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NIM : L200170050

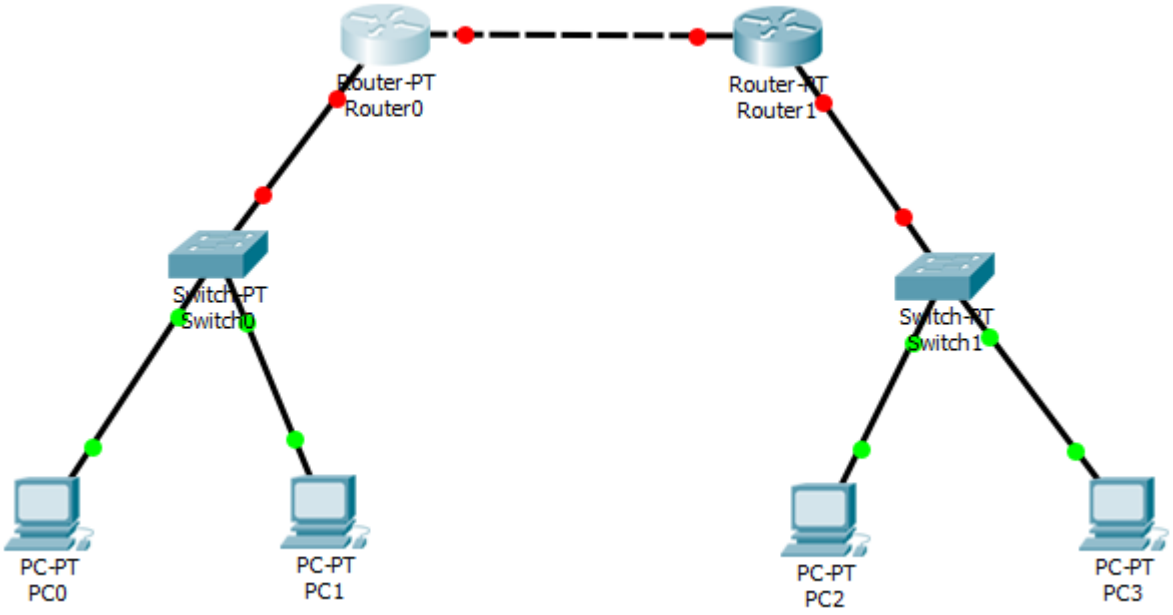
Kelas : B

MODUL 8

PACKET FILTERING DENGAN ACCESS LIST

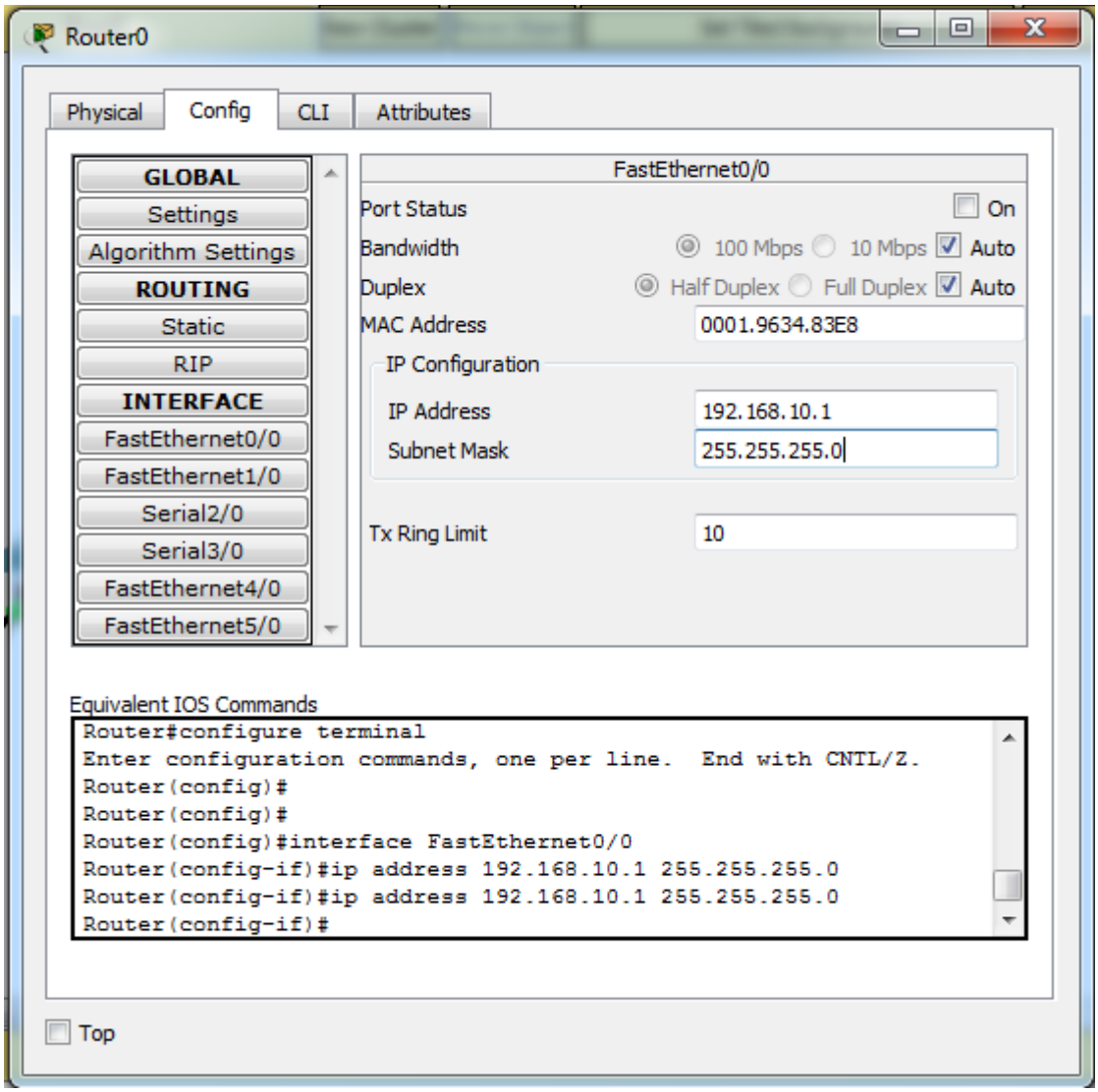
C. Kegiatan Praktikum

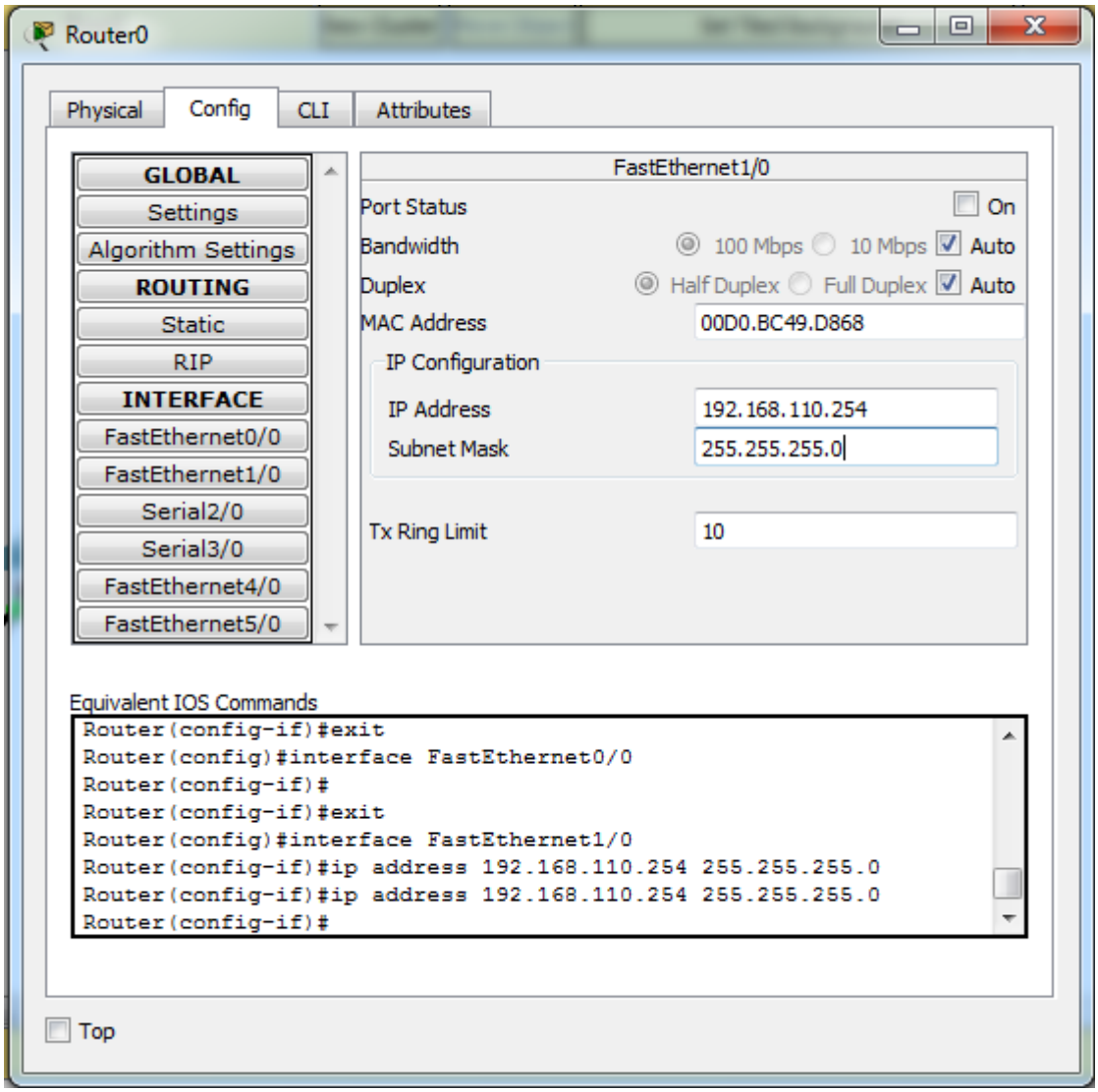
Kegiatan 1. Konfigurasi Access List

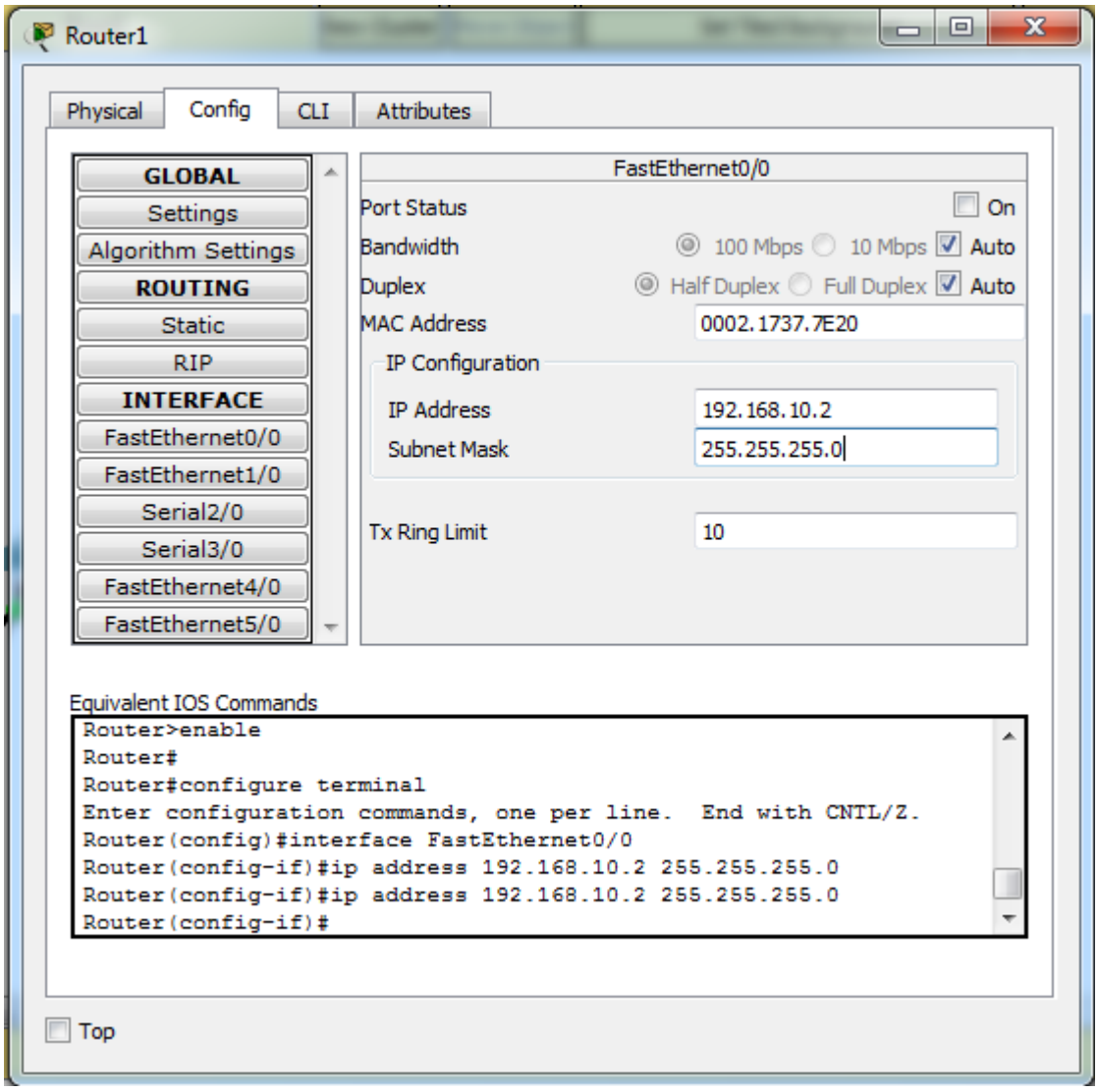


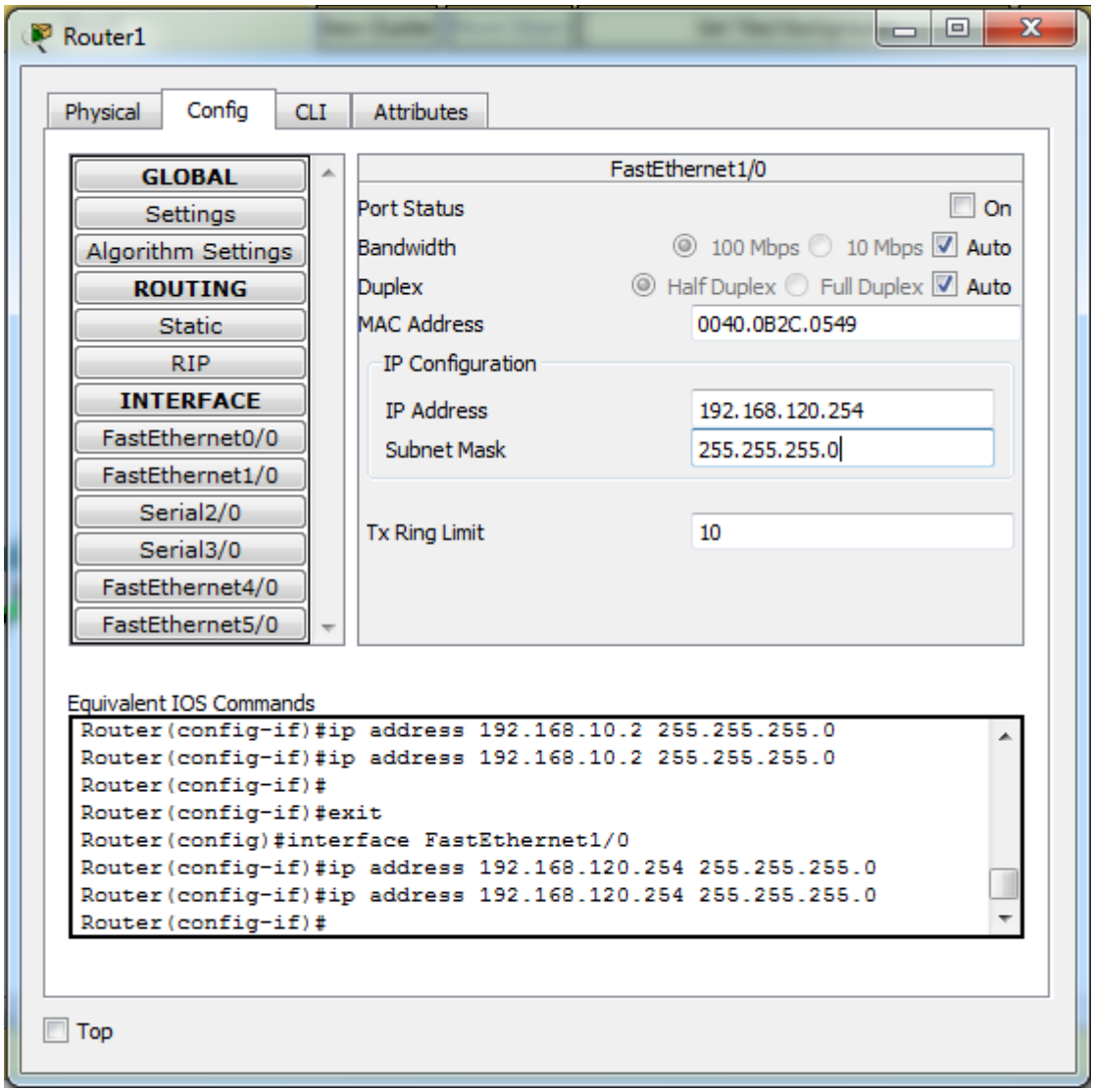
Langkah – langkah yang dilakukan untuk mengkonfigurasi Access List pada rangkaian di atas:

1. Memberikan alamat IP dan subnet mask pada masing – masing interface pada Router0 dan Router 1.

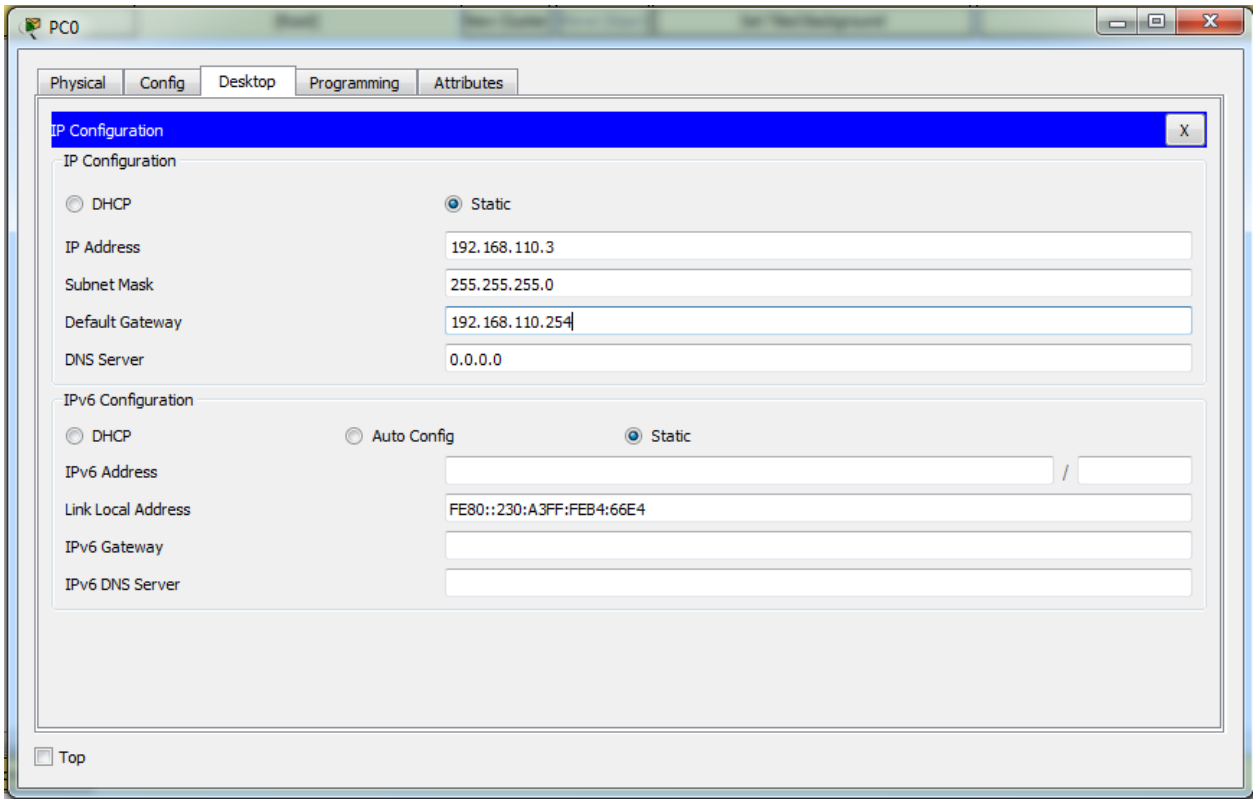

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.9634.83E8
IP Configuration
IP Address
192.168.10.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#
Top

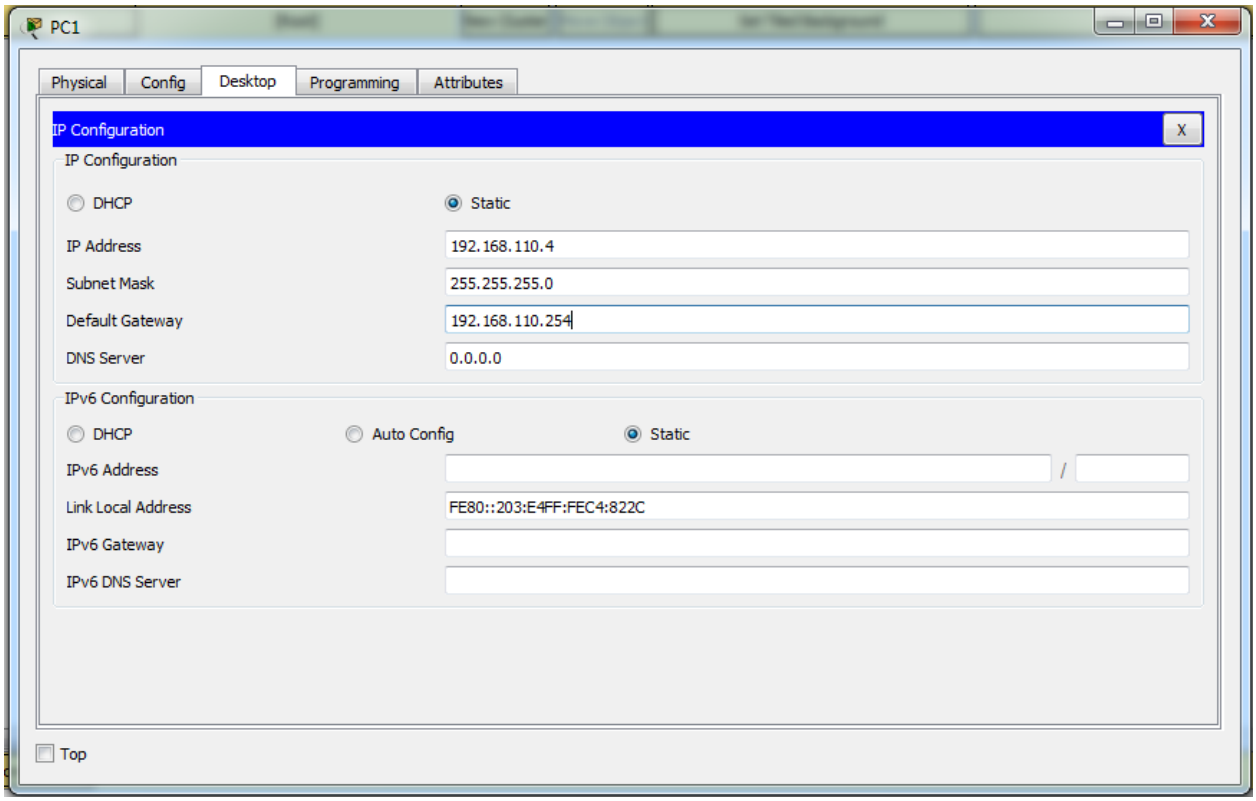

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet1/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00D0.BC49.D868
IP Configuration
IP Address
192.168.110.254
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#ip address 192.168.110.254 255.255.255.0
Router(config-if)#ip address 192.168.110.254 255.255.255.0
Router(config-if)#
Top

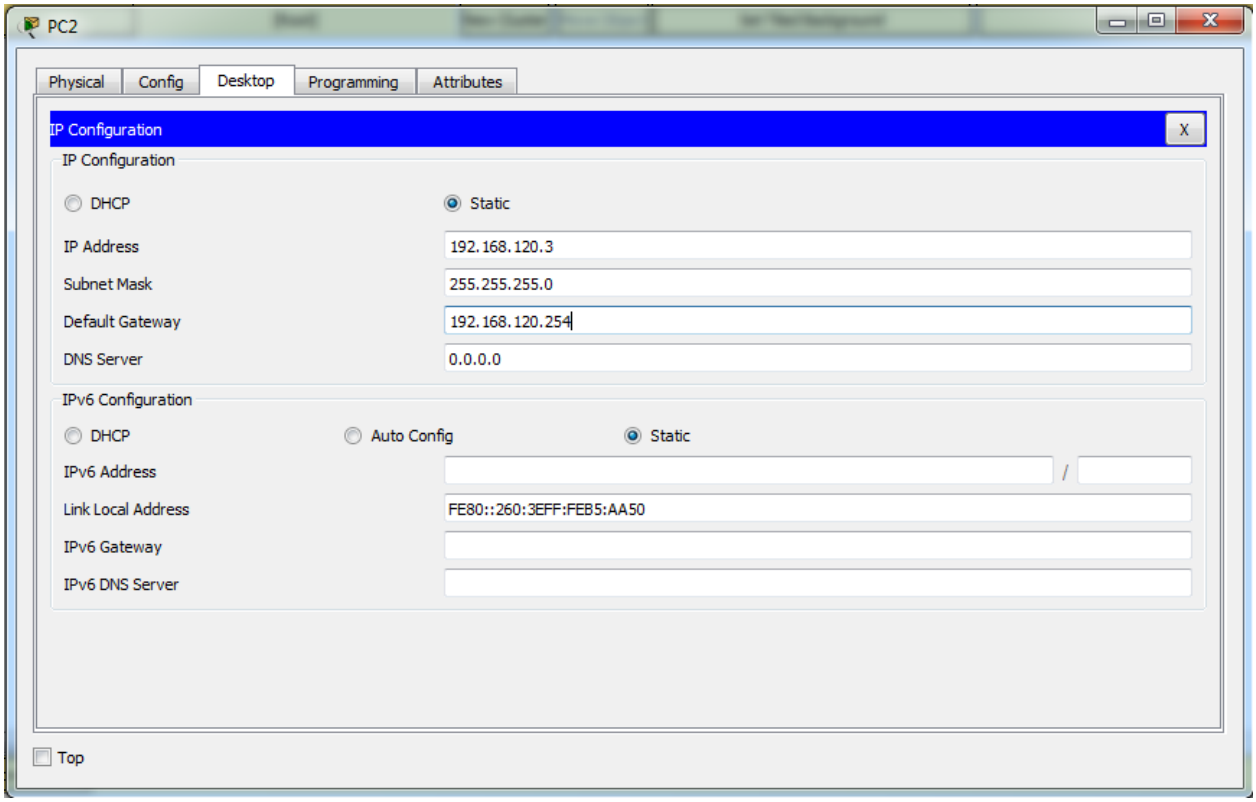

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.1737.7E20
IP Configuration
IP Address
192.168.10.2
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)#ip address 192.168.10.2 255.255.255.0
Router(config-if)#ip address 192.168.10.2 255.255.255.0
Router(config-if)#
Top

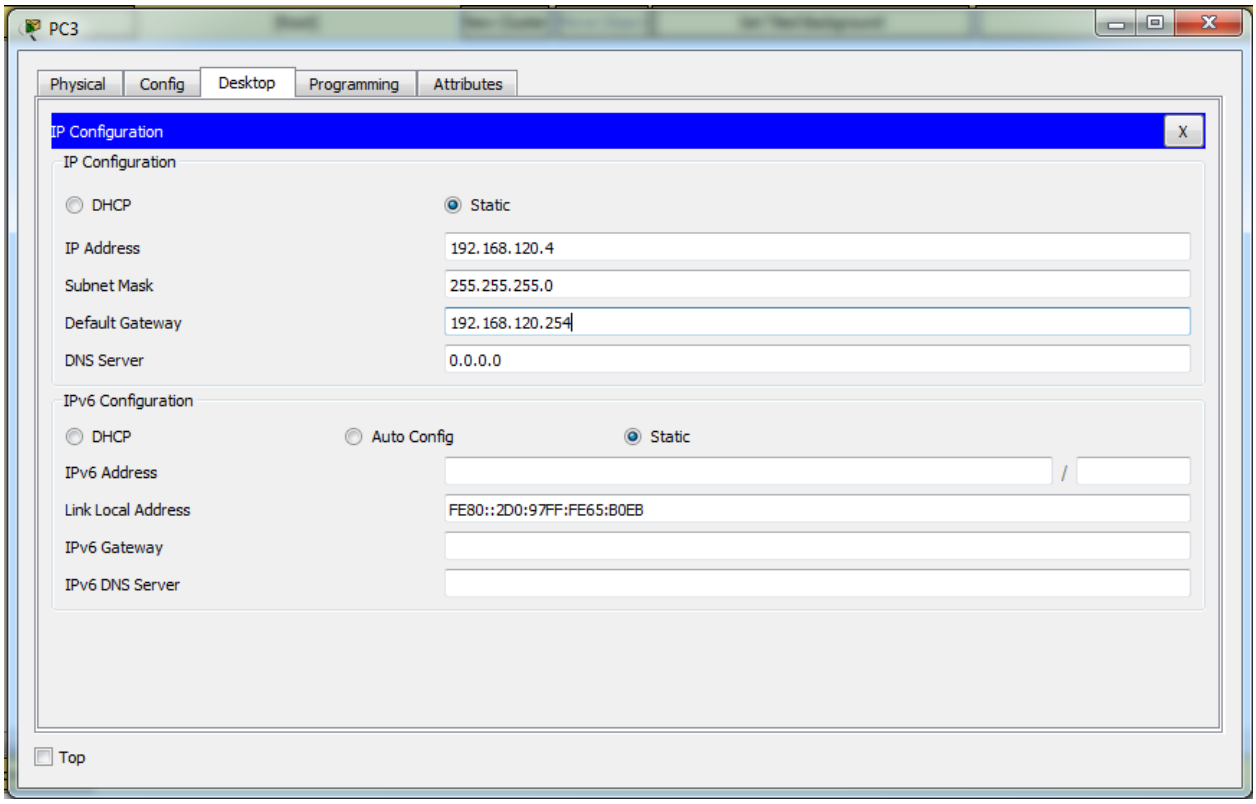

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet1/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0040.0B2C.0549
IP Configuration
IP Address
192.168.120.254
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#ip address 192.168.10.2 255.255.255.0
Router(config-if)#ip address 192.168.10.2 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#ip address 192.168.120.254 255.255.255.0
Router(config-if)#ip address 192.168.120.254 255.255.255.0
Router(config-if)#
Top

2. Memberikan alamat IP, subnet mask, dan default gateway pada masing – masing computer (PC0, PC1, PC2, dan PC3)




PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.110.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.110.254
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
/
Link Local Address
FE80::203:E4FF:FEC4:822C
IPv6 Gateway
IPv6 DNS Server
Top


PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.120.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.120.254
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
/
Link Local Address
FE80::260:3EFF:FEB5:AA50
IPv6 Gateway
IPv6 DNS Server
Top



3. Setting RIP protocol pada masing – masing router.

Router0

```
Router(config-router)#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
```

Router1

```
Router#conf
Configuring from terminal, memory, or network [terminal]?
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
```

4. Mengecek tabel routing pada masing – masing router.

Router0

```
Router>enable
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, 00:00:03,
FastEthernet0/0
```

Router1

```
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, 00:00:24,
FastEthernet0/0
C    192.168.120.0/24 is directly connected, FastEthernet1/0
```

5. Melakukan tes koneksi dengan menggunakan perintah [ping] pada PC0 ke PC3, dan sebaliknya.

   PC0

```
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=1ms 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 = 1ms, Maximum = 1ms, Average = 1ms
```

   PC1

```
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
```

   Dari hasil yang muncul, menunjukkan bahwa masing – masing PC saling membalas ping yang mereka terima, sehingga routing berhasil.

6. Berikutnya mengatur Access List pada Router0.

```
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#access-list 10 deny 192.168.120.0 0.0.255.255
Router(config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa1/0
Router(config-if)#ip access-group 10 out
Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

7. Melihat konfigurasi Access List Router0.

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

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

Current configuration : 845 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
!
!
!
!
!
!
!
!
!
!
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
 shutdown
!
interface Serial3/0
 no ip address
 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
!
!
!
!
!
!
```

```
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end
```

8. Melakukan tes koneksi dengan menggunakan perintah [ping] pada PC0 ke PC3, dan sebaliknya.

PC0

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.120.4

Pinging 192.168.120.4 with 32 bytes of data:

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

Ping statistics for 192.168.120.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

PC3

```
Packet Tracer PC Command Line 1.0
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:\>
```

```
Router#show access-lists
Standard IP access list 10
    10 deny 192.168.0.0 0.0.255.255 (7 match(es))
```

Apakah masih terjadi koneksi?

Tidak, karena Access List yang diatur untuk koneksi antara PC0 dengan PC3 diatur agar tidak mengijinkan semua host dari jaringan 192.168.120.0 dapat mengakses jaringan 192.168.110.0, ini dapat dilihat dari perintahnya yang menggunakan ‘deny’ dan hasil dari ping, dimana saat PC0 mem-ping PC3 hasil yang ditampilkan adalah RTO dan saat PC3 mem-ping PC0 hasil yang ditunjukkan bahwa PC3 saling terhubung, tetapi tidak dapat menjangkau PC0. Sederhananya memberikan limit pada jaringan 192.168.110.0.

9. Membuat Access List lain pada Router0.

```
Router#conf
Configuring from terminal, memory, or network [terminal]?
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
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa1/0
Router(config-if)#ip access-group 20 out
Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

10. Melihat konfigurasi Access List Router0.

```
Router#show access-lists
Standard IP access list 10
    10 deny 192.168.0.0 0.0.255.255 (7 match(es))
Standard IP access list 20
    10 permit host 192.168.120.4
```

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

Current configuration : 886 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
!
!
!
```

```
!
!
!
!
!
!
!
!
!
!
!
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 20 out
 duplex auto
 speed auto
!
```

```
interface Serial2/0
 no ip address
 shutdown
!
interface Serial3/0
 no ip address
 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
access-list 20 permit host 192.168.120.4
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end
```

11. Melakukan test koneksi pada PC2 yang berada pada jaringan 192.168.120.0 ke PC0 dan PC1 yang ada pada jaringan 192.168.110.0.

PC2

```
Packet Tracer PC Command Line 1.0
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),
```

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

Apakah tes tersebut berhasil?

Tidak, karena Access List yang diatur untuk koneksi diatur agar mengijinkan hanya host dengan ip address 192.168.120.4 saja yang diperbolehkan untuk berkomunikasi dengan host pada jaringan 192.168.110.0, dan oleh sebab itu PC2 dengan ip address 192.168.120.3 tidak dapat berkomunikasi dengan PC0 dan PC1.

12. Melakukan test koneksi pada PC3 yang berada pada jaringan 192.168.120.0 ke PC0 dan PC1 yang ada pada jaringan 192.168.110.0.

PC3

```
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=3ms TTL=126
Reply from 192.168.110.3: bytes=32 time=10ms 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 = 1ms, Maximum = 10ms, Average = 3ms
```

```
C:\>ping 192.168.110.4

Pinging 192.168.110.4 with 32 bytes of data:

Request timed out.
Reply from 192.168.110.4: bytes=32 time=11ms TTL=126
Reply from 192.168.110.4: bytes=32 time=10ms 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 = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 11ms, Average = 7ms
```

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

Apakah tes koneksi tersebut berhasil?

Iya, karena Access List yang diatur untuk koneksi diatur agar mengijinkan hanya host dengan ip address 192.168.120.4 dimana merupakan ip dari PC3, sehingga PC3 mampu berkomunikasi dengan host pada jaringan 192.168.110.0, dimana PC0 dan PC1 berada.

Kegiatan 2. Konfigurasi Extended Access List

Mengkonfigurasi Extended Access List pada Router0.

```
Router>enable
Router#conf
Configuring from terminal, memory, or network [terminal]?
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)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip access-group 100 in
Router(config-if)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Melakukan test koneksi dengan ping.

PC2

```
Packet Tracer PC Command Line 1.0
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),
```

PC3

```
Packet Tracer PC Command Line 1.0
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),
```

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