LAPORAN PRAKTIKUM JARINGAN KOMPUTER

MODUL 8

"PACKET FILTERING DENGAN ACCESS LIST"

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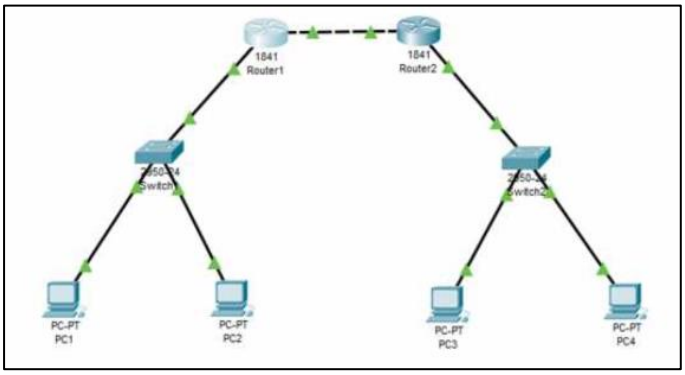
TUGAS MODUL

⇨ Tugas hasil kegiatan 1 dan kegiatan 2 di printscrn

Kegiatan 1. Konfigurasi Access List

1. Desain jaringan tersebut menggunakan router seri 1841 sedangkan semua switch menggunakan seri 2950-24, tambahkan 4 buah PC yang terbagi dalam 2 switch. Berikan identitas untuk semua sumber daya (router, switch, dan komputer) yang telah didesain.



2. Khusus untuk [Switch 1] dan [Switch 2] berikan alamat IP untuk digunakan sebagai default gateway bagi semua komputer.

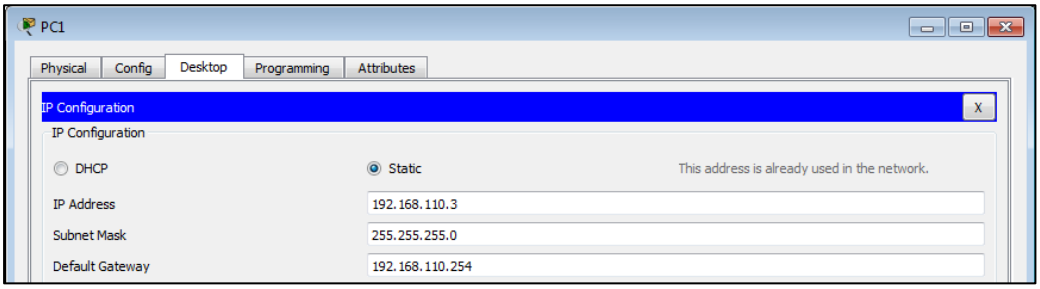
- Switch 1

```
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
```

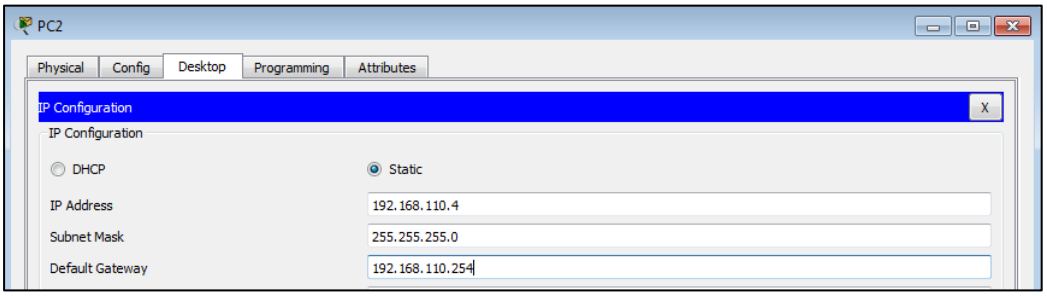
- Switch 2

```
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
```

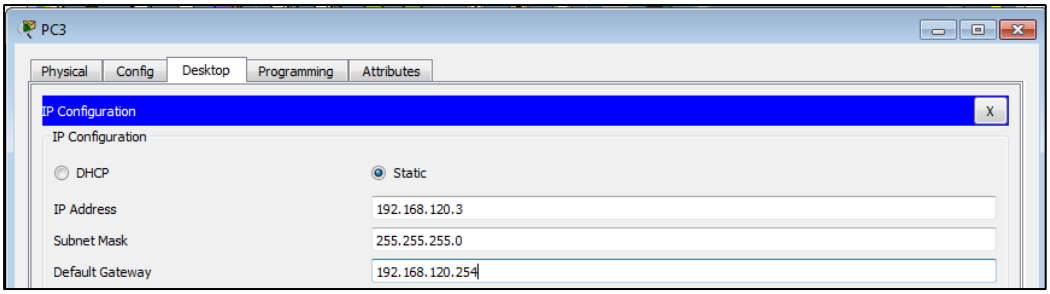
3. Berikutnya berikan alamat IP, subnet mask, dan defaul gateway pada masing-masing komputer.
   - PC1



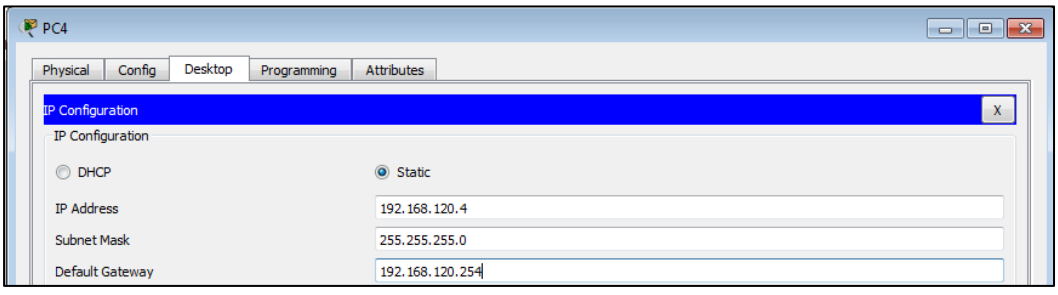
   - PC2



   - PC3



   - PC4



- Router 1

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no ip address
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.110.254 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

- Router 2

```
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)#no shutdown
Router(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

Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.120.254 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

4. Setelah semua sumber daya telah mempunyai identitas, lakukan routing untuk kedua jaringan tersebut. Gunakan routing dengan protokol RIP pada kedua jaringan. Pada [Router 1] diberikan network ID 192.168.110.0 dan 192.168.10.0 untuk digunakan sebagai jalur routing. Sedangkan [Router 2] diberikan network ID 192.168.120.0 dan 192.168.10.0 untuk digunakan sebagai jalur routing.
   - Switch 1

```
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
                     ^
% Invalid input detected at '^' marker.

Router(config-router)#
Router(config-router)#^Z
                     ^
% Invalid input detected at '^' marker.

Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

- Switch 2

```
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
```

5. Lakukan pengecekan tabel routing pada kedua router tersebut dengan perintah [show ip route]
   - Router 1

```
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, FastEthernet0/1
R    192.168.120.0/24 [120/1] via 192.168.10.2, 00:00:01, FastEthernet0/0
```

   - Router 2

```
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, 00:00:20,
FastEthernet0/0
C    192.168.120.0/24 is directly connected, FastEthernet0/1
```

6. Selanjutnya lakukan tes koneksi dari [PC1] ke [PC4] dengan menggunakan perintah ping.

```
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 = 0ms, Maximum = 0ms, Average = 0ms
```

7. Berikutnya tentukan Access List yang akan diterapkan dalam jaringan tersebut.

```
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
                                          ^
% Invalid input detected at '^' marker.

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
```

8. Selanjutnya terapkan Access List tersebt ke interface [Router 1] dalam hal ini interface [fa0/1] yang mengarah ke dalam jaringan 192.168.110.0. Opsi [out] pada bagian akhir perintah tersebut dimaksudkan untuk melewatkan paket keluar dari [Router1].

```
Router#en
Router#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa0/1
Router(config-if)#ip access-group 10 out
Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

9. Kemudian lihat konfigurasi Access List tersebut pada [Router 1]

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

10. Selanjutnya perhatikan juga konfigurasi Access List tersebut pada [Ethernet1] dengan perintah [show running-config]

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

Current configuration : 710 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
```

```
!
interface FastEthernet0/0
 ip address 192.168.10.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 192.168.110.254 255.255.255.0
 ip access-group 10 out
 duplex auto
 speed auto
!
interface Vlan1
 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
```

11. Lakukan tes koneksi dua arah antara [PC3] dan [PC1] yang berada pada jaringan berbeda dengan menggunakan perintah [ping]
    - PC3 ke PC1

```
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=11ms 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=2ms 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 = 11ms, Average = 3ms
```

    - PC1 ke PC3

```
C:\>ping 192.168.120.3

Pinging 192.168.120.3 with 32 bytes of data:

Reply from 192.168.120.3: bytes=32 time<1ms TTL=126
Reply from 192.168.120.3: bytes=32 time=1ms TTL=126
Reply from 192.168.120.3: bytes=32 time=11ms TTL=126
Reply from 192.168.120.3: bytes=32 time=13ms TTL=126

Ping statistics for 192.168.120.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 13ms, Average = 6ms
```

12. Memberikan hak akses hanya pada 1 host (PC4) dengan alamat IP 192.168.120.4 agar dapat mengakses ke jaringan 192.168.110.0

```
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
```

13. Kemudian terapkan Access List 20 tersebut ke interface [Ethernet] pada [Router1]

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

14. 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
    - PC3 ke PC1

```
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 ke PC2

```
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),
```

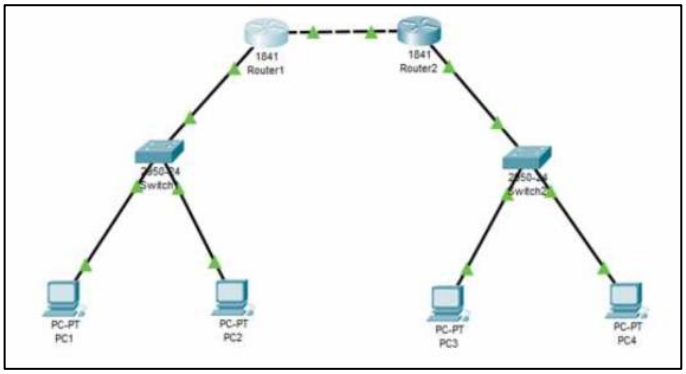
15. Lakukan juga tes koneksi dari [PC4] yang berada pada jaringan 192.168.120.0 ke [PC1] dan [PC2] yanga ada pada jaringan 192.168.110.0
    - PC4 ke PC1

```
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=10ms 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 = 10ms, Average = 2ms
```

    - PC4 ke 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=11ms 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 = 11ms, Average = 2ms
```

Kegiatan 2. Konfigurasi Extended Access List



1. Mengkonfigurasi Extended Access List

```
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
```

2. Cara menerapkan Extended Access List tersebut ke interface router

```
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 (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
```