Batch: A1	**Roll No.: 16010120015**
Experiment / assignment / tutorial No.___4___	
Grade: AA / AB / BB / BC / CC / CD /DD	

Experiment No.:4

TITLE: Building and configuring simple topology using Network tool - CISCO PACKET TRACER.

AIM: To build and configure VLAN (Virtual LAN) using CISCO Packet Tracer.

Packet Tracer is a network simulation program that allows students to experiment with network behaviour and ask "what if" questions. Packet Tracer provides simulation, visualization, and authoring, assessment, and collaboration capabilities and facilitates the teaching and learning of complex technology concepts.

Expected Outcome of Experiment:
CO1: Explain the fundamentals of the data communication networks, reference models, topologies, physical media, devices, simulators and identify their use in day-to-day networks.
CO3: Demonstrate various network layer protocols and network design using IP addressing
concepts.

Books/ Journals/ Websites referred:

1. http://www.google.com
2. A. S. Tanenbaum, "Computer Networks", Pearson Education, Fourth Edition
3. B. A. Forouzan, "Data Communications and Networking", TMH, Fourth Edition
4. CISCO PACKET TRACER 6.0.1 and Higher version (free download)

Pre-Lab/ Prior Concepts: Virtual LAN Network flow
A virtual local area network (VLAN) is a LAN which is not configured by physical wiring but it is configured by software. A VLAN is logical group of network devices that appear to be on same LAN despite their geographical distribution. A VLAN is implemented so

that network administrators can connect a group of host in the same domain inspite of their physical location to achieve scalability and improve security features.

To subdivide a network into virtual LANs, one configures a network switch or router. Simpler network devices can partition only per physical port (if at all) , in which case each VLAN is connected with a dedicated network cable (and VLAN connectivity is limited by the number of hardware ports available) More sophisticated devices can mark packets through tagging, so that a single interconnect (trunk) may be used to transport data for multiple VLANs. VLAN can greatly simplify network design and deployment, because VLAN membership can be configured through software.

New Concepts to be learned: Purpose of this lab is to become familiar with building Virtual Network in Packet Tracer.

Stepwise-Procedure:

A. Creating a simple LAN network using packet tracer:
Step 1: Select 12 PCs from the end devices and one fast ethernet switch (2950/24 ports)

Step 2: Connect PCs and switch via copper cable from the panel. Connection can be verified by appearance of all green dots on the links.

Step 3: For PCs to communicate click on PC0.

- Dialog box for PC0 appears
- Click on desktop applications by packet tracer.
- Go to IP configuration.
- Enter IP address to identify host i.e. PC0 (for example: 192.168.1.1)
- Subnet mask-by default already set one can change it as per his/her specification.

Step 4: Repeat step 3 for PC1

Step 5: Ping the PCs and check their working status.

Step 6: Simple PDU (Protocol Data Unit) to simulate network traffic by sending ICMP PDU to assess the network traffic. View simulation in simulation mode

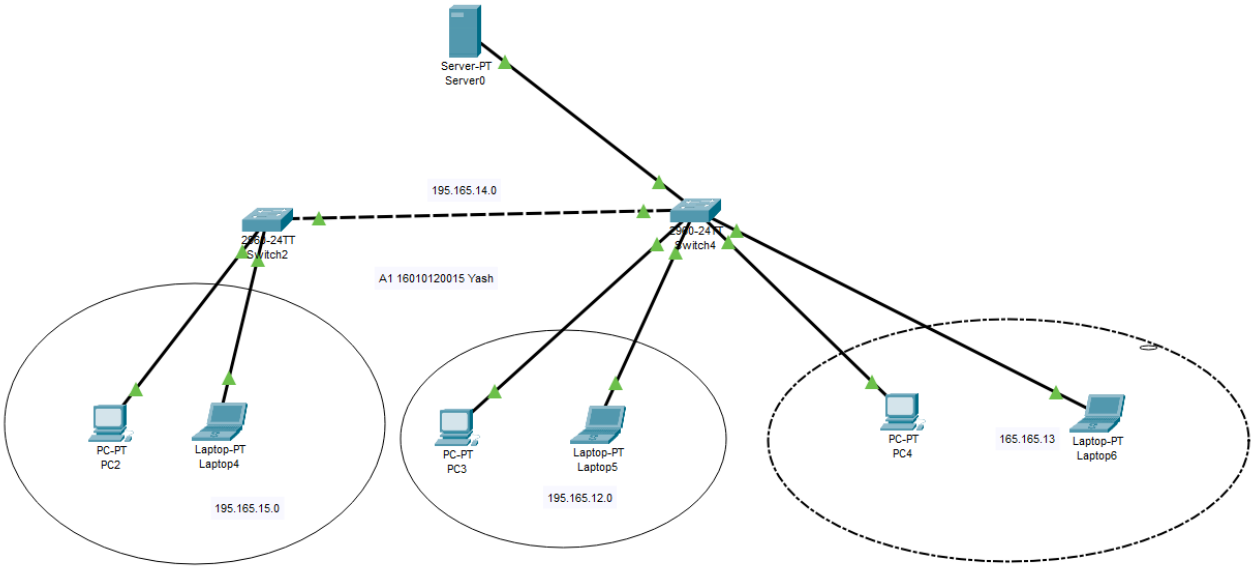
Step 7: . Configure two VLAN in a switch in 6 verticals.
Step 8. As per design, assign membership of VLAN to port using following command
switch port access vlan2 or vlan3

Step 9. Check status of VLAN.

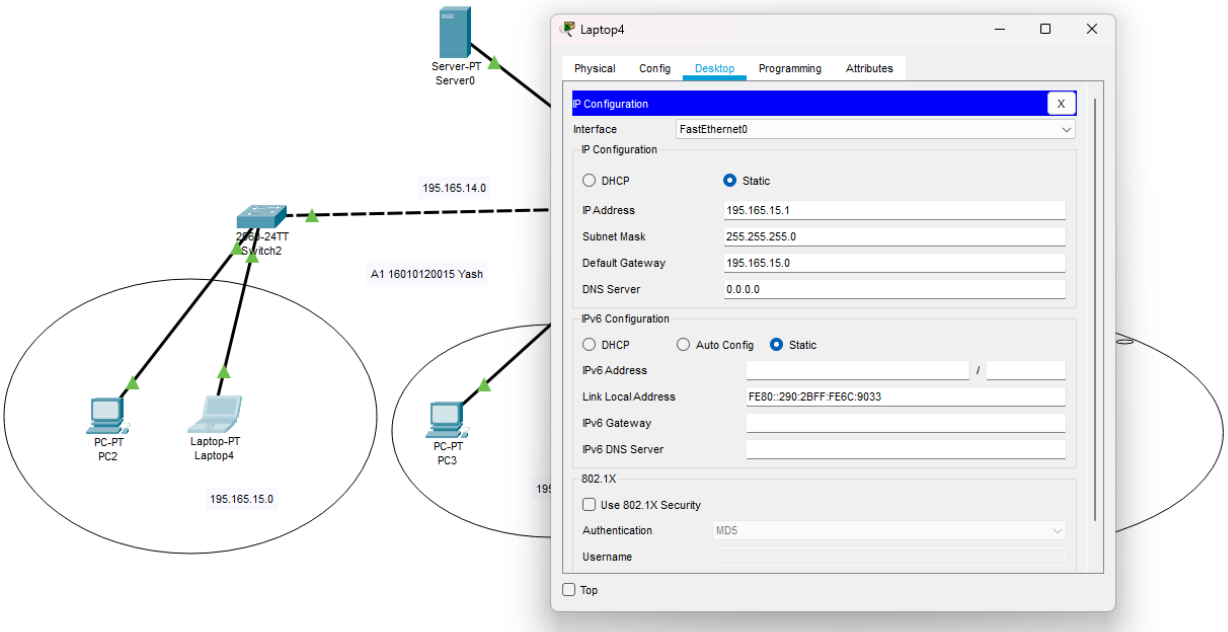
IMPLEMENTATION: (printout of simulation code)

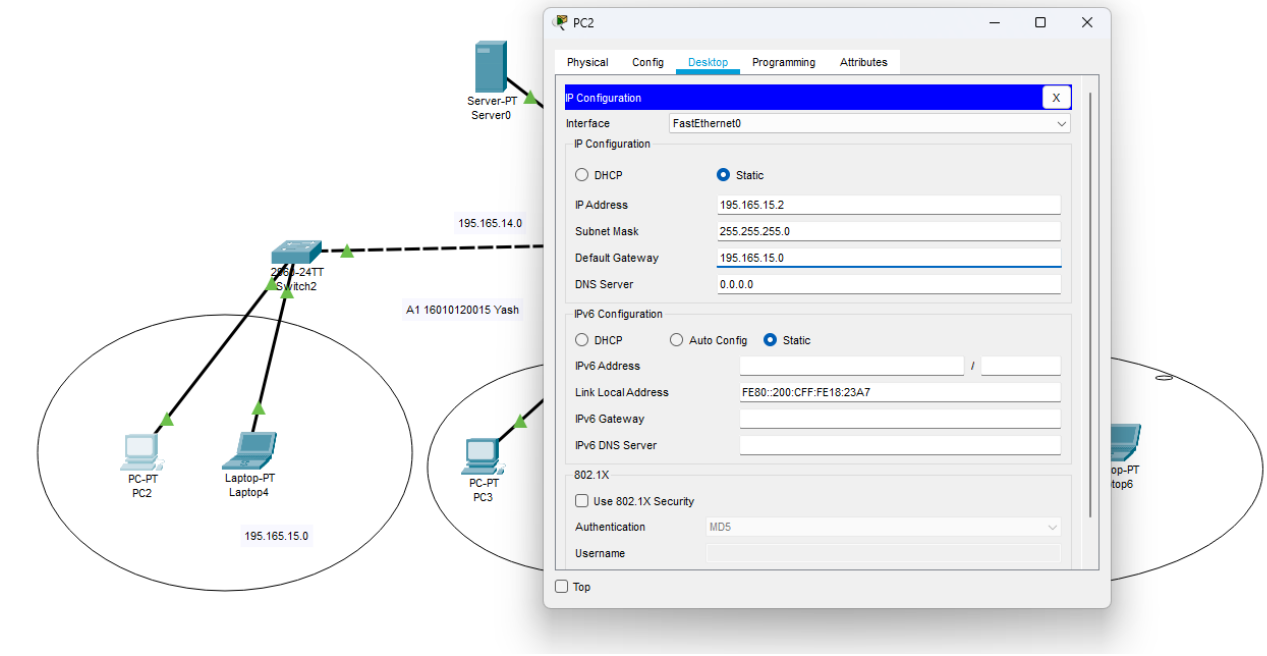
Network Design

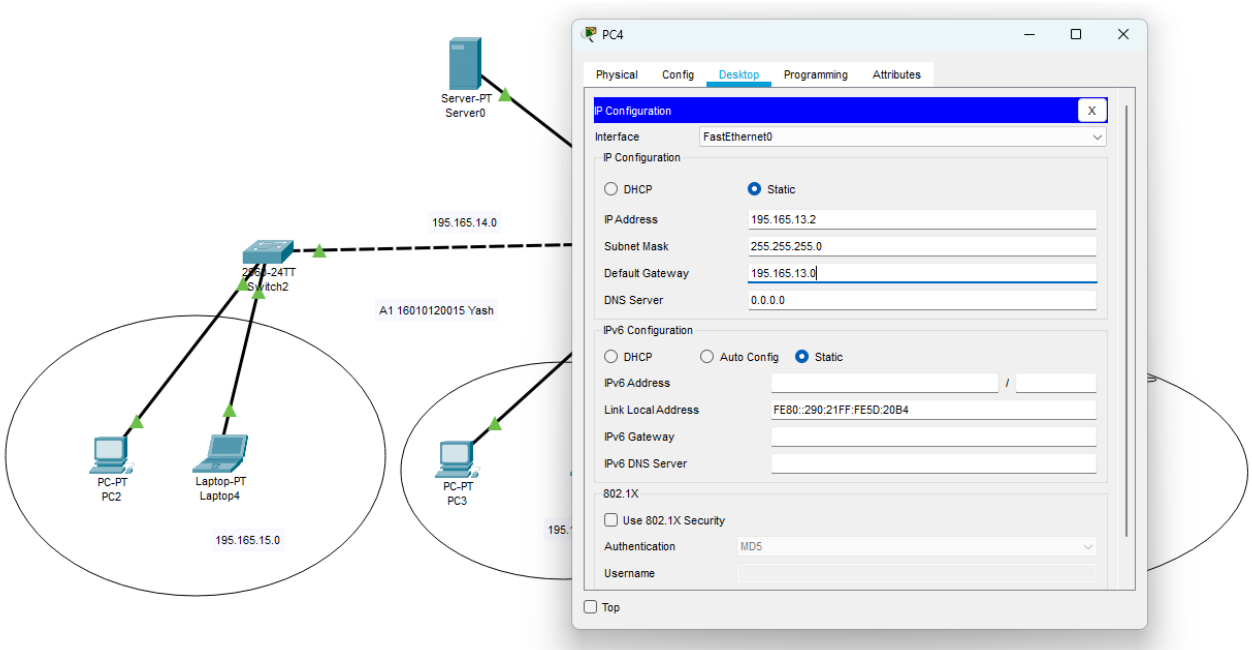
Fig. VLAN Design

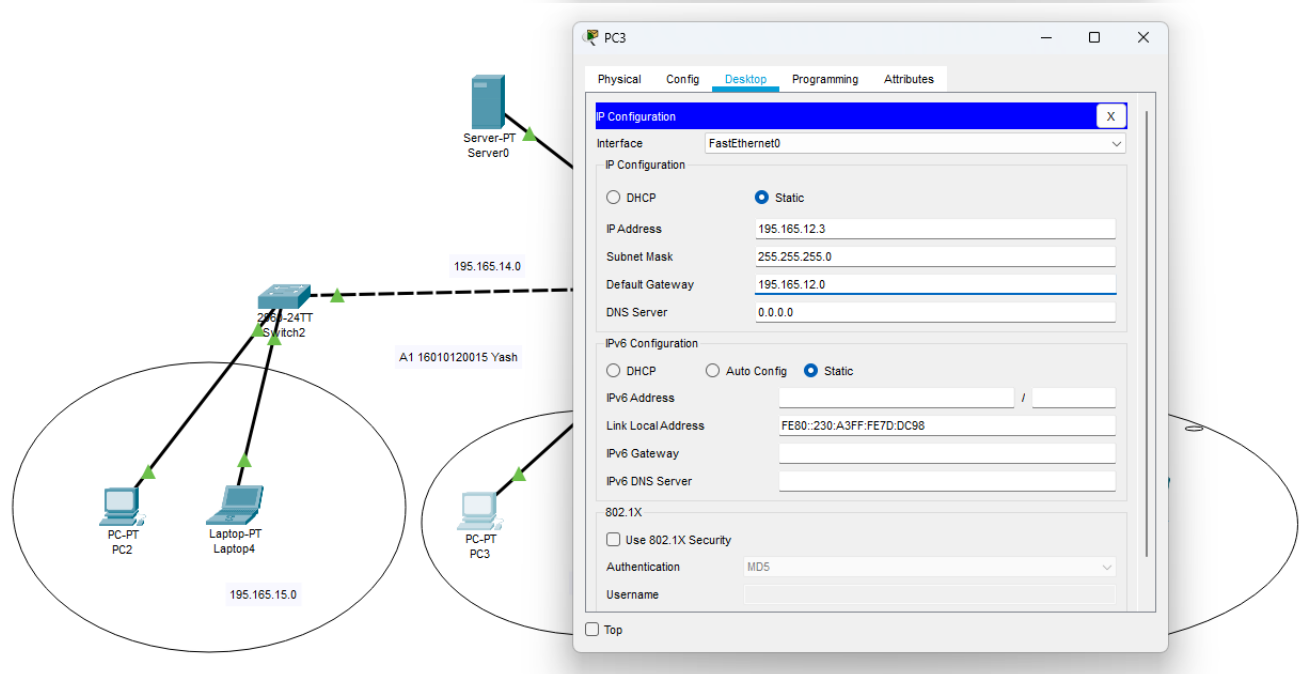


Observation



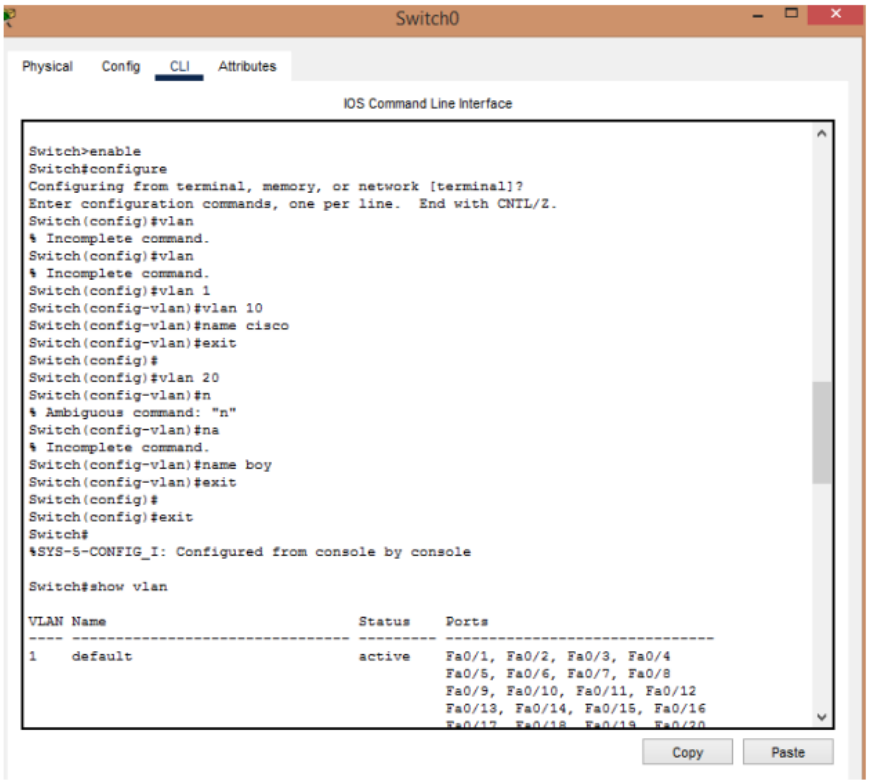


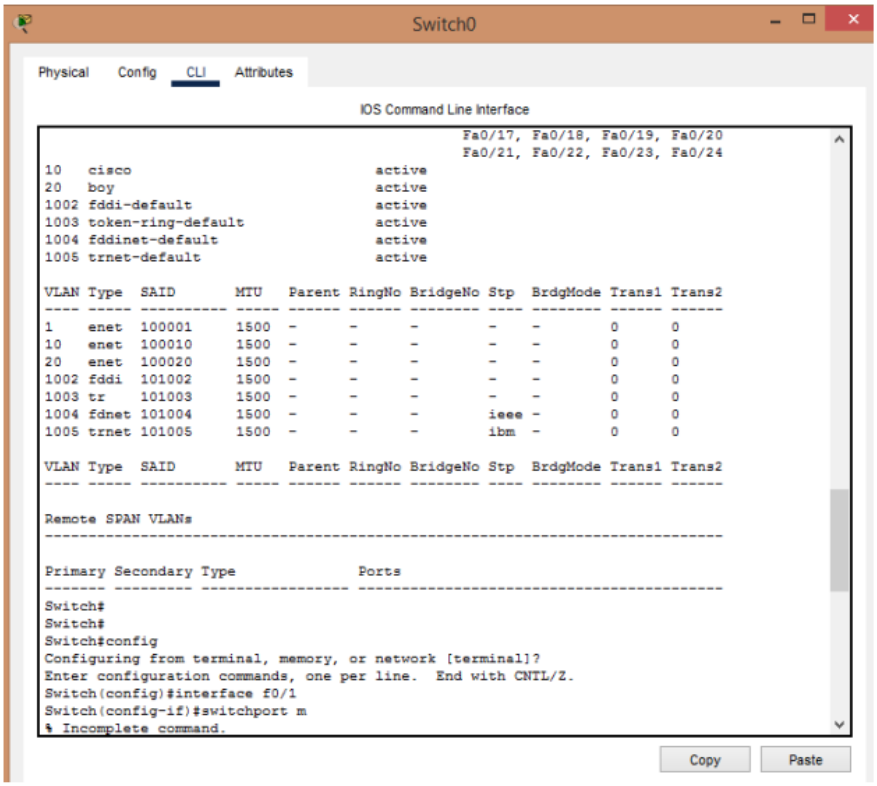




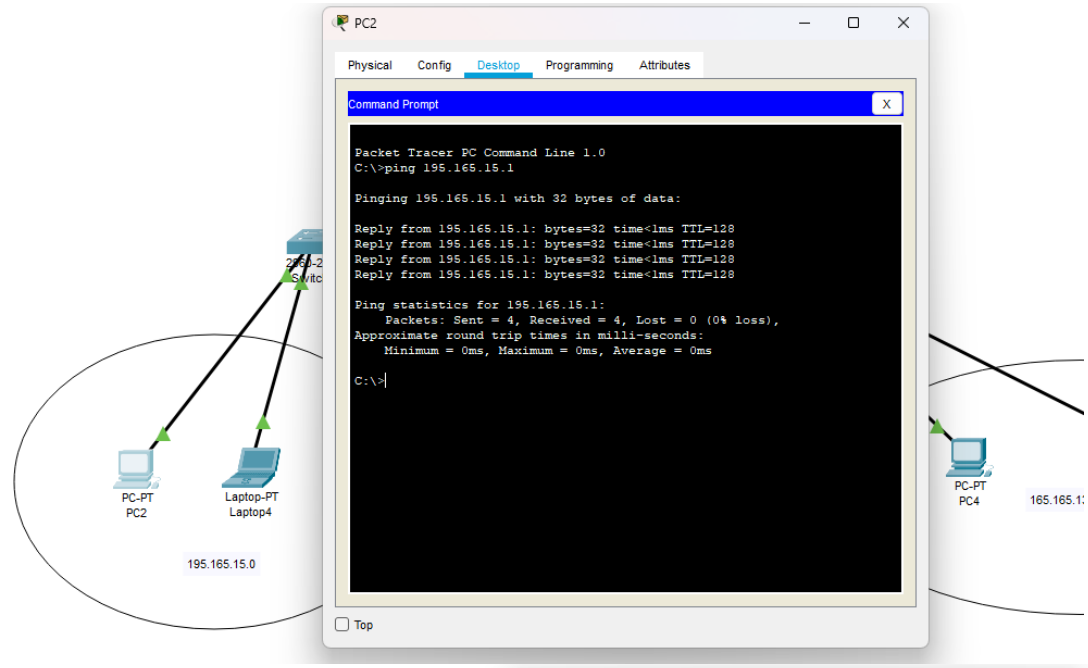
Screen shots

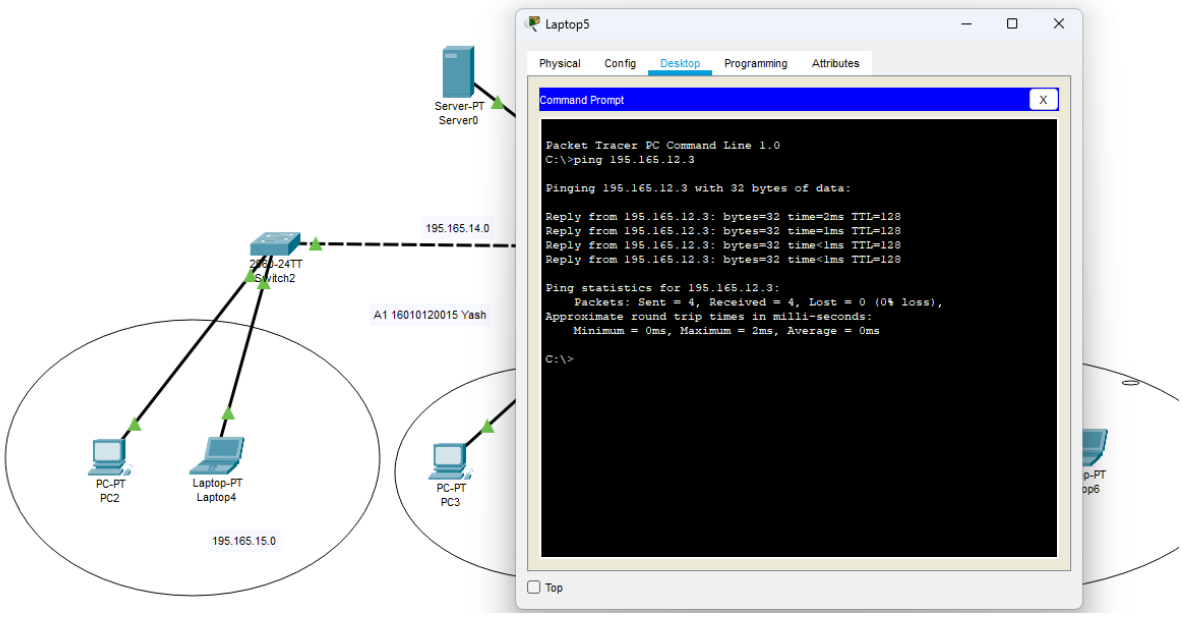
Server:


Switch0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch>enable
Switch#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan
% Incomplete command.
Switch(config)#vlan
% Incomplete command.
Switch(config)#vlan 1
Switch(config-vlan)#vlan 10
Switch(config-vlan)#name cisco
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#vlan 20
Switch(config-vlan)#n
% Ambiguous command: "n"
Switch(config-vlan)#na
% Incomplete command.
Switch(config-vlan)#name boy
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#show vlan
VLAN Name Status Ports
1 default active Fa0/1, Fa0/2, Fa0/3, 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
Copy
Paste

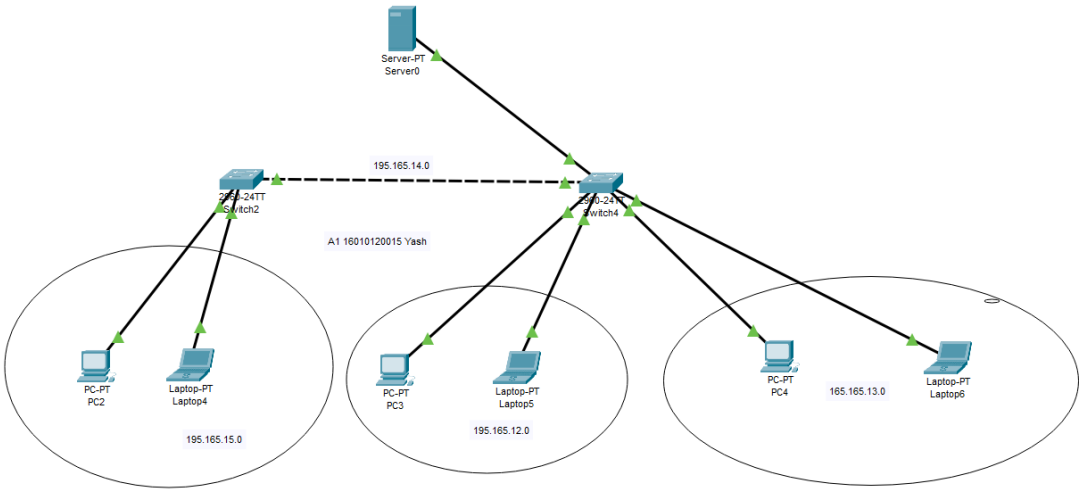

Switch0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Fa0/17, Fa0/18, Fa0/19, Fa0/20
Fa0/21, Fa0/22, Fa0/23, Fa0/24
10 cisco active
20 boy active
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
1 enet 100001 1500 - - - - - 0 0
10 enet 100010 1500 - - - - - 0 0
20 enet 100020 1500 - - - - - 0 0
1002 fddi 101002 1500 - - - - - 0 0
1003 tr 101003 1500 - - - - - 0 0
1004 fdnet 101004 1500 - - - ieee - 0 0
1005 trnet 101005 1500 - - - ibm - 0 0
Remote SPAN VLANs
Primary Secondary Type Ports
Switch#
Switch#
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface f0/1
Switch(config-if)#switchport m
% Incomplete command.
Copy
Paste

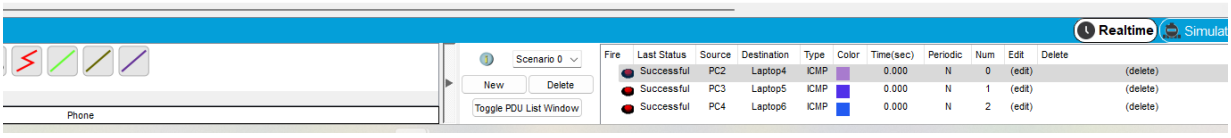
Ping :


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 195.165.15.1
Pinging 195.165.15.1 with 32 bytes of data:
Reply from 195.165.15.1: bytes=32 time<1ms TTL=128
Reply from 195.165.15.1: bytes=32 time<1ms TTL=128
Reply from 195.165.15.1: bytes=32 time<1ms TTL=128
Reply from 195.165.15.1: bytes=32 time<1ms TTL=128
Ping statistics for 195.165.15.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
Top
PC-PT
PC2
Laptop-PT
Laptop4
195.165.15.0
PC-PT
PC4


Laptop5
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 195.165.12.3
Pinging 195.165.12.3 with 32 bytes of data:
Reply from 195.165.12.3: bytes=32 time=2ms TTL=128
Reply from 195.165.12.3: bytes=32 time=1ms TTL=128
Reply from 195.165.12.3: bytes=32 time<1ms TTL=128
Reply from 195.165.12.3: bytes=32 time<1ms TTL=128
Ping statistics for 195.165.12.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 2ms, Average = 0ms
C:\>
Top
Server-PT
Server0
195.165.14.0
A1 16010120015 Yash
PC-PT
PC2
Laptop-PT
Laptop4
195.165.15.0
PC-PT
PC3

Real Time Simulation :





CONCLUSION:

IN this experiment we understood and implemented to build and configure VLAN (Virtual LAN) using CISCO Packet Tracer

Post Lab Subjective/Objective type Questions:

1. Describe the concept of Virtual LAN.

virtual LAN (VLAN) is a logical overlay network that groups together a subset of devices that share a physical LAN, isolating the traffic for each group.

A LAN is a group of computers or other devices in the same place –

e.g., the same building or campus -- that share the same physical network.

A LAN is usually associated with an Ethernet (Layer 2) broadcast domain, which is the set of network devices an Ethernet broadcast packet can reach.

VLAN is a custom network which is created from one or more local area networks. It enables a group of devices available in multiple networks to be combined into one logical network.

The result becomes a virtual LAN that is administered like a physical LAN. The full form of VLAN is defined as Virtual Local Area Network.

2. Compare LAN with VLAN.

BASIS FOR COMPARISON	LAN	VLAN
Stands for	Local Area Network	Virtual Local Area Network
Devices used	Hub, switch and router.	Switch and bridge.
Broadcast control	Packet is broadcasted to each device.	Sends packet to the specific broadcast domain.
Latency	High	Low
Security	Not secure enough and security measures are only taken at the routers end.	Improves security by limiting the broadcast domain.
Flexibility and scalability	Only filter the frames and is less scalable.	Specifies the port and protocols to identify the frame.
Cost	Higher comparatively.	Less

3. State the benefits of implementing VLAN.

VLANs provide a number of advantages, such as :

Flexibility

In the organization, VLAN acts like the friend who brings people together; it brings administrators and users together.

Security

The major advantage of using a VLAN network is the aspect of security that it provides. The traffic division and segmentation of the traffic restrict unwanted, unknown, and unauthorized users from getting on sensitive networks

Uses

Division of network helps improve security levels, reliability, and efficiency of a network.

Date: __28/11/2022_____ **Signature of faculty in-charge**