

LAPORAN PRAKTIKUM JARINGAN KOMPUTER
MODUL 8
“PACKET FILTERING DENGAN ACCESS LIST”



Oleh:

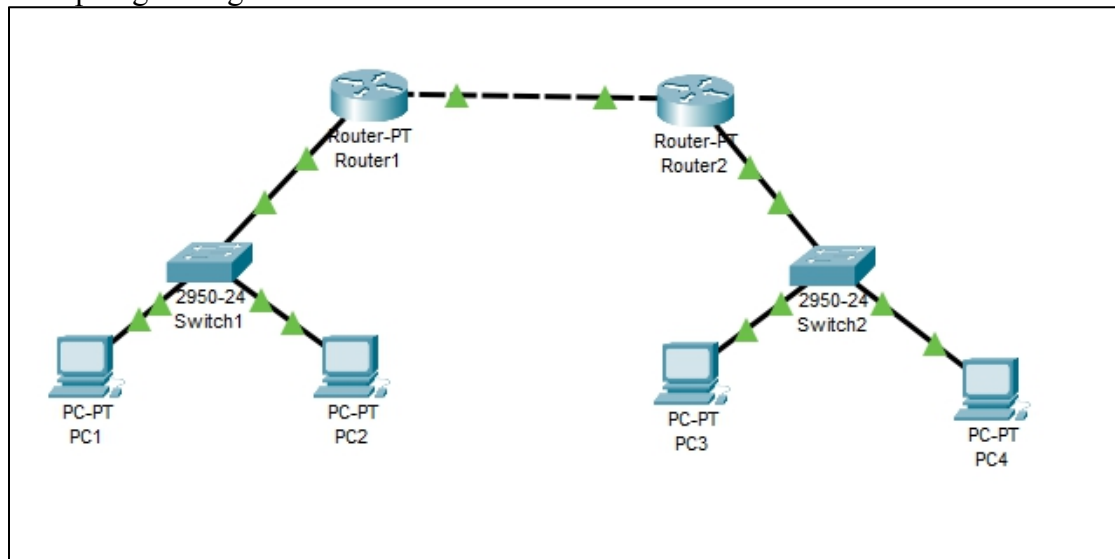
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Muhammadiyah Surakarta

C. Kegiatan Praktikum1.

Kegiatan 1. Konfigurasi Access List

1. Topologi Jaringan



2. Konfigurasi alamat IP untuk switch Switch1

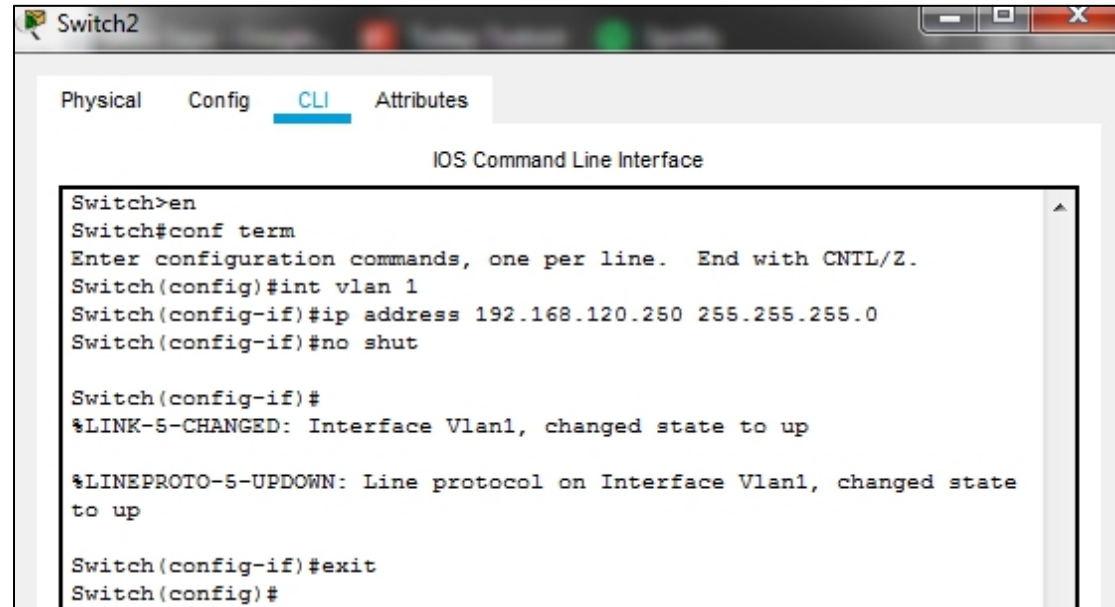
```
Switch1
Physical Config CLI Attributes
IOS Command Line Interface
Switch>en
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int vlan 1
Switch(config-if)#ip address 192.168.110.250 255.255.255.0
Switch(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state
to up

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

Switch2



```
Switch2
Physical Config CLI Attributes
IOS Command Line Interface

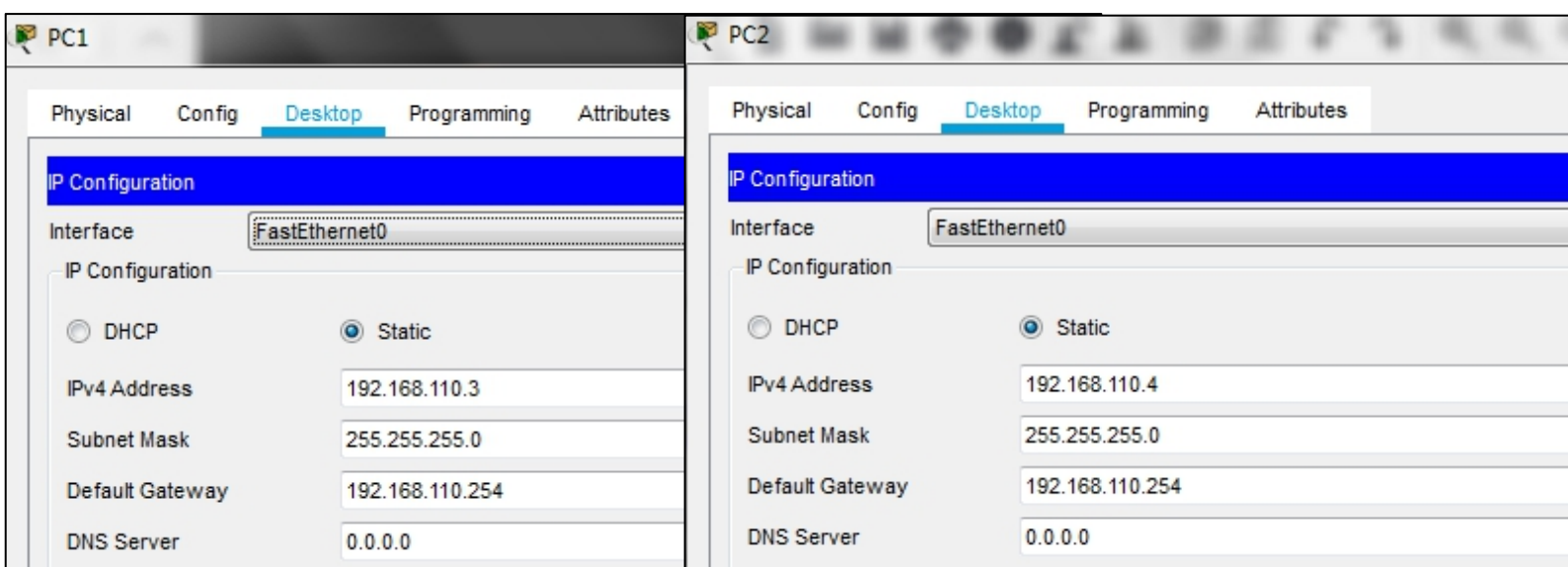
Switch>en
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int vlan 1
Switch(config-if)#ip address 192.168.120.250 255.255.255.0
Switch(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state
to up

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

3. Konfigurasi alamat IP, subnet mask, dan default gateway pada masing masing komputer.
PC1 dan PC2



The image shows two side-by-side screenshots of PC configuration windows for PC1 and PC2. Both windows have tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is selected, and the 'IP Configuration' section is expanded. In both cases, the interface is 'FastEthernet0' and the configuration is set to 'Static'.

Interface	IPv4 Address	Subnet Mask	Default Gateway	DNS Server
FastEthernet0	192.168.110.3	255.255.255.0	192.168.110.254	0.0.0.0

Interface	IPv4 Address	Subnet Mask	Default Gateway	DNS Server
FastEthernet0	192.168.110.4	255.255.255.0	192.168.110.254	0.0.0.0

PC3 dan PC4

The image shows two side-by-side configuration windows for PC3 and PC4. Both windows have tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is selected, and the 'IP Configuration' section is active. In both windows, the 'Interface' is 'FastEthernet0' and the configuration is set to 'Static'.

Field	PC3 Value	PC4 Value
IPv4 Address	192.168.120.3	192.168.120.4
Subnet Mask	255.255.255.0	255.255.255.0
Default Gateway	192.168.120.254	192.168.120.254
DNS Server	0.0.0.0	0.0.0.0

4. Melakukan konfigurasi FastEthernet pada kedua jaringan Router1

The image shows the configuration window for Router1. The 'Config' tab is selected, and the 'FastEthernet0/0' interface is chosen from the left-hand menu. The configuration details for FastEthernet0/0 are shown on the right.

Field	Value
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	000C.8590.8E5C
IPv4 Address	192.168.10.1
Subnet Mask	255.255.255.0
Tx Ring Limit	10

Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

Router1

PhysicalConfigCLIAttributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet0/0

FastEthernet1/0

Serial2/0

Serial3/0

FastEthernet4/0

FastEthernet5/0

FastEthernet1/0

Port Status

☒ On

Bandwidth

☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex

☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address

000A.F368.6D30

IP Configuration

IPv4 Address

192.168.110.254

Subnet Mask

255.255.255.0

Tx Ring Limit

10

Equivalent IOS Commands

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface FastEthernet0/0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface FastEthernet1/0

Router(config-if)#

Router2

The screenshot shows the Router2 configuration window with the 'Config' tab selected. The left sidebar has a tree view with 'INTERFACE' expanded and 'FastEthernet0/0' selected. The main panel shows the configuration for 'FastEthernet0/0'. The 'Port Status' is 'On'. 'Bandwidth' is set to '100 Mbps' and 'Auto'. 'Duplex' is set to 'Full Duplex' and 'Auto'. The 'MAC Address' is '00E0.B028.72BE'. The 'IP Configuration' section shows 'IPv4 Address' as '192.168.10.2' and 'Subnet Mask' as '255.255.255.0'. The 'Tx Ring Limit' is '10'. Below the configuration panel, the 'Equivalent IOS Commands' section shows the following commands:

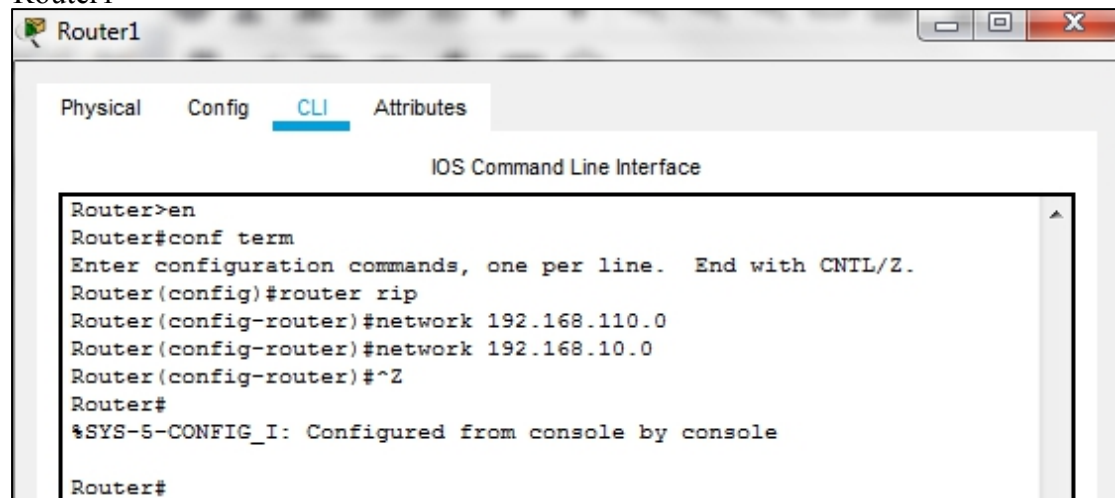
```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

The screenshot shows the Router2 configuration window with the 'Config' tab selected. The left sidebar has a tree view with 'INTERFACE' expanded and 'FastEthernet1/0' selected. The main panel shows the configuration for 'FastEthernet1/0'. The 'Port Status' is 'On'. 'Bandwidth' is set to '100 Mbps' and 'Auto'. 'Duplex' is set to 'Full Duplex' and 'Auto'. The 'MAC Address' is '0060.5C6C.E2B7'. The 'IP Configuration' section shows 'IPv4 Address' as '192.168.120.254' and 'Subnet Mask' as '255.255.255.0'. The 'Tx Ring Limit' is '10'. Below the configuration panel, the 'Equivalent IOS Commands' section shows the following commands:

```
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
```

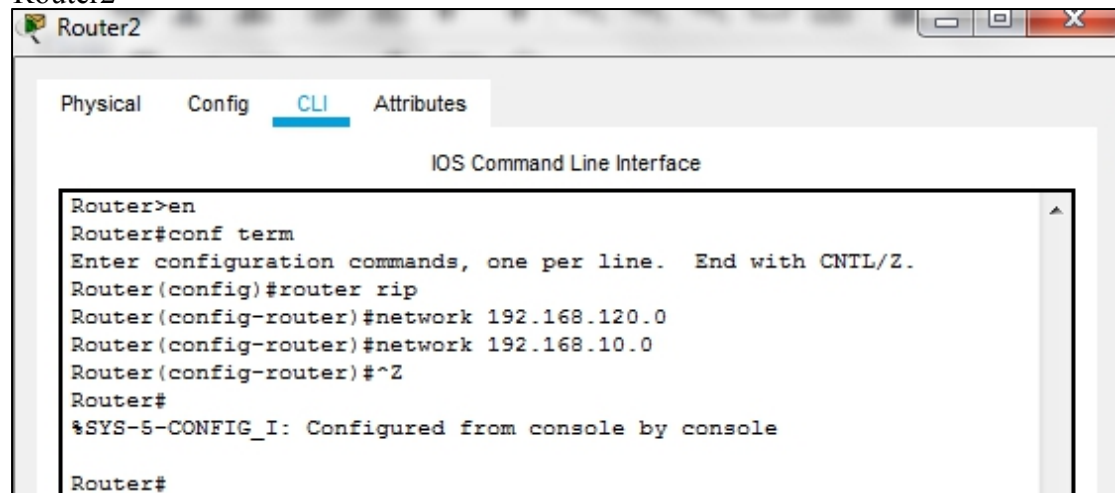

5. Membuat router RIP pada masing-masing router

Router1

The screenshot shows the CLI window for Router1. The 'CLI' tab is selected under the 'Config' section. The terminal text shows the configuration of RIP on Router1, including enabling the router, entering configuration mode, and specifying two networks: 192.168.110.0 and 192.168.10.0.

```
Router1
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)#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
Router#
```

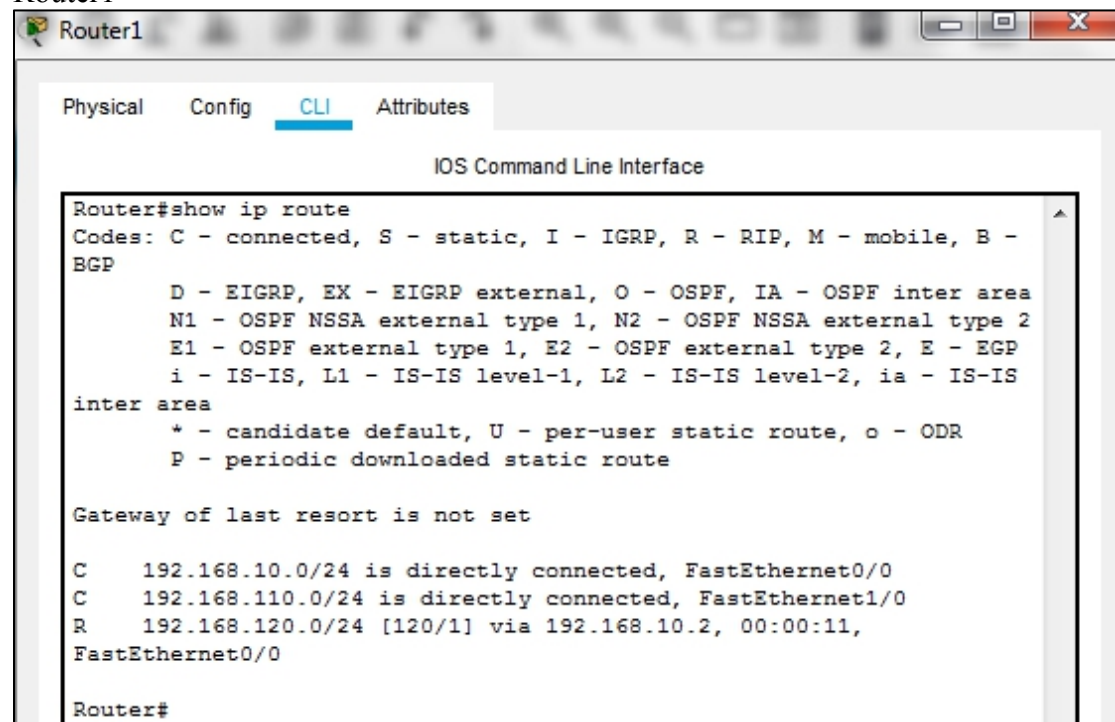
Router2

The screenshot shows the CLI window for Router2. The 'CLI' tab is selected under the 'Config' section. The terminal text shows the configuration of RIP on Router2, including enabling the router, entering configuration mode, and specifying two networks: 192.168.120.0 and 192.168.10.0.

```
Router2
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)#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
Router#
```

6. Pengecekan tabel routing pada kedua router.

Router1



The screenshot shows the CLI of Router1. The 'CLI' tab is selected. The command 'show ip route' has been entered, and the output is displayed. The output shows the routing table for Router1, including connected routes and a static route.

```
Router1
Physical Config CLI Attributes
IOS Command Line Interface

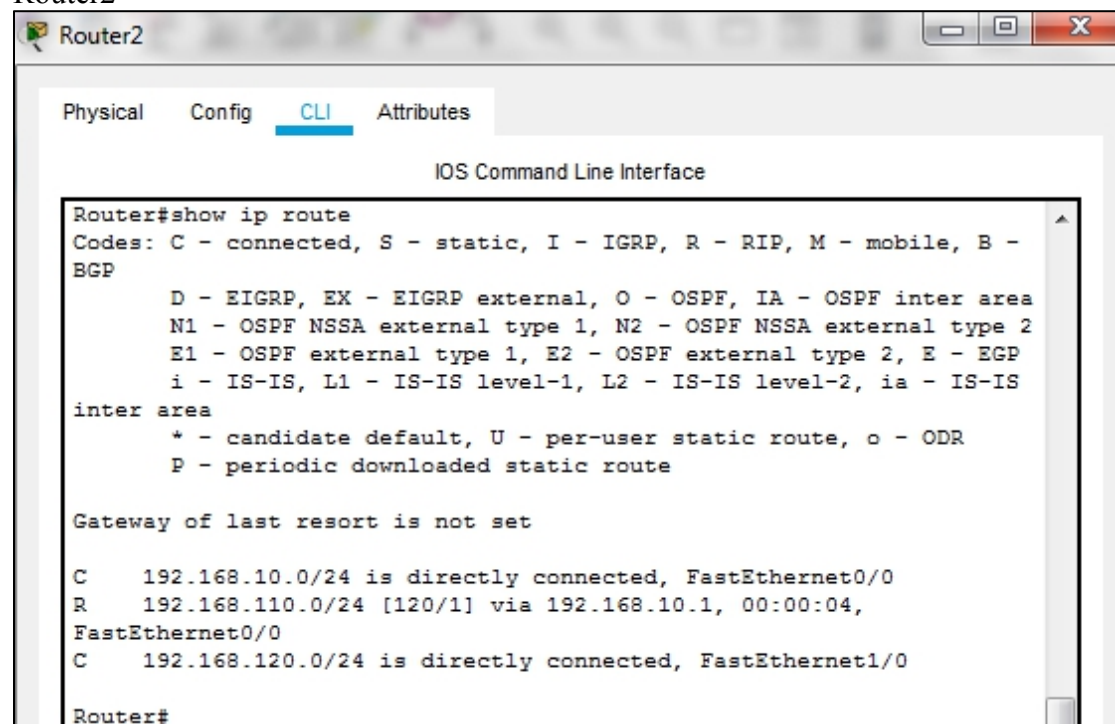
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E -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

C    192.168.10.0/24 is directly connected, FastEthernet0/0
C    192.168.110.0/24 is directly connected, FastEthernet1/0
R    192.168.120.0/24 [120/1] via 192.168.10.2, 00:00:11,
FastEthernet0/0

Router#
```

Router2



The screenshot shows the CLI of Router2. The 'CLI' tab is selected. The command 'show ip route' has been entered, and the output is displayed. The output shows the routing table for Router2, including connected routes and a static route.

```
Router2
Physical Config CLI Attributes
IOS Command Line Interface

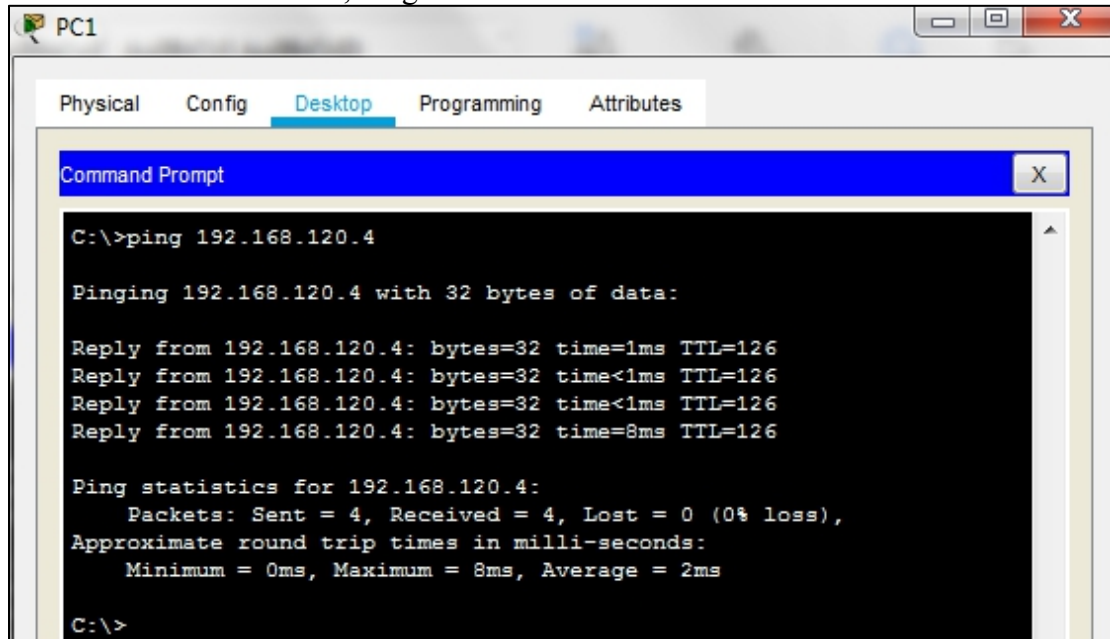
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E -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

C    192.168.10.0/24 is directly connected, FastEthernet0/0
R    192.168.110.0/24 [120/1] via 192.168.10.1, 00:00:04,
FastEthernet0/0
C    192.168.120.0/24 is directly connected, FastEthernet1/0

Router#
```


7. Melakukan tes koneksi, Ping PC1 ke PC4



The screenshot shows a 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 the command 'C:\>ping 192.168.120.4'. The output indicates a successful ping to 192.168.120.4 with 32 bytes of data. Four replies are shown with times of 1ms, <1ms, <1ms, and 8ms, all with a TTL of 126. The ping statistics show 4 packets sent, 4 received, and 0% loss, with an average round trip time of 2ms.

```
C:\>ping 192.168.120.4

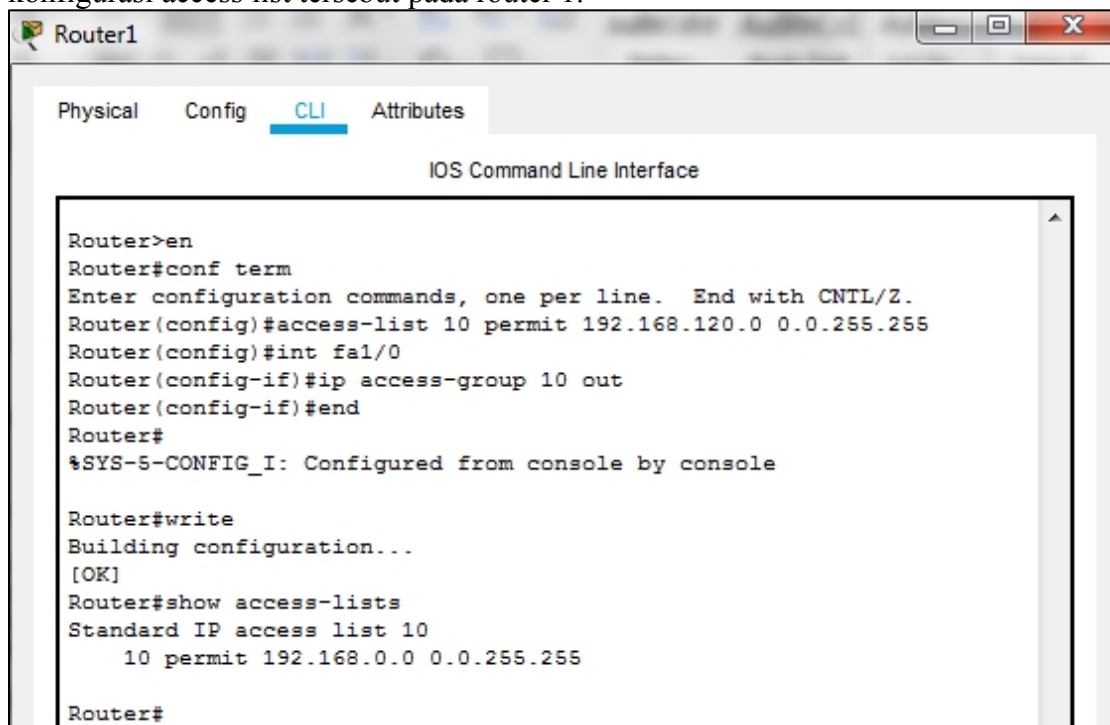
Pinging 192.168.120.4 with 32 bytes of data:

Reply from 192.168.120.4: bytes=32 time=1ms TTL=126
Reply from 192.168.120.4: bytes=32 time<1ms TTL=126
Reply from 192.168.120.4: bytes=32 time<1ms TTL=126
Reply from 192.168.120.4: bytes=32 time=8ms TTL=126

Ping statistics for 192.168.120.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 8ms, Average = 2ms

C:\>
```

8. Konfigurasi Access List dan menerapkannya ke router 1. Kemudian melihat konfigurasi access list tersebut pada router 1.



The screenshot shows a window titled 'Router1' with tabs for Physical, Config, CLI, and Attributes. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The commands entered are: 'Router>en', 'Router#conf term', 'Router(config)#access-list 10 permit 192.168.120.0 0.0.255.255', 'Router(config)#int fa1/0', 'Router(config-if)#ip access-group 10 out', 'Router(config-if)#end', 'Router#', '%SYS-5-CONFIG_I: Configured from console by console', 'Router#write', 'Building configuration...', '[OK]', 'Router#show access-lists', 'Standard IP access list 10', '10 permit 192.168.0.0 0.0.255.255', and 'Router#'.

```
Router>en
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)#int fa1/0
Router(config-if)#ip access-group 10 out
Router(config-if)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write
Building configuration...
[OK]
Router#show access-lists
Standard IP access list 10
  10 permit 192.168.0.0 0.0.255.255

Router#
```

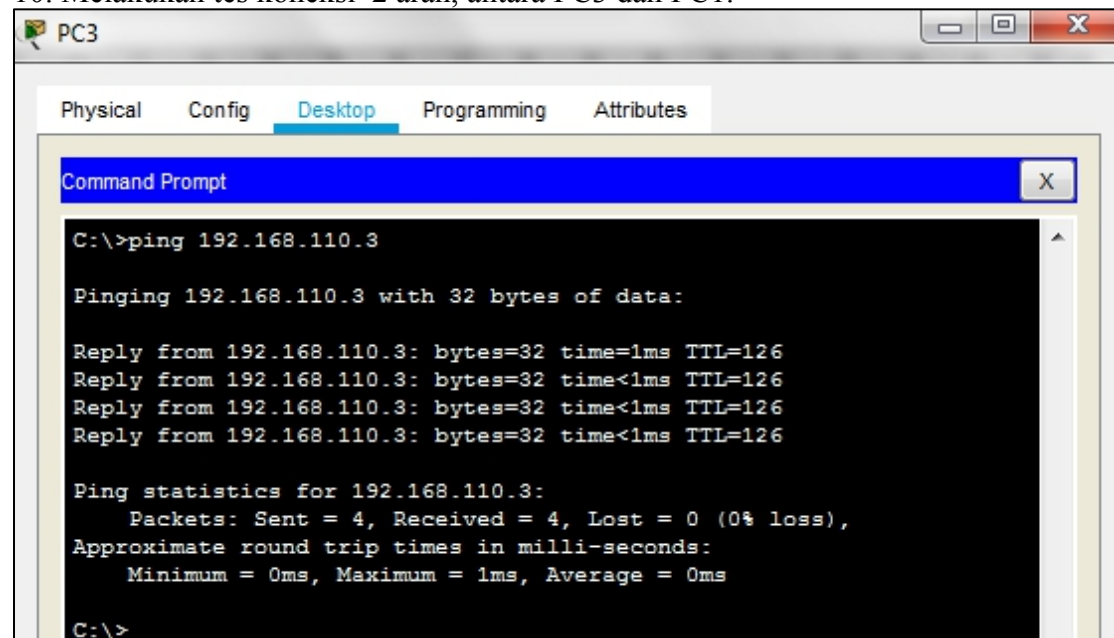
9. Show running-config



The screenshot shows the 'CLI' tab of the 'Router1' configuration window. The 'IOS Command Line Interface' is active, displaying the running configuration. The configuration includes settings for FastEthernet0/0, FastEthernet1/0, Serial2/0, Serial3/0, FastEthernet4/0, and FastEthernet5/0. It also shows the configuration for the 'router rip' and 'ip classless' commands, and an 'access-list 10' command.

```
interface FastEthernet0/0
ip address 192.168.10.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet1/0
ip address 192.168.110.254 255.255.255.0
ip access-group 10 out
duplex auto
speed auto
!
interface Serial2/0
no ip address
clock rate 2000000
shutdown
!
interface Serial3/0
no ip address
clock rate 2000000
shutdown
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
router rip
network 192.168.10.0
network 192.168.110.0
!
ip classless
!
ip flow-export version 9
!
!
access-list 10 permit 192.168.0.0 0.0.255.255
```

10. Melakukan tes koneksi 2 arah, antara PC3 dan PC1.



The screenshot shows the 'Desktop' tab of the 'PC3' configuration window. A 'Command Prompt' window is open, displaying the output of a 'ping' command. The command executed is 'C:\>ping 192.168.110.3'. The output shows four successful replies from 192.168.110.3, each with 32 bytes of data, a time of 1ms, and a TTL of 126. The ping statistics for 192.168.110.3 are also displayed, showing 4 packets sent, 4 received, and 0% loss.

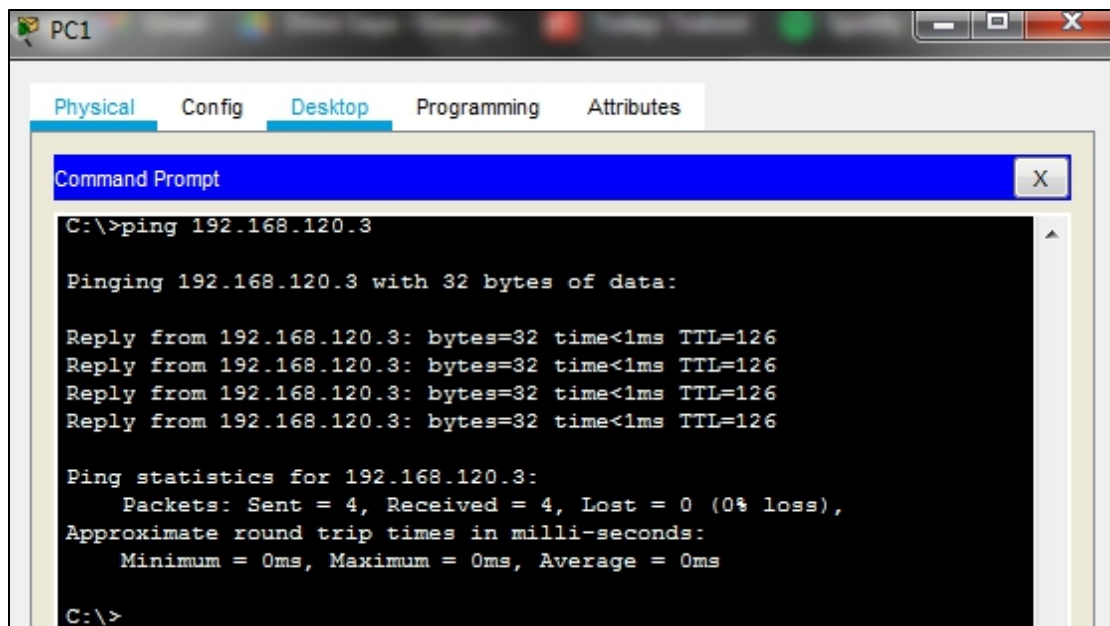
```
C:\>ping 192.168.110.3

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

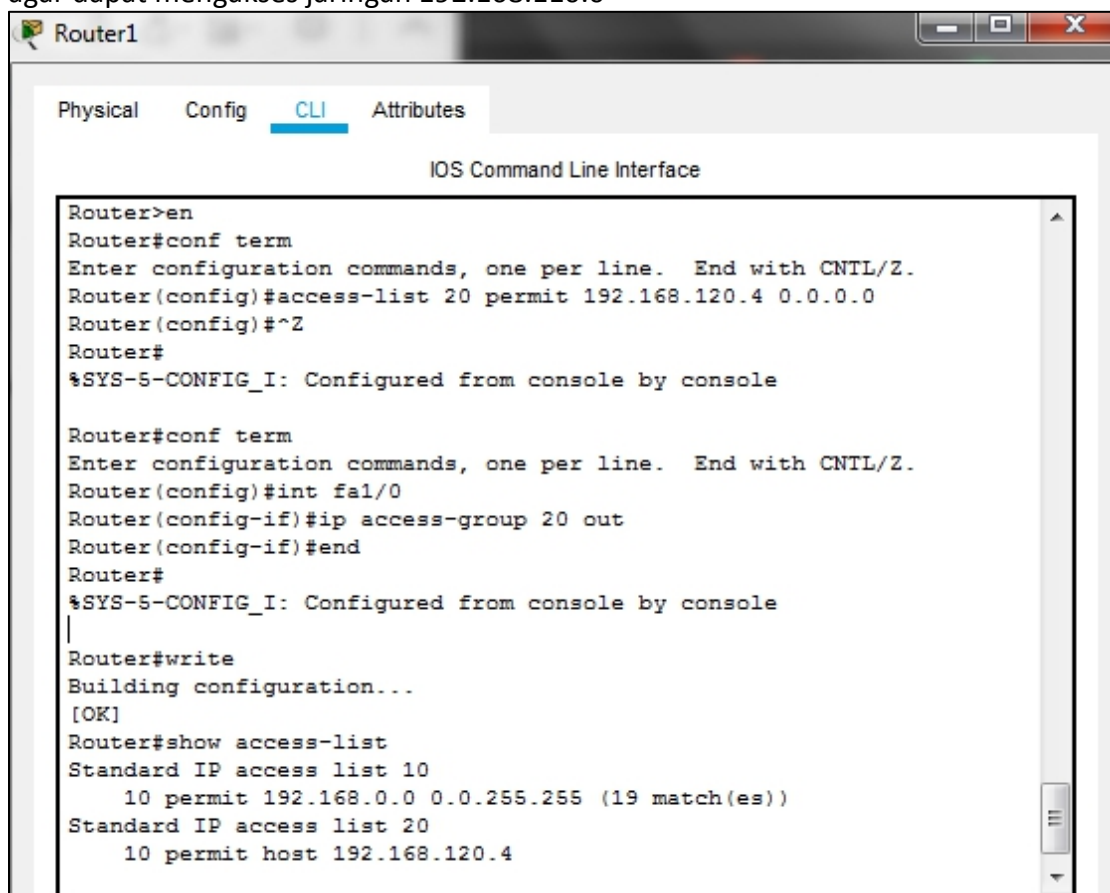
Ping statistics for 192.168.110.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

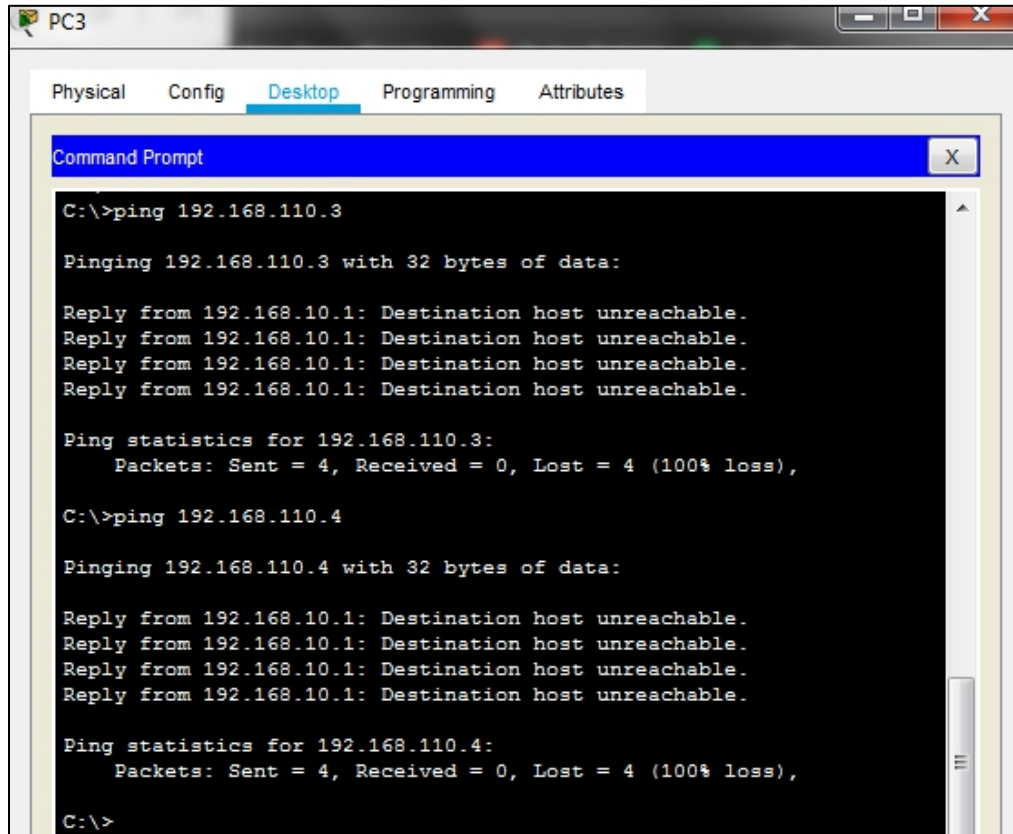


11. **Kesimpulan:** Mendapatkan balasan “**Reply**” karena Router1 mengizinkan host dari jaringan 192.168.120.0 agar dapat mengakses jaringan 192.168.100.0

12. Konfigurasi Access List 20 pada Router1 dengan alamat IP 192.168.120.4 (PC4) agar dapat mengakses jaringan 192.168.110.0



13. Melakukan tes koneksi dari PC 3 ke PC 1 dan PC 2



The screenshot shows a virtual machine window titled 'PC3' with a 'Desktop' tab selected. Inside the desktop is 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 'Destination host unreachable' replies and a 100% loss of packets. The second command is 'C:\>ping 192.168.110.4', which also results in four 'Destination host unreachable' replies and a 100% loss of packets.

```
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

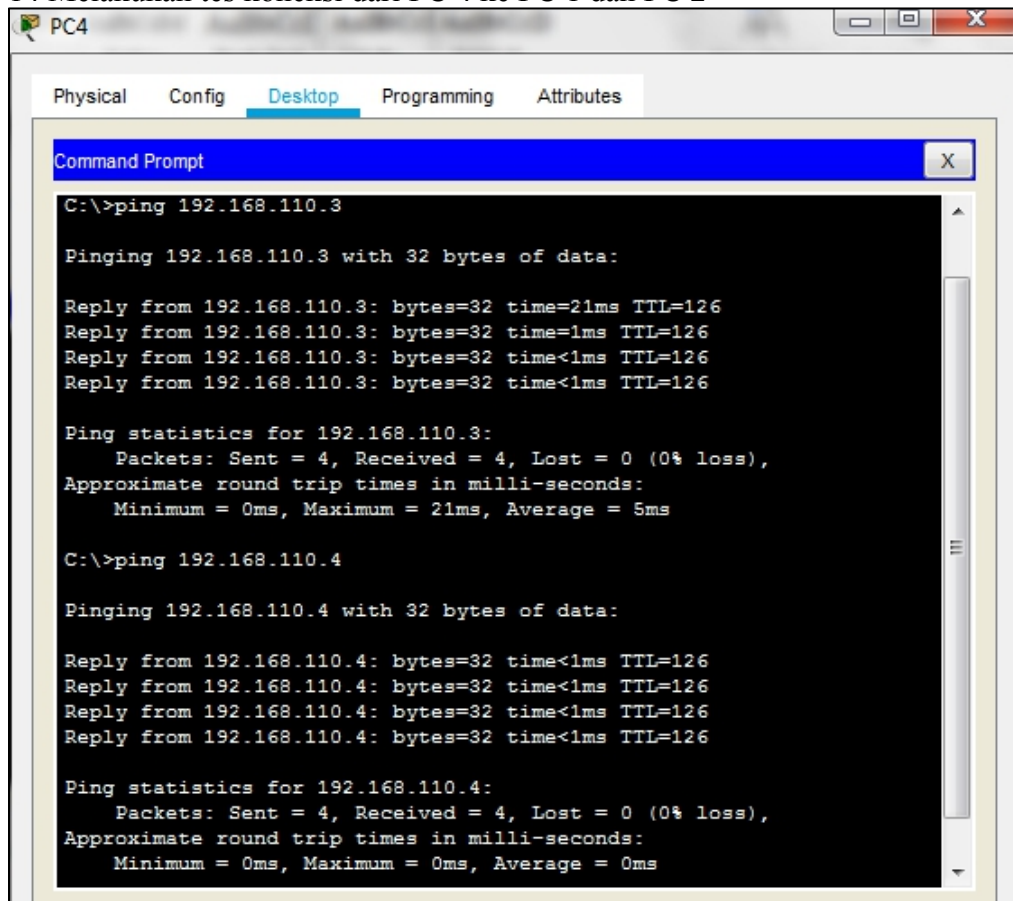
Pinging 192.168.110.4 with 32 bytes of data:

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:\>
```

14 Melakukan tes koneksi dari PC 4 ke PC 1 dan PC 2



The screenshot shows a virtual machine window titled 'PC4' with a 'Desktop' tab selected. Inside the desktop is 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 with 32 bytes, times less than 1ms, and TTL=126. The second command is 'C:\>ping 192.168.110.4', which also results in four successful replies with 32 bytes, times less than 1ms, and TTL=126.

```
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=21ms 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 = 21ms, Average = 5ms

C:\>ping 192.168.110.4

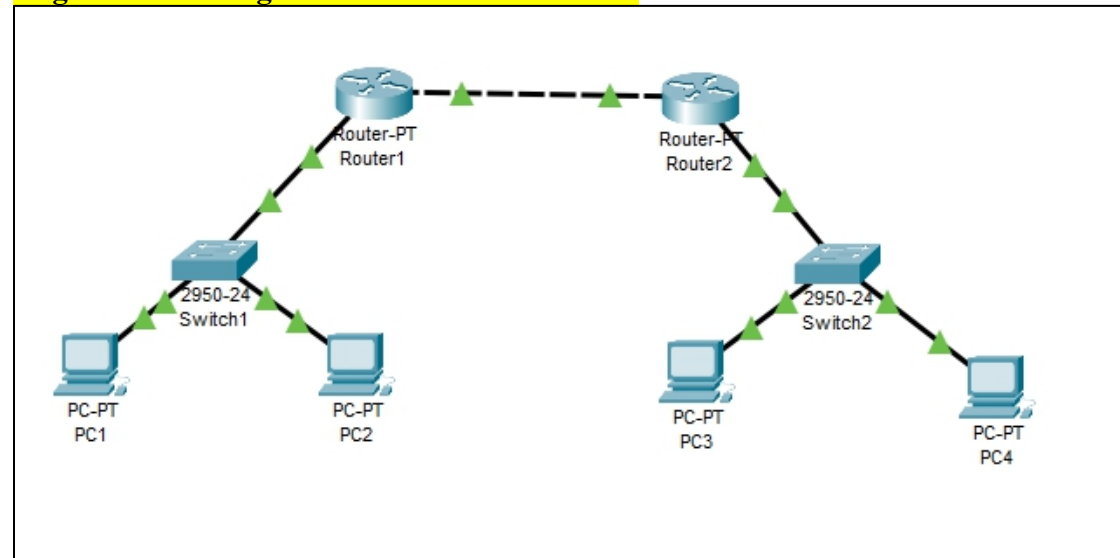
Pinging 192.168.110.4 with 32 bytes of data:

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 = 0ms, Average = 0ms
```

15. **Kesimpulan:** Pada saat PC3 melakukan tes koneksi ke PC1 dan PC2 hasilnya mendapatkan “**unreachable**”, karena tidak mendapatkan ijin akses, dikarenakan pada saat mengkonfigurasi Access List pada router1 hanya PC4 saja yang diberi ijin untuk mengakses PC1 dan PC2 dengan mendapatkan “**Reply**”

Kegiatan 2. Konfigurasi Extended Access List

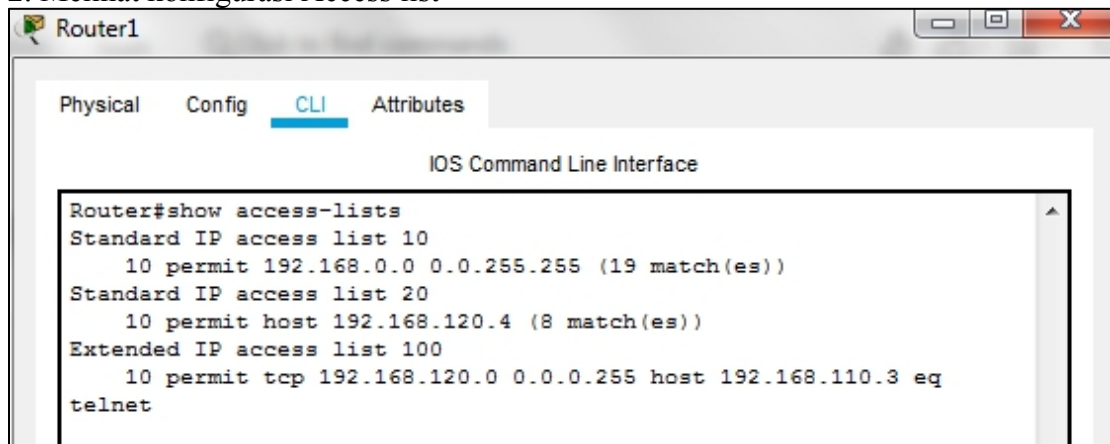


1. Mengizinkan paket telnet dari semua host pada jaringan 192.168.120.0 ke host 192.168.110.3

```
Router1
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)#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 fa0/0
Router(config-if)#ip access-group 100 in
Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write
Building configuration...
[OK]
```

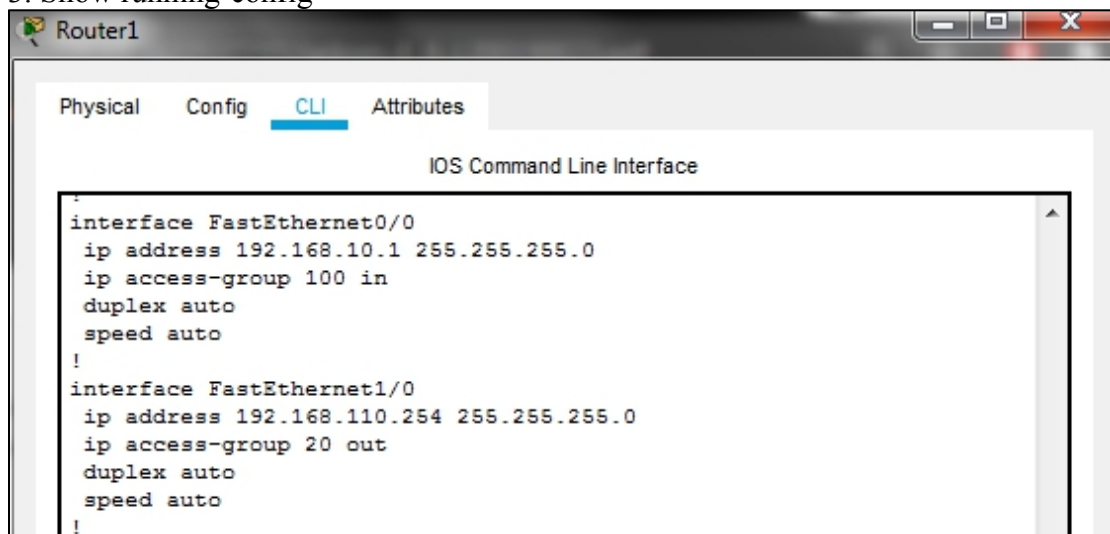
2. Melihat konfigurasi Access list



The screenshot shows a window titled "Router1" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the "IOS Command Line Interface". The command "Router#show access-lists" has been entered, resulting in the following output:

```
Router#show access-lists
Standard IP access list 10
  10 permit 192.168.0.0 0.0.255.255 (19 match(es))
Standard IP access list 20
  10 permit host 192.168.120.4 (8 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
```

3. Show running-config



The screenshot shows the same "Router1" window with the CLI tab active. The command "show running-config" has been entered, resulting in the following output:

```
!
interface FastEthernet0/0
 ip address 192.168.10.1 255.255.255.0
 ip access-group 100 in
 duplex auto
 speed auto
!
interface FastEthernet1/0
 ip address 192.168.110.254 255.255.255.0
 ip access-group 20 out
 duplex auto
 speed auto
!
```