

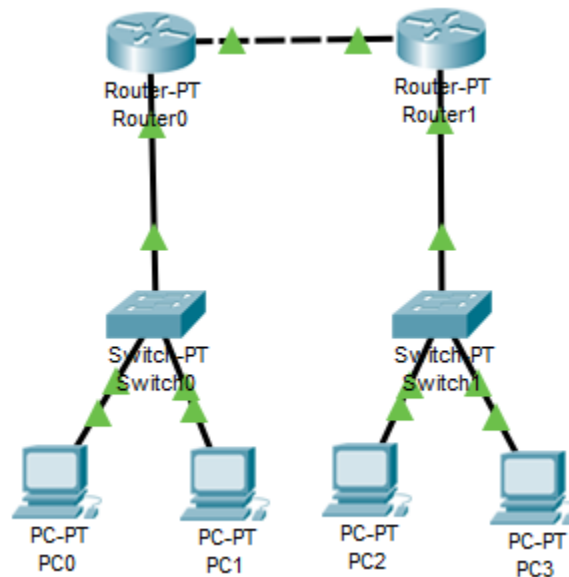
Nama	: Alfian Syahrani
NIM	: L200170038
Kelas	: A

## MODUL 8

### PACKET FILTERING DENGAN ACCESS LIST

#### C. Kegiatan Praktikum

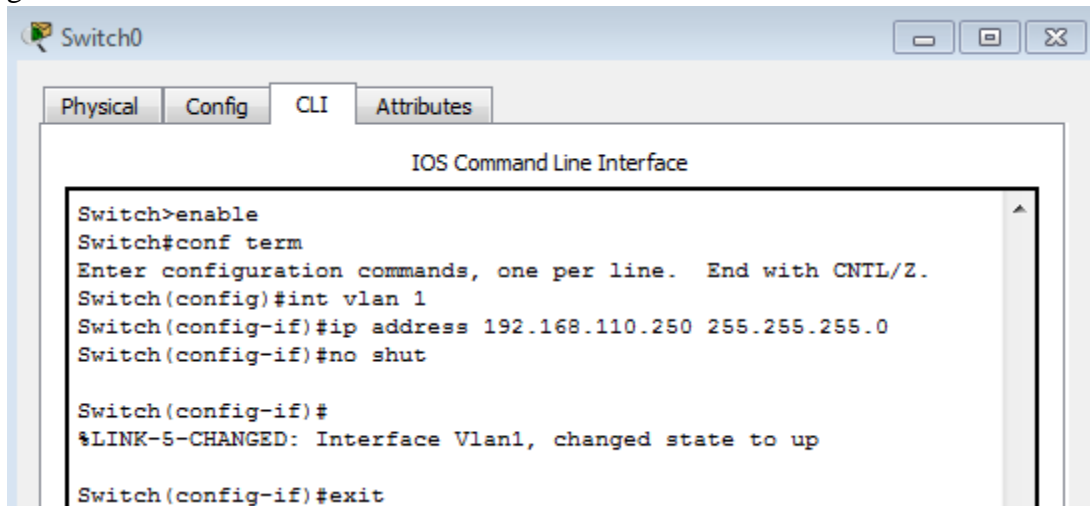
##### Kegiatan 1. Konfigurasi Access List



Langkah-langkah untuk mengkonfigurasi access list :

1. Desain jaringan tersebut menggunakan Boson Simulator. Semua router menggunakan seri 2514 sedangkan semua switch menggunakan seri 2950. Tambahkan 4 buah PC yang terbagi dalam 2 switch tersebut, untuk lebih jelas perhatikan gambar diatas dengan saksama.
2. Berikan identitas untuk semua sumber daya yang telah anda desain tersebut, perhatikan gambar agar anda tidak bingung. Petunjuk pemberian identitas pada sumber daya dapat anda lihat pada modul sebelumnya.a

3. Khusus untuk Switch 1 dan Switch 2 berikan alamat IP untuk digunakan sebagai default gateway bagi semua komputer. Untuk memberikan alamat IP pada switch perhatikan gambar berikut.

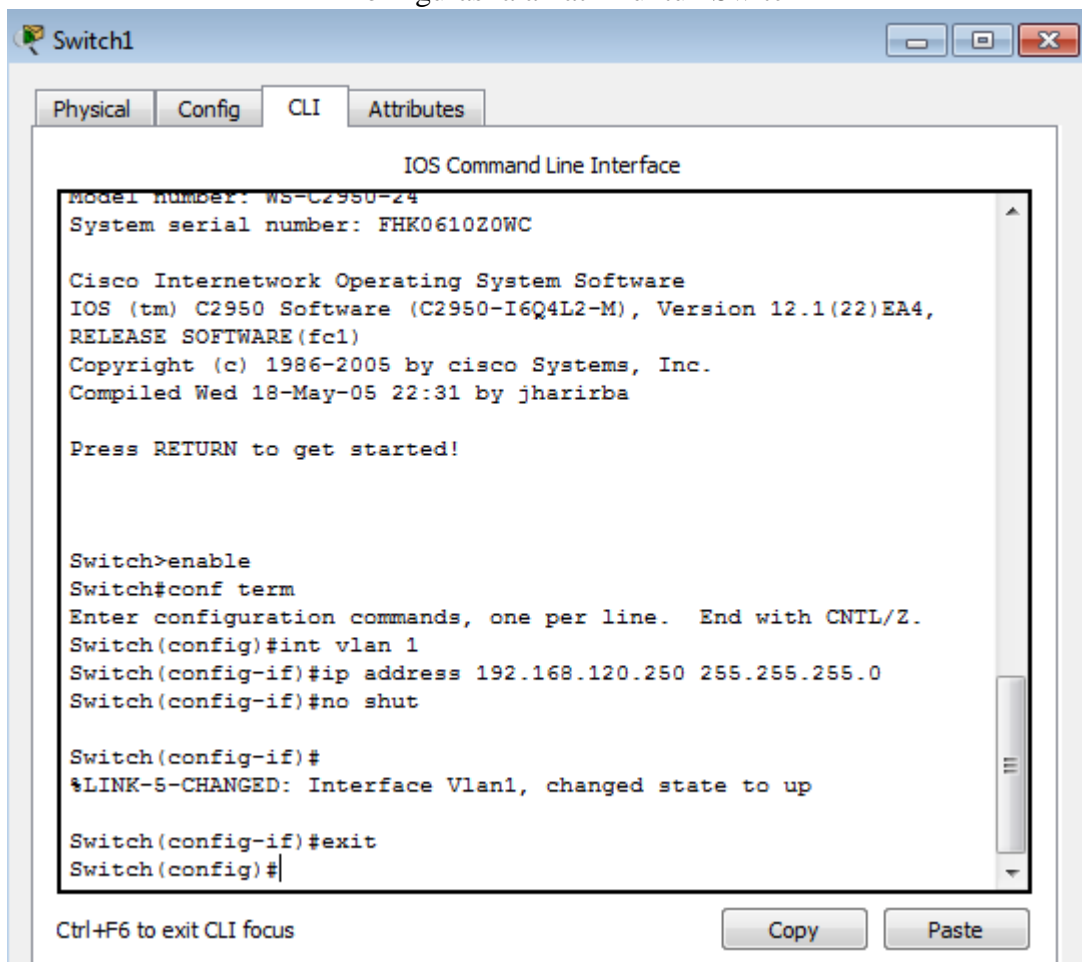
A screenshot of a network switch configuration window titled 'Switch0'. It has tabs for 'Physical', 'Config', 'CLI', and 'Attributes', with 'CLI' selected. The window shows the 'IOS Command Line Interface' with the following text:

```
Switch>enable
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int vlan 1
Switch(config-if)#ip address 192.168.110.250 255.255.255.0
Switch(config-if)#no shut

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

Switch(config-if)#exit
```

Konfigurasi alamat IP untuk Switch 1

A screenshot of a network switch configuration window titled 'Switch1'. It has tabs for 'Physical', 'Config', 'CLI', and 'Attributes', with 'CLI' selected. The window shows the 'IOS Command Line Interface' with the following text:

```
Model number: WS-C2950-24
System serial number: FHK0610Z0WC

Cisco Internetwork Operating System Software
IOS (tm) C2950 Software (C2950-I6Q4L2-M), Version 12.1(22)EA4,
RELEASE SOFTWARE(fc1)
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 18-May-05 22:31 by jharirba

Press RETURN to get started!

Switch>enable
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int vlan 1
Switch(config-if)#ip address 192.168.120.250 255.255.255.0
Switch(config-if)#no shut

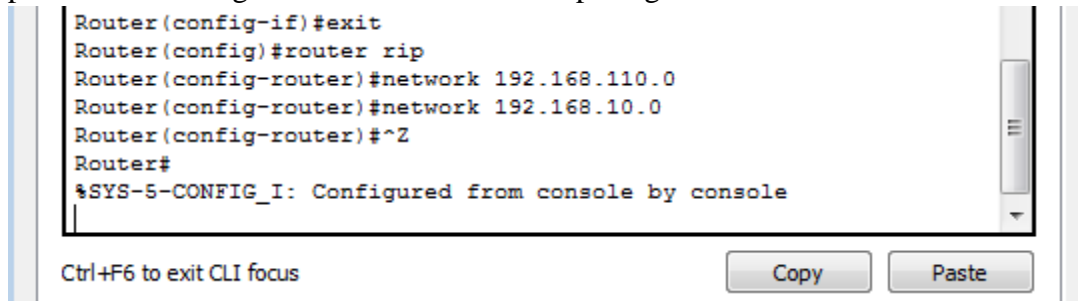
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

Switch(config-if)#exit
Switch(config)#
```

At the bottom of the window, there is a status bar with the text 'Ctrl+F6 to exit CLI focus' and two buttons labeled 'Copy' and 'Paste'.

Konfigurasi alamat IP untuk Switch 2

4. Berikutnya berikan alamat IP, subnetmask dan default gateway pada masing-masing komputer, perhatikan gambar berikut ini.
5. Gunakan perintah tersebut untuk memberikan identitas untuk komputer yang lain.
6. Setelah semua sumber daya telah mempunyai identitas , lakukan routing untuk kedua jaringan tersebut.
7. Gunakan routing dengan protocol RIP pada kedua jaringan tersebut, perintah untuk pembuatan routing tersebut dapat anda lihat pada gambar berikut ini.

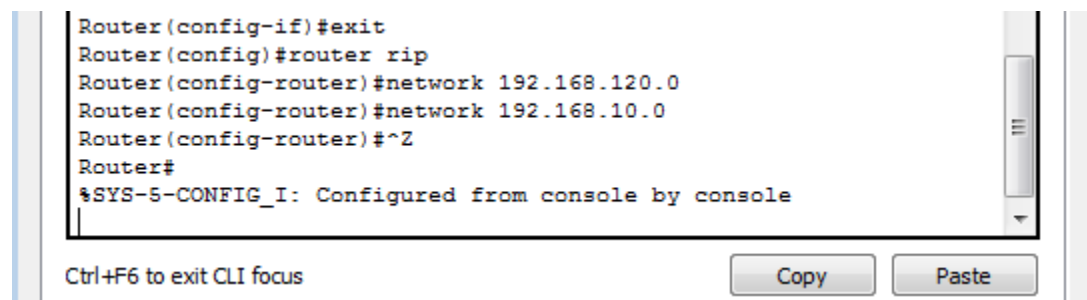


```
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.110.0
Router(config-router)#network 192.168.10.0
Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

Copy Paste

Konfigurasi protocol RIP pada Router 1



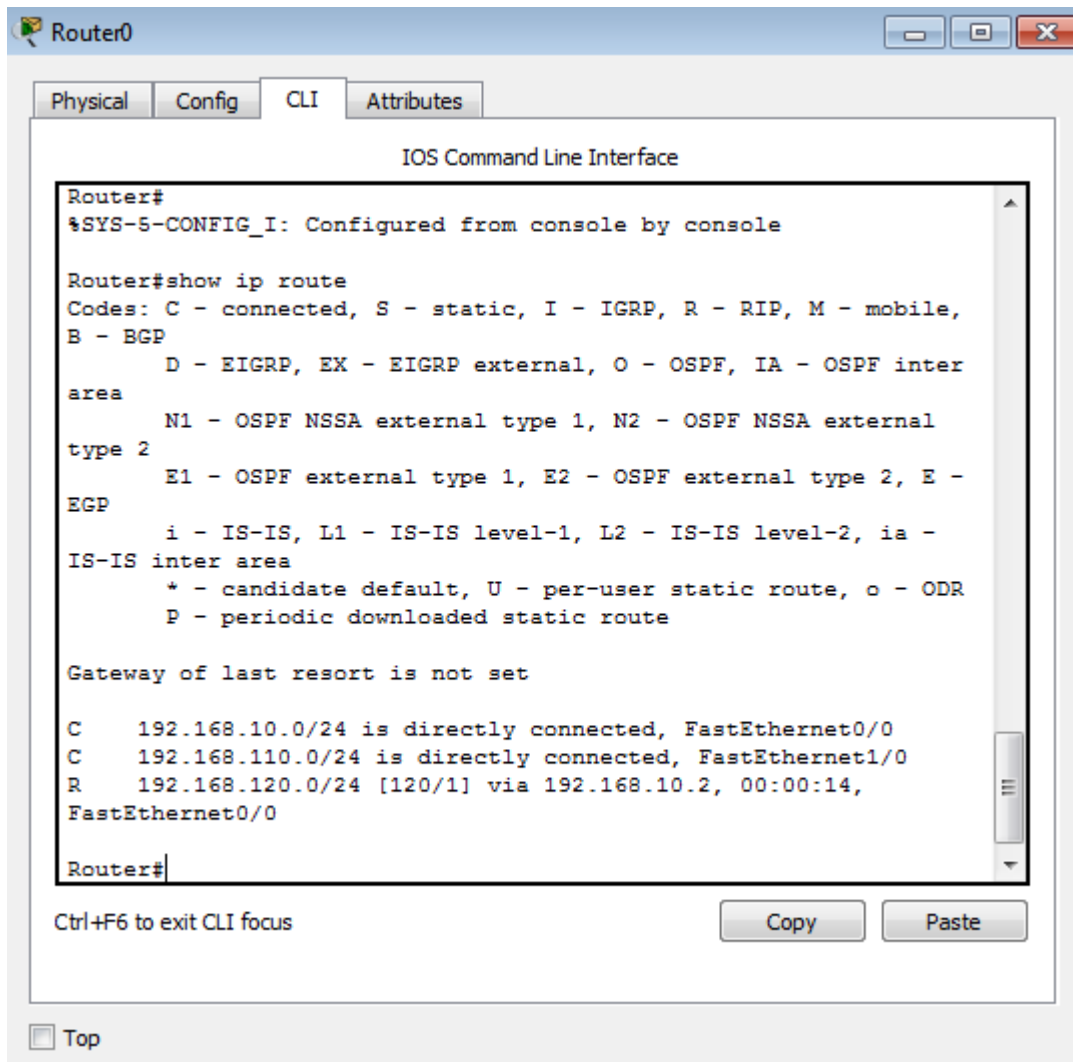
```
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.120.0
Router(config-router)#network 192.168.10.0
Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

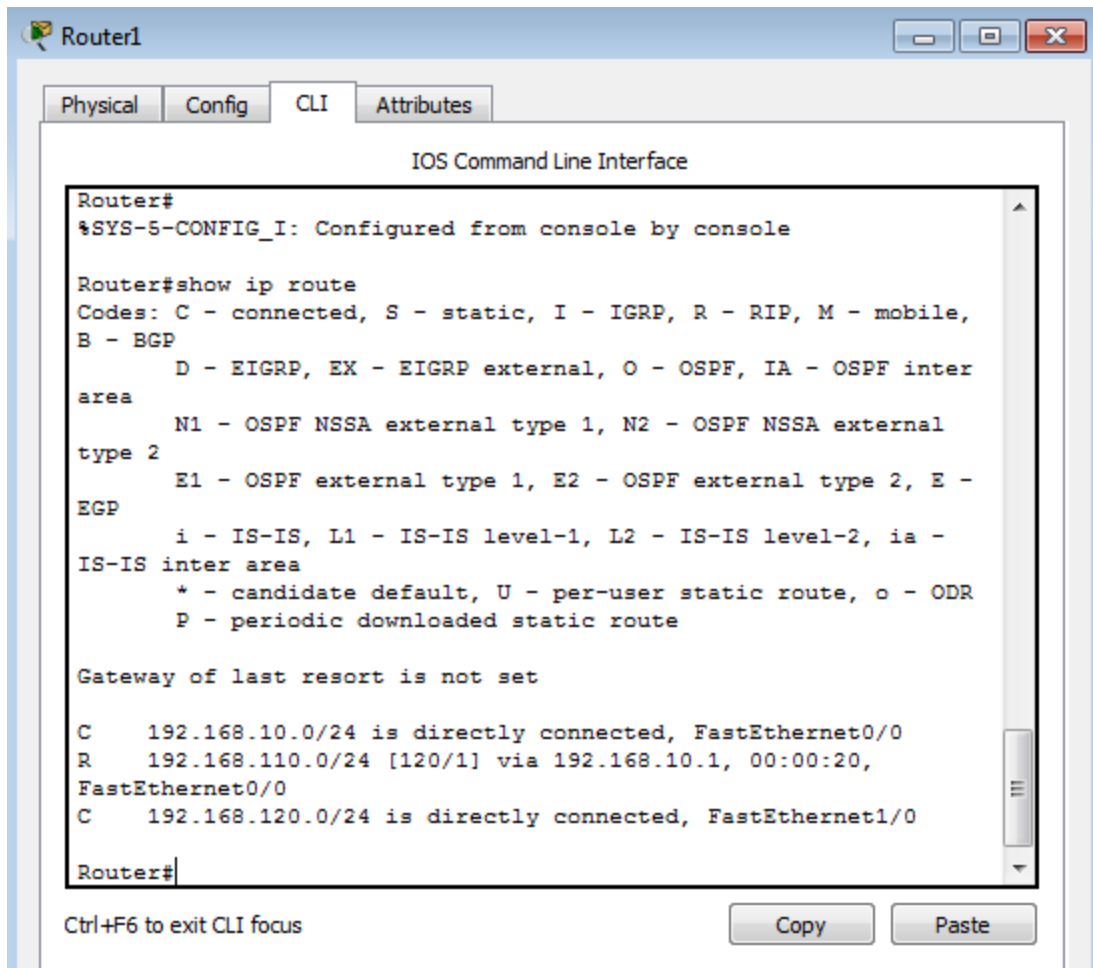
Copy Paste

Konfigurasi protocol RIP pada Router 2

8. Pada router 1 diberikan network ID 192.168.110.0 dan 192.168.10.0 untuk digunakan sebagai jalur routing. Sedangkan pada router 2 diberikan network ID 192.168.120.0 dan 192.168.10.0 untuk digunakan sebagai jalur routing.
9. Lakukan pengecekan tabel routing pada kedua router tersebut dengan perintah show ip route.

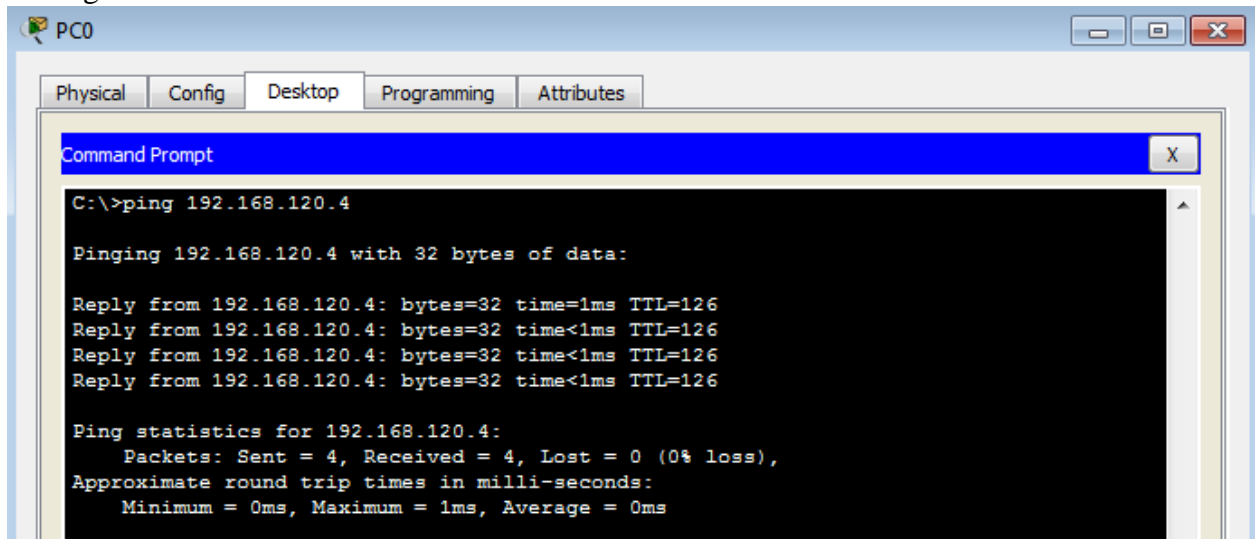


Tabel Routing RIP telah terbentuk pada Router 1

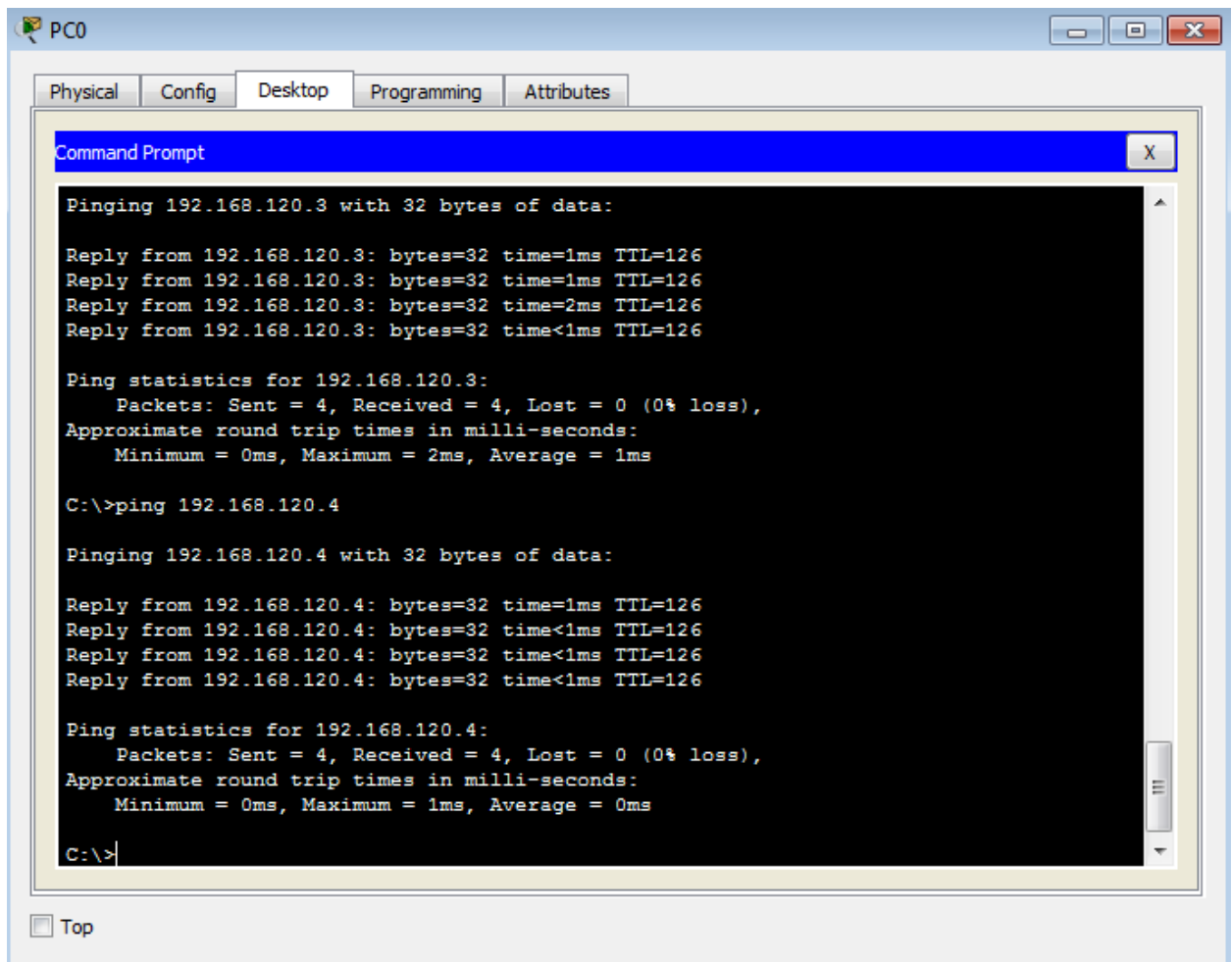


Tabel Routing RIP telah terbentuk pada Router 2

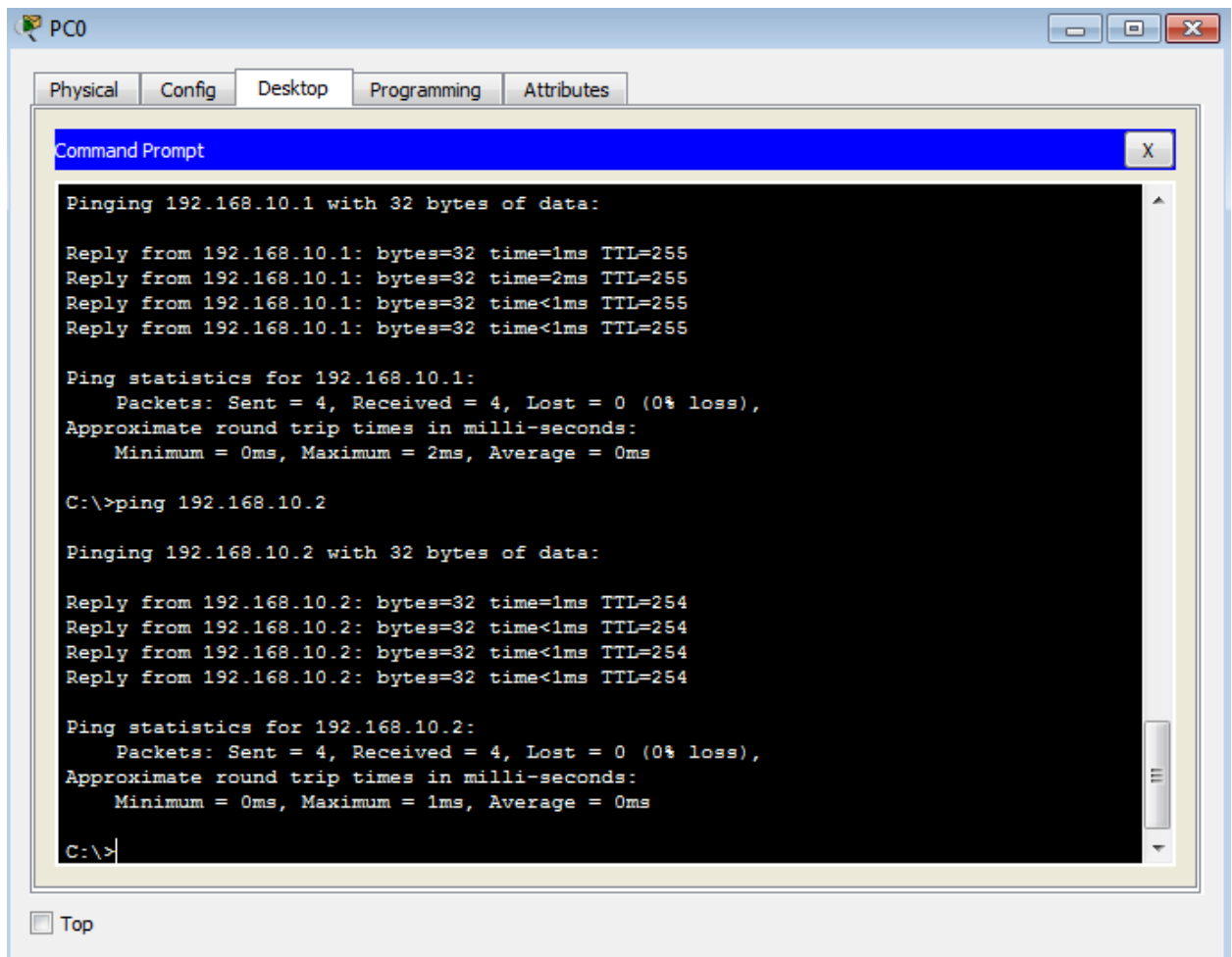
10. Selanjutnya lakukan tes koneksi dari PC 1 ke PC 4 dengan menggunakan perintah Ping. Kedua PC tersebut berada pada jaringan yang berbeda, jika koneksi berhasil maka routing anda berhasil.



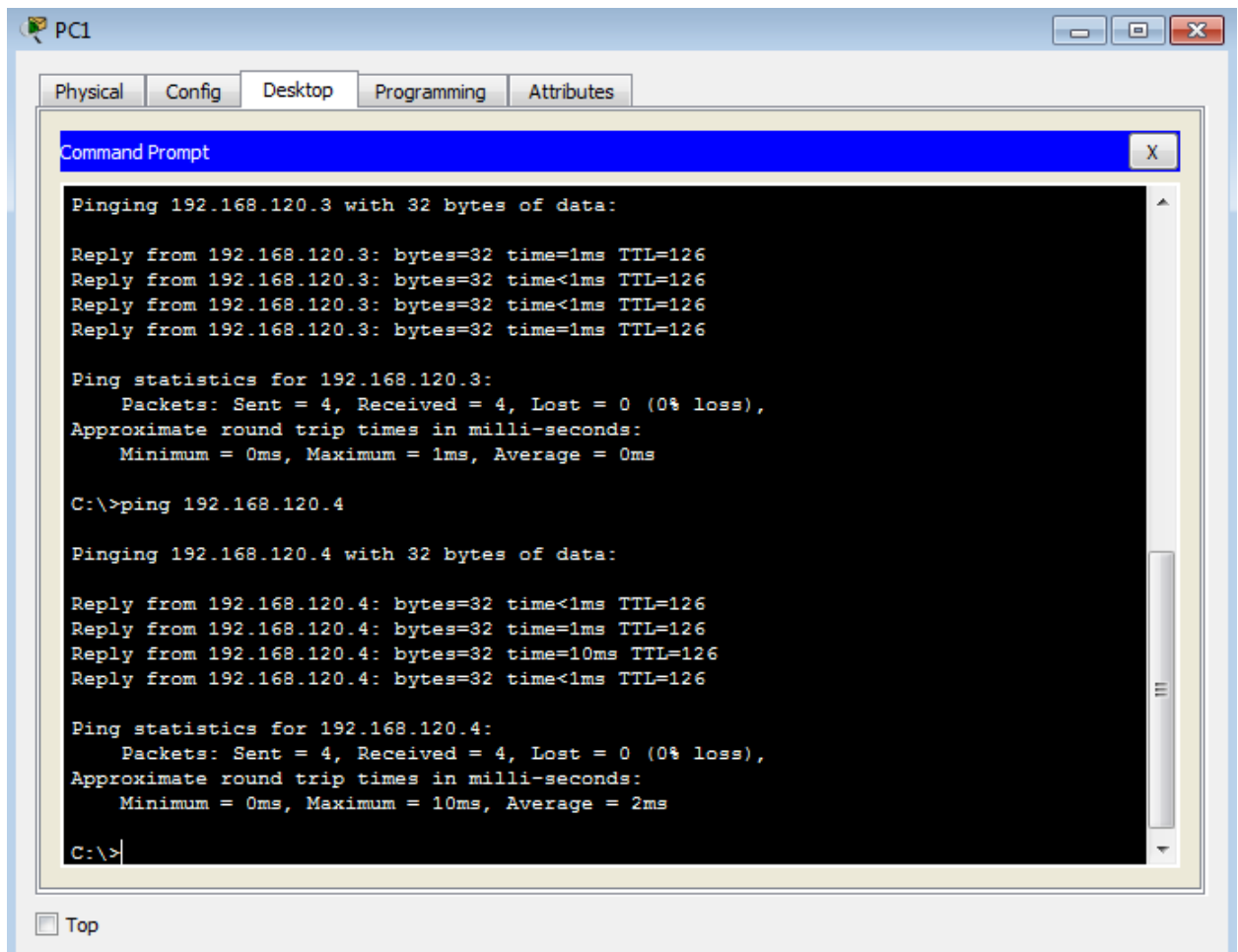
Ping PC 1 ke PC 4



Ping PC 1 ke PC 3 dan PC 4



Ping Pc 1 ke Router 1 dan Router 2



Ping PC 2 ke PC 3 dan PC 4



The screenshot shows a Windows-style window titled "PC1" with tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is active, displaying a "Command Prompt" window. The command prompt shows the execution of two ping commands. The first command is "ping 192.168.10.1", which results in four successful replies with 32 bytes of data, times ranging from <1ms to 2ms, and a TTL of 255. The statistics show 4 packets sent and received with 0% loss, and round trip times of 0ms, 2ms, and 0ms. The second command is "ping 192.168.10.2", which also results in four successful replies with 32 bytes of data, times <1ms, and a TTL of 254. The statistics show 4 packets sent and received with 0% loss, and round trip times of 0ms, 1ms, and 0ms. The prompt is currently at "C:\>".

```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Ping 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time=1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=2ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>ping 192.168.10.2

Ping 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time<1ms TTL=254
Reply from 192.168.10.2: bytes=32 time=1ms TTL=254
Reply from 192.168.10.2: bytes=32 time<1ms TTL=254
Reply from 192.168.10.2: bytes=32 time<1ms TTL=254

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Ping PC 2 ke Router 1 dan Router 2

The screenshot shows a Windows-style window titled "PC2" with tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is active, displaying a "Command Prompt" window. The command prompt shows the execution of a ping command to 192.168.110.4. The result shows four successful replies with 32 bytes of data, times ranging from 1ms to 2ms, and a TTL of 126. The statistics show 4 packets sent and received with 0% loss, and round trip times of 0ms, 2ms, and 1ms. The prompt is currently at "C:\>".

```
PC2
Physical Config Desktop Programming Attributes
Command Prompt
Ping 192.168.110.4 with 32 bytes of data:

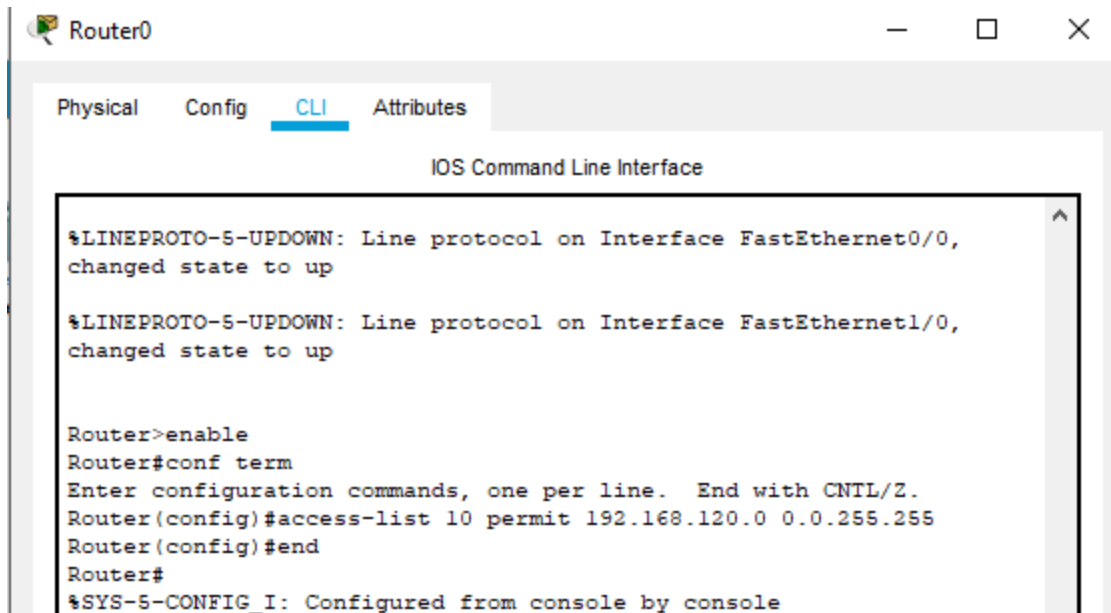
Reply from 192.168.110.4: bytes=32 time=1ms TTL=126
Reply from 192.168.110.4: bytes=32 time=1ms TTL=126
Reply from 192.168.110.4: bytes=32 time<1ms TTL=126
Reply from 192.168.110.4: bytes=32 time=2ms TTL=126

Ping statistics for 192.168.110.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\>
```

Ping PC 3 ke PC 2

11. Berikutnya tentukan Access List yang akan diterapkan dalam jaringan tersebut. Sebagai contoh dari router 1 kita akan mengizinkan semua host dari jaringan 192.168.120.0 dapat mengakses jaringan 192.168.100.0 maka perintahnya adalah :



The screenshot shows the Router0 CLI interface with tabs for Physical, Config, CLI (selected), and Attributes. The CLI window displays the following text:

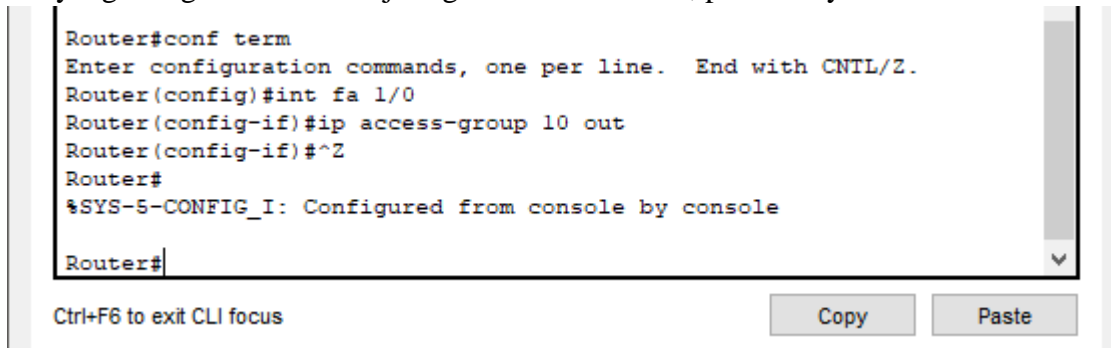
```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up

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

Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 10 permit 192.168.120.0 0.0.255.255
Router(config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Access List 192.168.120 ke 192.168.110 pada Router 1

12. Selanjutnya terapan Access List tersebut ke interface router 1 dalam hal ini interface fa 1/0 yang mengarah ke dalam jaringan 192.168.110.0 , perintahnya adalah



The screenshot shows the Router0 CLI interface with the following text:

```
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa 1/0
Router(config-if)#ip access-group 10 out
Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```

Below the CLI window, there are buttons for "Copy" and "Paste", and a note "Ctrl+F6 to exit CLI focus".

Access List 10 untuk interface fa 1/0

13. Opsi out pada bagian akhir perintah tersebut dimaksudkan untuk melewati paket keluar dari router 1.
14. Kemudian lihat konfigurasi Access List tersebut pada router 1.

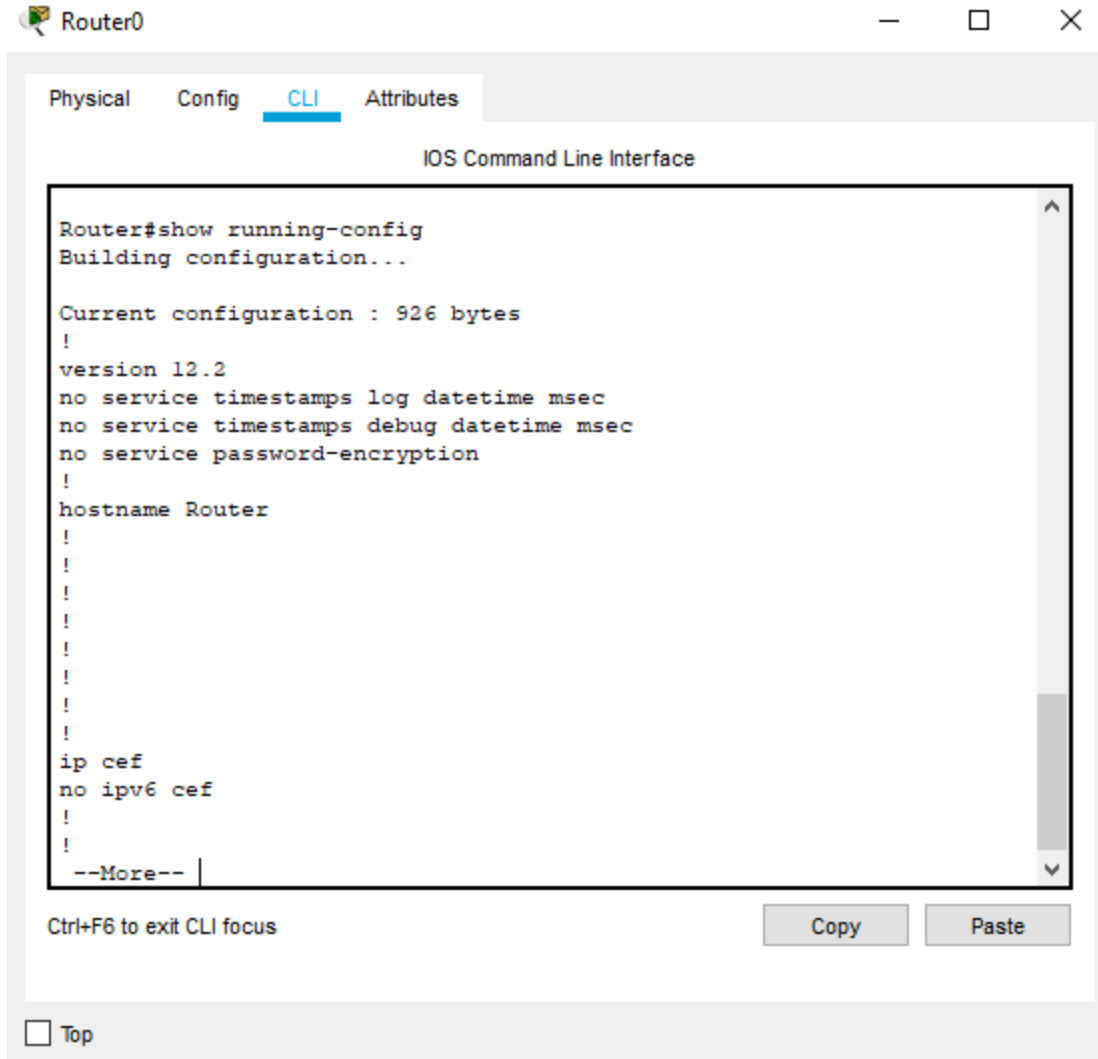


The screenshot shows the Router0 CLI interface with the following text:

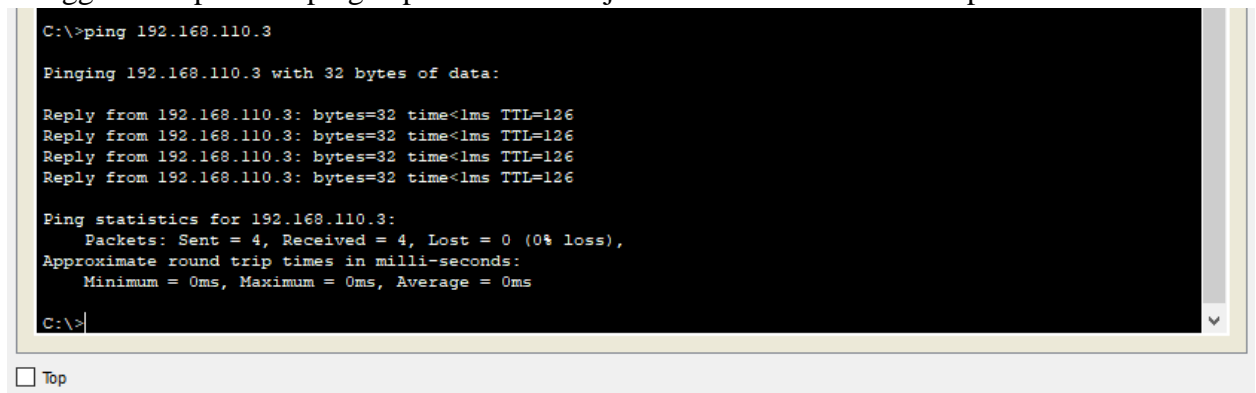
```
Router#show access-lists
Standard IP access list 10
  10 permit 192.168.0.0 0.0.255.255
```

Konfigurasi Access List pada Router 1

15. Selanjutnya perhatikan juga konfigurasi Access List tersebut pada Ethernet 1 dengan perintah show running-config.



16. Lakukan tes koneksi dua arah antara PC3 dengan PC1 yang berada pada jaringan berbeda menggunakan perintah ping. Apakah masih terjadi koneksi? Buatlah kesimpulan.



Kesimpulan : Masih terjadi Koneksi.

17. Sekarang kita akan memberikan akses hanya pada 1 host PC4 dengan alamat IP 192.168.120.4 agar dapat mengakses ke jaringan 192.168.110.0

18. Perintah yang anda gunakan adalah :

```
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 20 permit 192.168.120.4 0.0.0.0
Router(config)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa 1/0
Router(config-if)#ip access-group 20 out
Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

19. Kemudian terapkan Access List 20 tersebut ke interface Ethernet 1 pada router 1.

20. Selanjutnya coba lakukan tes koneksi dari PC3 yang berada pada jaringan 192.168.120.0 ke PC1 dan PC2 yang ada pada jaringan 192.168.110.0 , apakah tes tersebut berhasil?

PC2

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>
C:\>ping 192.168.110.3

Pinging 192.168.110.3 with 32 bytes of data:

Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.

Ping statistics for 192.168.110.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.110.4

Pinging 192.168.110.4 with 32 bytes of data:

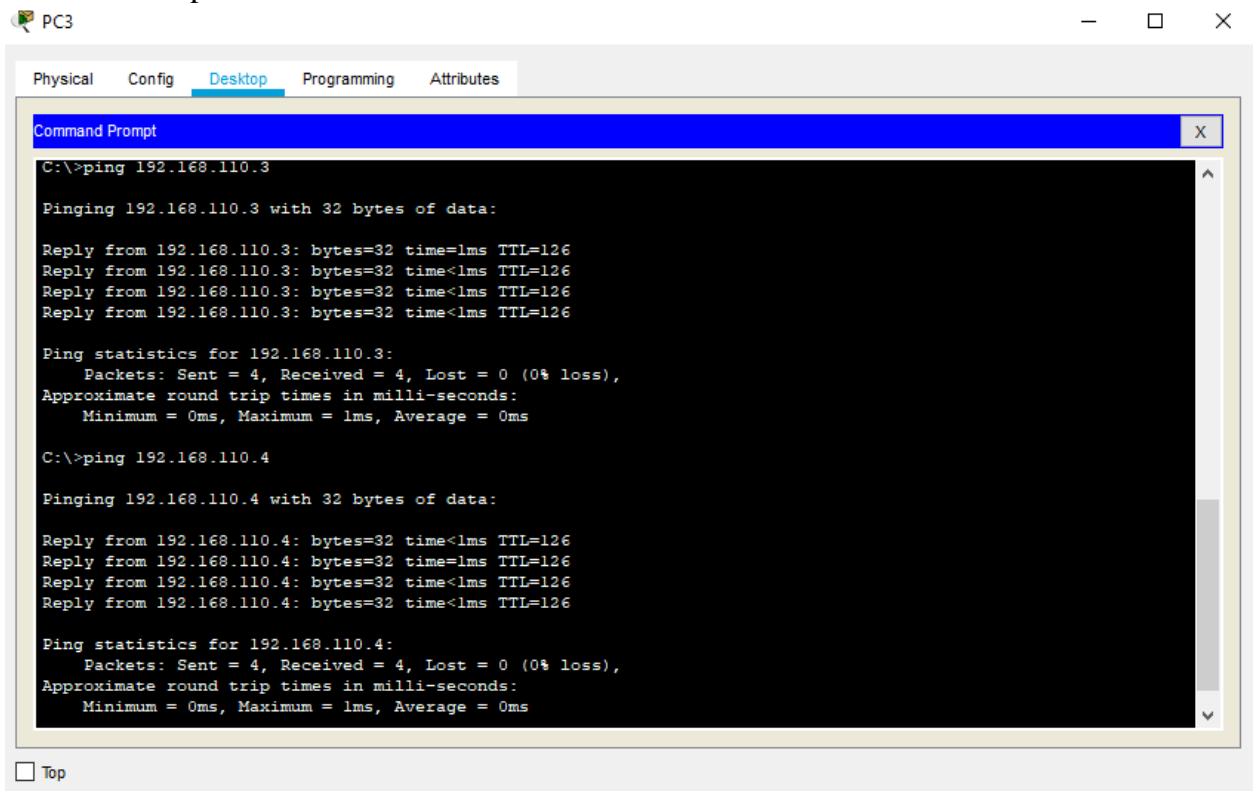
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.

Ping statistics for 192.168.110.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Top

21. Lakukan juga tes koneksi dari PC4 yang berada pada jaringan 192.168.120.0 ke PC1 dan PC2 yang berada pada jaringan 192.168.110.0, apakah tes koneksi tersebut berhasil? Berikan kesimpulan.



The screenshot shows a Packet Tracer interface for PC3. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the execution of two ping commands. The first command is 'C:\>ping 192.168.110.3', which results in four successful replies from 192.168.110.3 with 32 bytes of data, each taking less than 1ms and having a TTL of 126. The ping statistics for 192.168.110.3 show 4 packets sent, 4 received, 0 lost (0% loss), and approximate round trip times of 0ms. The second command is 'C:\>ping 192.168.110.4', which also results in four successful replies from 192.168.110.4 with 32 bytes of data, each taking less than 1ms and having a TTL of 126. The ping statistics for 192.168.110.4 show 4 packets sent, 4 received, 0 lost (0% loss), and approximate round trip times of 0ms. A 'Top' button is visible at the bottom left of the command prompt window.

```
C:\>ping 192.168.110.3

Pinging 192.168.110.3 with 32 bytes of data:

Reply from 192.168.110.3: bytes=32 time<1ms TTL=126
Reply from 192.168.110.3: bytes=32 time<1ms TTL=126
Reply from 192.168.110.3: bytes=32 time<1ms TTL=126
Reply from 192.168.110.3: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.110.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.110.4

Pinging 192.168.110.4 with 32 bytes of data:

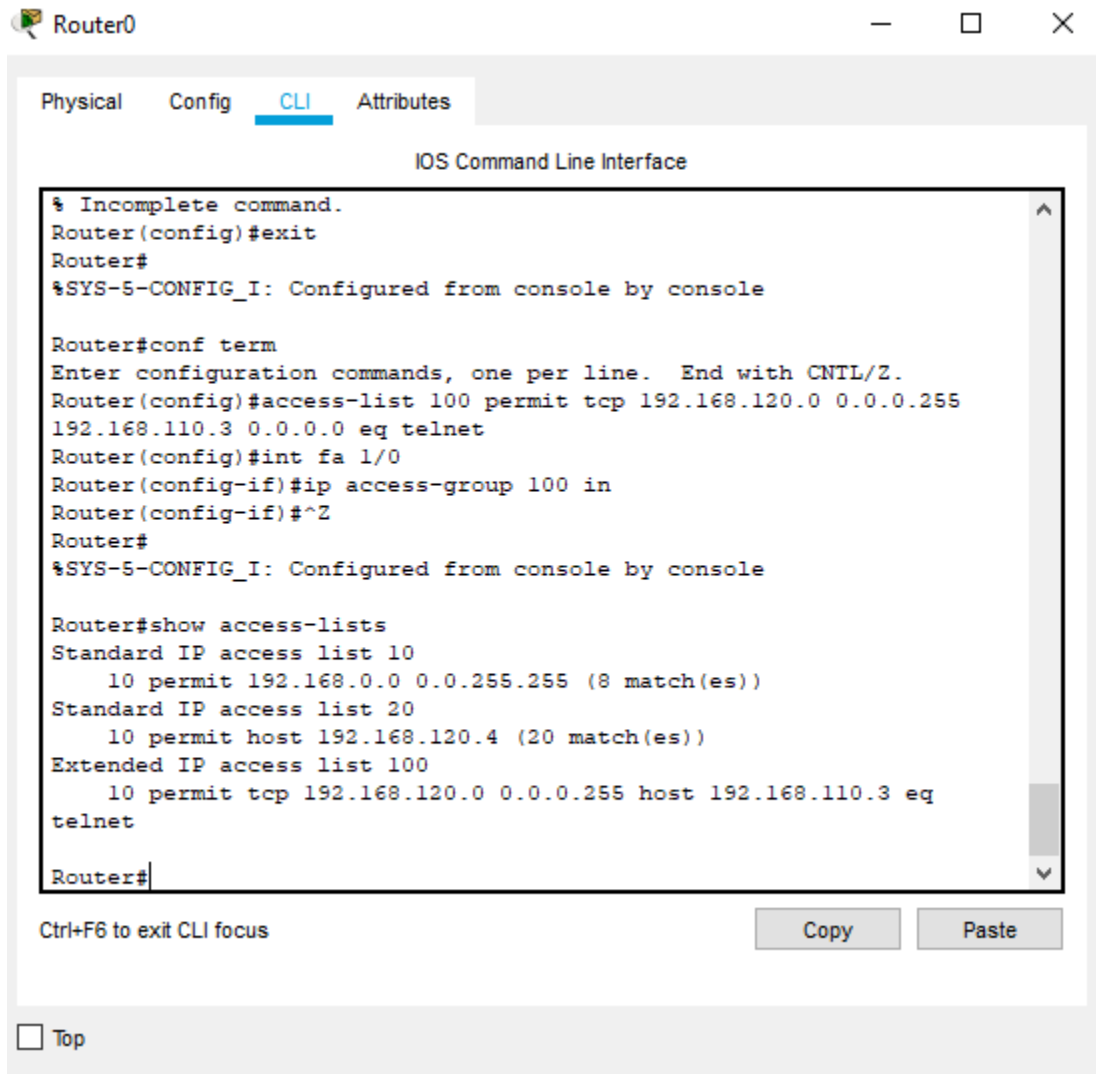
Reply from 192.168.110.4: bytes=32 time<1ms TTL=126
Reply from 192.168.110.4: bytes=32 time<1ms TTL=126
Reply from 192.168.110.4: bytes=32 time<1ms TTL=126
Reply from 192.168.110.4: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.110.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Berhasil di akses karena pada router 1 kita memberikan hak akses pada PC4 agar dapat mengakses sehingga saat dilakukan ping dari PC4 ke PC 1 dan PC 2 berhasil.

## Kegiatan 2. Konfigurasi Extended Access List

Untuk mengkonfigurasi Extended Access List sebenarnya tidak terlalu beda jauh dengan cara mengkonfigurasi Standard Access List. Perintah yang digunakan ada penambahan informasi tentang paket yang diijinkan atau di tolak.



```
Router0
Physical Config CLI Attributes
IOS Command Line Interface

% Incomplete command.
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 100 permit tcp 192.168.120.0 0.0.0.255
192.168.110.3 0.0.0.0 eq telnet
Router(config)#int fa 1/0
Router(config-if)#ip access-group 100 in
Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show access-lists
Standard IP access list 10
  10 permit 192.168.0.0 0.0.255.255 (8 match(es))
Standard IP access list 20
  10 permit host 192.168.120.4 (20 match(es))
Extended IP access list 100
  10 permit tcp 192.168.120.0 0.0.0.255 host 192.168.110.3 eq
telnet
Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

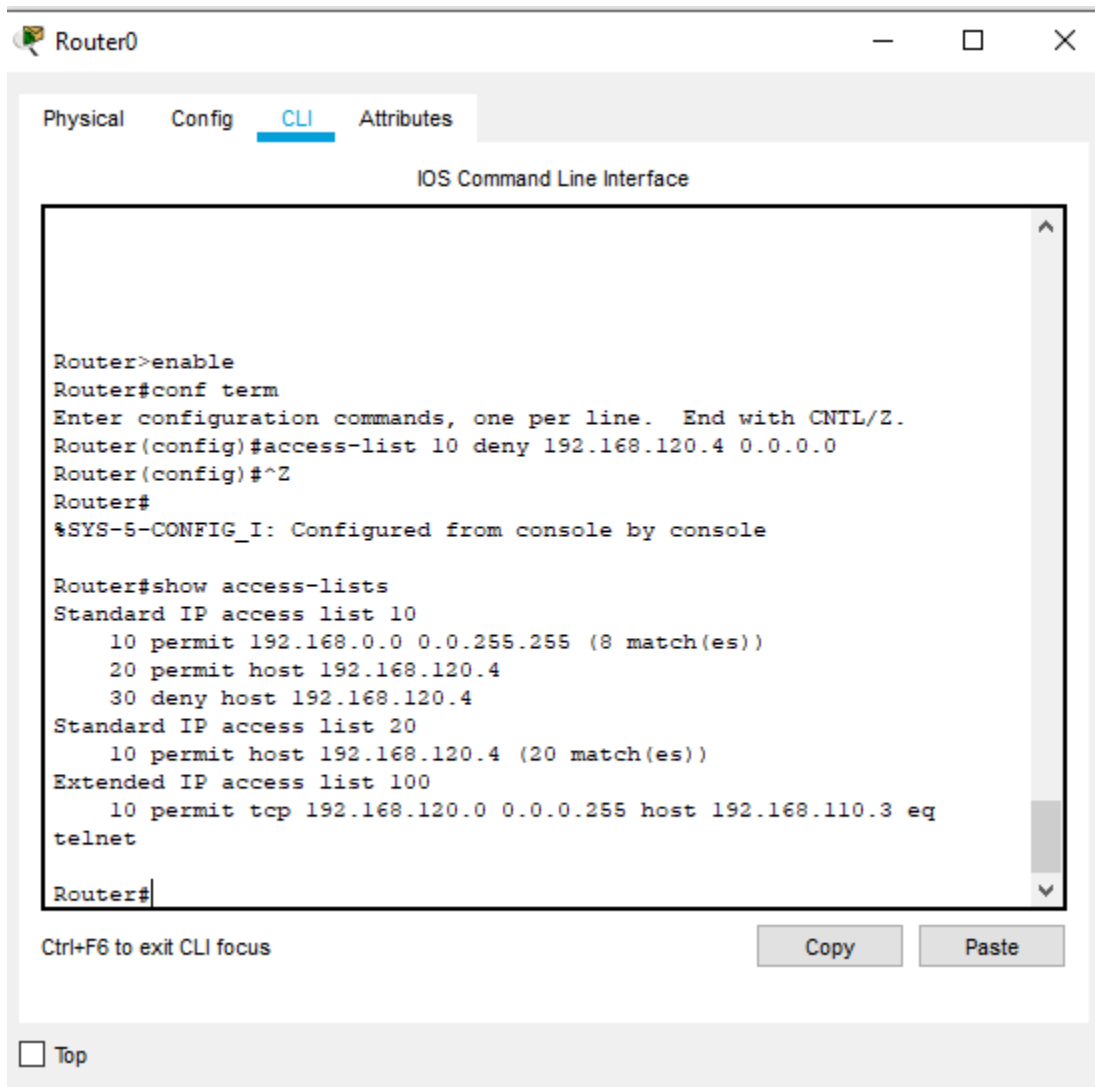
☐ Top

Pada contoh perintah diatas, kita mengijinkan (permit) paket telnet dari semua host ada di jaringan 192.168.120.0 ke host 192.168.110.3.

Angka [100] setelah perintah [access list] merupakan bagi Extended Access List. Cara menerapkan Access List tersebut ke interface router juga tidak berbeda dengan penerapan Standard Access List.

## Tugas Tambahan

Tidak memberikan hak akses (Deny) pada PC3 dengan alamat IP 192.168.120.4 sehingga **tidak dapat mengakses ke jaringan 192.168.110.0**



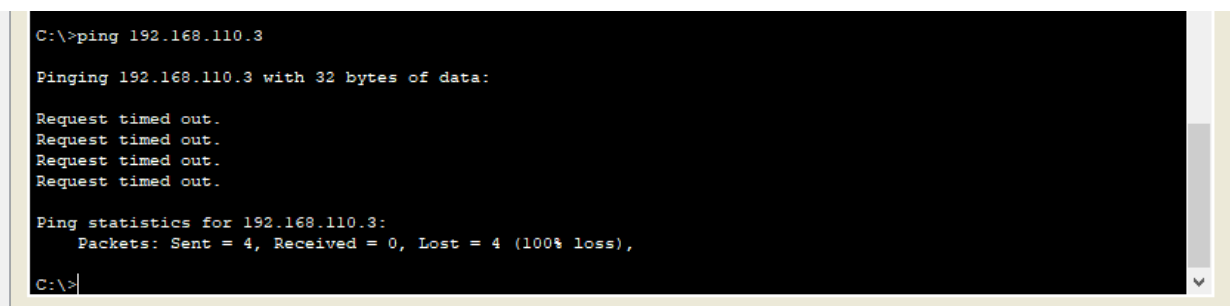
The screenshot shows the Router0 CLI interface with the following commands and output:

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 10 deny 192.168.120.4 0.0.0.0
Router(config)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show access-lists
Standard IP access list 10
  10 permit 192.168.0.0 0.0.255.255 (8 match(es))
  20 permit host 192.168.120.4
  30 deny host 192.168.120.4
Standard IP access list 20
  10 permit host 192.168.120.4 (20 match(es))
Extended IP access list 100
  10 permit tcp 192.168.120.0 0.0.0.255 host 192.168.110.3 eq
telnet
Router#
```

Below the CLI window, there is a "Top" button and a "Ctrl+F6 to exit CLI focus" message. To the right of the CLI window are "Copy" and "Paste" buttons.

Sehingga pada saat dilakukan ping antaras PC 3 dengan PC0 maka akan terjadi **Request time out**.



The screenshot shows a Windows command prompt with the following output:

```
C:\>ping 192.168.110.3

Pinging 192.168.110.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.110.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```