18CSS202J - Computer Communications

PROJECT REPORT

Register Number :

Name :

Department :

Semester :

SRMIINSTITUTEOFSCIENCEANDTECHNOLOGY
S.R.M. NAGAR, KATTANKULATHUR -603 203

BONAFIDE CERTIFICATE

Register No. _____

Certified to be the bonafide record of work done by _____ _____*of* *, B. Tech Degree course in the Practical* **18CSS202JComputer Communications** *in SRM Institute of Science and Technology, Kattankulathur during the academic year2021-2022.*

Date: **Lab Incharge**

Submitted for University Examination held in _____ SRM Institute of Science and

Technology, Kattankulathur.

Examiner-1 Examiner-2

CERTIFICATE

This is to certify that the project entitled "**Network design proposal for small office**" carried out by

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Under my supervision at Department of Computing and Technology, SRM Institute of Science and Technology, Kattankulathur, Chennai.

The work is original, as it has not been submitted earlier either in part or full for any purpose before.

Mr.M.Saravanan
(Professor)

DECLARATION

I, hereby declare that the work presented in this dissertation entitled "**Network design proposal for small office**" has been done by me and my team, and this dissertation embodies my own work.

Approved By:

Mr.M.Saravanan

ACKNOWLEDGEMENTS

We would like to thank **Mr.M.Saravanan** (

Professor) who has been a great inspiration and who have provided sufficient background knowledge and understanding of this subject.

Our humble prostration goes to him, for providing all the necessary resources and environment, which have aided us to complete this project successfully.

TABLE OF CONTENT

1. **Problem Statement:** Our aim is to implement a network design for small companies using the hybrid network technology.

2. **Abstract:**A network is used by many small businesses to share Internet access, printers, and files from one computer to another. Your company's computer network infrastructure is its backbone. Your computer network supports or is based upon all of your devices, applications, software, and the majority of your work. As a result, the planning, design, purchase, and security of a commercial computer network should be a top concern for your company.

3. **Introduction:** Think of a small office network setup as having a foundation of switches and routers.While having a network is almost always beneficial to your business, you must determine which type of network is appropriate for your company based on its unique and specialized demands.

You have the option of using wired, wireless, or hybrid networks. When choosing a network for your company, two factors should be considered: the location of your devices and how fast you want your network to be. Although the pricing are comparable across the different varieties, they will vary depending on the network speed you choose.

The following sections describe the different network options available:

Wired network:

Depending on the type of cables used, wired or Ethernet networks can carry data at speeds ranging from 10 Mbps to 1000 Mbps. With a transfer rate of up to 1 gigabit per second, Gigabit Ethernet is the fastest available (1000 Mbps).

Wireless network:

Depending on the wireless standard used by your modem, wireless networks can carry data at speeds ranging from 10 to 600 megabytes per second (Mbps).

Hybrid networks:

Combine wireless and wired networks to give you the best of both worlds, allowing you to use faster traditional desktops and mobile wireless devices like laptops, tablets, and smartphones. To connect wired and wireless devices, a hybrid network uses hybrid routers, hubs, switches, and Ethernet connections. A hybrid router emits a wireless signal while also providing wired access ports. A wireless or Wi-Fi router with Ethernet connections, sometimes known as a "LAN port," is the most frequent name for it.

In terms of speed, mobility, affordability, and security, a hybrid wired/wireless network appears to give the best of both worlds. Users that require the fastest Internet and file-sharing speeds can connect to the network via an Ethernet connection.

4. Project Requirements:

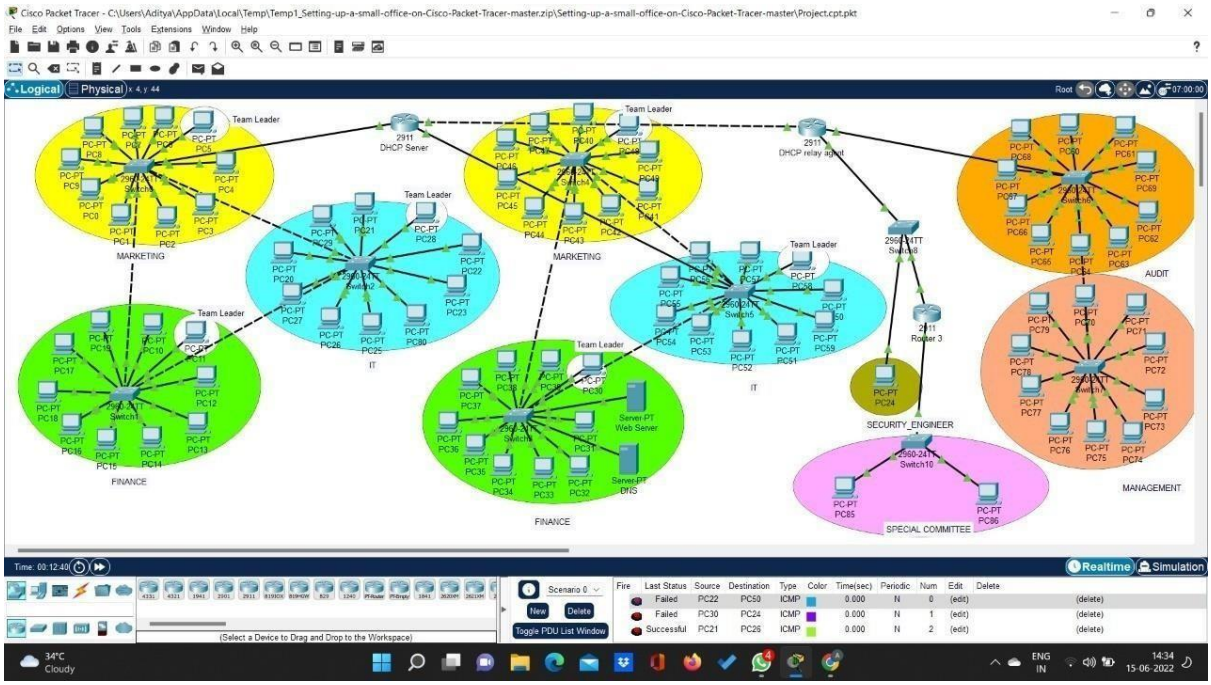
Here is a list of devices needed to set up a computer network for our project-

- Modem
- Router
- Firewall
- Switch
- LAN cable
- Access point
- Repeater
- Patch Panel

5. Hardware requirement analysis:

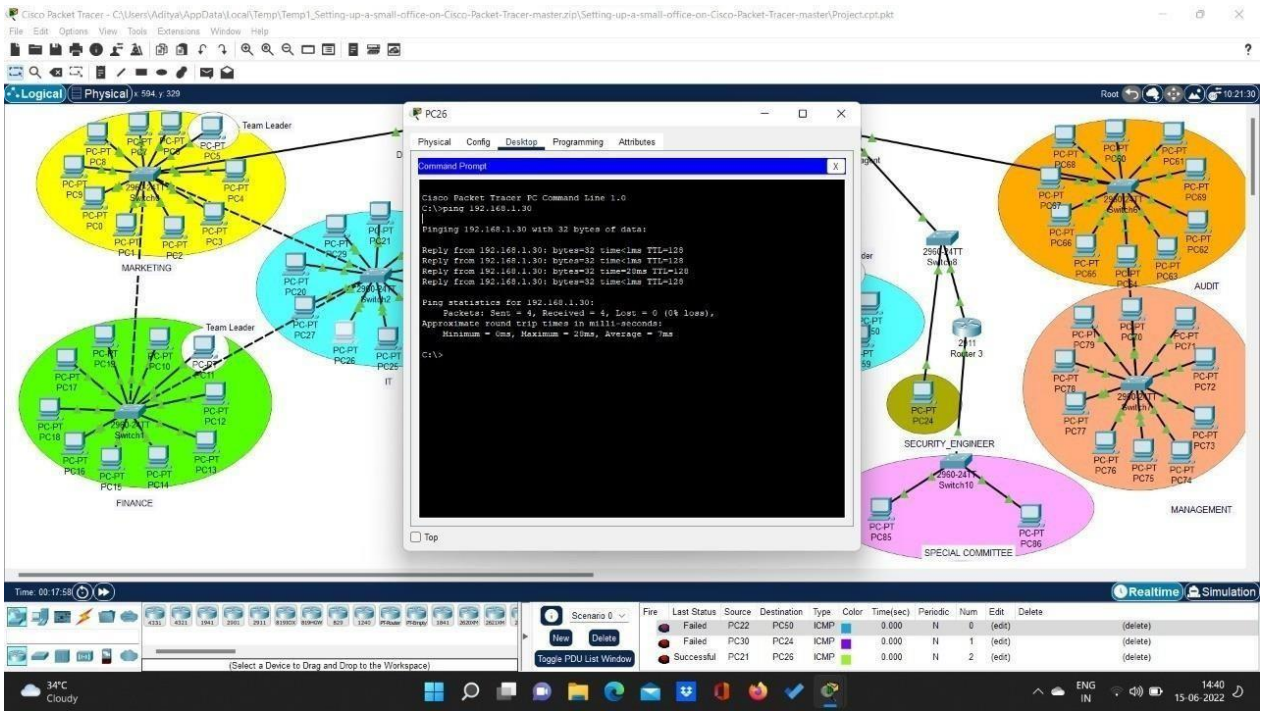
Hardware	Quantity
Network adapter An adapter connects devices to a network so that they can communicate.	One for each device on your network. Both desktops and portable devices usually have these adapters built in.
hybrid router A router helps you share a single Internet connection among several devices. You don't require a router to set up a wired network, but you should use one if you want multiple devices to share an Internet connection.	At least one. If you need to connect more than four wired devices, add an extra wired router.
Ethernet cables Network cables connect devices to one another and to other related hardware, such as hubs, routers, and external network adapters.	One for each device connected to the network hub or switch. 10/100/1000 Cat 6 cables are best, but not required.

6. Network TopologyDiagram



7. **Output:**
8. **ADDRESSING TABLE**

DEVICE	INTERFACE	IP ADDRESS	SUBNET MASK	GATEWAY
PC0	Fa 0/0	192.168.1.2/26	255.255.255.252	192.168.1.1
PC1	Fa 0/0	192.168.1.65/27	255.255.255.252	192.168.1.64
PC2	Fa 0/0	192.168.1.96/27	255.255.255.252	192.168.1.95
PC3	Fa 0/0	192.168.1.161/2	255.255.255.252	192.168.1.160
PC4	Fa 0/0	192.168.1.192/27	255.255.255.252	192.168.1.191
SWITCH 1	–	192.168.1.1/26	255.255.255.252	–



SWITCH 2	–	192.168.1.64/27	255.255.255.252	–
SWITCH 3	–	192.168.1.125/27	255.255.255.252	–
SWITCH 4	–	192.168.1.160/2	255.255.255.252	–
SWITCH 5	–	192.168.1.191/27	255.255.255.252	–
SWITCH 6	–	192.168.1.224/27	255.255.255.252	–

9. Conclusion:

A network design for small companies using the hybrid network technology is implemented successfully. The design was simulated using Cisco Packet Tracer software.

10. References:

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- https://www.virtualriders.net/resources/briefing-papers/8-setting-up-a-small-office-network

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