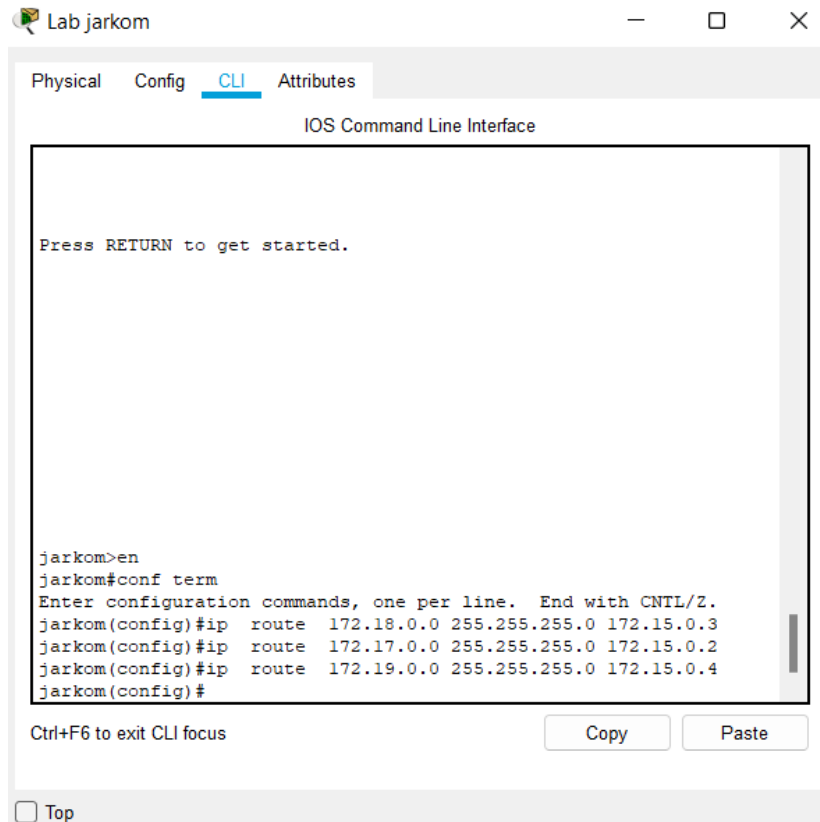
Link Local Address FE80:260:47FF:FE21:94CB

IPv6 Gateway

IPv6 DNS Server

☐ Top

- Melakukan routing pada masing-masing router



Lab RPL

Physical Config CLI Attributes

IOS Command Line Interface

Press RETURN to get started.

```
rp1>en
rp1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
rp1(config)#ip route 172.16.0.0 255.255.255.0 172.15.0.1
rp1(config)#ip route 172.17.0.0 255.255.255.0 172.15.0.2
rp1(config)#ip route 172.19.0.0 255.255.255.0 172.15.0.4
rp1(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Gateway

Physical Config CLI Attributes

IOS Command Line Interface

```
ums(config)#int fa 0/0
ums(config-if)#ip address 172.19.0.1 255.255.255.0
ums(config-if)#no shutdown

ums(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

ums(config-if)#exit
ums(config)#int fa 1/0
ums(config-if)#ip address 172.15.0.4 255.255.255.0
ums(config-if)#no shutdown

ums(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up

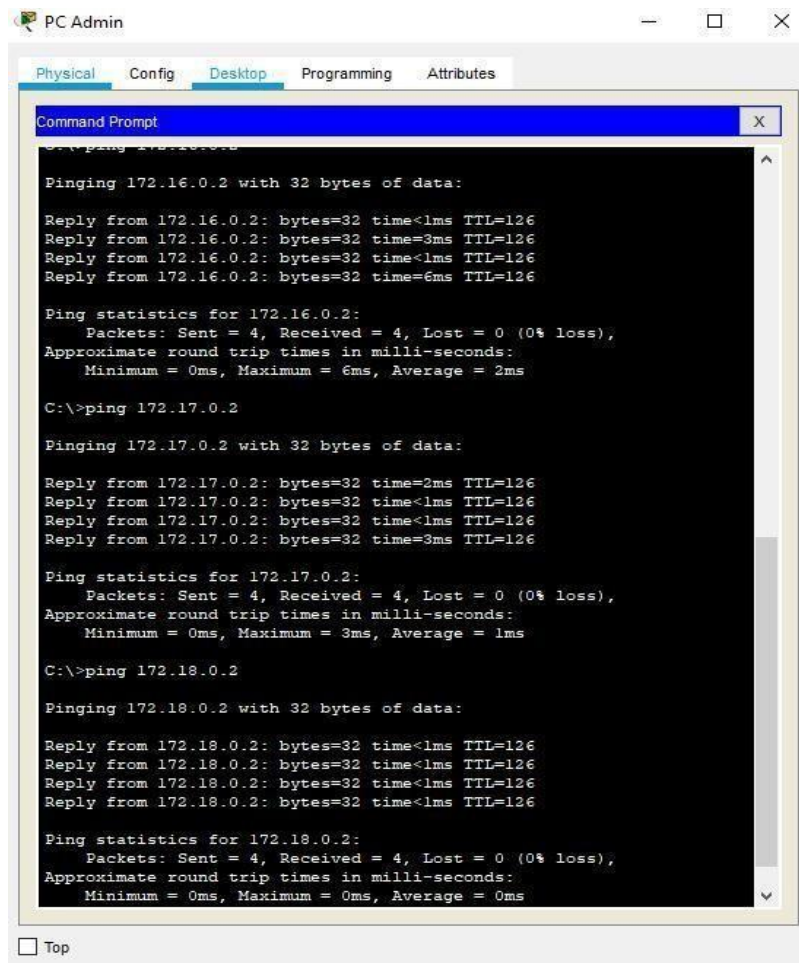
ums(config-if)#exit
ums(config)#ip route 172.16.0.0 255.255.255.0 172.15.0.1
ums(config)#ip route 172.18.0.0 255.255.255.0 172.15.0.3
ums(config)#ip route 172.17.0.0 255.255.255.0 172.15.0.2
ums(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

b. Melakukan uji konektivitas



The screenshot shows a 'PC Admin' window with tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes'. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The Command Prompt shows the results of three ping tests performed from the C:\ directory.

```
C:\>ping 172.16.0.2

Pinging 172.16.0.2 with 32 bytes of data:

Reply from 172.16.0.2: bytes=32 time<1ms TTL=126
Reply from 172.16.0.2: bytes=32 time=3ms TTL=126
Reply from 172.16.0.2: bytes=32 time<1ms TTL=126
Reply from 172.16.0.2: bytes=32 time=6ms TTL=126

Ping statistics for 172.16.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>ping 172.17.0.2

Pinging 172.17.0.2 with 32 bytes of data:

Reply from 172.17.0.2: bytes=32 time=2ms TTL=126
Reply from 172.17.0.2: bytes=32 time<1ms TTL=126
Reply from 172.17.0.2: bytes=32 time<1ms TTL=126
Reply from 172.17.0.2: bytes=32 time=3ms TTL=126

Ping statistics for 172.17.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 1ms

C:\>ping 172.18.0.2

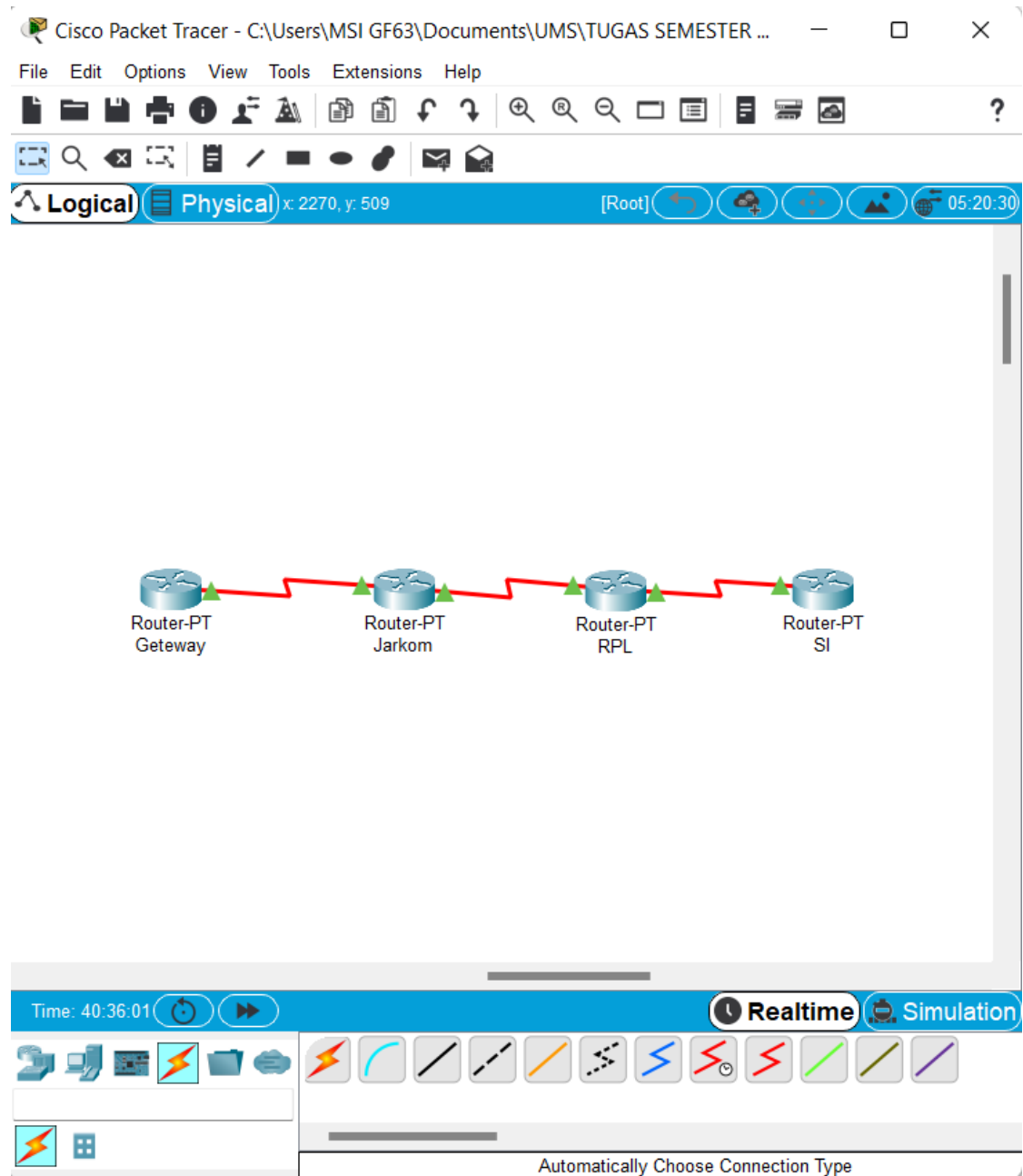
Pinging 172.18.0.2 with 32 bytes of data:

Reply from 172.18.0.2: bytes=32 time<1ms TTL=126
Reply from 172.18.0.2: bytes=32 time<1ms TTL=126
Reply from 172.18.0.2: bytes=32 time<1ms TTL=126
Reply from 172.18.0.2: bytes=32 time<1ms TTL=126

Ping statistics for 172.18.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

At the bottom left of the PC Admin window, there is a 'Top' button.

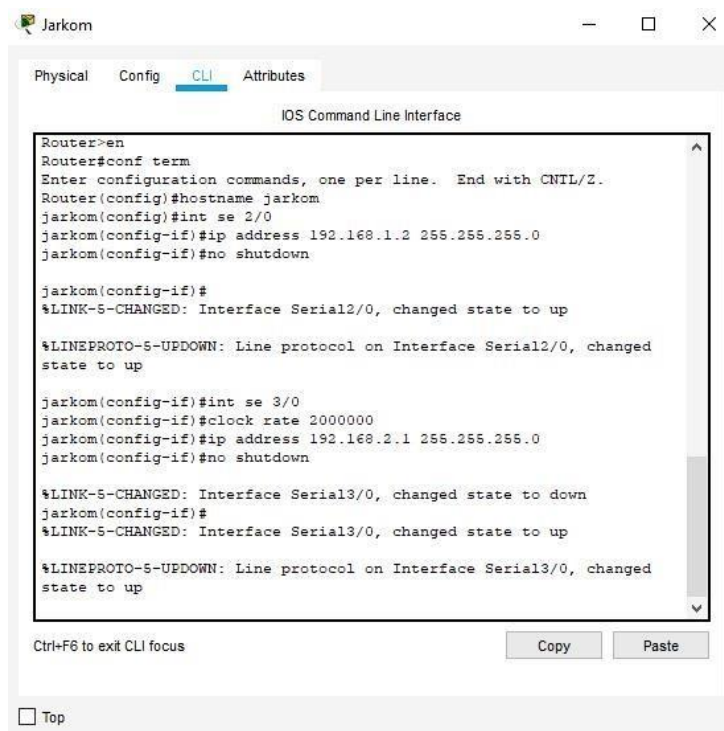
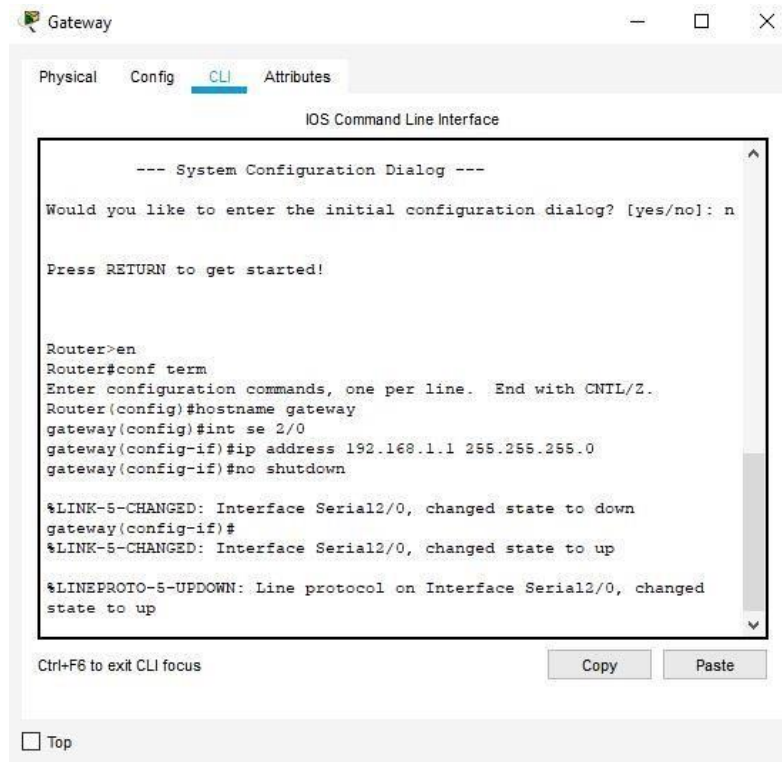
2. Buatlah topologi jaringan BUS untuk membangun sebuah laboratorium computer yang terdiri dari 3 router (Jarkom, RPL, SI) dan berpusat pada 1 router gateway, dengan metode routing:

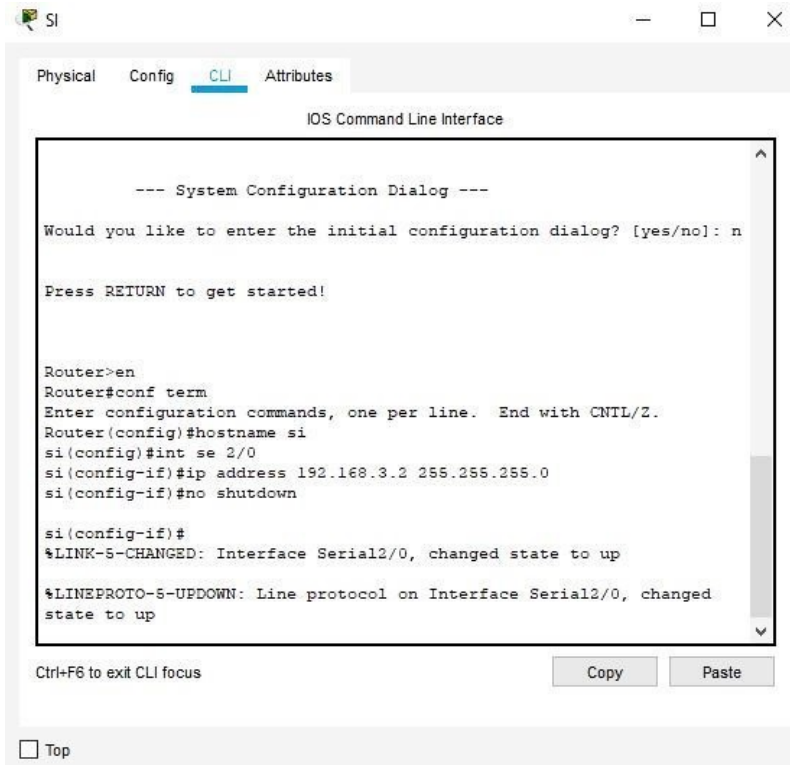
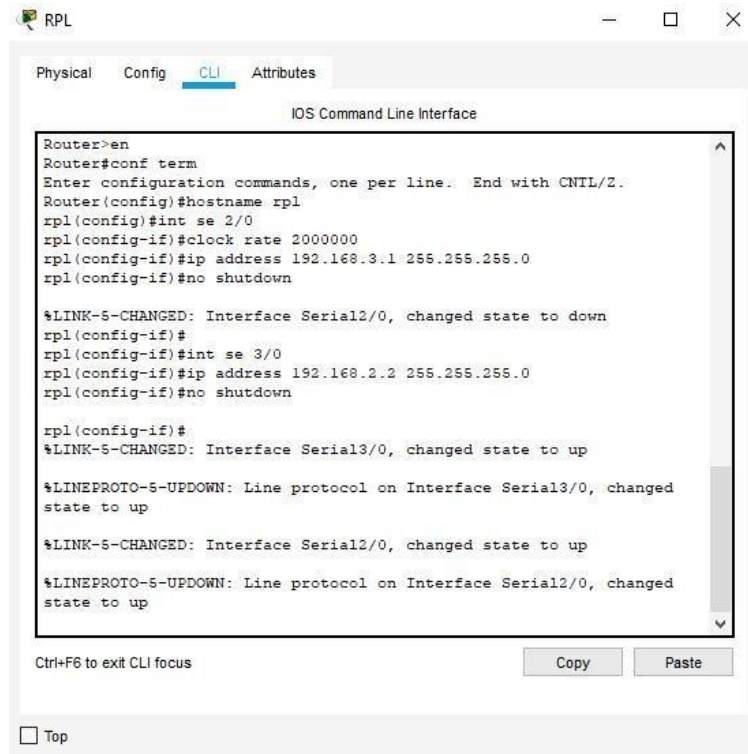


a. Statis

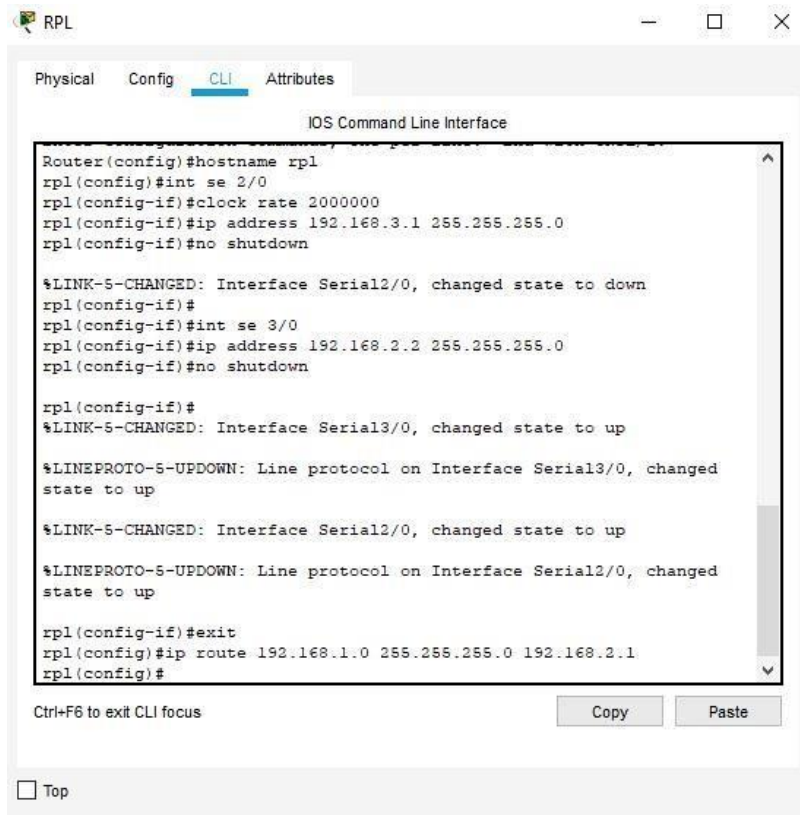
Petunjuk untuk routing statis, gunakan default gateway 0.0.0.0/0 pada topologi dibawah router gateway ketika route data akan menuju gateway.

1. Konfigurasi router (Gateway, Jarkom, RPL, SI).





2. Routing router (Gateway, Jarkom, RPL, SI).



The screenshot shows the configuration window for a router named 'RPL'. The 'CLI' tab is selected, displaying the IOS Command Line Interface. The configuration commands entered are as follows:

```
Router(config)#hostname rpl
rpl(config)#int se 2/0
rpl(config-if)#clock rate 2000000
rpl(config-if)#ip address 192.168.3.1 255.255.255.0
rpl(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
rpl(config-if)#
rpl(config-if)#int se 3/0
rpl(config-if)#ip address 192.168.2.2 255.255.255.0
rpl(config-if)#no shutdown

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

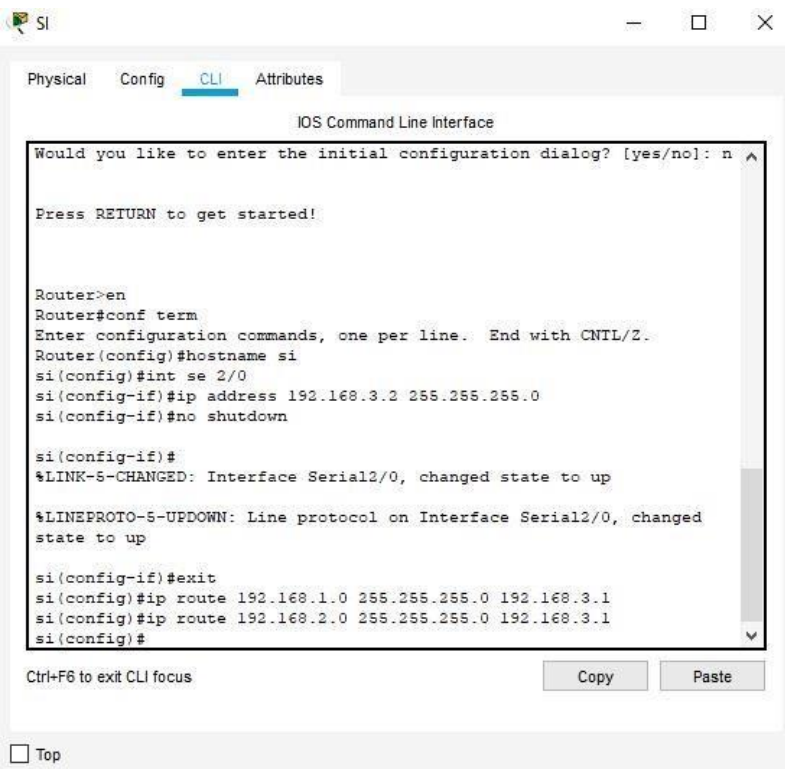
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed
state to up

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

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

rpl(config-if)#exit
rpl(config)#ip route 192.168.1.0 255.255.255.0 192.168.2.1
rpl(config)#
```

Below the CLI window, there is a 'Ctrl+F6 to exit CLI focus' label and 'Copy' and 'Paste' buttons. A 'Top' button is located at the bottom left of the window.



The screenshot shows the configuration window for a router named 'SI'. The 'CLI' tab is selected, displaying the IOS Command Line Interface. The configuration process begins with a prompt: 'Would you like to enter the initial configuration dialog? [yes/no]: n'. After pressing RETURN, the configuration commands entered are as follows:

```
Router>en
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname si
si(config)#int se 2/0
si(config-if)#ip address 192.168.3.2 255.255.255.0
si(config-if)#no shutdown

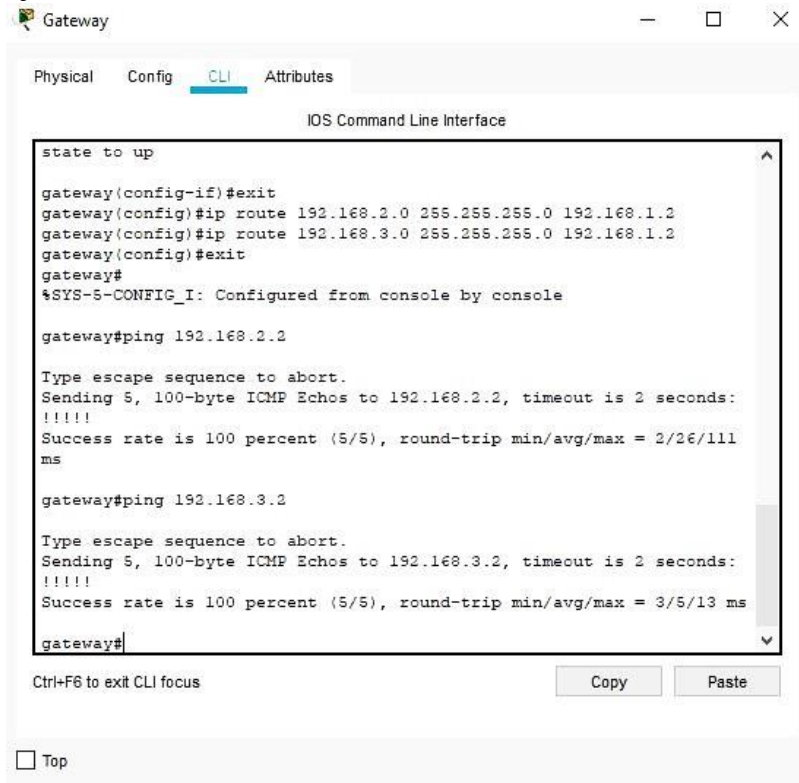
si(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

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

si(config-if)#exit
si(config)#ip route 192.168.1.0 255.255.255.0 192.168.3.1
si(config)#ip route 192.168.2.0 255.255.255.0 192.168.3.1
si(config)#
```

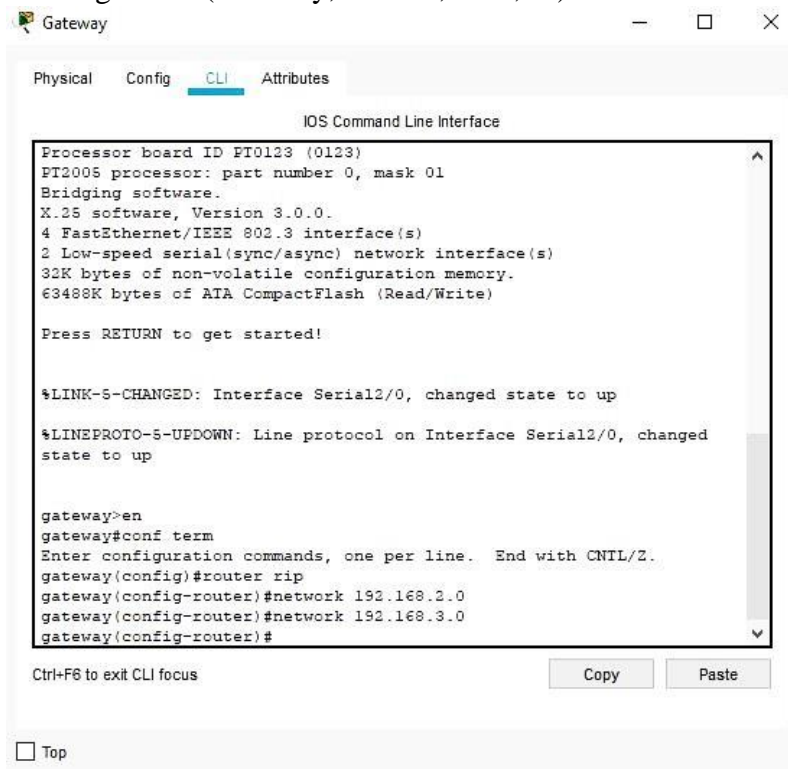
Below the CLI window, there is a 'Ctrl+F6 to exit CLI focus' label and 'Copy' and 'Paste' buttons. A 'Top' button is located at the bottom left of the window.

3. Uji konektivitas



b. Dinamis

1. Routing router (Gateway, Jarkom, RPL, SI).



Jarkom

Physical Config **CLI** Attributes

IOS Command Line Interface

```
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

%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 Serial2/0, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed
state to up

jarkom>en
jarkom#conf term
Enter configuration commands, one per line. End with CNTL/Z.
jarkom(config)#router rip
jarkom(config-router)#network 192.168.3.0
jarkom(config-router)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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RPL

Physical Config **CLI** Attributes

IOS Command Line Interface

```
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

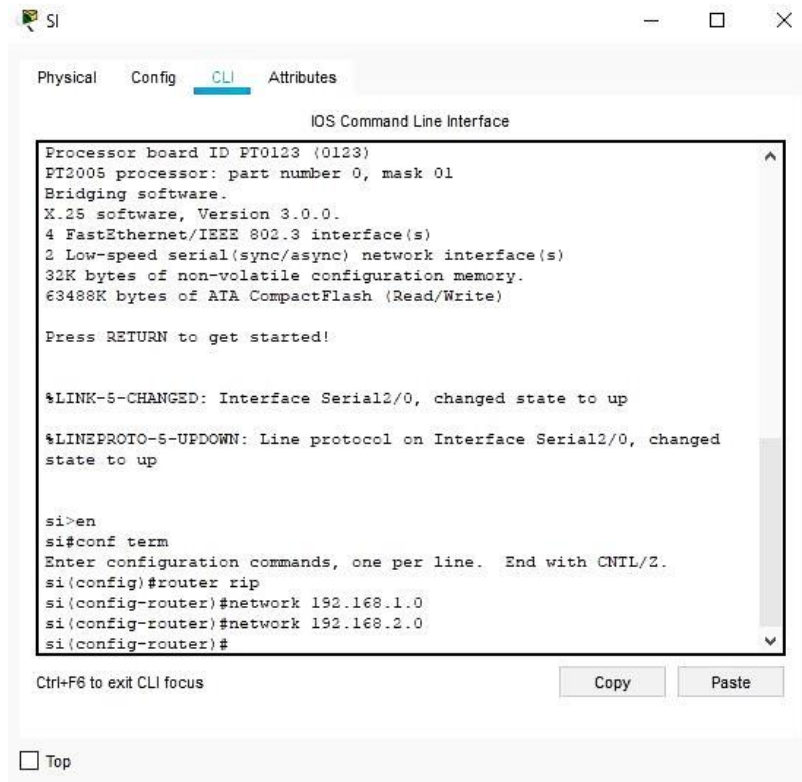
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed
state to up

rpl>en
rpl#conf term
Enter configuration commands, one per line. End with CNTL/Z.
rpl(config)#router rip
rpl(config-router)#network 192.168.1.0
rpl(config-router)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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2. Uji konektivitas.

