

# Judul

Mata Kuliah: Jaringan Komputer

Materi Praktikum ke: 10

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Tanggal Praktikum: 20-5-2025

# **BAB I**

## **PENDAHULUAN**

### **1.1 Latar Belakang**

#### **VLAN**

VLAN atau Virtual Local Area Network adalah sub network yang dapat mengelompokkan kumpulan perangkat pada jaringan area lokal fisik (LAN) yang terpisah. Virtual Local Area Network juga bisa dikatakan pengelompokkan logis perangkat dalam domain siaran yang sama.

Fungsi *Virtual Local Area Network* pada jaringan komputer adalah menyediakan metode pada jaringan yang dapat membagi jaringan fisik menjadi beberapa broadcast domain.

### **1.2 Tujuan**

Mempelajari apa itu :

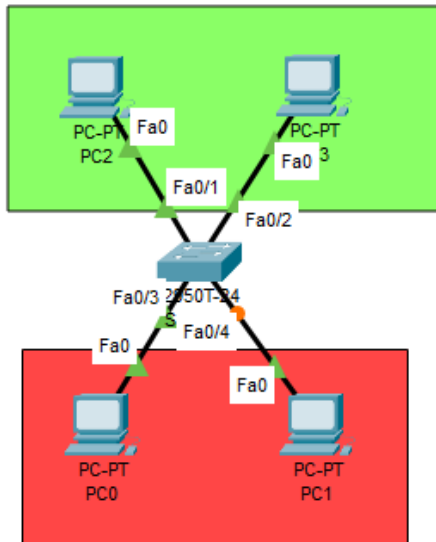
- VLAN Access
- VLAN Trunk
- Router on stick
- Final lab

## **BAB II**

### **PROSEDUR KERJA**

#### **A.VLAN Access**

1. Buat topologi seperti di bawah ini



Pada PC2 dan PC3 adalah bagian VLAN 10 dengan ip 192.168.10.0 dan PC0 dan PC1 adalah VLAN 20 dengan ip 192.168.20.0

2. Hubungkan access vlan ke masing-masing pc

VLAN Name	Status	Ports
1 default	active	Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10 ruang-guru	active	Fa0/1, Fa0/2
20 ruang-meeting	active	Fa0/3, Fa0/4
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

Switch(config)#

Copy

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3. lakukan pengtestan terhadap masing-masing pc

```

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=128
Reply from 192.168.20.2: bytes=32 time<1ms TTL=128
Reply from 192.168.20.2: bytes=32 time<1ms TTL=128
Reply from 192.168.20.2: bytes=32 time<1ms 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 = 0ms, Maximum = 0ms, Average = 0ms

C:\>

```

```

Cisco Packet Tracer PC Command Line 1.0
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=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128

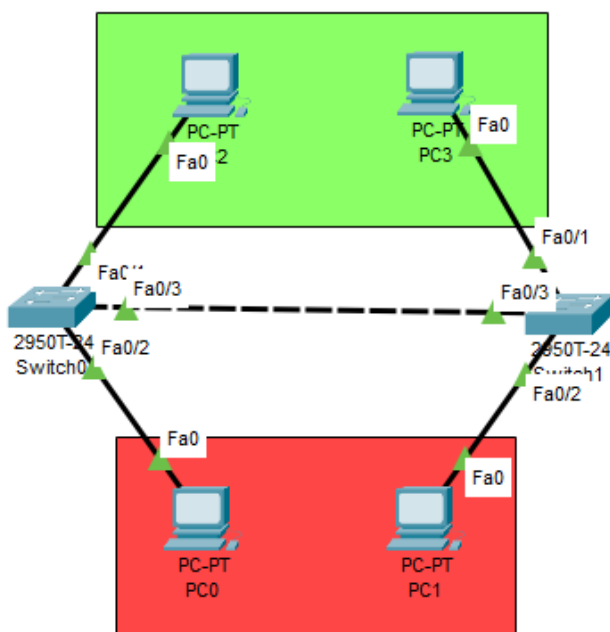
Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>

```

## B.VLAN Trunk

1.buat topologi lalu tambah switch dan hubungkan antar switch tersebut menggunakan kabel cross



2. buat nama vlan di switch 0 dan switch 1 : vlan 10 ruang-guru dan vlan 20 ruang-meeting

Switch0

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch(config)#do show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/4, Fa0/5, Fa0/6, Fa0/7 Fa0/8, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch(config)#vlan 10
Switch(config-vlan)#name ruang-guru
Switch(config-vlan)#ex
Switch(config)#vlan 20
Switch(config-vlan)#name ruang-meeting
Switch(config-vlan)#ex
Switch(config)#do show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/4, Fa0/5, Fa0/6, Fa0/7 Fa0/8, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
10	ruang-guru	active	
20	ruang-meeting	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

Switch(config)#

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Switch1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch(config)#do show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/4, Fa0/5, Fa0/6, Fa0/7 Fa0/8, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch(config)#vlan 10
Switch(config-vlan)#name ruang-guru
Switch(config-vlan)#ex
Switch(config)#vlan 20
Switch(config-vlan)#name ruang-meeting
Switch(config-vlan)#ex
Switch(config)#do show vlan brief
```

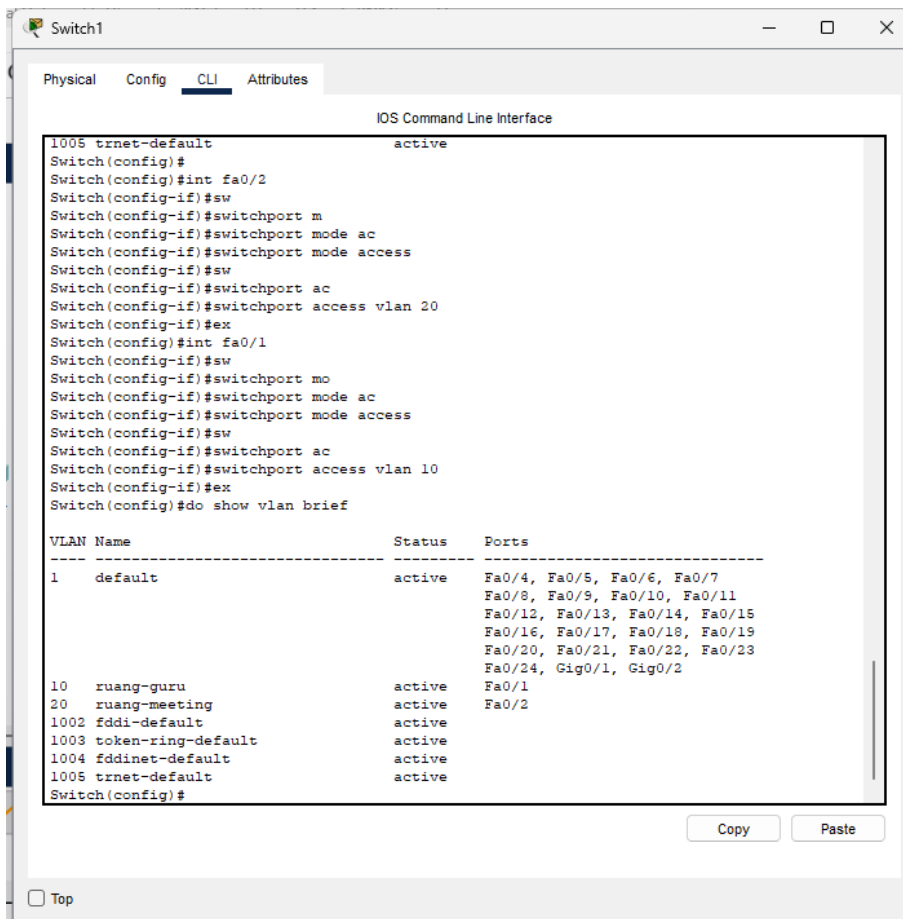
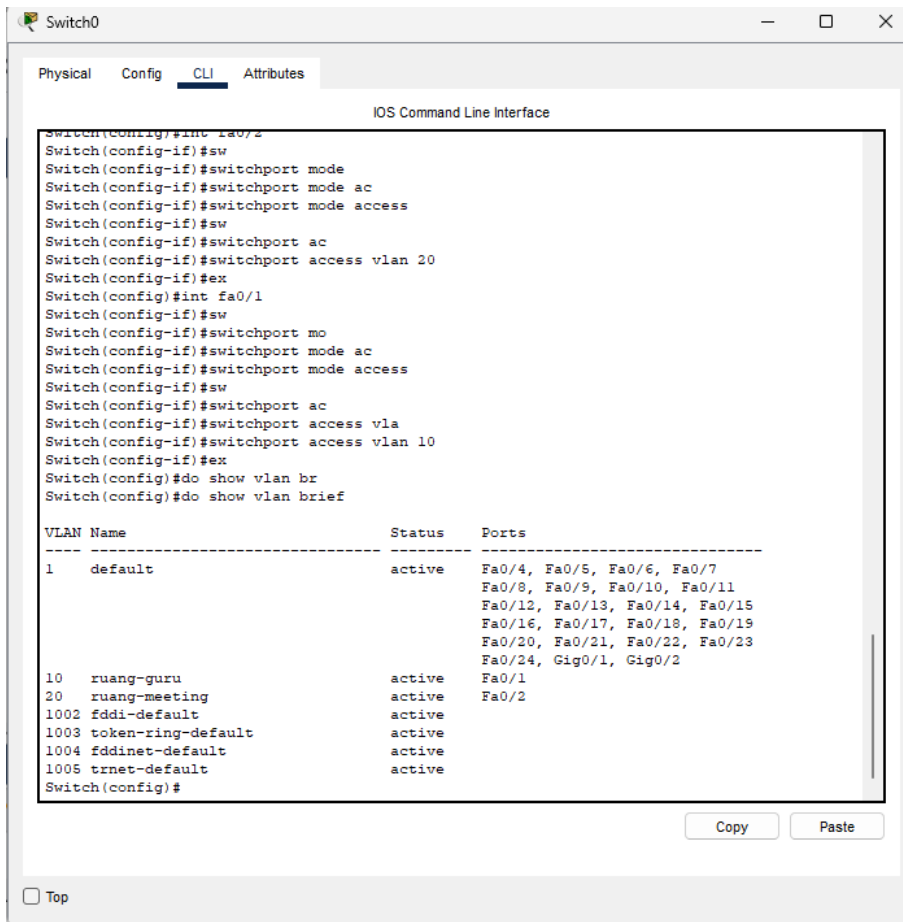
VLAN	Name	Status	Ports
1	default	active	Fa0/4, Fa0/5, Fa0/6, Fa0/7 Fa0/8, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
10	ruang-guru	active	
20	ruang-meeting	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

Switch(config)#

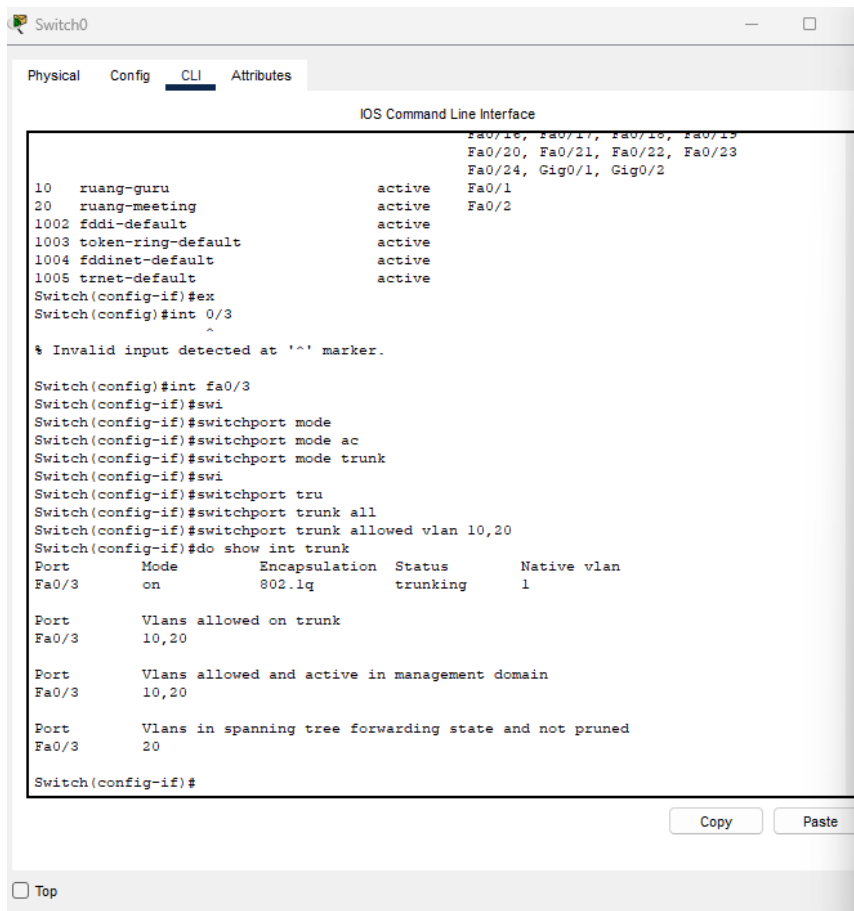
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3.lalu hubungkan vlan di switch0 dengan pc yang terhubung dan begitu juga dengan switch1



4.hubungkan antar switchport dengan mode trunk pada switch0 dan switch1,lalu lakukan pengecekan



Switch0

Physical Config CLI Attributes

IOS Command Line Interface

```
10 ruang-guru active Fa0/16, Fa0/17, Fa0/18, Fa0/19
20 ruang-meeting active Fa0/20, Fa0/21, Fa0/22, Fa0/23
1002 fddi-default active Fa0/24, Gig0/1, Gig0/2
1003 token-ring-default active Fa0/1
1004 fddinet-default active Fa0/2
1005 trnet-default active
Switch(config-if)#ex
Switch(config)#int 0/3
^
% Invalid input detected at '^' marker.

Switch(config)#int fa0/3
Switch(config-if)#swi
Switch(config-if)#switchport mode
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode trunk
Switch(config-if)#swi
Switch(config-if)#switchport tru
Switch(config-if)#switchport trunk all
Switch(config-if)#switchport trunk allowed vlan 10,20
Switch(config-if)#do show int trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/3     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/3     10,20

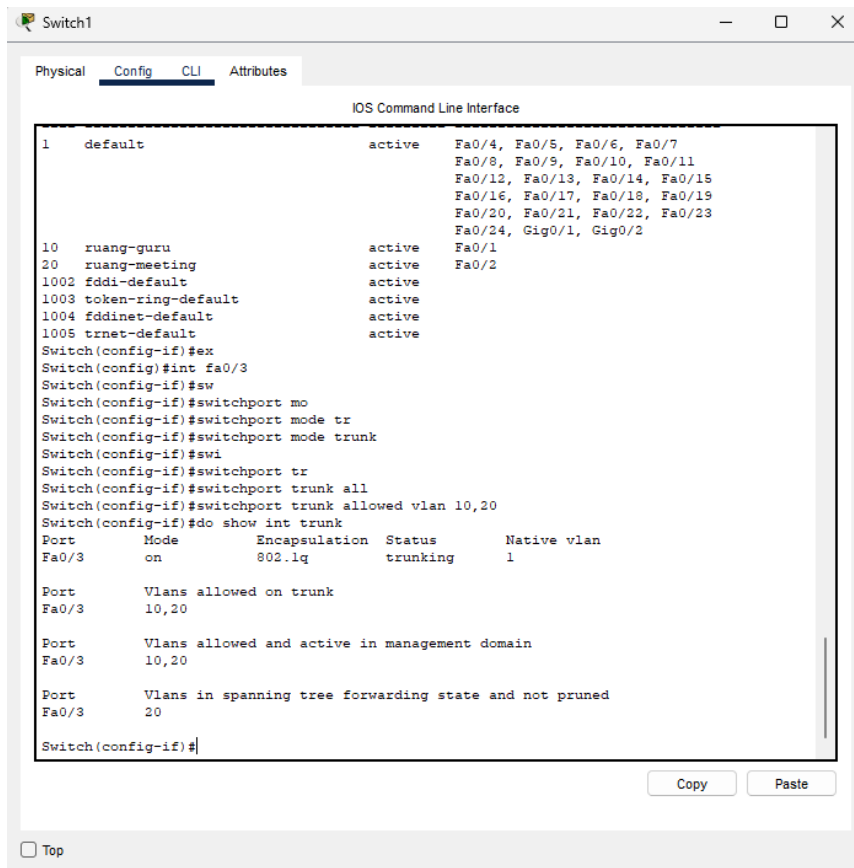
Port      Vlans allowed and active in management domain
Fa0/3     10,20

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/3     20

Switch(config-if)#
```

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Switch1

Physical Config CLI Attributes

IOS Command Line Interface

```
1 default active Fa0/4, Fa0/5, Fa0/6, Fa0/7
Fa0/8, Fa0/9, Fa0/10, Fa0/11
Fa0/12, Fa0/13, Fa0/14, Fa0/15
Fa0/16, Fa0/17, Fa0/18, Fa0/19
Fa0/20, Fa0/21, Fa0/22, Fa0/23
Fa0/24, Gig0/1, Gig0/2
10 ruang-guru active Fa0/1
20 ruang-meeting active Fa0/2
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
Switch(config-if)#ex
Switch(config)#int fa0/3
Switch(config-if)#sw
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode tr
Switch(config-if)#switchport mode trunk
Switch(config-if)#swi
Switch(config-if)#switchport tr
Switch(config-if)#switchport trunk all
Switch(config-if)#switchport trunk allowed vlan 10,20
Switch(config-if)#do show int trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/3     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/3     10,20

Port      Vlans allowed and active in management domain
Fa0/3     10,20

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/3     20

Switch(config-if)#
```

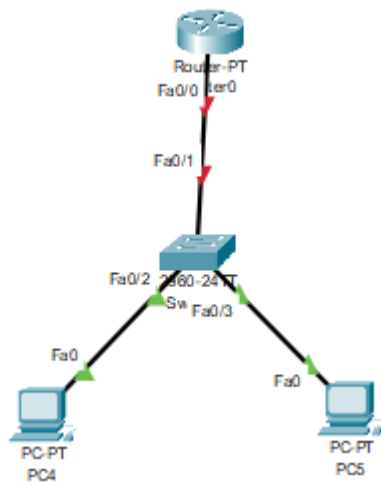
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	Successful	PC2	PC3	ICMP		0.000	N	5	(ec
	Successful	PC0	PC1	ICMP		0.000	N	6	(ec

## C.Router on Stick

### 1.membuat topologi



### 2.Melakukan encapsulation pada router

Router1

Physical Config CLI Attributes

IOS Command Line Interface

```

Router1>conf t
Router1(config)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
ex
Router1(config)#int fa0/0.10
Router1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.10, changed state to up
enca
Router1(config-subif)#encapsulation dot1Q 10
Router1(config-subif)#ip add
Router1(config-subif)#ip address 192.168.10.1 255.255.255.0
Router1(config-subif)#ex
Router1(config)#int fa0/0.20
Router1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.20, changed state to up
en
Router1(config-subif)#encapsulation dot1
Router1(config-subif)#encapsulation dot1Q 20
Router1(config-subif)#ip add
Router1(config-subif)#ip address 192.168.20.1 255.255.255.0
Router1(config-subif)#ex
Router1(config)#do show ip int brief
Interface      IP-Address      OK? Method Status      Protocol
FastEthernet0/0    unassigned      YES unset    up          up
FastEthernet0/0.10 192.168.10.1    YES manual  up          up
FastEthernet0/0.20 192.168.20.1    YES manual  up          up
FastEthernet1/0    unassigned      YES unset    administratively down down
Serial2/0          unassigned      YES unset    administratively down down
Serial3/0          unassigned      YES unset    administratively down down
FastEthernet4/0    unassigned      YES unset    administratively down down
FastEthernet5/0    unassigned      YES unset    administratively down down
Router1(config)#

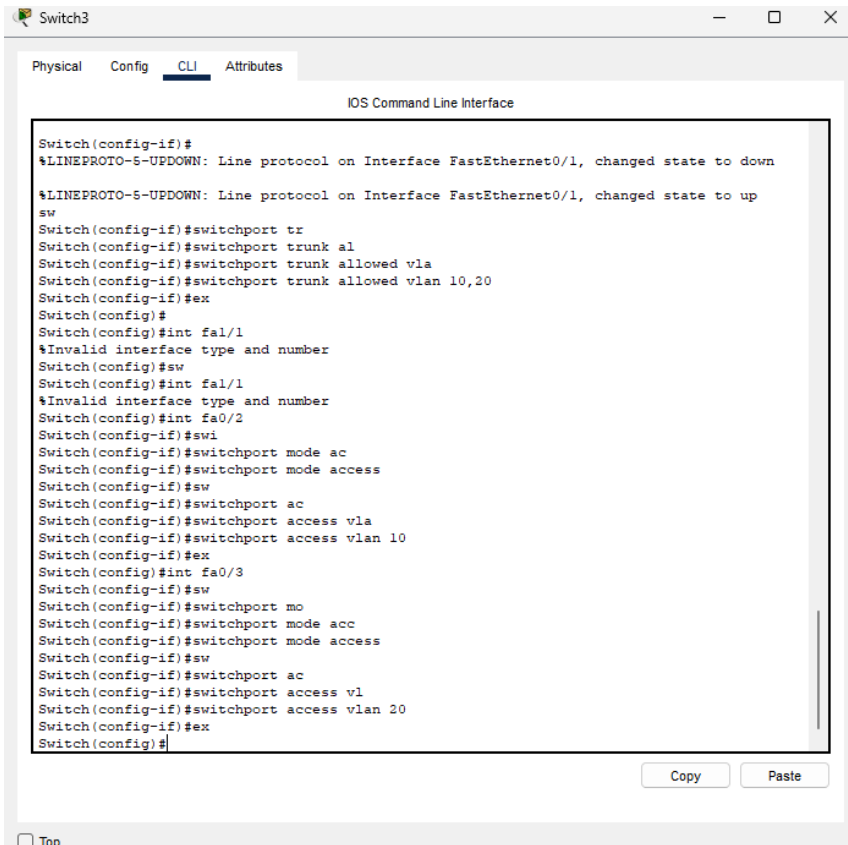
```

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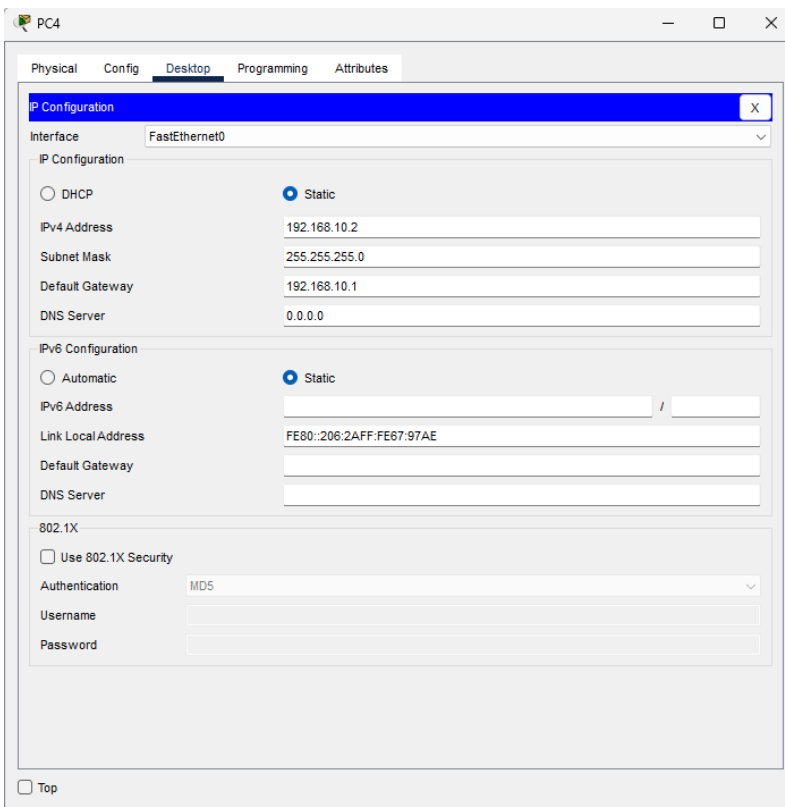
☐ Top

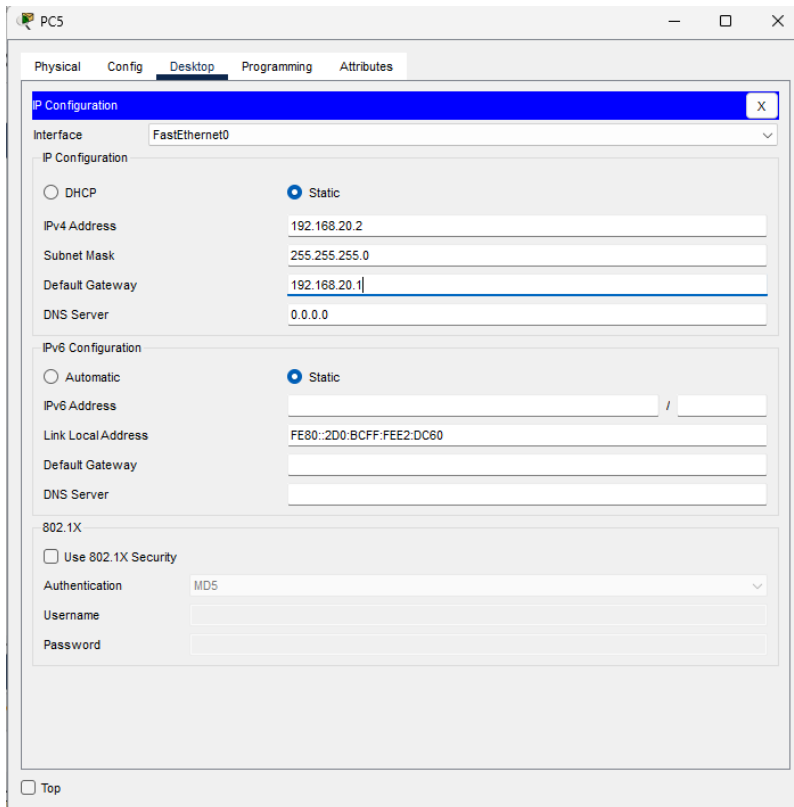


### 3.hubungkan pc ke vlan 10 dan 20



### 4.lalu tambahkan ip address ke pc dengan static dan berikan juga ip gateway





5. lakukan pengtestan ping pada antar pc untuk mengetahui apakah berhasil atau tidak

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Request timed out.
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 = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

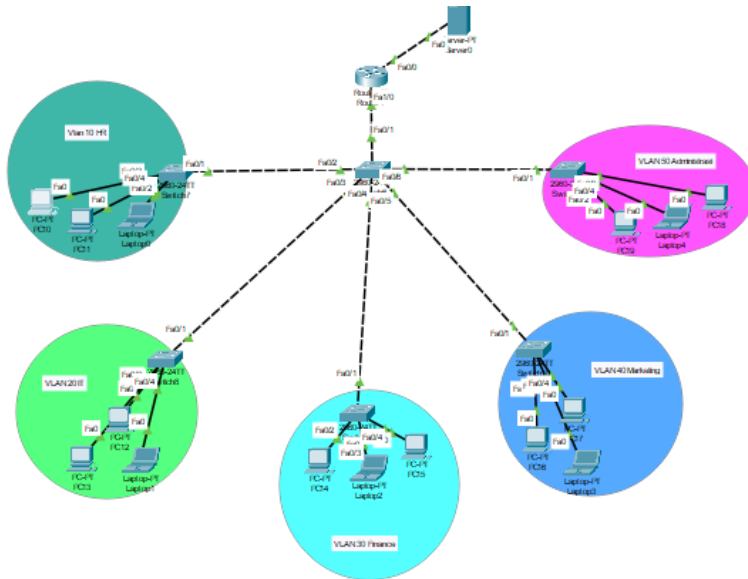
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127

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 = 1ms, Average = 0ms

C:\>
```

## D.Final Lab

## 1.buat topologi



## 2.tambahkan vlan 10,20,30,40,dan 50 ke masing-masing switch

Switch1

Physical Config CLI Attributes

IOS Command Line Interface

```
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name HR
Switch(config-vlan)#ex
Switch(config)#vlan 20
Switch(config-vlan)#name IT
Switch(config-vlan)#ex
Switch(config)#vlan 30
Switch(config-vlan)#name finance
Switch(config-vlan)#ex
Switch(config)#vlan 40
Switch(config-vlan)#name marketing
Switch(config-vlan)#ex
Switch(config)#vlan 50
Switch(config-vlan)#name administrasi
Switch(config-vlan)#ex
Switch(config)#do show vlan brief
Switch(config)#
```

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10 HR	active	
20 IT	active	
30 finance	active	
40 marketing	active	
50 administrasi	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

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Top

Switch6

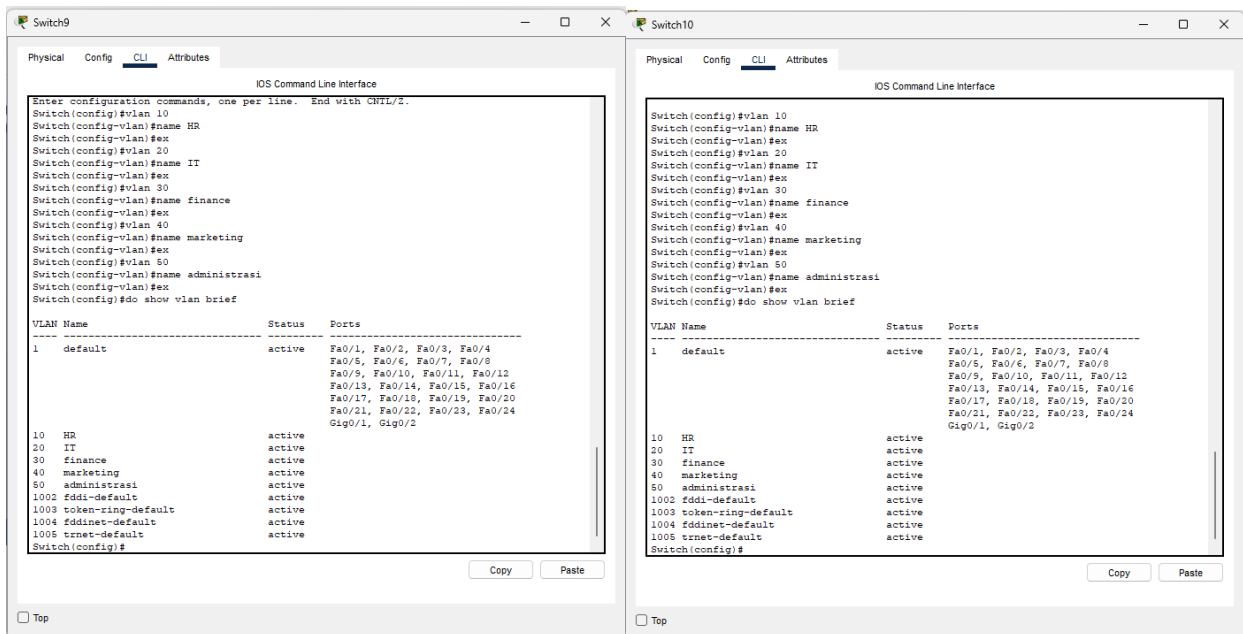
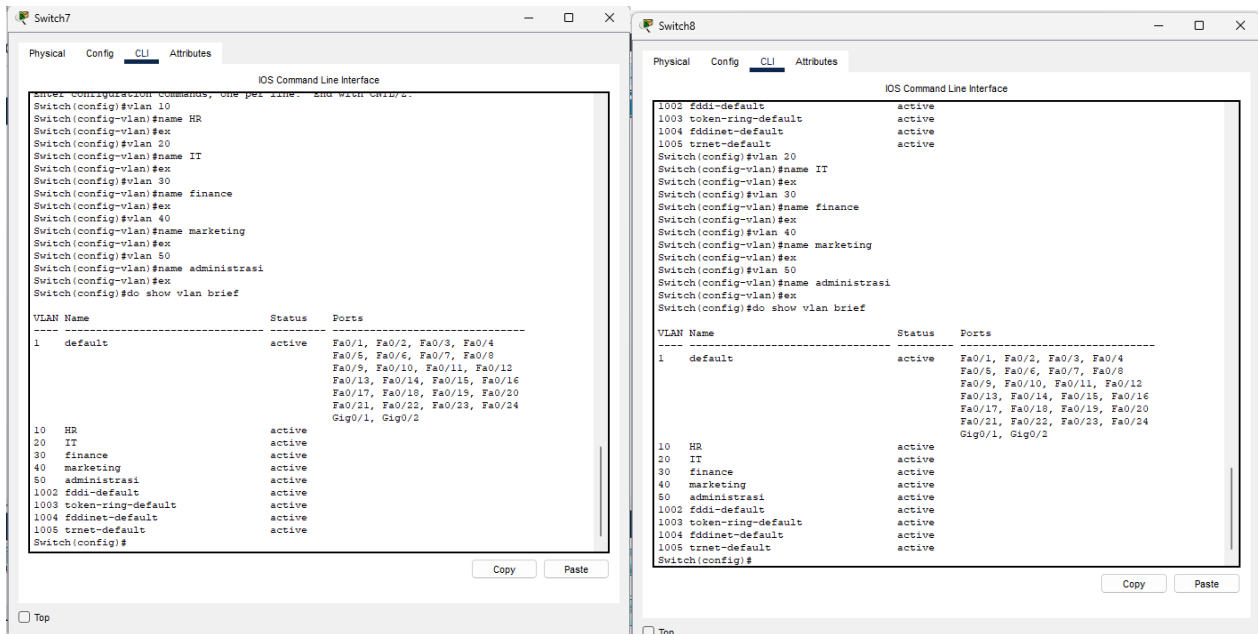
Physical Config CLI Attributes

IOS Command Line Interface

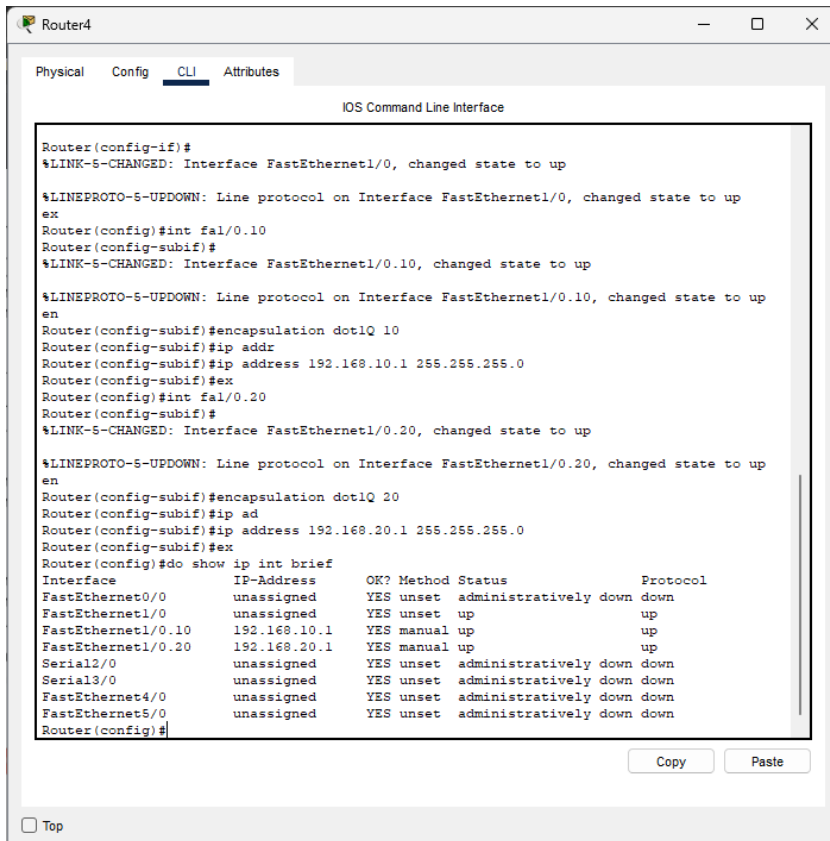
```
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name HR
Switch(config-vlan)#ex
Switch(config)#vlan 20
Switch(config-vlan)#name IT
Switch(config-vlan)#ex
Switch(config)#vlan 30
Switch(config-vlan)#name finance
Switch(config-vlan)#ex
Switch(config)#vlan 40
Switch(config-vlan)#name marketing
Switch(config-vlan)#ex
Switch(config)#vlan 50
Switch(config-vlan)#name administrasi
Switch(config-vlan)#ex
Switch(config)#do show vlan brief
Switch(config)#
```

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10 HR	active	
20 IT	active	
30 finance	active	
40 marketing	active	
50 administrasi	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

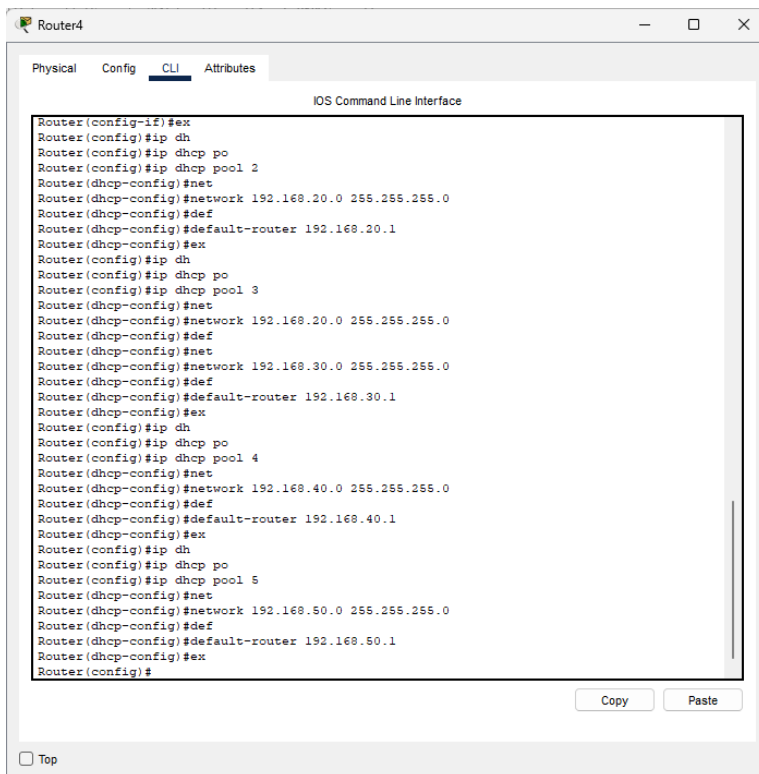
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3.melakukan encapsulation ke setiap ip



#### 4.melakukan konfigurasi ip



#### 5.connectkan ip ke setiap pc menggunakan dhcp

PC19

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.50.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.50.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::20A:F3FF:FEE1:B38C

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MDS

Username

Password

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PC10

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.10.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.10.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::260:2FFF:FE04:818A

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MDS

Username

Password

Top

Laptop1

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.20.4

Subnet Mask 255.255.255.0

Default Gateway 192.168.20.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2D0:BCFF:FEE1:9957

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MDS

Username

Password

Top

PC14

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.30.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.30.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::290:CFF:FE4B:9BD3

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MDS

Username

Password

Top

PC16

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.40.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.40.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2E0:F7FF:FEB5:DC70

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

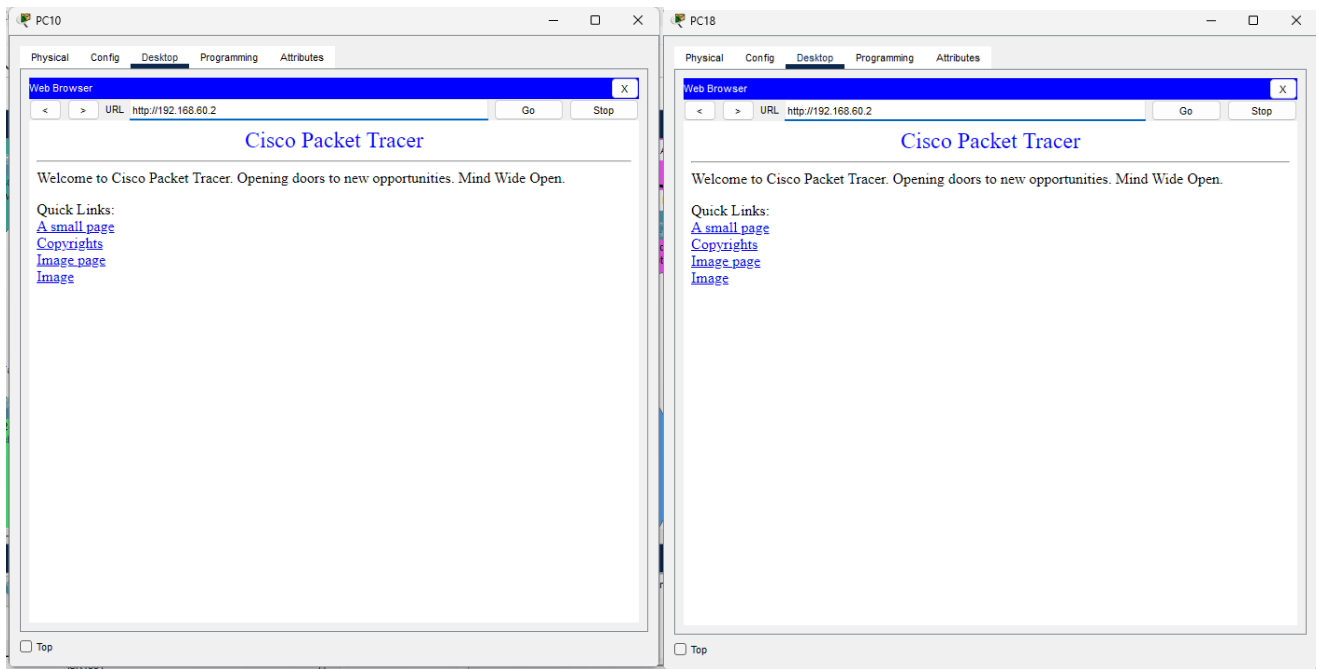
Authentication MDS

Username

Password

Top

6.mencoba website yang tersedia pada server ke pc di vlan 10 dan vlan 50



## DAFTAR PUSTAKA

VLAN: Pengertian, Fungsi, Cara Kerja, dan Jenis-Jenisnya (Alvana Noor Fariza) - <https://www.sekawanmedia.co.id/blog/pengertian-vlan/>