

AIM OF THE EXPERIMENT:

Configuration of VLAN using switch to regulate different types of Network and users.

DEVICES REQUIRED:-

To set up this network, we require

- (i) One 2960 switch, the switch serve as the central networking device, managing VLANs and assigning devices to their respective networks.
- (ii) Four personal computers (PCs) where PC<sub>0</sub>, PC<sub>1</sub> belongs to one VLAN and PC<sub>2</sub>, PC<sub>3</sub> belongs to another VLAN. Each PC will be connected to the switch using straight-through Ethernet cables, which are typically used to connect devices to networking equipment.

NETWORK ARCHITECTURE:-

The network is divided into separate VLANs, each representing a different network.

VLAN-10 :- Network 10.0.0.0/24

→ PC<sub>0</sub> with IP address 10.0.0.1

→ PC-1 with IP address 10.0.0.2

VLAN-20 :- Network 20.0.0.0/14

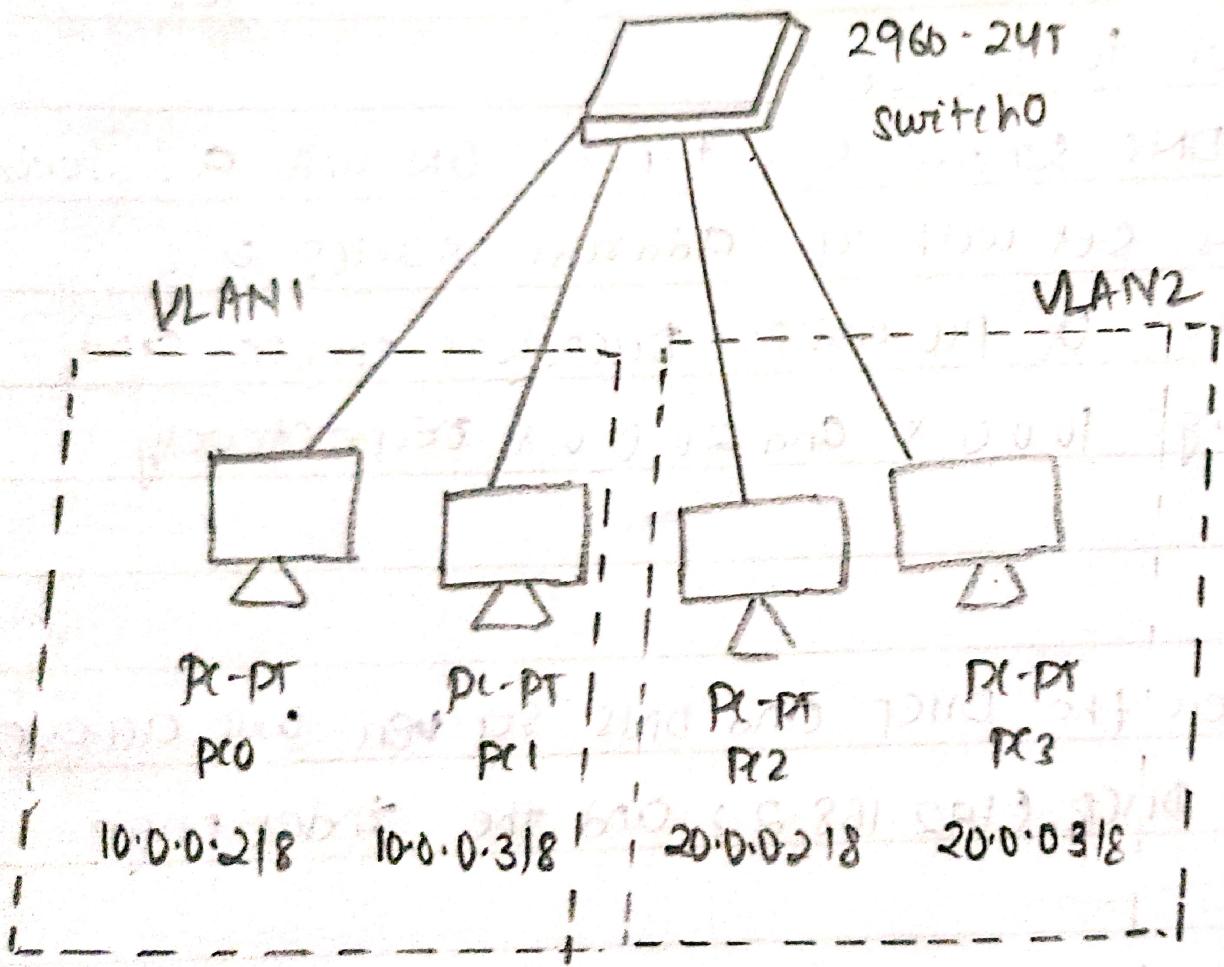
→ PC-2 with IP address 20.0.0.1

→ PC-3 with IP address 20.0.0.2

Each VLANs operates as independent subnet. VLAN 10 should be able to communicate with each other so as VLAN 20. However devices from VLAN 10 shouldn't able to communicate with those VLAN 20.

Teacher's Signature: \_\_\_\_\_

## VLAN CONFIGURATION USING SWITCH



NETWORK CONFIGURATION:

## 1. setting up the physical topology

→ begun by placing a CISCO 2960 switch and four PCs into the workspace.  
Each PC is connected to switch using copper-straight through wire.  
The physical layout of the network is as follows:

(i) PC-0 is connected to FastEthernet 0/1 on the switch.

(ii) PC-1 is connected to FastEthernet 1/1 on the switch.

(iii) PC-2 is connected to FastEthernet 2/1 on the switch.

(iv) PC-3 is connected to FastEthernet 3/1 on the switch.

Once the physical connection is made assign IP address according to VLAN as mentioned in Network Architecture.

VLAN 10

→ default gateway is 10.0.0.01

→ PC-0 is assigned with IP 10.0.0.2

→ PC-1 is assigned with IP 10.0.0.3

VLAN 20

→ default gateway is 20.0.0.1

→ PC-2 is assigned with IP 20.0.0.2

→ PC-3 is assigned with IP 20.0.0.3

## 2. Configuration of VLAN on switch (as shown in table)

LOGICAL CONNECTIONS and Expected Result

When VLAN configuration in place, each PC is logically connected with in it's assigned VLAN. we expect the following results

1. Devices within VLAN should be able to communicate

PC-0 should be able to ping PC-1 successfully

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## Configuration of VLAN on switch

1. Entering Privileged EXEC mode:

    >> enable

2. Entering global configuration mode:

    >> configure terminal

3. Creating VLANs and assigning name

    >> vlan 10

    >> interface FastEthernet 1/1

        exit

    >> interface FastEthernet 2/1

        exit

    >> interface FastEthernet 3/1

        exit

    >> interface FastEthernet 4/1

        exit

    >> exit

    >> vlan 10

    >> name cf

    >> exit

    >> vlan 20

        name cs

        exit

>> exit

Assignment ports to VLAN

Assignment port 0/1 and 1/1 to VLAN 10

>> interface FastEthernet 0/1

switchport mode access

switchport access VLAN 10

exit

>> interface FastEthernet 1/1

switchport mode access

- PC-2 should be able to ping PC-3 successfully
2. Devices in Different VLANs shouldn't be able to communicate
- PC-0 shouldn't be able to ping PC-2 or PC-3
- PC-1 shouldn't be able to ping PC-2 or PC-3

#### OBSERVATION:

1. Successful Communication with VLANs:  
When a ping is initiated from PC-0 to PC-1, a response is received confirming successful communication with VLAN-10. Similarly, PC-2 ping PC-3 successfully, demonstrating connectivity within VLAN 20.
2. Communication Blocked between VLANs:  
When attempting to ping between VLANs (e.g. PC-0 to PC-2), the request times out. This confirms that VLANs are effectively isolating 2 networks as expected.

#### CONCLUSION:

1. Successfully demonstrated configuration of VLAN by segmenting network into VLAN 10 and VLAN 20, ensuring only devices within a VLAN can communicate. It's an effective way to enhance security and prevent unwanted communication between different groups of devices.
2. If communication between VLANs were required, inter-VLAN routing can be implemented using a router or layer 3 switch.

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Switchport access VLAN10  
exit

Assigning port 2 and port 3 to VLAN20

>> interface FastEthernet 2/1

Switchport mode access

switchport access VLAN20

exit

>> interface FastEthernet 3/1

Switchport mode access

switchport access VLAN20

exit

Saving the configuration

>> end

>> write memory

>> show VLAN brief

VLAN Name

1. default

10. zt

20. lse

1002. fddi-default

1003 token-ring-default

1004 fddinet-default

1005 trinet-default

Status

PORT

Fa4/1, Fa5/1

Fa2/1, Fa3/1

Fa0/1, Fa1/1