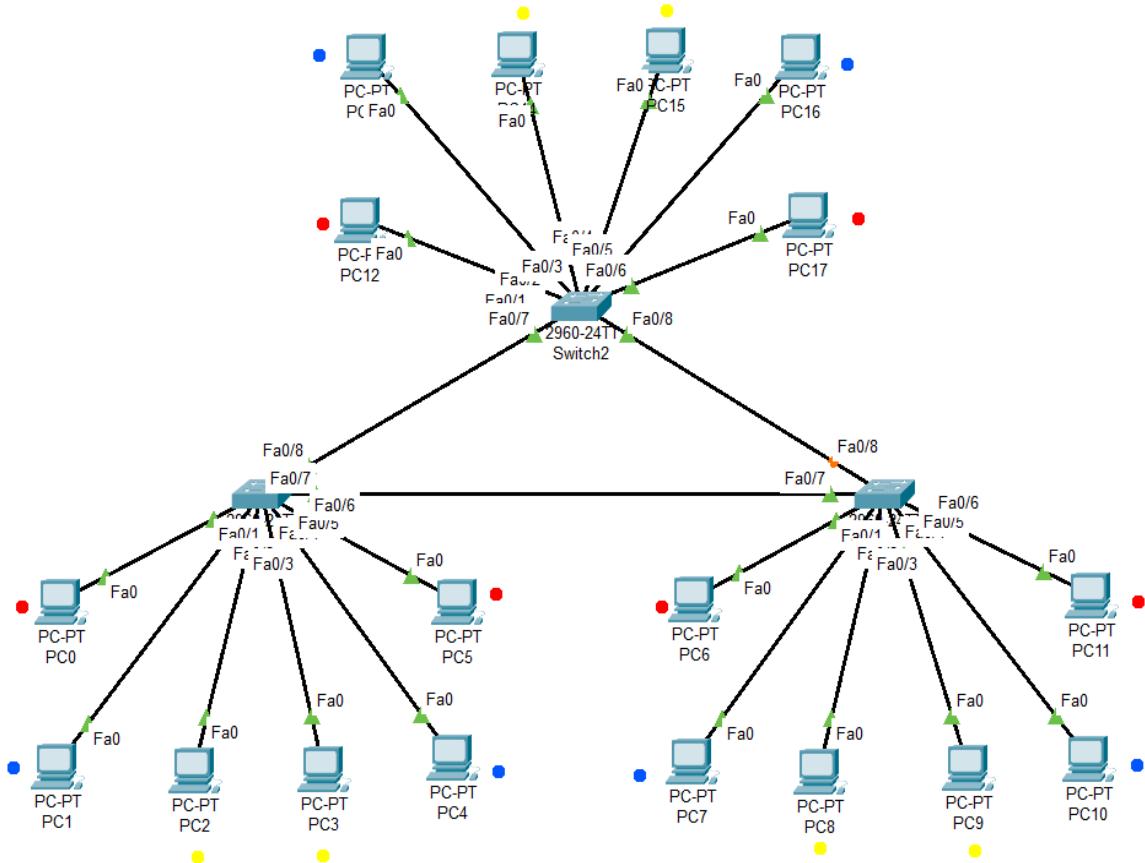


Practical No : 9

Aim : VLAN Configuration with CLI



Objective:

To divide the large LAN into smaller logical networks (VLANs) — **VLAN10, VLAN11, VLAN12** — and assign switch ports to each VLAN according to color-coded groups (Red, Blue, Yellow).

Apparatus / Tools Used:

- Cisco Packet Tracer
- 3 Cisco 2960 Switches
- 18 PCs connected to switches via FastEthernet cables

Theory:

A **VLAN (Virtual Local Area Network)** is a logical grouping of network devices that allows users to be segmented into separate broadcast domains, even if they are connected to the same physical switch.

Each VLAN acts as a separate subnet, reducing broadcast traffic and improving security.

By default, all switch ports are part of **VLAN 1**, but we can create custom VLANs to isolate traffic.

VLAN Plan (as per topology):

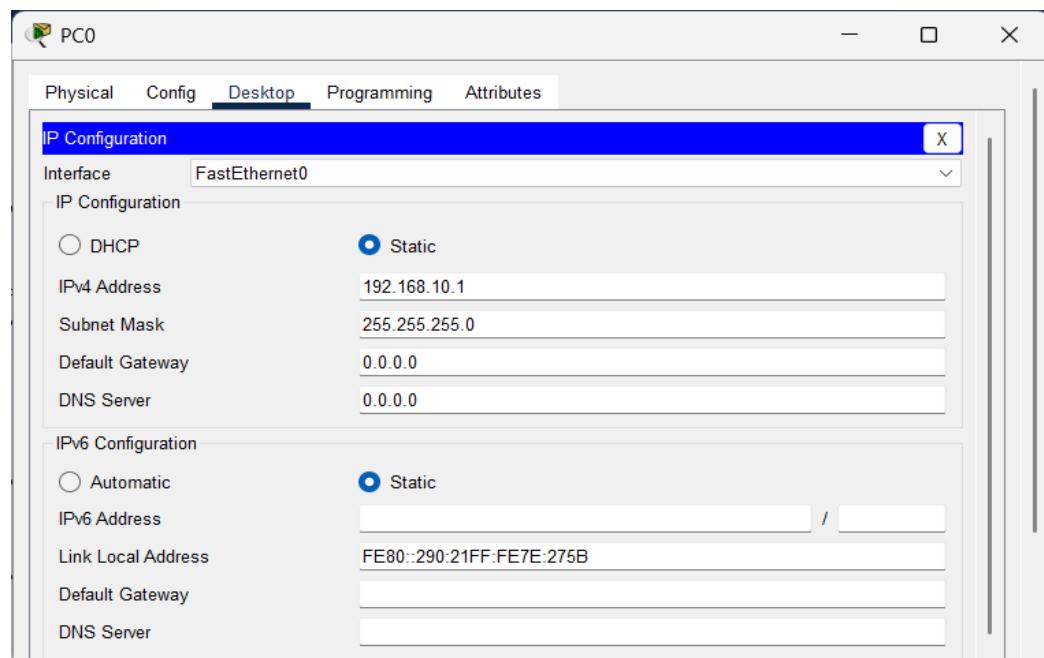
VLAN Name	VLAN ID	Color Group	Example PCs
VLAN10 (v10)	10	Red	PC0, PC6, PC12, PC17
VLAN11 (v11)	11	Blue	PC1, PC7, PC13, PC16
VLAN12 (v12)	12	Yellow	PC2, PC8, PC14, PC15

(Green ports in the image represent the active connections to the switch ports.)

STEPS TO PERFORM :

1. Create Topology as given in image and assign IP to each PC.

We will use only one network (192.168.10.0) for all 18 PC and we will give IP serially eg 1,2,3,4...18.



2. Creating VLANs:

VLANs are created on switches using the `vlan` command.

Example:

```
Switch(config)#vlan 10
Switch(config-vlan)#name v10
Switch(config-vlan)#exit
Switch(config)#vlan 11
Switch(config-vlan)#name v11
Switch(config-vlan)#exit
Switch(config)#vlan 12
Switch(config-vlan)#name v12
Switch(config-vlan)#exit
```

3. Assigning Ports to VLANs:

Each PC port is assigned to a VLAN using the following commands:

```
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#interface fa0/6
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#interface fa0/2
Switch(config-if)#switchport access vlan 11
Switch(config-if)#exit
Switch(config)#interface fa0/5
Switch(config-if)#switchport access vlan 11
Switch(config-if)#exit
Switch(config)#interface fa0/3
```

```

Switch(config-if)#switchport access vlan 12
Switch(config-if)#exit
Switch(config)#interface fa0/4
Switch(config-if)#switchport access vlan 12
Switch(config-if)#exit

```

4. Configuring Trunk Ports Between Switches:

Trunk ports allow VLAN traffic to pass between switches.

```

Switch(config)#interface fa0/7
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport nonegotiate
Switch(config-if)#exit
Switch(config)#interface fa0/8
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport nonegotiate
Switch(config-if)#exit

```

Result: After configuration:

- PCs in the **same VLAN (same color)** can communicate with each other.
- The network is logically divided into 3 VLANs: **v10, v11, and v12**, improving management, performance, and security.

PDU List Window											
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
●	Successful	PC0	PC6	ICMP	■	0.000	N	0	(edit)	(delete)	
●	Successful	PC5	PC11	ICMP	■	0.000	N	1	(edit)	(delete)	
●	Successful	PC0	PC12	ICMP	■	0.000	N	2	(edit)	(delete)	
●	Successful	PC5	PC17	ICMP	■	0.000	N	3	(edit)	(delete)	
●	Successful	PC1	PC7	ICMP	■	0.000	N	4	(edit)	(delete)	
●	Successful	PC1	PC10	ICMP	■	0.000	N	5	(edit)	(delete)	
●	Successful	PC1	PC13	ICMP	■	0.000	N	6	(edit)	(delete)	
●	Successful	PC4	PC16	ICMP	■	0.000	N	7	(edit)	(delete)	
●	Successful	PC2	PC8	ICMP	■	0.000	N	8	(edit)	(delete)	
●	Successful	PC3	PC9	ICMP	■	0.000	N	9	(edit)	(delete)	
●	Successful	PC2	PC14	ICMP	■	0.000	N	10	(edit)	(delete)	
●	Successful	PC3	PC15	ICMP	■	0.000	N	11	(edit)	(delete)	