

Date: 18/08/2025

### Lab Practical #05:

Study the concept of VLAN using packet tracer.

### Practical Assignment #05:

1. Implement the different network structures in VLAN and VLAN trunking. Also check connectivity between them using ping command or PDU utility.

### Solution :

#### Steps:

1. Open Packet Tracer.
2. Add 1 Switch + 4 PCs.
3. Assign IPs:
  - VLAN 10 → PC1: 192.168.10.1, PC2: 192.168.10.2
  - VLAN 20 → PC3: 192.168.20.1, PC4: 192.168.20.2
4. Go to Switch → CLI → Configure VLANs:

```
Switch> enable
Switch# configure terminal
Switch(config)# vlan 10
Switch(config-vlan)# name SALES
Switch(config-vlan)# exit
Switch(config)# vlan 20
Switch(config-vlan)# name HR
Switch(config-vlan)# exit
```

5. Assign VLANs to ports:

```
Switch(config)# interface fastEthernet 0/1
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 10

Switch(config)# interface fastEthernet 0/2
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 10

Switch(config)# interface fastEthernet 0/3
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 20

Switch(config)# interface fastEthernet 0/4
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 20
```

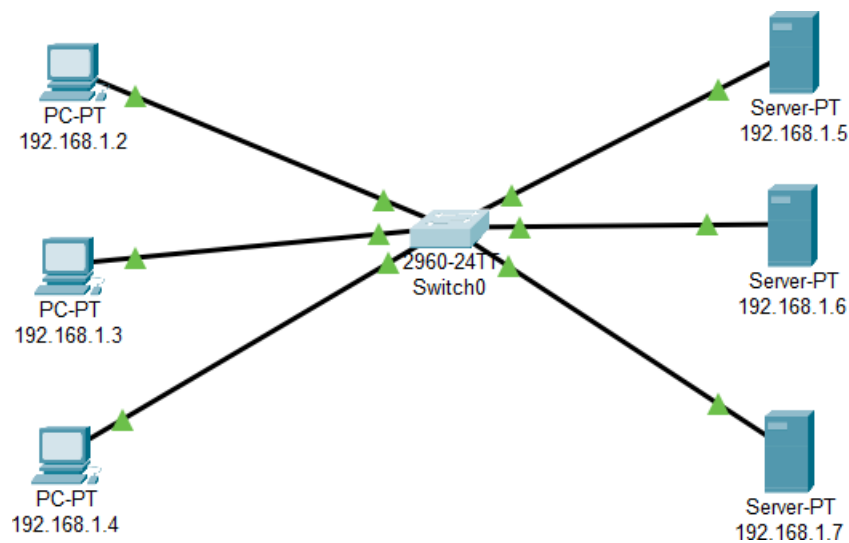
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6. For VLAN trunking (between switches):

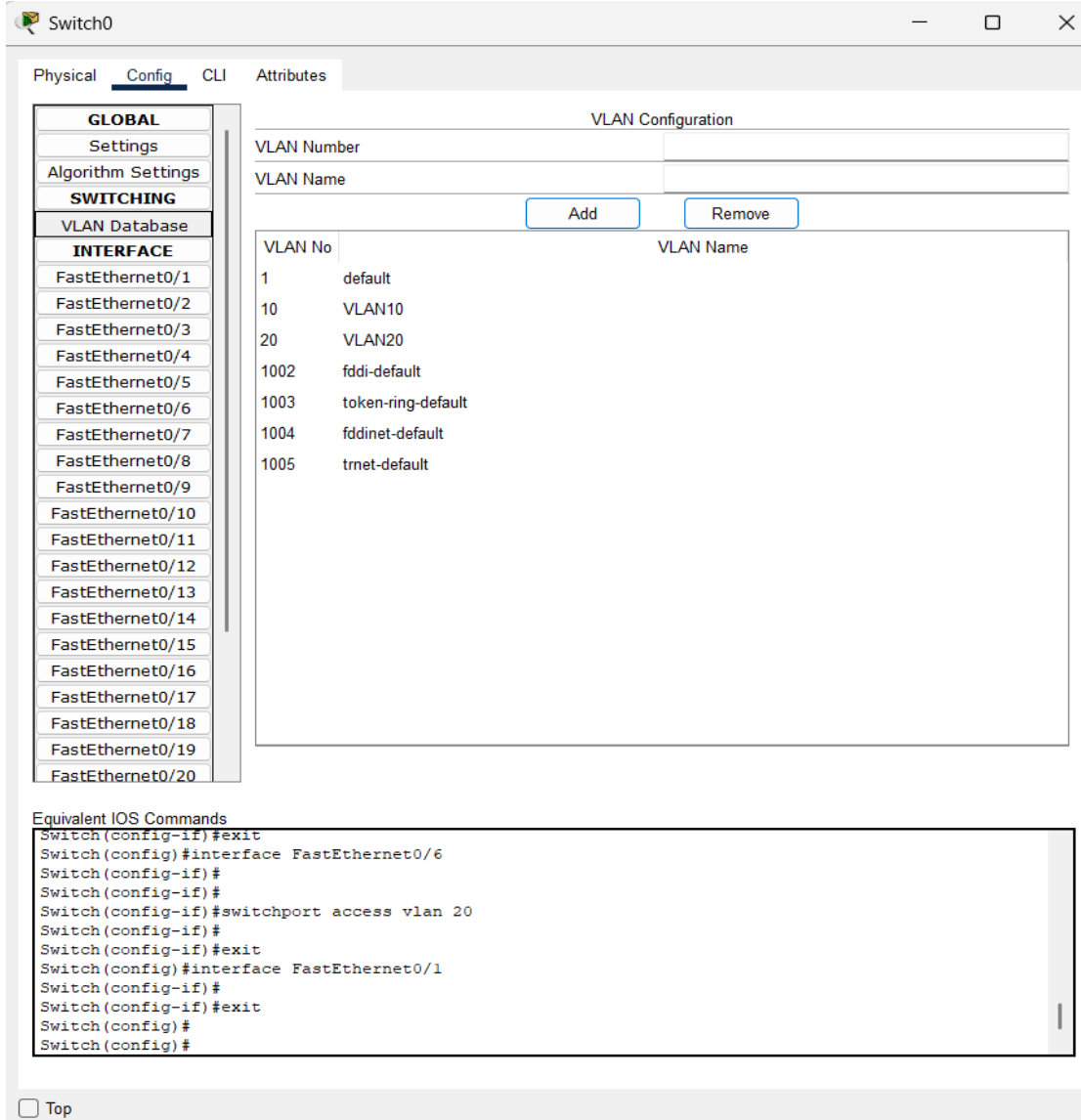
```
Switch(config)# interface fastEthernet 0/24
Switch(config-if)# switchport mode trunk
```

7. Test connectivity:

- PCs in the **same VLAN** can ping each other.
- PCs in **different VLANs** cannot ping unless a router-on-a-stick or Layer 3 switch is configured.



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Switch0

Physical Config CLI Attributes

**GLOBAL**

- Settings
- Algorithm Settings

**SWITCHING**

- VLAN Database

**INTERFACE**

- FastEthernet0/1
- FastEthernet0/2
- FastEthernet0/3
- FastEthernet0/4
- FastEthernet0/5
- FastEthernet0/6
- FastEthernet0/7
- FastEthernet0/8
- FastEthernet0/9
- FastEthernet0/10
- FastEthernet0/11
- FastEthernet0/12
- FastEthernet0/13
- FastEthernet0/14
- FastEthernet0/15
- FastEthernet0/16
- FastEthernet0/17
- FastEthernet0/18
- FastEthernet0/19
- FastEthernet0/20

**VLAN Configuration**

VLAN Number

VLAN Name

Add Remove

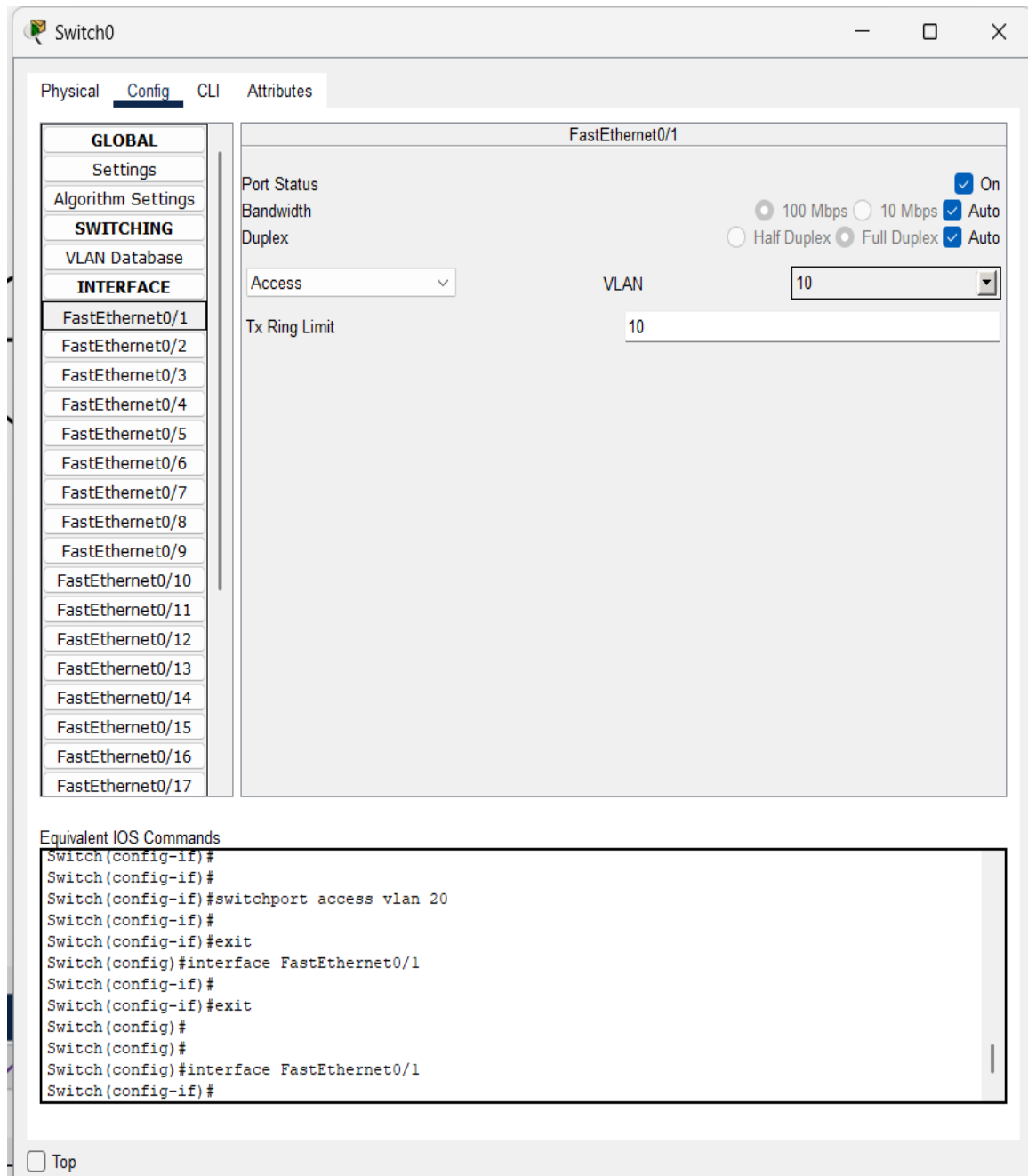
VLAN No	VLAN Name
1	default
10	VLAN10
20	VLAN20
1002	fddi-default
1003	token-ring-default
1004	fddinet-default
1005	trnet-default

**Equivalent IOS Commands**

```
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/6
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#switchport access vlan 20
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#
Switch(config)#
```

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Here we setup VLAN database add VLAN number and name

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Switch0

Physical Config CLI Attributes

**GLOBAL**

- Settings
- Algorithm Settings
- SWITCHING**
- VLAN Database
- INTERFACE**
- FastEthernet0/1
- FastEthernet0/2
- FastEthernet0/3
- FastEthernet0/4
- FastEthernet0/5
- FastEthernet0/6
- FastEthernet0/7
- FastEthernet0/8
- FastEthernet0/9
- FastEthernet0/10
- FastEthernet0/11
- FastEthernet0/12
- FastEthernet0/13
- FastEthernet0/14
- FastEthernet0/15
- FastEthernet0/16
- FastEthernet0/17

**FastEthernet0/1**

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

Access  VLAN

Tx Ring Limit

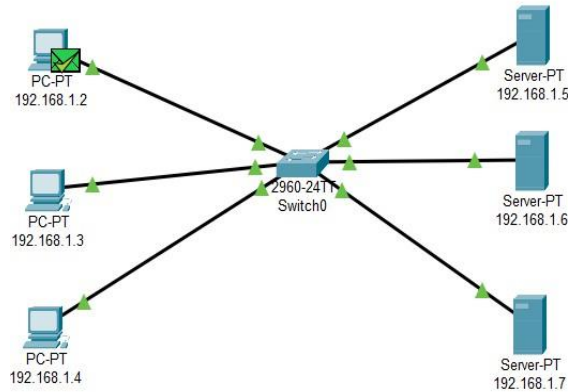
**Equivalent IOS Commands**

```
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#switchport access vlan 20
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#
Switch(config)#
Switch(config)#interface FastEthernet0/1
Switch(config-if)#
```

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Here we setup the switch ,set vlan10->10 and vlan20->20

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PDU Information at Device: 192.168.1.2

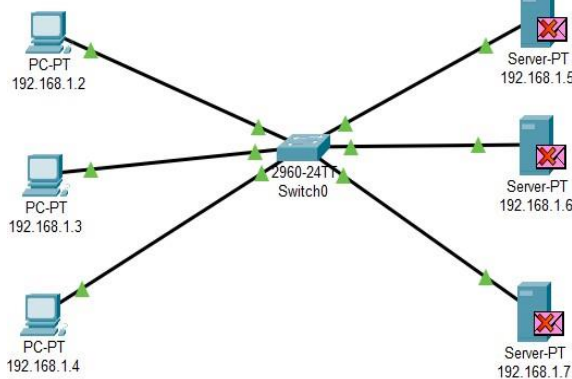
OSI Model Inbound PDU Details

At Device: 192.168.1.2  
Source: 192.168.1.2  
Destination: 192.168.1.4

In Layers	Out Layers
Layer7	Layer7
Layer6	Layer6
Layer5	Layer5
Layer4	Layer4
Layer 3: IP Header Src. IP: 192.168.1.4, Dest. IP: 192.168.1.2 ICMP Message Type: 0	
Layer 2: Ethernet II Header 0002.16E0.7424 >> 0007.EC3A.B65B	
Layer 1: Port FastEthernet0	Layer1

1. FastEthernet0 receives the frame.

Challenge Me << Previous Layer Next Layer >>



PDU Information at Device: 192.168.1.7

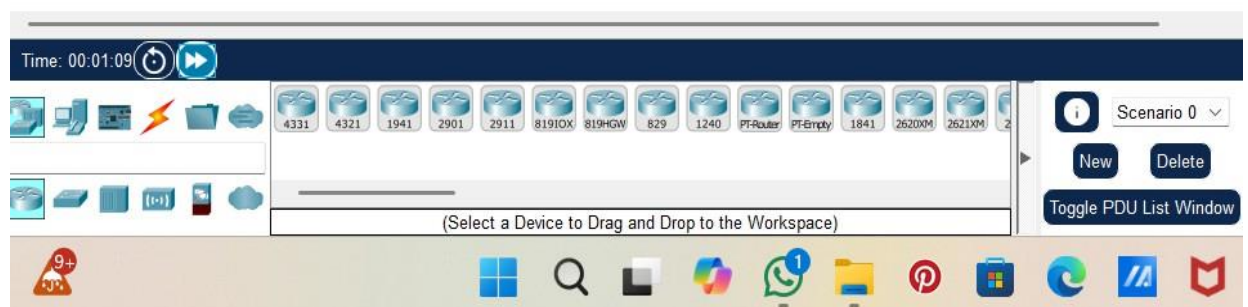
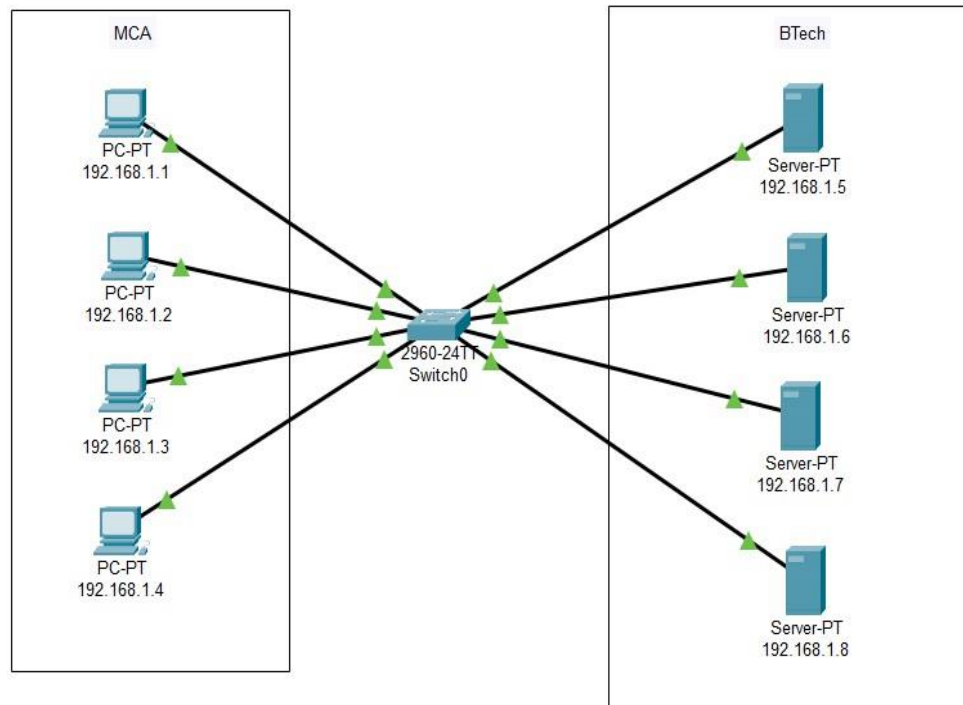
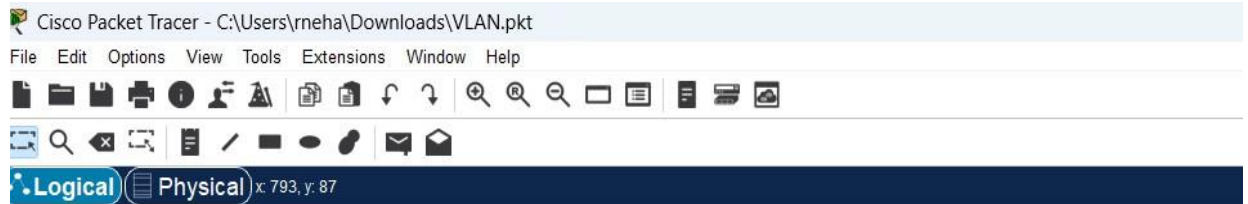
OSI Model Inbound PDU Details

At Device: 192.168.1.7  
Source: Switch0  
Destination: STP Multicast Address

In Layers	Out Layers
Layer7	Layer7
Layer6	Layer6
Layer5	Layer5
Layer4	Layer4
Layer3	Layer3
Layer 2: IEEE 802.3 Header 0001.C752.3B06 >> 0180.C200.0000 LLC STP BPDU	
Layer 1: Port FastEthernet0	Layer1

1. FastEthernet0 receives the frame.

Challenge Me << Previous Layer Next Layer >>

**Date: 18/08/ 2025****Other VLAN NETWORK SCREENSHOTS OR LABWORK**

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