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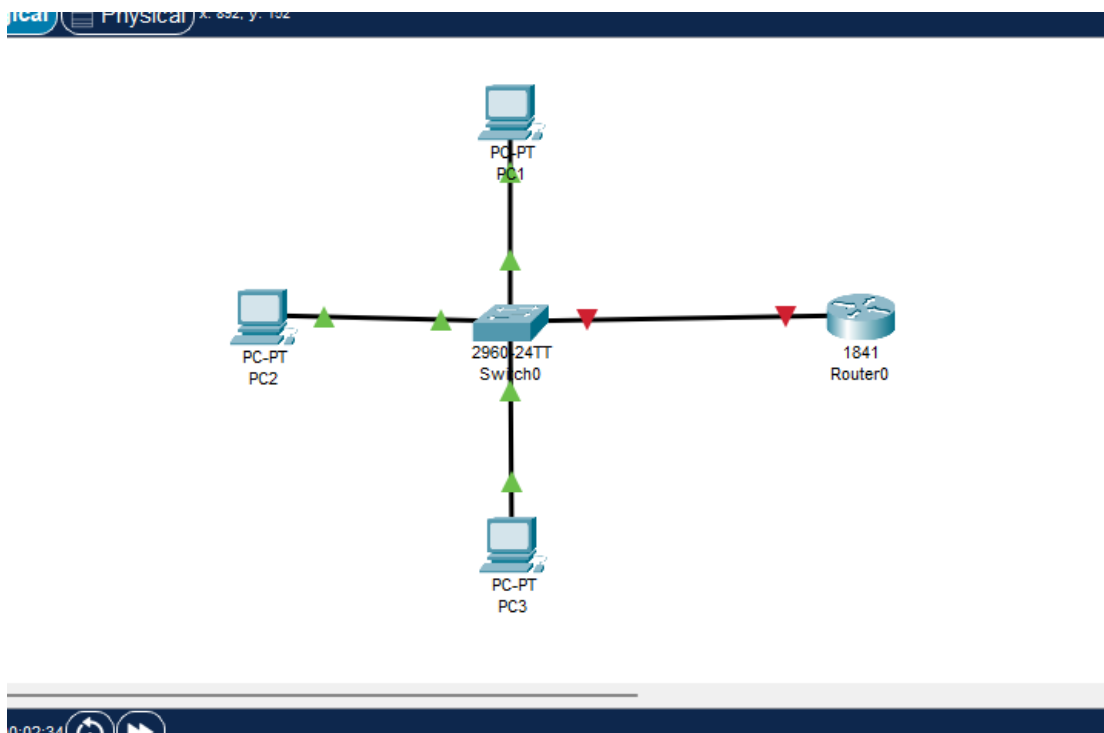
NIM : 09010182327004

Kelas ; MI3A

MK : Praktikum jaringan computer

VLAN & INTER-VLAN

- Topologi



- Konfigurasi switch

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#Hostname SWITCH_09010182327004
SWITCH_09010182327004(config)#banner motd #selamat Datang di SWITCH_09010182327004#
SWITCH_09010182327004(config)#line console 0
SWITCH_09010182327004(config-line)#password 12345
SWITCH_09010182327004(config-line)#login
SWITCH_09010182327004(config-line)#exit
SWITCH_09010182327004(config)#line vty 0 4
SWITCH_09010182327004(config-line)#password 12345
SWITCH_09010182327004(config-line)#login
SWITCH_09010182327004(config-line)#exit
SWITCH_09010182327004(config)#enable password 12345
SWITCH_09010182327004(config)#enable secret 12345
The enable secret you have chosen is the same as your enable password.
This is not recommended. Re-enter the enable secret.
SWITCH_09010182327004(config)#vlan 2
SWITCH_09010182327004(config-vlan)#Name Humas
SWITCH_09010182327004(config-vlan)#exit
SWITCH_09010182327004(config)#vlan 3
SWITCH_09010182327004(config-vlan)#Name Keuangan
SWITCH_09010182327004(config-vlan)#exit
SWITCH_09010182327004(config)#vlan 4
SWITCH_09010182327004(config-vlan)#Name IT
SWITCH_09010182327004(config-vlan)#exit
SWITCH_09010182327004(config)#vlan 5
SWITCH_09010182327004(config-vlan)#Name Pimpinan
SWITCH_09010182327004(config-vlan)#exit
SWITCH_09010182327004(config)#exit
SWITCH_09010182327004#
%SYS-5-CONFIG_I: Configured from console by console
```

```

SWITCH_09010182327004#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWITCH_09010182327004(config)#interface fastEthernet 0/1
SWITCH_09010182327004(config-if)#switchport mode access
SWITCH_09010182327004(config-if)#switchport access vlan 2
SWITCH_09010182327004(config-if)#exit
SWITCH_09010182327004(config)#interface fastEthernet 0/2
SWITCH_09010182327004(config-if)#switchport mode access
SWITCH_09010182327004(config-if)#switchport access vlan 3
SWITCH_09010182327004(config-if)#exit
SWITCH_09010182327004(config)#interface fastEthernet 0/3
SWITCH_09010182327004(config-if)#switchport mode access
SWITCH_09010182327004(config-if)#switchport access vlan 4
SWITCH_09010182327004(config-if)#exit
SWITCH_09010182327004(config)#interface fastEthernet 0/24
SWITCH_09010182327004(config-if)#switchport mode trunk
SWITCH_09010182327004(config-if)#exit
SWITCH_09010182327004(config)#exit
SWITCH_09010182327004#
%SYS-5-CONFIG_I: Configured from console by console

SWITCH_09010182327004#copy run start
Destination filename [startup-config]? show vlan
%Error copying nvram:show vlan (Invalid argument)
SWITCH_09010182327004#show vlan

```

- Hasil Daftar vlan

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
2 Humas	active	Fa0/1
3 Keuangan	active	Fa0/2
4 IT	active	Fa0/3
5 Pimpinan	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
2	enet	100002	1500	-	-	-	-	-	0	0

--More--

- Konfigurasi Router

```

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname ROUTER_09010182327004
ROUTER_09010182327004(config)#banner motd #selamat Datang di Router I#
ROUTER_09010182327004(config)#line console 0
ROUTER_09010182327004(config-line)#password 12345
ROUTER_09010182327004(config-line)#login
ROUTER_09010182327004(config-line)#exit
ROUTER_09010182327004(config)#enable password 12345
ROUTER_09010182327004(config)#enable secret 12345
The enable secret you have chosen is the same as your enable password.
This is not recommended. Re-enter the enable secret.
ROUTER_09010182327004(config)#line vty 0 4
ROUTER_09010182327004(config-line)#password 12345
ROUTER_09010182327004(config-line)#login
ROUTER_09010182327004(config-line)#exit
ROUTER_09010182327004(config)#interface fastEthernet 0/1
ROUTER_09010182327004(config-if)#no ip address
ROUTER_09010182327004(config-if)#no shutdown

ROUTER_09010182327004(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

ROUTER_09010182327004(config-if)#exit
ROUTER_09010182327004(config)#interface fastEthernet 0/1.1
ROUTER_09010182327004(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/1.1, changed state to up

ROUTER_09010182327004(config-subif)#encapsulation dot1Q 2
ROUTER_09010182327004(config-subif)#ip address 192.168.200.1 255.255.255.0
ROUTER_09010182327004(config-subif)#exit
ROUTER_09010182327004(config)#interface fastEthernet 0/1.2
ROUTER_09010182327004(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/1.2, changed state to up

```

```

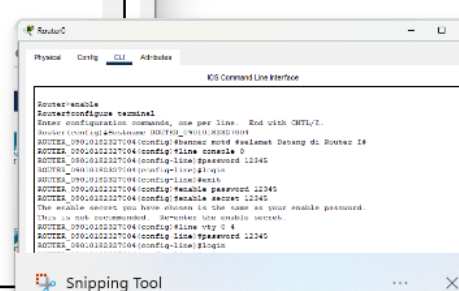
ROUTER_09010182327004(config-subif)#ip address 192.168.100.1 255.255.255.0

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.1Q, IEEE 802.1Q,
or ISL vLAN.

ROUTER_09010182327004(config-subif)#encapsulation dot1Q 3
ROUTER_09010182327004(config-subif)#exit
ROUTER_09010182327004(config)#interface fastEthernet 0/1.3
ROUTER_09010182327004(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/1.3, changed state to up

ROUTER_09010182327004(config-subif)#encapsulation dot1Q 4
ROUTER_09010182327004(config-subif)#ip address 192.168.150.1 255.255.255.0
ROUTER_09010182327004(config-subif)#

```



Tes koneksi menggunakan ICMP

NO	Sumber	Tujuan	Hasil	
			Ya	Tidak
1	PC1	PC2		TIDAK
		PC3		TIDAK

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.100.2

Pinging 192.168.100.2 with 32 bytes of data:

Reply from 192.168.100.2: bytes=32 time=15ms TTL=128
Reply from 192.168.100.2: bytes=32 time=26ms TTL=128
Reply from 192.168.100.2: bytes=32 time=1ms TTL=128
Reply from 192.168.100.2: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.100.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 26ms, Average = 10ms

C:\>ping 192.168.200.2

Pinging 192.168.200.2 with 32 bytes of data:

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

Ping statistics for 192.168.200.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.150.2

Pinging 192.168.150.2 with 32 bytes of data:

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

Ping statistics for 192.168.150.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
  
```

	PC2	PC1		TIDAK
		PC3		TIDAK

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.200.2

Pinging 192.168.200.2 with 32 bytes of data:

Reply from 192.168.200.2: bytes=32 time=18ms TTL=128
Reply from 192.168.200.2: bytes=32 time=1ms TTL=128
Reply from 192.168.200.2: bytes=32 time=6ms TTL=128
Reply from 192.168.200.2: bytes=32 time=28ms TTL=128

Ping statistics for 192.168.200.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 28ms, Average = 13ms

C:\>ping 192.168.100.2

Pinging 192.168.100.2 with 32 bytes of data:

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

Ping statistics for 192.168.100.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

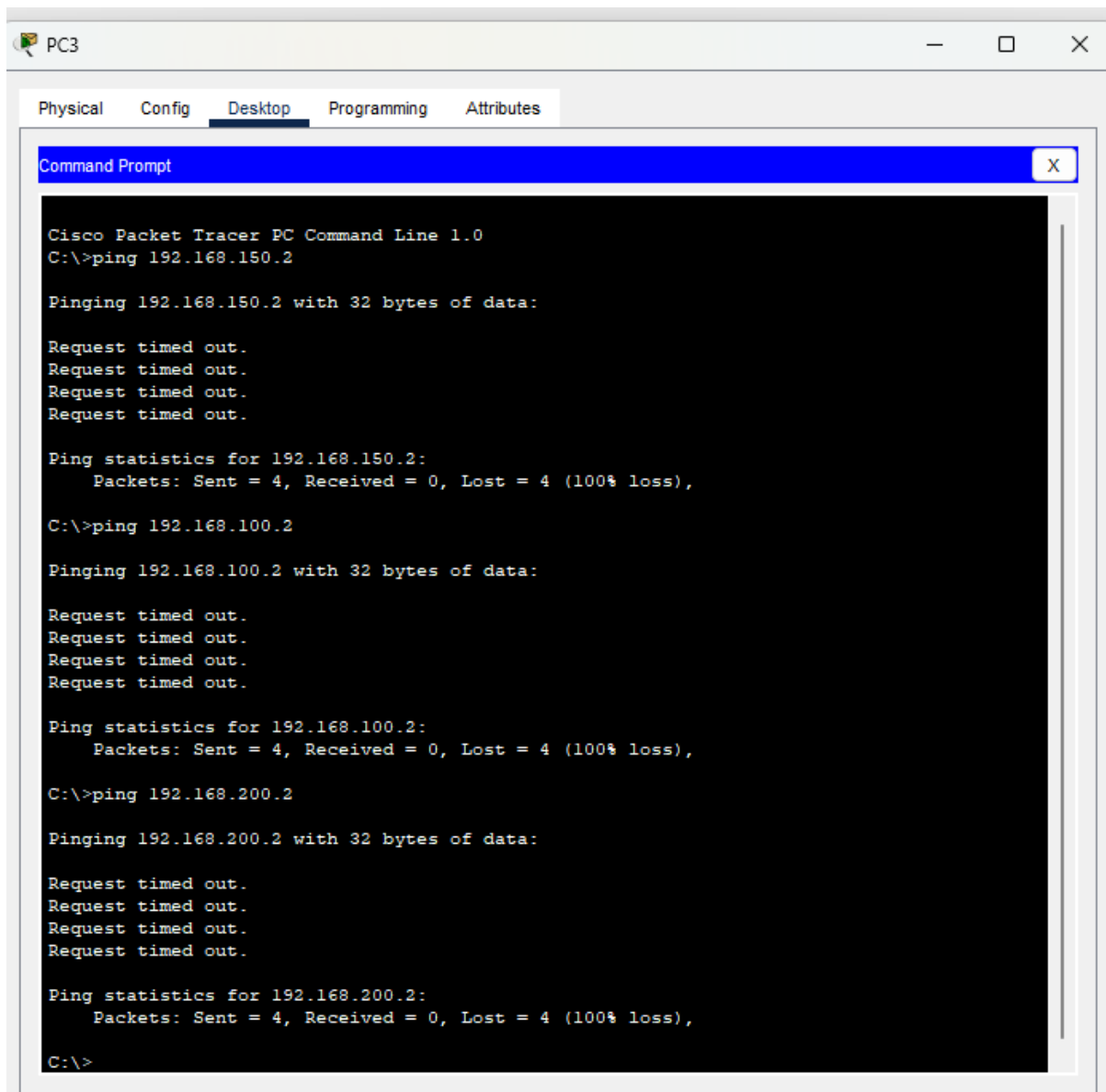
C:\>ping 192.168.150.2

Pinging 192.168.150.2 with 32 bytes of data:

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

Ping statistics for 192.168.150.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
  
```

3	PC3	PC1		TIDAK
		PC2		TIDAK



Judul Percobaan:**“Konfigurasi VLAN dan Inter-VLAN Routing dengan Router-on-a-stick”****Hasil Percobaan:**

1. Setelah konfigurasi switch dan router selesai, masing-masing PC berhasil mendapatkan alamat IP yang sesuai dengan VLAN-nya.
2. Pengujian koneksi antar PC dalam VLAN yang berbeda menunjukkan bahwa komunikasi dapat dilakukan dengan baik menggunakan ICMP (ping).
3. Hasil pengecekan konfigurasi VLAN dengan perintah show vlan menunjukkan daftar VLAN yang aktif dan port yang terasosiasi dengan VLAN tersebut.

Analisi Percobaan:

Pada percobaan ini, kita menggunakan metode router-on-a-stick untuk memungkinkan komunikasi antar VLAN. Switch yang digunakan berfungsi sebagai VTP server untuk mendistribusikan informasi VLAN ke PC dalam jaringan. Setiap port pada switch dikonfigurasi dalam mode akses untuk VLAN yang spesifik, dan port trunk digunakan untuk menghubungkan switch ke router. Router menggunakan sub-interface untuk setiap VLAN dan menerapkan fungsi routing agar VLAN dapat saling berkomunikasi. Berdasarkan pengujian ICMP (ping), terbukti bahwa Inter-VLAN routing berhasil dilakukan, memungkinkan PC dari VLAN yang berbeda saling terhubung.

Kesimpulan Percobaan:

Dari percobaan ini, dapat disimpulkan bahwa konfigurasi router-on-a-stick adalah metode yang efektif untuk mengimplementasikan Inter-VLAN routing dengan jumlah port yang terbatas pada router. Switch yang dikonfigurasi dengan VLAN memberikan segmentasi jaringan yang baik, dan router berperan penting dalam memungkinkan komunikasi antar VLAN