

# LAPORAN PRAKTIKUM

## TUGAS 4

NAMA : VERINA RAHMA DINAH

NIM : 10231090

Link Repository: <https://github.com/verinaaard/TUGAS-DMJK>

### 1. Alamat IP

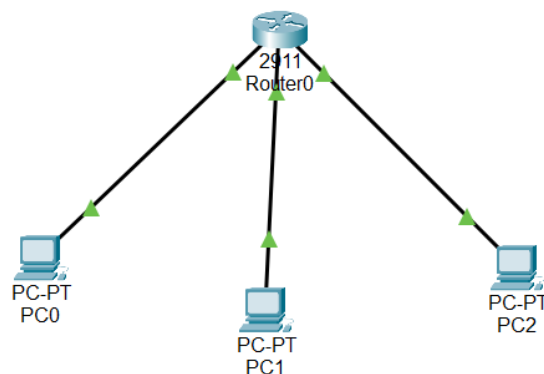
- Subnet A (VLAN 10): 192.168.10.0/24
- Subnet B (VLAN 20): 192.168.20.0/24
- Subnet C (VLAN 30): 192.168.30.0/24

### 2. Router yang Digunakan

Router yang digunakan adalah Cisco 2911 dengan interface GigabitEthernet.

### 3. Penggunaan Interface

- Interface GigabitEthernet0/0: Terhubung ke Subnet A dengan IP 192.168.10.1
- Interface GigabitEthernet0/1: Terhubung ke Subnet B dengan IP 192.168.20.1
- Interface GigabitEthernet0/2: Terhubung ke Subnet C dengan IP 192.168.30.1



➤ PC0

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.10.1

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address

Link Local Address FE80::201:C7FF:FE27:553B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

Top

➤ PC1

PC1

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.20.1

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address

Link Local Address FE80::20C:CFFF:FECD:1866

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

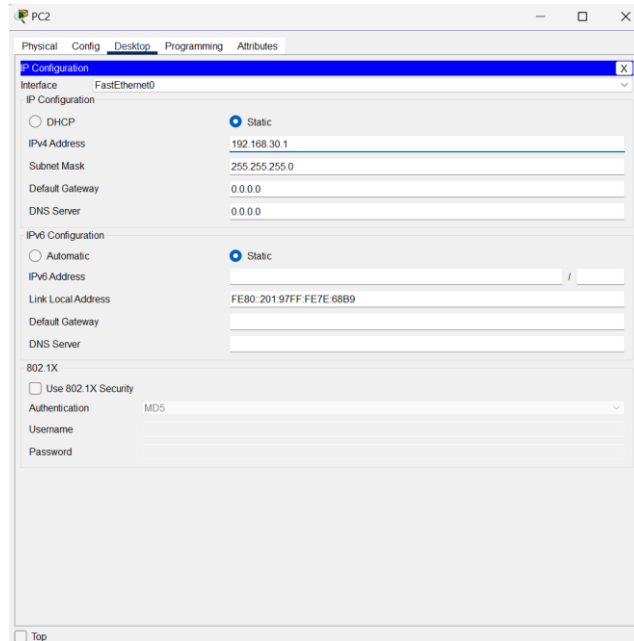
Authentication MD5

Username

Password

Top

➤ PC2

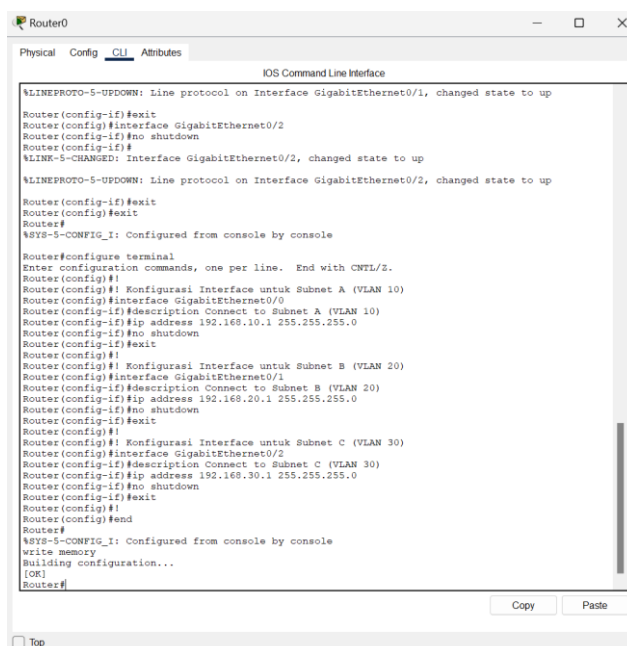


#### 4. Konfigurasi Fisik

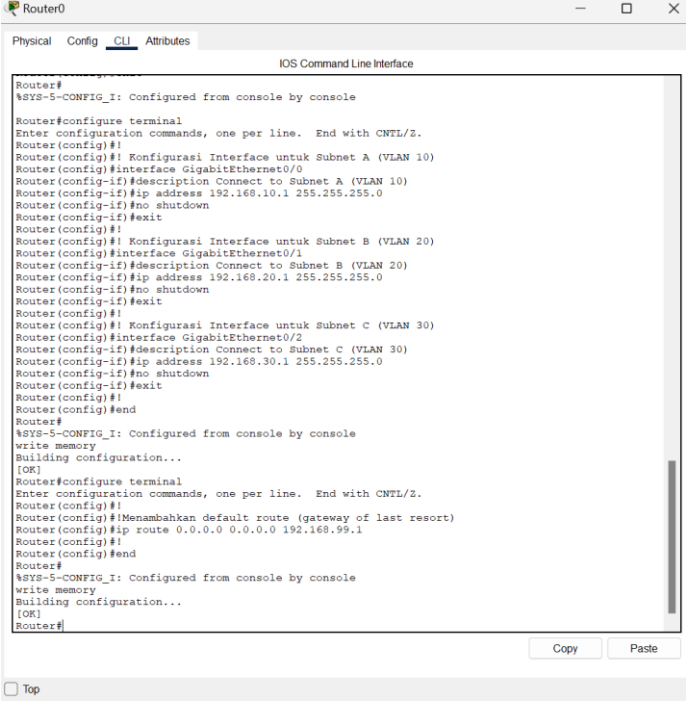
##### 1. Pilih Router dan Periksa Interface

- Di Cisco Packet Tracer, pilih router yang akan digunakan yaitu Cisco 2911.
- Pastikan router memiliki minimal tiga interface.
- Menggunakan Cisco 2911, interface yang digunakan adalah GigabitEthernet0/0, GigabitEthernet0/1, dan GigabitEthernet0/2.

##### 2. Konfigurasi Interface pada Router Masuk ke mode konfigurasi global dan atur masing-masing interface dengan IP yang telah ditentukan



## 5. Konfigurasi Default Route



```
Router0
Physical Config CLI Attributes
IOS Command Line Interface
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#! Konfigurasi Interface untuk Subnet A (VLAN 10)
Router(config)#interface GigabitEthernet0/0
Router(config-if)#description Connect to Subnet A (VLAN 10)
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
Router(config)#! Konfigurasi Interface untuk Subnet B (VLAN 20)
Router(config)#interface GigabitEthernet0/1
Router(config-if)#description Connect to Subnet B (VLAN 20)
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
Router(config)#! Konfigurasi Interface untuk Subnet C (VLAN 30)
Router(config)#interface GigabitEthernet0/2
Router(config-if)#description Connect to Subnet C (VLAN 30)
Router(config-if)#ip address 192.168.30.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
Router#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
write memory
Building configuration...
[OK]
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#!Menambahkan default route (gateway of last resort)
Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.99.1
Router(config)#
Router#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
write memory
Building configuration...
[OK]
Router#
```

Konfigurasi default route pada router dilakukan dengan menambahkan perintah `ip route 0.0.0.0 0.0.0.0 192.168.99.1` dalam mode global configuration. Perintah ini mengarahkan semua lalu lintas yang tidak memiliki rute spesifik ke next-hop IP 192.168.99.1, yang biasanya merupakan gateway menuju jaringan luar seperti Internet.

## 6. Konfigurasi PC

Setiap PC pada masing-masing subnet harus dikonfigurasi secara manual dengan parameter IP yang sesuai untuk memastikan konektivitas yang tepat. Konfigurasi ini memastikan bahwa setiap PC dapat berkomunikasi dalam subnetnya sendiri dan menggunakan router sebagai gateway untuk mengakses subnet lain atau jaringan luar seperti Internet.

Subnet	PC	IP Address	Subnet Mask	Default Gateway
Subnet A	PC1	192.168.10.2	255.255.255.0	192.168.10.1
Subnet B	PC2	192.168.20.2	255.255.255.0	192.168.20.1
Subnet C	PC3	192.168.30.2	255.255.255.0	192.168.30.1

➤ PC0

The screenshot shows the configuration window for PC0. The 'Config' tab is active, and the 'IP Configuration' section is expanded. The interface is 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 Address is '192.168.10.2', Subnet Mask is '255.255.255.0', Default Gateway is '192.168.10.1', and DNS Server is '0.0.0.0'. Under 'IPv6 Configuration', 'Static' is also selected. The IPv6 Address is empty, Link Local Address is 'FE80::201:C7FF:FE27:553B', and Default Gateway and DNS Server are empty. The '802.1X' section has 'Use 802.1X Security' unchecked, Authentication set to 'MD5', and Username and Password fields are empty.

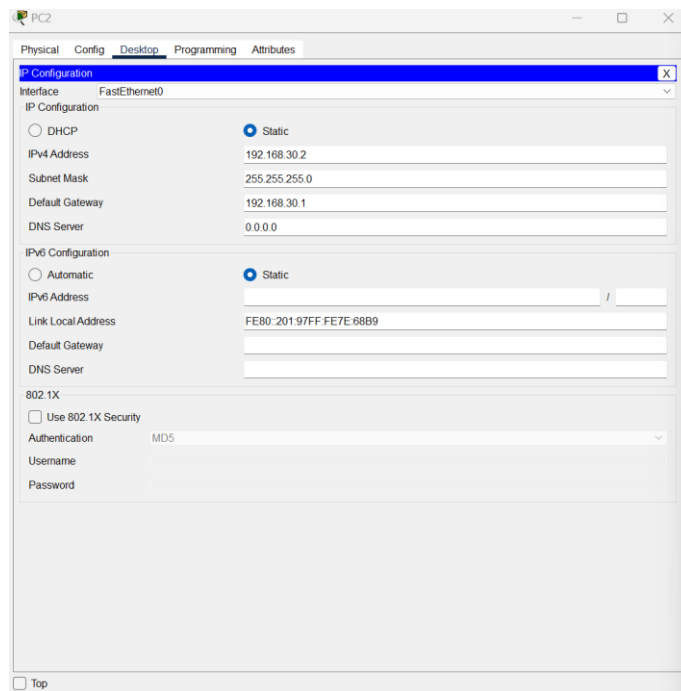
Section	Field	Value
IP Configuration	Interface	FastEthernet0
	IP Configuration	Static
	IPv4 Address	192.168.10.2
	Subnet Mask	255.255.255.0
	Default Gateway	192.168.10.1
IPv6 Configuration	IPv6 Configuration	Static
	IPv6 Address	
	Link Local Address	FE80::201:C7FF:FE27:553B
	Default Gateway	
	DNS Server	
802.1X	Use 802.1X Security	<input type="checkbox"/>
	Authentication	MD5
	Username	
	Password	

➤ PC1

The screenshot shows the configuration window for PC1. The 'Config' tab is active, and the 'IP Configuration' section is expanded. The interface is 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 Address is '192.168.20.2', Subnet Mask is '255.255.255.0', Default Gateway is '192.168.20.1', and DNS Server is '0.0.0.0'. A red error message 'This address is already used in the network.' is displayed next to the IPv4 Address field. Under 'IPv6 Configuration', 'Static' is also selected. The IPv6 Address is empty, Link Local Address is 'FE80::20C:CFFF:FECD:1866', and Default Gateway and DNS Server are empty. The '802.1X' section has 'Use 802.1X Security' unchecked, Authentication set to 'MD5', and Username and Password fields are empty.

Section	Field	Value
IP Configuration	Interface	FastEthernet0
	IP Configuration	Static
	IPv4 Address	192.168.20.2
	Subnet Mask	255.255.255.0
	Default Gateway	192.168.20.1
IPv6 Configuration	IPv6 Configuration	Static
	IPv6 Address	
	Link Local Address	FE80::20C:CFFF:FECD:1866
	Default Gateway	
	DNS Server	
802.1X	Use 802.1X Security	<input type="checkbox"/>
	Authentication	MD5
	Username	
	Password	

➤ PC2



## 7. Tabel Konfigurasi Router

```
Router#show ip interface brief
Interface      IP-Address      OK? Method Status  Protocol
GigabitEthernet0/0  192.168.10.1    YES manual up      up
GigabitEthernet0/1  192.168.20.1    YES manual up      up
GigabitEthernet0/2  192.168.30.1    YES manual up      up
Vlan1           unassigned      YES unset  administratively down down
Router#
```

Interface	IP Address	Subnet Mask	Status	Connected Subnet	
GigabitEthernet0/0	192.168.10.1	255.255.255.0	Up	Subnet (192.168.10.0/24)	A
GigabitEthernet0/1	192.168.20.1	255.255.255.0	Up	Subnet (192.168.20.0/24)	B
GigabitEthernet0/2	192.168.30.1	255.255.255.0	Up	Subnet (192.168.30.0/24)	C

Output dari perintah show ip interface brief menunjukkan bahwa router memiliki tiga antarmuka aktif: GigabitEthernet0/0 (192.168.10.1), GigabitEthernet0/1 (192.168.20.1), dan GigabitEthernet0/2 (192.168.30.1), masing-masing terhubung ke Subnet A, B, dan C. Semua antarmuka ini dalam status up/up, menandakan mereka berfungsi dengan baik.

## 8. Verifikasi Routing Table pada Router

```

Router#
Router#show ip route
Codes: L - local, C - connected, S - static, 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

192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/0
L       192.168.10.1/32 is directly connected, GigabitEthernet0/0
192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.20.0/24 is directly connected, GigabitEthernet0/1
L       192.168.20.1/32 is directly connected, GigabitEthernet0/1
192.168.30.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.30.0/24 is directly connected, GigabitEthernet0/2
L       192.168.30.1/32 is directly connected, GigabitEthernet0/2

```

Output dari perintah show ip route menunjukkan tabel routing pada router, yang mencakup informasi tentang rute-rute yang diketahui oleh router. Router memiliki tiga subnet yang terhubung langsung: 192.168.10.0/24 terhubung ke antarmuka GigabitEthernet0/0, 192.168.20.0/24 terhubung ke antarmuka GigabitEthernet0/1, dan 192.168.30.0/24 terhubung ke antarmuka GigabitEthernet0/2. Ini berarti router dapat mengirim data ke perangkat di ketiga subnet tersebut.

## 9. Pengujian Konektivitas Antar Subnet

- Dari PC subnet A

PCO

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.1

Pinging 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<1ms 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 = 1ms, Average = 0ms

C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.30.2: bytes=32 time<1ms TTL=127
Reply from 192.168.30.2: bytes=32 time<1ms TTL=127
Reply from 192.168.30.2: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

☐ Top

➤ Dari PC subnet B



```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.1

Pinging 192.168.20.1 with 32 bytes of data:

Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time=4ms TTL=128
Reply from 192.168.20.2: bytes=32 time=7ms TTL=128
Reply from 192.168.20.2: bytes=32 time=5ms TTL=128
Reply from 192.168.20.2: bytes=32 time=4ms TTL=128

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 7ms, Average = 5ms

C:\>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:

Reply from 192.168.30.2: bytes=32 time<1ms TTL=127
Reply from 192.168.30.2: bytes=32 time<1ms TTL=127
Reply from 192.168.30.2: bytes=32 time<1ms TTL=127
Reply from 192.168.30.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

☐ Top

➤ Dari PC subnet C

```
PC2
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.30.1

Pinging 192.168.30.1 with 32 bytes of data:

Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.30.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time<1ms TTL=127
Reply from 192.168.10.2: bytes=32 time<1ms TTL=127
Reply from 192.168.10.2: bytes=32 time<1ms TTL=127
Reply from 192.168.10.2: bytes=32 time<1ms TTL=127

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 = 0ms, Average = 0ms

C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

☐ Top