

Register No:	99220040581
Name	KOPPOLU VENKATA KALYAN RAM
Class/Section	8501A/S06
Ex.No:	6a
Date of Submission	30.1.2025
Name of the Experiment	Configuration of Inter VLAN network using L3 switch
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1lCejKm7aX5Dw5bNkLt7KwHkljdOOS0Z6?usp=sharing

Objective(s):

To design and implement Inter VLAN using switch configuration

Introduction:

Normally, Routers are used to divide the broadcast domain and switches (at layer 2) Operate in a single broadcast domain but Switches can also divide the broadcast domain by using the concept of **VLAN (Virtual LAN)**.

VLAN is the logical grouping of devices in the same or different broadcast domains. By default, all the switch ports are in VLAN 1. As the single broadcast domain is divided into multiple broadcast domains, Routers or layer 3 switches are used for intercommunication between the different VLANs. The process of intercommunication of the different Vlan is known as Inter Vlan Routing (IVR).

Suppose we have made 2 logical groups of devices (VLAN) named sales and finance. If a device in the sales department wants to communicate with a device in the finance department, inter-VLAN routing has to be performed. These can be performed by either router or layer 3 switches.

Switch Virtual Interface (SVI): SVI is a logical interface on a multilayer switch that provides layer 3 processing for packets to all switch ports associated with that VLAN. A single SVI can be created for a VLAN. SVI on the layer 3 switch provides both management and routing services while SVI on layer 2 switch provides only management services like creating VLANs or telnet/SSH services.

Process of Inter Vlan Routing by Layer 3 Switch: The SVI created for the respective VLAN acts as a default gateway for that VLAN just like the sub-interface of the router (in the process of Router On a stick). If the packet is to be delivered to different VLANs i.e inter VLAN Routing is to be performed on the layer 3 switch then first the packet is delivered to the layer 3 switch and then to the destination just like in the process of the router on a stick.

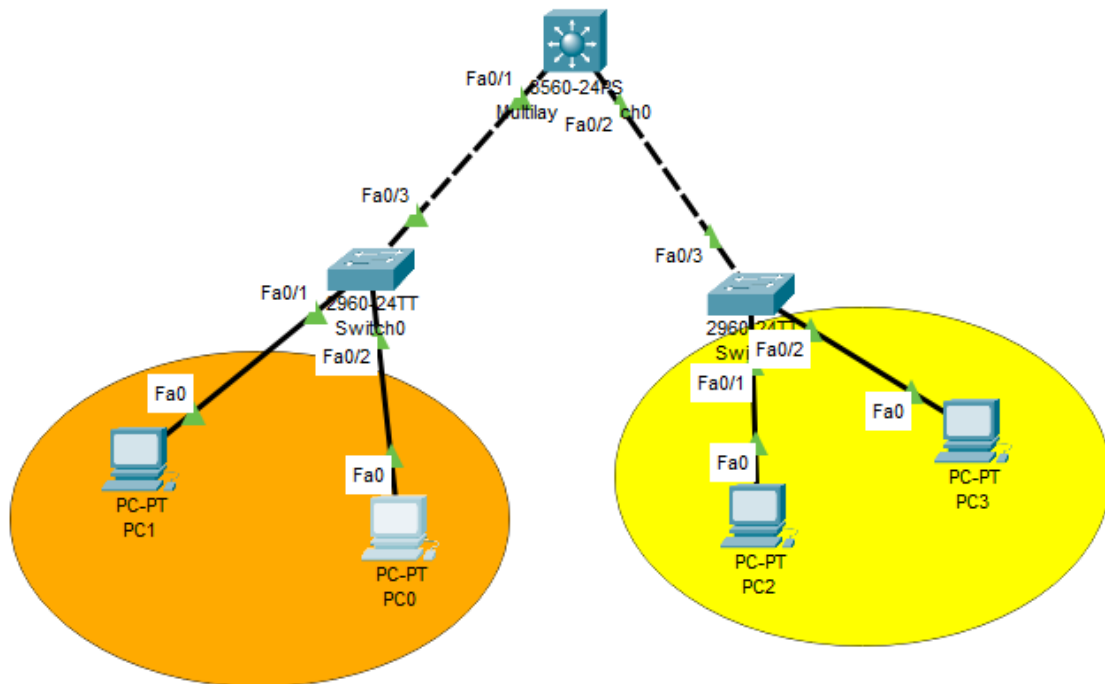
1. Device Requirements:

- 1.L3 Switch
2. PC0
- 3.PC1
- 4.PC2
- 5.PC3
- 6.Cable

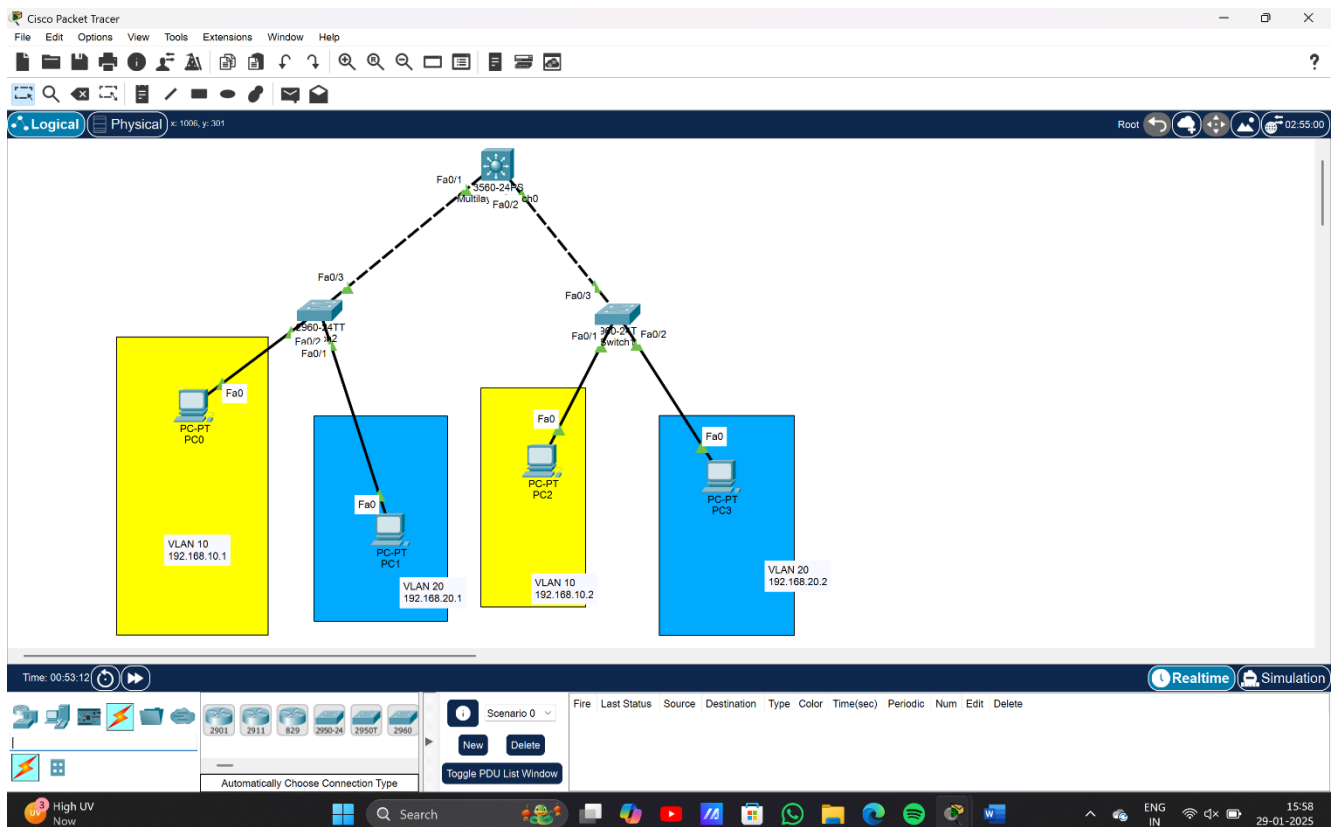
7. Switch 0

8. Switch 1

2. Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)



3. Network Diagram (Packet Tracer diagram before configuration):

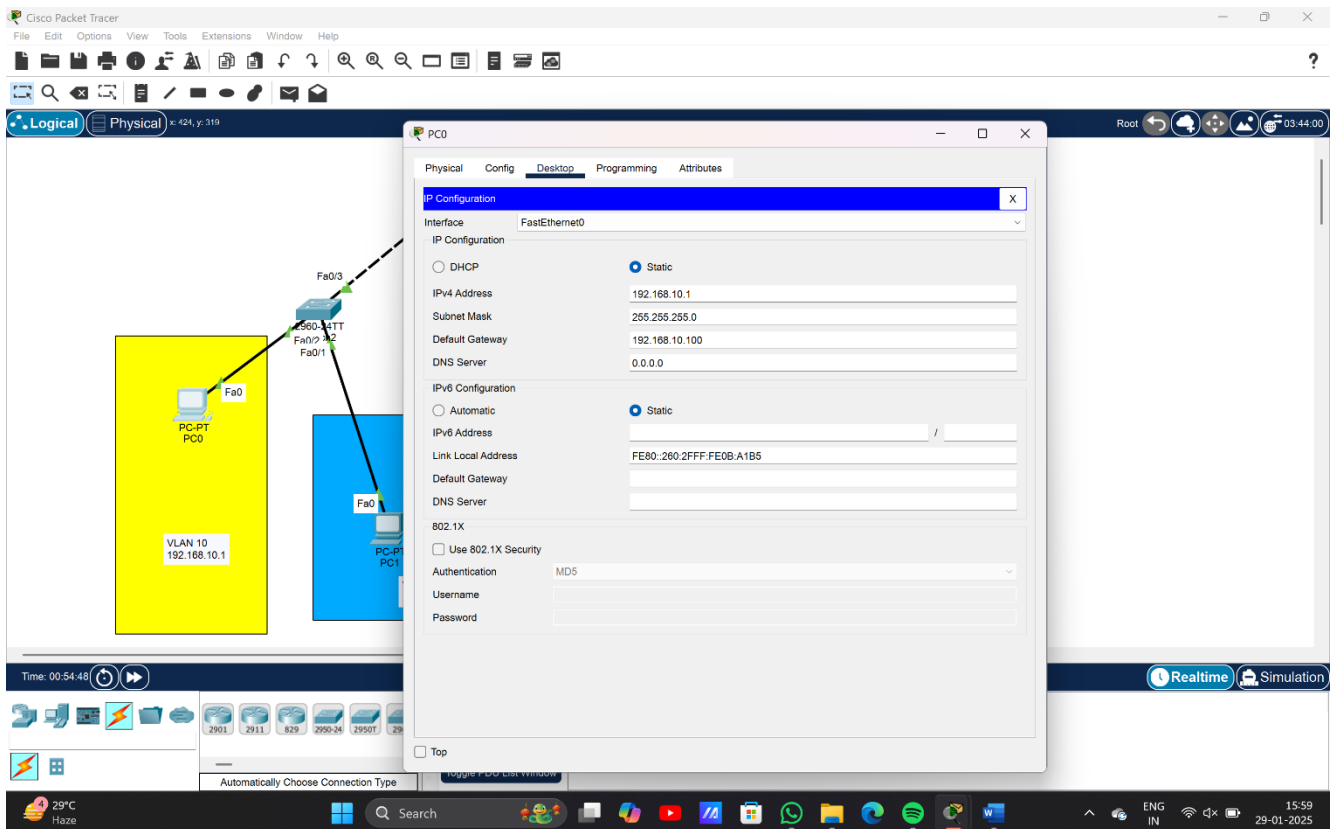
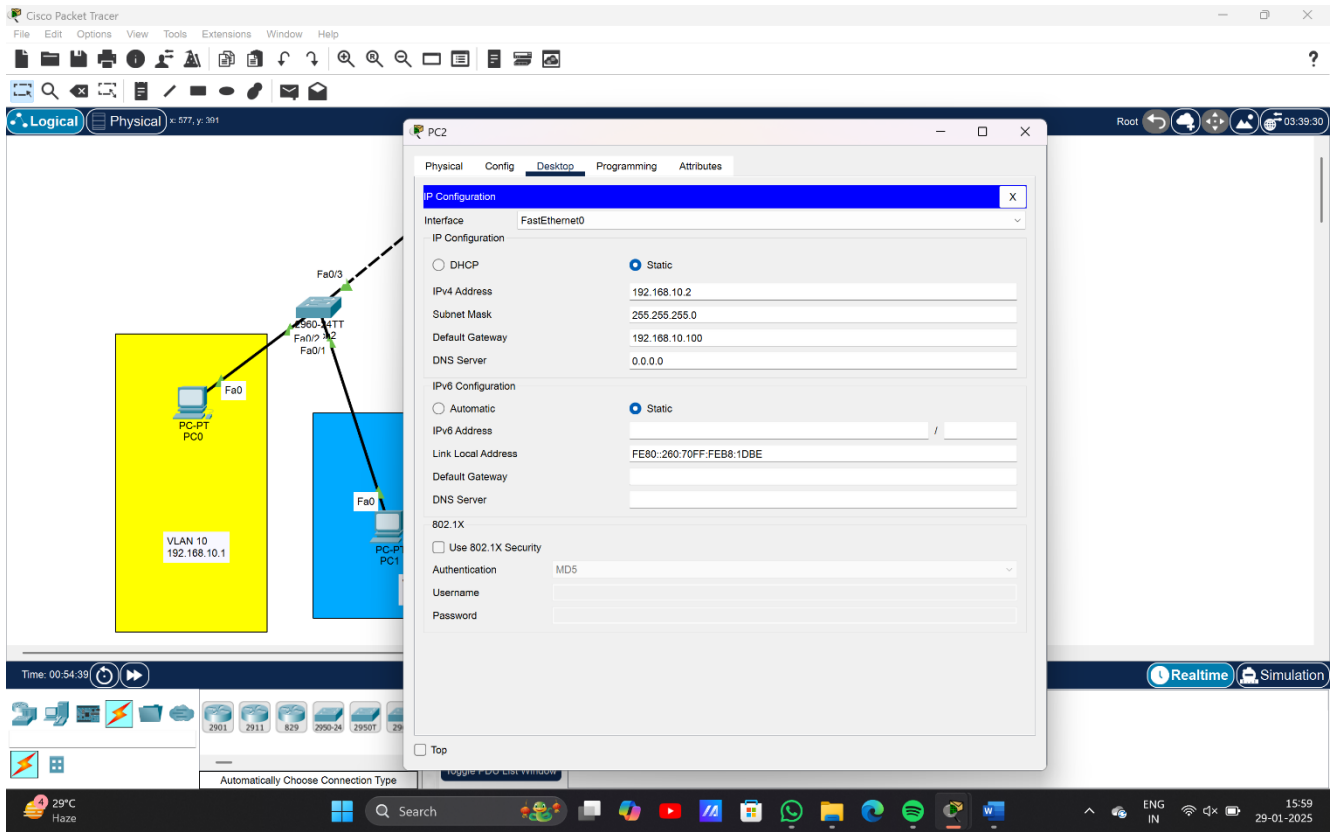


4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0/2	192.168.10.1	255.255.255.0
PC1	Fa0/1	192.168.20.2	255.255.255.0
PC2	Fa0/1	192.168.10.2	255.255.255.0
PC3	Fa0/2	192.168.20.2	255.255.255.0
Switch 0	Fa0/1		
Switch 1	Fa0/2		
L3 switch			

5. Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**1.Create VLANs****2.Configure interfaces****3.Configure trunking**

6. Output Diagram (Minimum 3 screenshot):



The screenshot shows the Cisco Packet Tracer interface with a network diagram and a PC configuration window. The network diagram includes a central switch (S2600-4TTT) connected to two PCs (PC0 and PC1) via their Fa0/24 ports. PC0 is in a yellow box labeled 'VLAN 10' with IP 192.168.10.1. PC1 is in a blue box with IP 192.168.10.2. The PC0 configuration window is open, showing the Command Prompt with the following commands and output:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ip config
Invalid Command.

C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix...:
Link-local IPv6 Address...: FE80::260:2EFF:FE00:A105
IPv6 Address...:
IPv4 Address...: 192.168.10.1
Subnet Mask...: 255.255.255.0
Default Gateway...: 192.168.10.100

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address...:
IPv6 Address...:
IPv4 Address...: 0.0.0.0
Subnet Mask...: 0.0.0.0
Default Gateway...: 0.0.0.0

C:\>192.168.10.2
Invalid Command.

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

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

The screenshot shows the Cisco Packet Tracer interface with a network diagram and a PC configuration window. The network diagram is the same as the previous one, but the PC2 configuration window is open, showing the Command Prompt with the following commands and output:

```
Bluetooth Connections:

Connection-specific DNS Suffix...:
Link-local IPv6 Address...:
IPv6 Address...:
IPv4 Address...: 0.0.0.0
Subnet Mask...: 0.0.0.0
Default Gateway...: 0.0.0.0

C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

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

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time=1ms TTL=128
Reply from 192.168.10.1: bytes=32 time=1ms TTL=128
Reply from 192.168.10.1: bytes=32 time=1ms TTL=128
Reply from 192.168.10.1: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.20.1

Pinging 192.168.20.1 with 32 bytes of data:

Request timed out.
Request timed out.
```

CONCLUSION (provide conclusion about this experiment):

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections (4)	Created the topology, Identify the proper devices, making the connections But missing some features (3)	Created wrong topology, Failed to Identify the proper devices and making connections (1)	
Verify the connectivity (4)	Verified the connectivity in all the levels (4)	Verified the connectivity at some levels (only some nodes) (2)	Verified the connectivity is not done. (1)	
Timely Completion (2)	Completed the lab before the allotted time (2)	Completed the lab after the deadline (1)	Did not submitted before grading (0)	
Total				