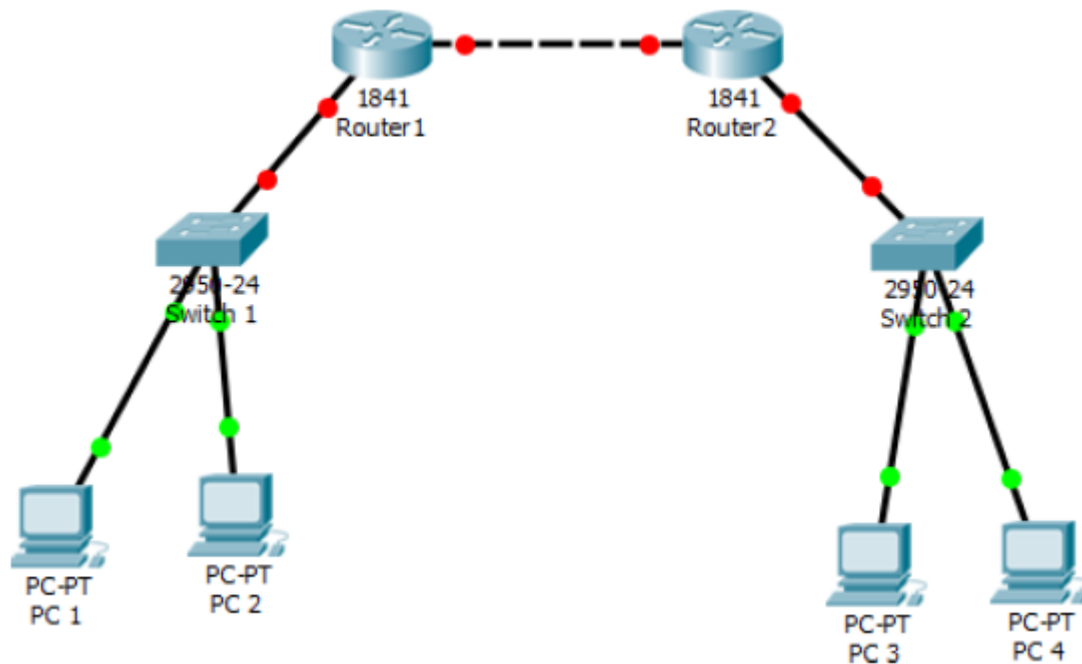


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- **Kegiatan 1 Praktikum**

Membuat topologi jaringan dengan menggunakan dua router seri 1841, dua switch seri 2950-24, dan 4 buah PC yang terbagi dalam dua switch tersebut seperti pada gambar di bawah ini.



Berikan alamat IP pada Switch 1 dan Switch 2.

```
Switch1>en
Switch1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch1(config)#int vlan 1
Switch1(config-if)#ip address 192.168.110.250 255.255.255.0
Switch1(config-if)#no shut

Switch1(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

Switch1(config-if)#ex
```

```

Switch2>en
Switch2#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch2(config)#int vlan 1
Switch2(config-if)#ip address 192.168.120.250 255.255.255.0
Switch2(config-if)#no shut

Switch2(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

Switch2(config-if)#ex
Switch2(config)#

```

Berikan alamat IP, subnet mask, dan default gateway pada masing-masing PC.

The screenshot shows the configuration window for PC1 in a network simulator. The 'Desktop' tab is selected, displaying the following configuration fields:

- Physical** tab: DHCP (selected)
- Config** tab: Static (selected)
- Desktop** tab:
 - IP Address: 192.168.110.3
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.168.110.254
 - DNS Server: 0.0.0.0
- Programming** tab: DHCP (selected)
- Attributes** tab:
 - IPv6 Configuration:
 - Static (selected)
 - IPv6 Address: [empty] / [empty]
 - Link Local Address: FE80::250:FFF:FE12:7252
 - IPv6 Gateway: [empty]
 - IPv6 DNS Server: [empty]
 - 802.1X:
 - Use 802.1X Security: [unchecked]
 - Authentication: MD5
 - Username: [empty]
 - Password: [empty]

At the bottom left, there is a checkbox labeled 'Top'.

PC2

Physical Config **Desktop** Programming Attributes

☐ 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::201:97FF:FE97:538C

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC3

Physical Config **Desktop** Programming Attributes

☐ 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::201:C7FF:FE14:6B17

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC4

PhysicalConfigDesktopProgrammingAttributes

☐ DHCP

☒ Static

IP Address

192.168.120.4

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::209:7CFF:FE02:6B21

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

☐ Top

Lakukan routing untuk kedua jaringan tersebut.

```
Router1>enable
Router1#
Router1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#interface FastEthernet0/1
Router1(config-if)#no shutdown
Router1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
ip address 192.168.10.1 255.255.255.0
Router1(config-if)#ip address 192.168.10.1 255.255.255.0
Router1(config-if)#
Router1(config-if)#exit
Router1(config)#interface FastEthernet0/0
Router1(config-if)#no shutdown
Router1(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
ip address 192.168.110.254 255.255.255.0
Router1(config-if)#ip address 192.168.110.254 255.255.255.0
Router1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up

Router1>en
Router1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#router rip
Router1(config-router)#network 192.168.110.0
Router1(config-router)#network 192.168.10.0
Router1(config-router)#^Z
Router1#
%SYS-5-CONFIG_I: Configured from console by console
|
```

```

Router2>enable
Router2#
Router2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router2(config)#interface FastEthernet0/0
Router2(config-if)#
Router2(config-if)#exit
Router2(config)#interface FastEthernet0/1
Router2(config-if)#no shutdown
Router2(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
ip address 192.168.10.2 255.255.255.0
Router2(config-if)#ip address 192.168.10.2 255.255.255.0
Router2(config-if)#
Router2(config-if)#exit
Router2(config)#interface FastEthernet0/0
Router2(config-if)#no shutdown
Router2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

Router2>en
Router2#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
Router2(config)#router rip
Router2(config-router)#network 192.168.120.0
Router2(config-router)#network 192.168.10.0
Router2(config-router)#^Z
Router2#
%SYS-5-CONFIG_I: Configured from console by console

```

Kemudian lakukan pengecekan tabel routing pada kedua router.

```

Router1#sh 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, FastEthernet0/1
C    192.168.110.0/24 is directly connected, FastEthernet0/0
R    192.168.120.0/24 [120/1] via 192.168.10.2, 00:00:17,
FastEthernet0/1

```

Router1#

```

Router2#sh 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, FastEthernet0/1
R    192.168.110.0/24 [120/1] via 192.168.10.1, 00:00:14,
FastEthernet0/1
C    192.168.120.0/24 is directly connected, FastEthernet0/0

```

Router2#

Setelah itu, tes koneksi dari PC 1 ke PC 4

```
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=3ms TTL=126
Reply from 192.168.120.4: bytes=32 time=13ms TTL=126
Reply from 192.168.120.4: bytes=32 time=2ms 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 = 13ms, Average = 4ms
```

Terapkan access list ke interface router yang mengarah ke dalam jaringan 192.168.110.0 (int fa0/0) dan Kemudian lihat access list pada router.

```
Router1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#int fa 0/0
Router1(config-if)#ip access-group 10 out
Router1(config-if)#^Z
Router1#
%SYS-5-CONFIG_I: Configured from console by console

Router1#

Router1#sh access-lists
Standard IP access list 10
 10 permit 192.168.0.0 0.0.255.255

Router1#
```


Lihat konfigurasi Access List pada Ethernet1 dengan perintah “show running-config”

```
Router1#sh running-config
Building configuration...

Current configuration : 713 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router1
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
interface FastEthernet0/0
    ip address 192.168.110.254 255.255.255.0
    ip access-group 10 out
    duplex auto
    speed auto
!
interface FastEthernet0/1
    ip address 192.168.10.1 255.255.255.0
    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
!
!
!
end
```

Lakukan tes koneksi antara PC 3 dengan PC 1.

```
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=12ms TTL=126
Reply from 192.168.110.3: bytes=32 time=10ms 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 = 12ms, Average = 8ms

C:\>
```

Berikan akses hanya pada satu host (PC 4).

```
Router1>en
Router1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#access-list 20 permit 192.168.120.4 0.0.0.0
Router1(config)#^Z
Router1#
%SYS-5-CONFIG_I: Configured from console by console

Router1#|
```

Kemudian terapkan access list 20 tersebut pada interface Ethernet pada Router dan gunakan perintah 'Show access-lists' untuk melihat access list tersebut.

```
Router1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#int fa 0/0
Router1(config-if)#ip access-group 20 out
Router1(config-if)#^Z
Router1#
%SYS-5-CONFIG_I: Configured from console by console

Router1#|

Router1#sh access-lists
Standard IP access list 10
    10 permit 192.168.0.0 0.0.255.255 (4 match(es))
Standard IP access list 20
    10 permit host 192.168.120.4

Router1#|
```

Lakukan tes koneksi dari PC 3 ke PC 1 dan PC 2.

```
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:\>
```

Lakukan tes koneksi dari PC 4 ke PC 1 dan PC 2

```
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=13ms TTL=126
Reply from 192.168.110.3: bytes=32 time=13ms 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 = 13ms, 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=11ms TTL=126
Reply from 192.168.110.4: bytes=32 time=13ms TTL=126
Reply from 192.168.110.4: bytes=32 time=10ms 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 = 1ms, Maximum = 13ms, Average = 5ms

C:\>|
```

- **Kegiatan 2 Konfigurasi Extended Access List**

Mengkonfigurasi extended access-list kemudian diterapkan access list tersebut ke interface router.

```
Router1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#access-list 100 permit tcp 192.168.120.0 0.0.0.255
192.168.110.3 0.0.0.0 eq telnet
Router1(config)#^Z
Router1#
%SYS-5-CONFIG_I: Configured from console by console

Router1#|

Router1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#int fa 0/1
Router1(config-if)#ip access-group 100 in
Router1(config-if)#^Z
Router1#
%SYS-5-CONFIG_I: Configured from console by console

Router1#|
```