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Section: 6-A

Subject: Computer Networks

Instructor: Sir Imran Khan

Type: Project Report

Report on VoIP-IP Telephony Networking Project

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1. Introduction

The **VoIP-IP Telephony Networking Project** is designed to simulate a real-world telephony system using Cisco Packet Tracer. This project aims to provide an efficient and cost-effective communication network that integrates voice and data services. By leveraging VoIP technology, businesses can reduce telephony costs, enhance scalability, and improve communication efficiency.

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2. Objectives

- To design and simulate a telephony network using Cisco Packet Tracer.
- To demonstrate the integration of VoIP technology with networking equipment.
- To analyze the cost of implementing this network in a real-world scenario.

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3. Project Design

Tools Used; -

We used **Cisco Packet Tracer** to design and simulate the project. It allowed us to configure, test, and troubleshoot the network virtually before deploying it in a real-world scenario.

Components Used: -

Below is the list of components used in the project:

1. 4 routers (**2811**)
2. 5 switches (**2960-24TT**)
3. 40 PCs (**PC-PT**)
4. 40 IP phones (**7960**)
5. 4 printers (**Printer-PT**)
6. 4 servers (**Server-PT**)
7. Copper-Straight Through Cables (**97**)
8. 4 Serial DCE-Wires
9. 4 HWIC-2T Modules

Design Steps: -

1. **Network Topology Creation**: Created a topology with routers, switches, PCs, IP phones, printers, and servers.
2. **IP Addressing**: Assigned IP addresses to all devices for seamless communication.
3. **VoIP Configuration**: Configured routers to support VoIP by setting up dial peers and assigning phone numbers.
4. **Testing**: Conducted various tests to ensure connectivity and functionality.

Resources Consulted; -

- **Cisco Packet Tracer Documentation**
- Online tutorials on VoIP configuration.
- Networking textbooks and resources from Cisco Networking Academy.

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4. Cost Analysis

Below is the cost analysis for the components used in the project:

Component	Quantity	Cost per Item (USD)	Total Cost (USD)
Router (2811)	4	300	1,200
Switch (2960-24TT)	5	150	750
PC (PC-PT)	40	500	20,000
IP Phone (7960)	40	200	8,000
Printer (Printer-PT)	4	400	1,600
Server (Server-PT)	4	2,000	8,000
Copper-Straight Through	97	10	970
Serial DCE-Wire	4	50	200
HWIC-2T	4	300	1,200

Total Cost: **$41,920**

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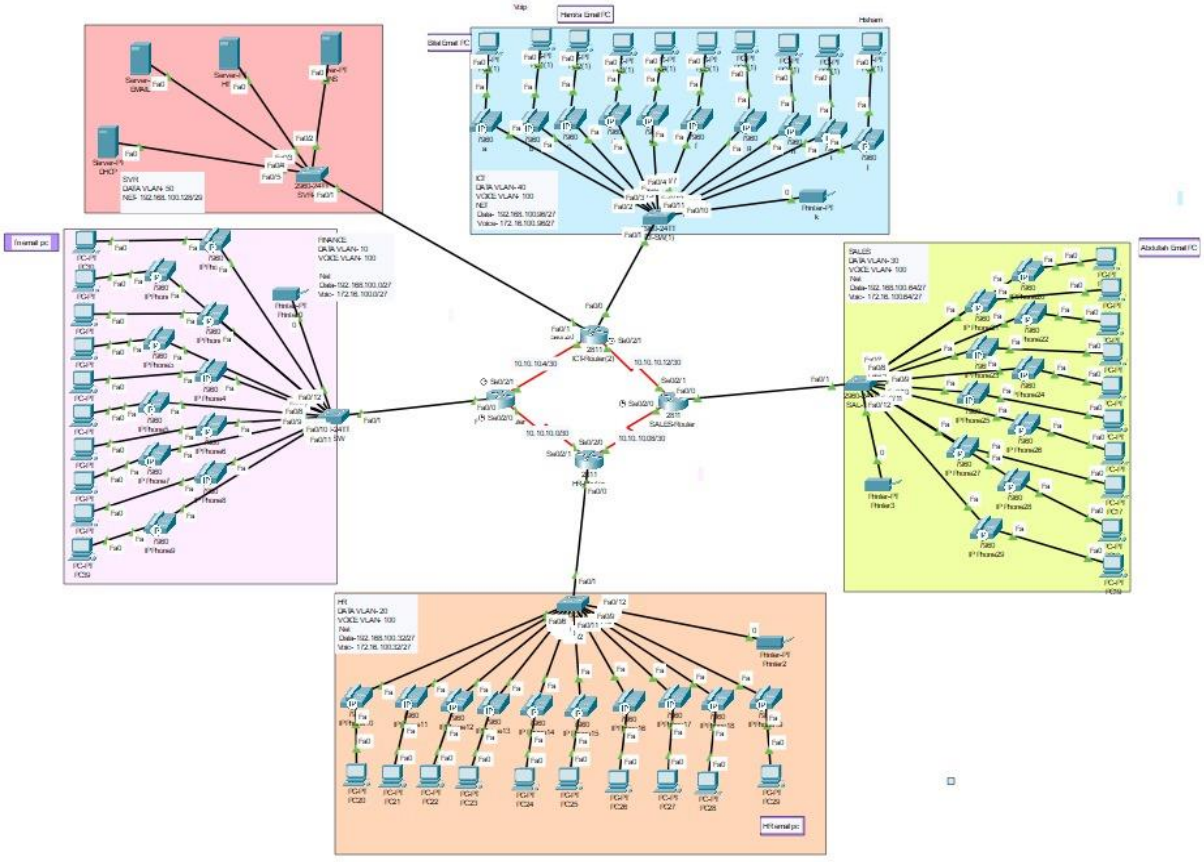
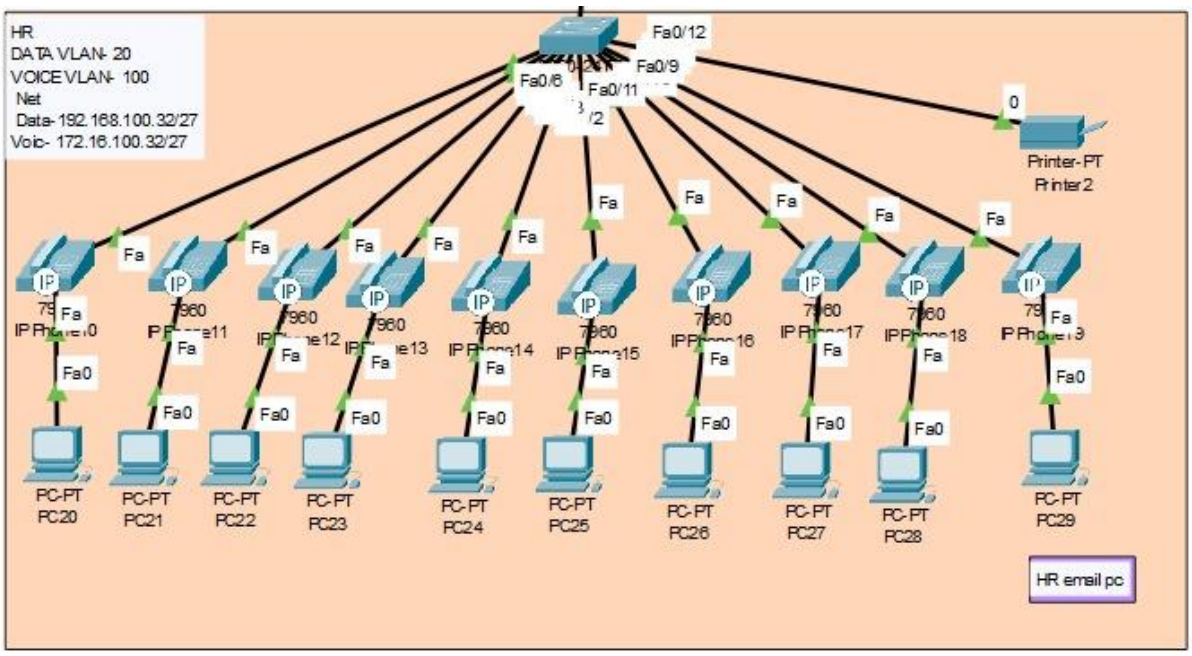
5. Conclusion

This project demonstrates the successful implementation of a VoIP-based telephony network using Cisco Packet Tracer. By designing, configuring, and simulating the network, we showcased how businesses can integrate voice and data communication effectively. The estimated cost of $41,920 provides a realistic insight into the investment required for real-world

implementation.




HR
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VOICE VLAN- 100
Net
Data- 192.168.100.32/27
Voic- 172.16.100.32/27
Fa0/12
Fa0/9
Fa0/11
Printer-PT
Printer2
PC-PT
PC20
PC-PT
PC21
PC-PT
PC22
PC-PT
PC23
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PC25
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PC29
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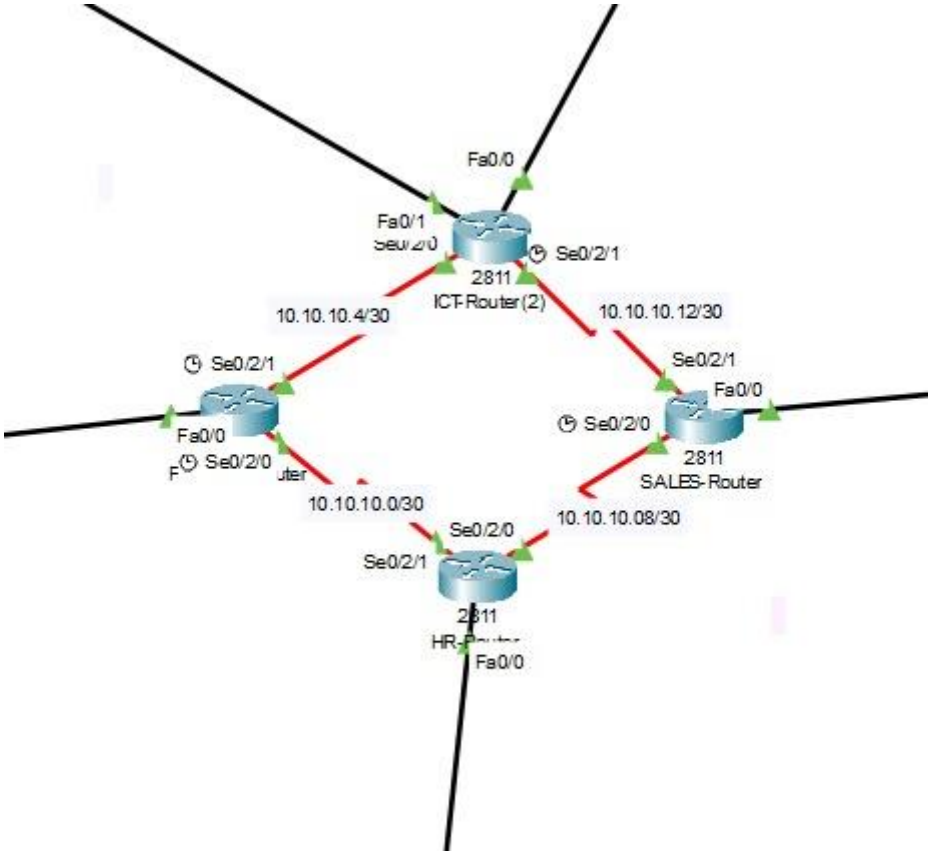
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Se0/2/1
2811
ICT-Router(2)
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10.10.10.12/30
Se0/2/1
Fa0/0
Se0/2/0
2811
SALES-Router
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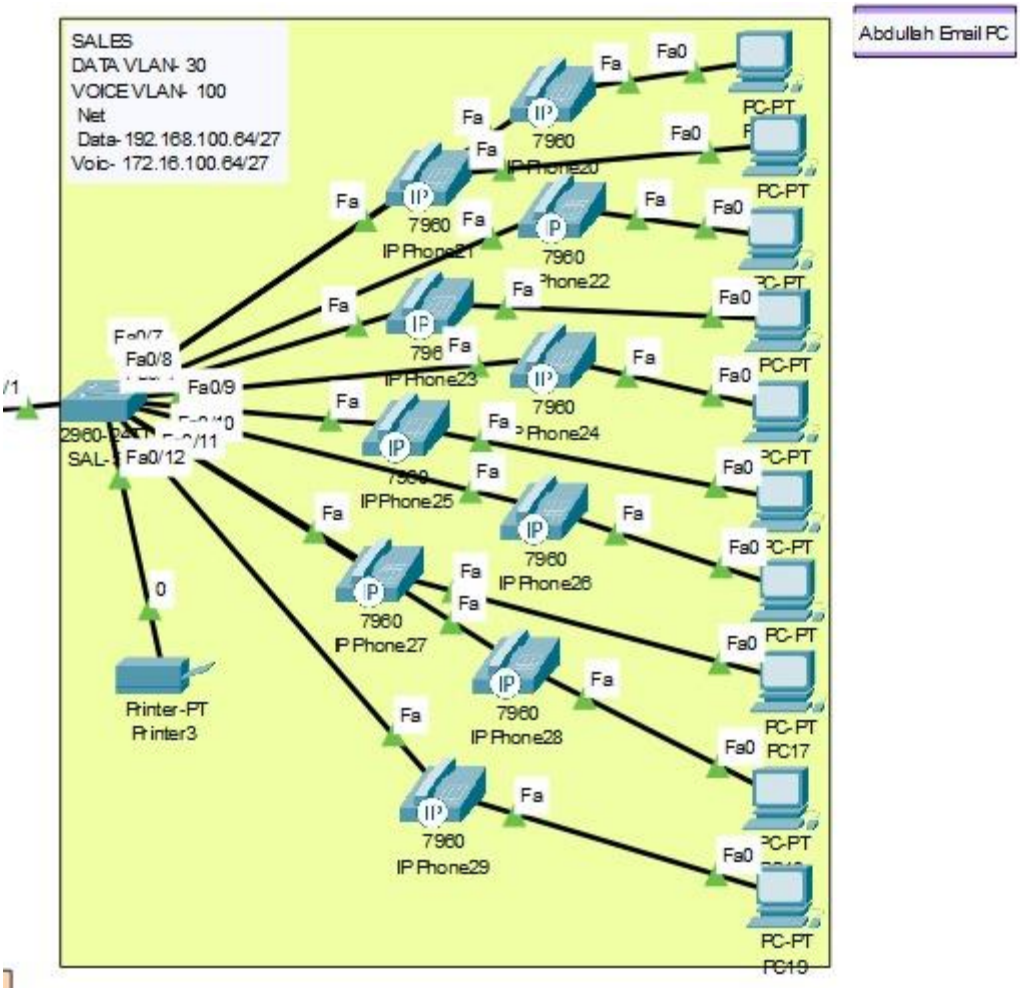
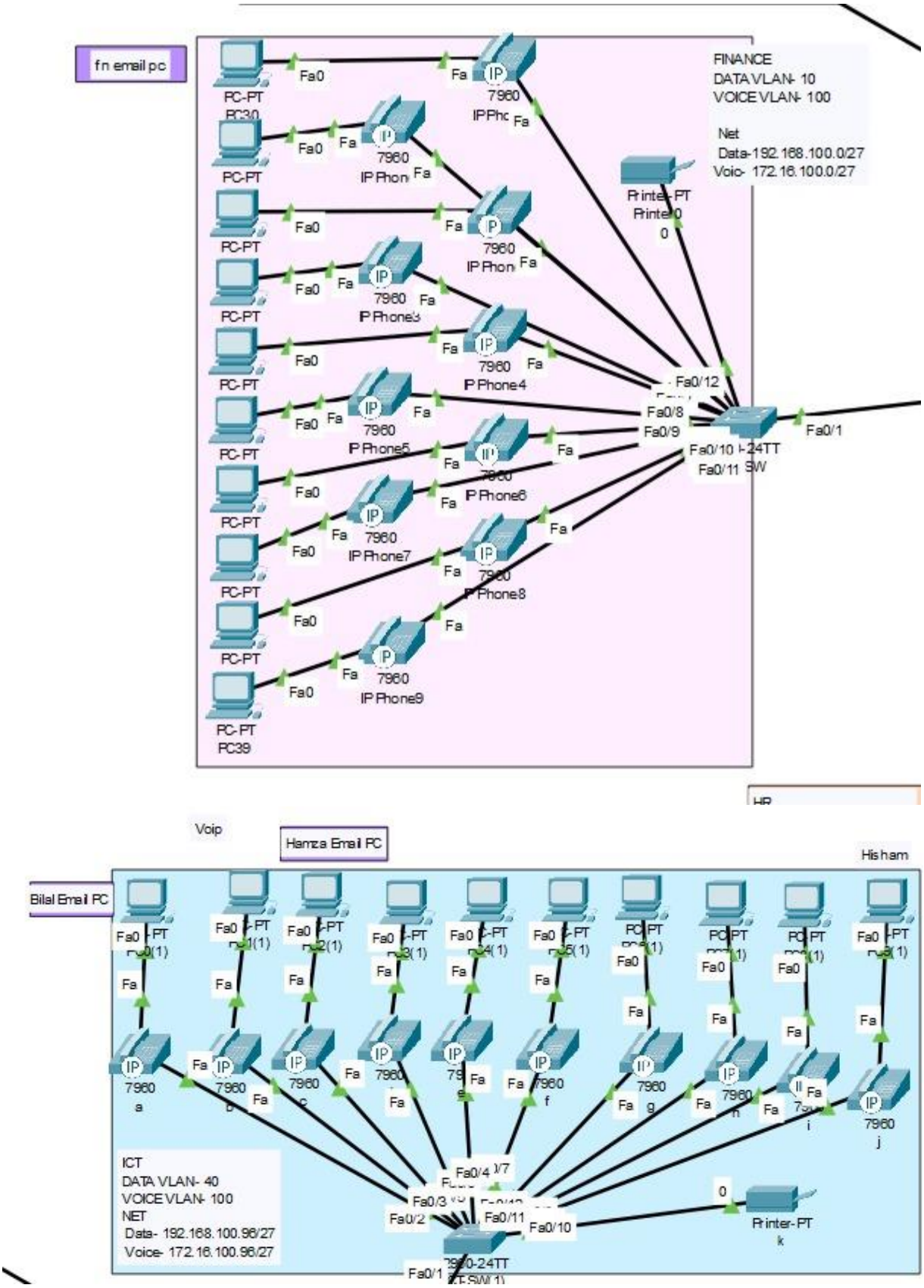
10.10.10.08/30
Se0/2/0
Se0/2/1
Fa0/0


SALES
DATA VLAN- 30
VOICE VLAN- 100
Net
Data- 192.168.100.64/27
Voic- 172.16.100.64/27
Abdullah Email PC
Fa0/8
Fa0/9
Fa0/12
Printer-PT
Printer3
7960
IP Phone27
IP Phone28
IP Phone29
PC-PT
PC17
PC-PT
PC19


fn email pc
FINANCE
DATA VLAN- 10
VOICE VLAN- 100
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Data-192.168.100.0/27
Voic- 172.16.100.0/27
PC-PT PC30
PC-PT PC39
IP Phone3
IP Phone4
IP Phone5
IP Phone6
IP Phone7
IP Phone8
IP Phone9
Printer-PT
Fa0/1
Fa0/8
Fa0/9
Fa0/10
Fa0/11
Fa0/12
Voip
Hamza Email PC
Bilal Email PC
Hisham
ICT
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VOICE VLAN- 100
NET
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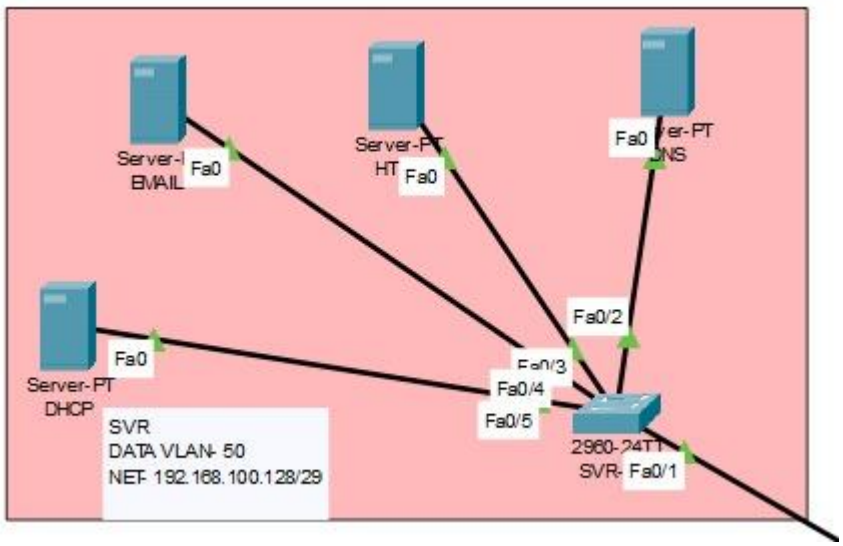
Voice- 172.16.100.96/27
Printer-PT
Fa0/10
Fa0/11


Server-
EMAIL
Fa0
Server-PT
HT
Fa0
Fa0
Fa0/2
Server-PT
DHCP
Fa0
Fa0/4
Fa0/5
SVR
DATA VLAN- 50
NET- 192.168.100.128/29
SVR- Fa0/1