

**BASIC NETWORKING TECHNOLOGIES WITH HARDWARE  
TROUBLESHOOTING**

**BY**

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This Report Presented in Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science in Computer Science and Engineering

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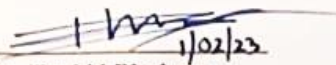


**DAFFODIL INTERNATIONAL UNIVERSITY  
DHAKA, BANGLADESH  
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## APPROVAL.

This Project/internship titled "**Basic Networking Technologies With Hardware Troubleshooting**", submitted by Md Golam Morshed, ID No: 182-15-11555 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfilment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 29-01-2023.

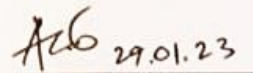
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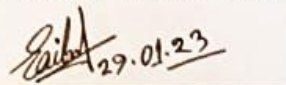
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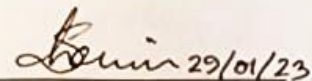
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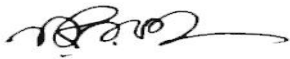
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## DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Narayan Ranjan Chakraborty, Assistant Professor, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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## ACKNOWLEDGEMENT

First and foremost, I am thankful to Almighty Allah for empowering me. I'm pleased that I was able to complete this chapter in the allocated time.

I am really grateful and wish our profound indebtedness to Sir **Narayan Ranjan Chakraborty, Assistant Professor**, Department of CSE Daffodil International University, Dhaka. To finish this task, our supervisor has to have vast knowledge and a deep interest in the topic of " Computer Networking, Network Security," This project might not have been completed without his endless care, educational guidance, persistent motivation, continuous and proactive supervision, helpful advice and reviewing many defective designs and their corrections at all stages.

I have great respect and gratitude for Dr. Touhid Bhuiyan, the honorable head of the CSE department. I'm grateful to my institution for providing me with countless chances to work when I was a student.

I will be grateful to the excellent faculty of Daffodil International University for their unwavering support and cooperation all across the rest of my life and university studies, as well as to PeopleNTech Company Ltd., where I gained a fortune of practical experience and knowledge.

I would like to thank all my coursemate at Daffodil International University, who participated in this discussion while completing course work.

I would really like to sincerely thank to Quazi Mahmudul Haque my instructor." IT Director" of "PeopleNTech Company Ltd," for providing me with the opportunity to work and for exposing me to several key difficulties. Because of my companions' support and explanation of many tasks while I was an apprentice.

Finally, With all due respect, I must recognize my parents' unwavering assistance and patience. Above all, I'd like to express my gratitude to everyone who will read this report and learn from it, whether now or later.

## **ABSTRACT**

PeopleNTech Company Ltd began internal training for its consultants and new hires on cutting edge testing, business analysis, project management, database administration, and network administration that are being used directly in the job desks concurrently with the employment agency, consultancy, and staffing services. Testing specialists, QA analysts, business analysts, project management experts, database administrators, and network administrators all performed at a high level as a consequence of the favorable effects of this training. The goal of this internship is to learn Operating System Security and Basic Networking With Hardware Troubleshooting. I have faced errors and tried to solve the problems of hardware and Network. This report mainly focuses on How to establish the overall networking of this office and classrooms configuration. What is the networking protocol that uses this configuration and design structure and how do maintain internal software and bandwidth management? I have collected the data for this internship report through personal observations and interviews and also through the websites of some information agencies.

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# Chapter 1

## INTRODUCTION

### 1.1 Introduction

The present we cannot consider without IT arrangement and aNetworking. In wherever we should require web. There a are relatively few office, a industry and establishment without web. Each industry, office and organization should utilize PC and specialized gadget. They use web for the correspondence. They utilize so many different types of Hardware, a unique Software for better correspondence. at this point on this world, we never consider done anything with out any websites. Each industry, workplaces and establishments need numerous individuals who knows a Networking and keep up all sort of conveying gadget. An internship allows you to obtain experience in a range of job disciplines, develop our real-life Understanding, and a possibility to pick a specialized career - or not.As I chose this entry-level work since I required to induce encounter. They permit me to monitoring the networking devices and study the networking infrastructure under the guidance of my instructor.

The above paper is really a necessity from the participants' internship program, in its entirety or in portion of the Daffodil International University (DIU). Following the internship program's legislation and requirements, the person who wrote this article has accomplished the four-month apprenticeship at PeopleNTech Company Ltd.

### 1.2 Motivation

As I have finished my undergraduate degree in Computer science and Engineering with Networking Sector, I trust an internship in the same unit will help me to meet the practical experience with academic study. Another reason I decided networking is that the CCNA training grabbed my interest. In the job market, networking talent is highly valued. The financial advantages that networking knowledge provides are far higher than those of other professions. Career path and improvement: With experience, I may go into network

security employment or other IT fields such as project management, information security, or consulting.

### **1.3 Internship Objectives**

My internship program's objective is to directly improve career skills and strategies. Working in an internship program is essential for learning about an organization's environment, knowledge, ideas, skills, and tactics. Through this internship program, I was able to learn practical real-world knowledge, willingness to work hard, communication management, and other abilities. It will play a vital role in my career, and I am hopeful that my feeling of responsibility and good work habits will be improved as an outcome of career skills and strategies. We have a greater degree of academic achievement as a result of this internship report. Internship programs improve job opportunities after graduation. Strength, team spirit, self-confidence, creativity, responsibility skills, and the capacity to communicate ideas are all factors that can help students succeed.

On the Other Hand Practically To know the overall process of Operating System Security , Networking With Hardware Troubleshooting in PeopleNTech Limited Offices. To Know office networking and security process. To Know the routing protocol, Bandwidth Management, and Know modern networking equipment. And know the basics of Active Directory Domain Services to create and manage users and computers.

### **1.4 Introduction to the Organization**

PeopleNTech is a global leader in IT training, Job Placement, Outsourcing and Software Development. Best IT Training Institute in Dhaka Bangladesh. Over 6,000 students have been trained by PeopleNTech since its start in 2005. Since the company's beginning, Abu Hanip, its creator, has placed a great emphasis on altering people's lives and careers. At PeopleNTech, they offer practical training based on current projects. The rivalry in the actual world forces us to develop fresh ideas for training advancements. They are a

career-change organization driven by the labor market, with decades of expertise in the disciplines of business analysis and software quality assurance, network system administration and database administration.

### **Origination Information**

Name: PeopleNTech Limited

Address: 151/7, Good Luck Center (7th & 8th) Floor, Green Road, Dhaka - 1205, Bangladesh.

Phone: +880179-944-6655, +880176-2002-444, Email: info@peplentech.com.bd

Website: <https://www.peplentech.com.bd/en>



Figure 1.4: PeopleNTech Limited Logo

## **1.5 Report Layout**

In chapter one, I provided an overview of where I came from and why I wanted to intern at this organization. In this chapter, I also included an internship goal and a report layout. In chapter two, I described the company's introduction, technology and market scenario, as well as the company's ambition. I also discussed SWOT analysis in this chapter. In chapter three, I covered my internship's Daily Tasks and Activities, as well as events and activities that occurred throughout my internship. I also highlighted in this chapter what this company's project and activities were, as well as the problems I had throughout my internship. In chapter four, I discussed the skills I gained, as well as my clever strategy and observations on my internship. In chapter 5, I included a discussion on endings and destiny job prospects. Finally, I added all references, appendices, and information about the internship completion and the company.

## Chapter 2

### ORGANIZATION

#### 2.1 Introduction

PeopleNTech has trained nearly 6,000 students since its founding in 2005. Since its beginning, PeopleNTech's creator, Abu Hanip, has dedicated his career to transforming people's lives and careers. At PeopleNTech, we offer practical training based on current projects. We are inspired to develop fresh tactics and ideas to enhance our training by the competition we face in real life. We are a job market-driven career change facility with decades of expertise in the fields of software quality assurance, business analysis, and database administration. Our knowledgeable teachers closely monitor each stage of the learning process. PeopleNTech, an organization with its main office in Tyson's Corner, Virginia, offers complete live, interactive, educational, project-based online training through Webinar. At PeopleNTech, we are enthusiastic about learning, and we want our students to feel the same way.

##### 2.1.1 Mission

They prioritize hands-on training in order to deliver a learning experience that goes above and beyond expectations. They will always support and encourage our pupils as they strive to keep developing and learning. Their objective is to satisfy the expanding need for IT training in order to keep up with the most recent tools and methods.

##### 2.1.2 Vision

Their perceiving is to use Their students as a platform to set up new opportunities and improve participants' careers.

## 2.2 Product and market situation

PeopleNTech has established a splitting training curriculum in a wide range of fields. They Mainly Serving Educational Skills Training In Different Technologies. Like:-

- Software Quality assurance.
- Professional Web Development.
- Database Administration.
- Networking & Switching.
- Web Development with ASP.NET Core.
- LINUX.
- Microsoft Technologies and much more.

These Courses are Of different Duration And For Different People .Like -

- Online Special Courses
- Short Time Skilling Courses With Lab
- Long Time Training Courses With Lab
- Corporate Education Programs With Lab
- Certificate Training Programs
- Industrial Attachment For Diploma Students

They Also Provide Peoples H1B Visa And PeopleNTech is an H1B sponsoring company. Besides They Provide IT Services On:

- Web site,
- virtualized,
- USA virtualized personal Computers,
- physical servers, domains registrars,
- SSL certifications,
- application development,
- Kaspersky B2B solutions,
- Sophos Firewalls,
- Dell/HP virtual machines and

- Cisco products

### **2.3 Target Group**

They Mainly Target On Students And Corporate Training .Besides They Provide Government Training Projects Training . Like : BITM,LICT,SEIP,ISDB-BISEW,Bangladesh Hi-Tech Park Authoritys Projects.

### **2.4 SWOT Analysis**

I've tried to emphasize People in Tech's numerous capabilities using their 'SWOT Analysis report.

#### **2.4.1 Strength OF PeopleNTech**

- Confirm that their services adhere to the standards set forth.
- Track, compare, and continually improve the performance of our company, services, infrastructure, and workforce.
- We seek for, train, and keep highly skilled and motivated employees.
- Each employee takes ownership and is held accountable for the quality of their service and process.
- Encourage each worker to take the initiative to encourage ongoing progress.

#### **2.4.2 Weakness of PeopleNTech**

- Employee salary rate is high.
- Charges High Price From Customers.
- Transport problem.

#### **2.4.3 Opportunity of PeopleNTech**

- Good user experience
- Understand
- Communicate
- Job Placement



- Create value
- Environment friendly
- Cooperative team.

#### **2.4.4 Threats of PeopleNTech**

Technological improvements may cause this market to change beyond their ability to adapt. Any market position they earn could be cancelled out by a minor change in a big competitor's focus. Besides There Are Lots Of Competitor In Market.

## 2.5 Organization Structure

Table 2.5: Organization chart

Founder & CEO	
President & Managing Director	
Vice President	
Deputy Manager	
Managers Each Department	Faculty
Sr. Assistant Manager	
Assistant Manager	

## Chapter 3

### Task Project and Activities

#### 3.1 Daily Task and Activities

During my internship, I experienced multiple types of work and activities, including study setup and various types of problem solving.

Every day, software, databases, and networks are used internally.

Everyday systems provide support in the face of problems that are related to it.

In this chapter, I'll discuss the hardware and software issues. I'll talk about the problems and how to fix it.

##### 3.1.1 Hardware And Software Error

When a hardware component of a computer system malfunctions, a hardware error happens. The hardware components include built-in error detection mechanisms that enable them to identify the presence of hardware errors. Hardware errors can be classified as fixed or unresolved.

- A hardware error situation that has been corrected by the hardware or firmware by the time the operating system has been made aware of it is referred to as a rectified error.
- A hardware error condition known as an unfixable error is one that neither the hardware nor the firmware can fix.

A software bug is a phrase that refers to an error, flaw, mistake, failure, or fault in a computer program or system that results in an incorrect or unanticipated outcome.

There are two categories of errors:

1. **System Software:** The operating system, as well as all the applications that make the computer work and this type of bug called system software bug.
2. **Application Software:** Programs that perform real-world tasks for users are Application Software Applications software includes things like word processors, spreadsheets, and database management systems. And This Softwares Bug Are Application Software Bug.

During my internship, I experienced some errors. Now I'm talking about those issues.

### 3.1.2 when the computer is powered on, but it does not work

There may be a part of issue if the computer is definitely receiving power system and its peripheral devices. Many times, the computer's Power-On Self-Test (POST) will use Beep Codes to notify me what's wrong with it. Beep codes will help me in troubleshooting common PC hardware issues. The following are examples of beep codes.

- **There is no beep,** but the machine turns on and runs normally - Under normal conditions, computers typically produce one short beep when powered on. If it doesn't, "beeper" could no longer exist.
- **Continuous, short beeps** - The power supply or voltages may be faulty. Normally, a supplement would be required.
- **Steady, lengthy beeps-** indicate that The power source has broken.
- **long, continuous beep-** Your Random Access Memory (RAM) sticks may have gone bad.

If you have more than one USB stick installed, try removing one to see if the machine will start. If it doesn't work, try it with the other stick. This will reveal which rod has failed, allowing you to replace or upgrade as needed. If you only have one lever installed, you will need to replace or upgrade it to fix the problem.

- **one lengthy and two short beeps** -A video card failure has been detected. The first thing I should try reinserting the graphics card. When a computer is connected to projectors, this often solves the problem because the VGA/DVI/Video cable moves

so often that the card can be slowly disconnected. If reseating doesn't work, replace the graphics card.

### **3.1.3 Computer Has Insufficient Memory**

When you get a "insufficient memory or disk space" error notice, you may typically solve it (at least temporarily) by removing unnecessary windows to free up RAM. If the problem continues after you've tried everything else, reboot your computer and install the most recent operating system update.

### **3.1.4 CMOS Error**

The CMOS (complementary metal-oxide-semiconductor) is an onboard chip that saves data such as time and date, as well as system hardware settings. If you see a CMOS warning message on the screen, it is likely that the CMOS battery on the motherboard needs to be replaced. Carefully remove it, replace it with a new battery that is similar to the old one, and reset the CMOS settings to their original default values.

### **3.1.5 Blue Screen Error**

The blue screen of death (BSOD) is triggered when Microsoft Windows experiences an unrecoverable, serious malfunction that causes a crash and data loss. This might be brought on by Windows' low-level software crashing. The primary cause of blue screen errors is viruses.

When a BSOD occurs, the computer creates a minidump file and automatically restarts the computer. If the blue screen persists, follow the on-screen instructions to identify and locate the error code and find out how to fix the problem.

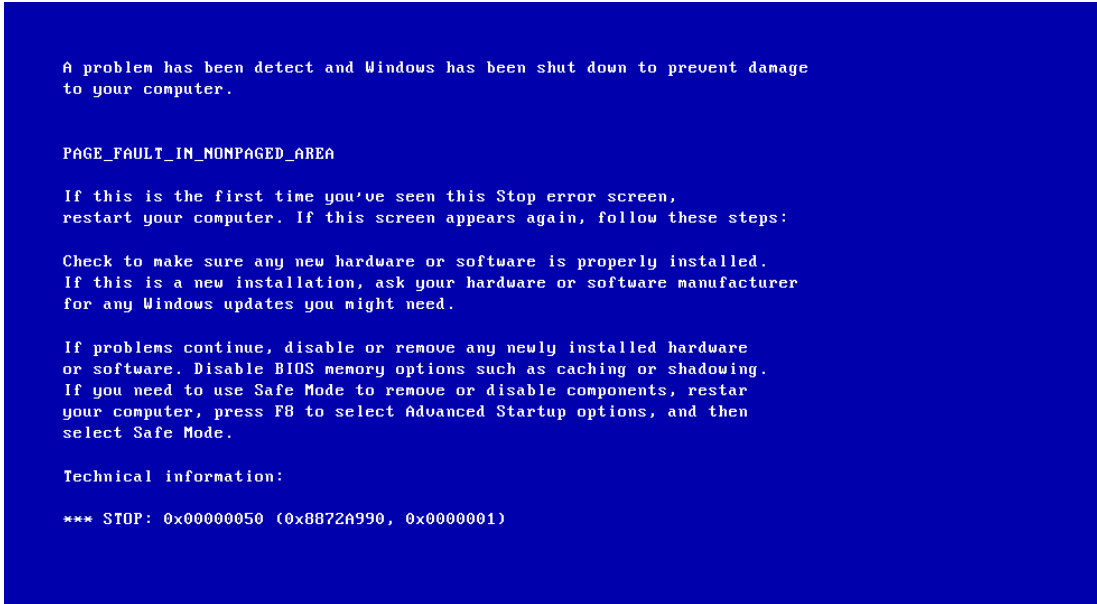


Figure 3.1.5 :Blue Screen Error

### 3.1.6 Motherboard Problem

The motherboard is a computer's largest and most critical component. Without one, it's likely that your computer would not power on at all. Despite this, it might be one of the

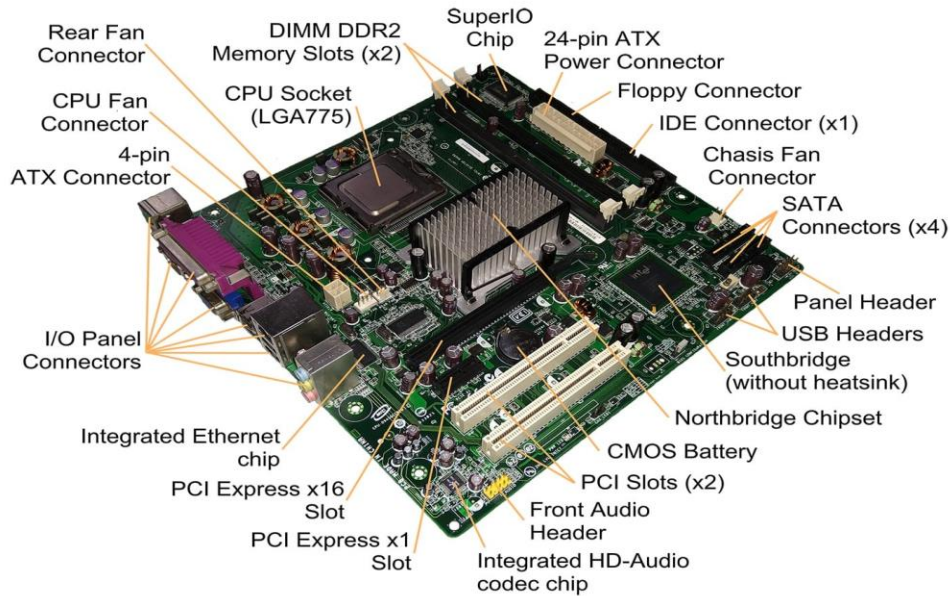


Figure 3.1.6: MotherBoard

easiest to harm or destroy. Troubleshooting a faulty motherboard can be challenging, especially for someone who is unfamiliar with electronics maintenance.

Some Of Other Motherboard Problems:

- Damage to the power supply.
- Boot-up Errors.
- Flip the power on and off on the motherboard.
- Problem with the Power Button
- Overheated and inconsistent.
- Memory synchronization
- The motherboard has burned out and is currently shorting out.
- Auxiliary wire has become shorted.
- A problem with the BIOS.
- There is a problem with AGP.
- Short-circuit.

### 3.1.7 Harddisk Problem



Figure 3.1.8:Hard-Disk Drive

The hard disk drive is the computer's primary memory. It's the biggest data storage device. We keep the computer operating system, software, data, and other files on this device. There are a number of ways to transfer data between a hard disk and a computer.

Problems with Hard Disks are a common occurrence.

- The drive is working, but the computer would not boot.
- Failures of the drive
- The drive is not rotating.
- The drives spin, but the system doesn't detect the drive,
- C drive messing

### 3.1.8 Ram Problem

RAM (Random Access Memory) is a type of temporary storage that your computer uses instead of a cache or long-term repository. Storage is the term for long-term data preserved on a hard drive or solid state drive; memory is sometimes used improperly. A processor chip's CPU cache is a little chunk of frequently accessed memory. When your computer is turned off, both the RAM and the CPU cache are cleaned.

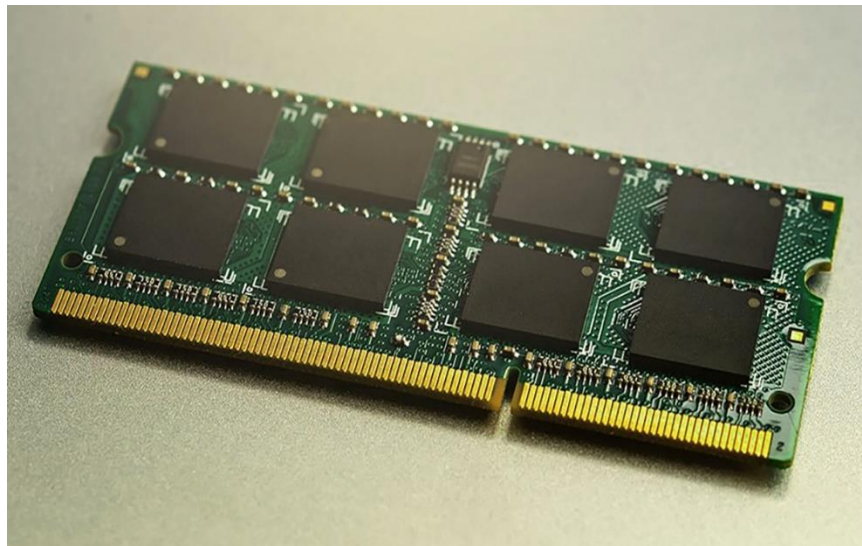


Figure 3..1.8: Random Access Memory (RAM)



When we install fresh RAM and the system does not detect it, or you hear beep sounds, it signifies there is a problem. This issue is primarily caused by faulty memory installation, inaccurate installation, and inappropriate installation.

We can solve this problem by properly installing RAM. Turn off the computer, monitor, and all other accessories first. Then turn off the power to all of the accessories. Using the appropriate tools, open the computer case. Remove the cover by pressing down on the memory module's retention clips at the ends and dragging the module toward you. Locate the open memory slots, and if there are more than one, find the one with the lowest number. If necessary, remove the holding clips and install the memory in an open slot. Turn on the computer and check to see if the RAM is listed on the starting screen. If the startup screen is not visible, right-click My Computer, go to Properties, General tab, and check that the RAM is recognized. If the memory is detected and the computer appears to be working properly, carefully reattach the cover.

### **3.1.9 Port Problems**

We have issues with serial, parallel, and gaming ports. A issue with a device connected to an I/O port can have four different reasons.

- The software is not correctly configured for the port.
- It is not a good idea to connect the signal cable.
- The port is broken.
- The device you've attached isn't functional.

### 3.1.10 Power Supply Problems

The power supply issue is a major one for the computer.



Figure 3.1.9 :Power Supply Unit

Here are some of the most prevalent power supply issues, as well as their potential impact on sensitive equipment:

- Surges in Power
- Spikes of High Voltage
- Frequency Variation
- Transients
- Noise from Power Lines

### 3.1.11 Network Card Problems And Troubleshooting

Cabling is one of the most common issues encountered during the establishment of a network.

Is there a connection?

Are all of the connectors in good condition?

Is the cable you're using the right one?

The most efficient technique to assess network cable operation is to use a line tester.

### **3.2 Event and Activities**

I went to all an Event and prepared programs when I was doing my entry-level position. It is highly beneficial to both my profession and myself. I've modified dozens of things and dealt with dozens of problems and annoyances. I learned how to create routers, work with switches, and provide internet in a suitable manner. I, however, consider the working environment. Each assist need itI managed to pick up how to cope with a workplace, an office, and corporate work environment through this entry-level role.

I improved my skills in inspecting a PC, setting up an OS (Operating System), a LAN, a MAN, and a WAN. I also learned how to set up a Wi-Fi network, manage a client, and set up a system server, a client server, and a storage device. I figured out how to manage for a CCTV.

They ensure that each assistant can adapt to the full working approach in a timely manner. Furthermore, they have the ability to significantly alter the workplace.

### **3.3 Project Task & Activities**

Multiple hosts, also known as gadgets, that are linked through a number of channels in order to send and receive data or material. Computer networks can also contain a variety of tools or platforms that facilitate communication between two or more computers; these are referred to as network tools and include, for example, routers, switches, hubs, and bridges. Now need to understand the various types of networking:

Classification Based On Area-

1. LAN- Local Area Network
2. MAN- Metropolitan Area Network

### 3. WAN-Wide Area Network

#### Classification Based On Computer Networking Rules-

1. Peer to peer network
2. Client server network
3. Depending on Remote Connectivity
4. Internet
5. Extranet

#### Classification Based On Local Connectivity

1. Cable Network
2. Wireless Network

#### 3.3.1 Local Area Network(LAN )

The most talked-about networks are LANs, which are also among the most popular, unique, and basic kinds of networks. LANs link together collections of computers and low-voltage devices across shorter lengths (inside a building or between a group of two or three closely spaced buildings) to exchange data and resources. LANs are often managed and kept up by businesses. LANs may link to wide area networks using routers to transport data quickly and securely.

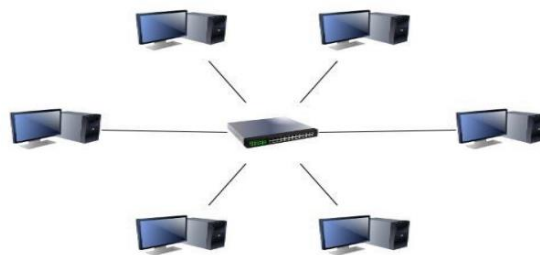


Figure 3.3.1:LAN Topology Design

### 3.3.2 Metropolitan Area Network (MAN)

These networks combine components from both LANs and WANs and are bigger than LANs but smaller than WANs.

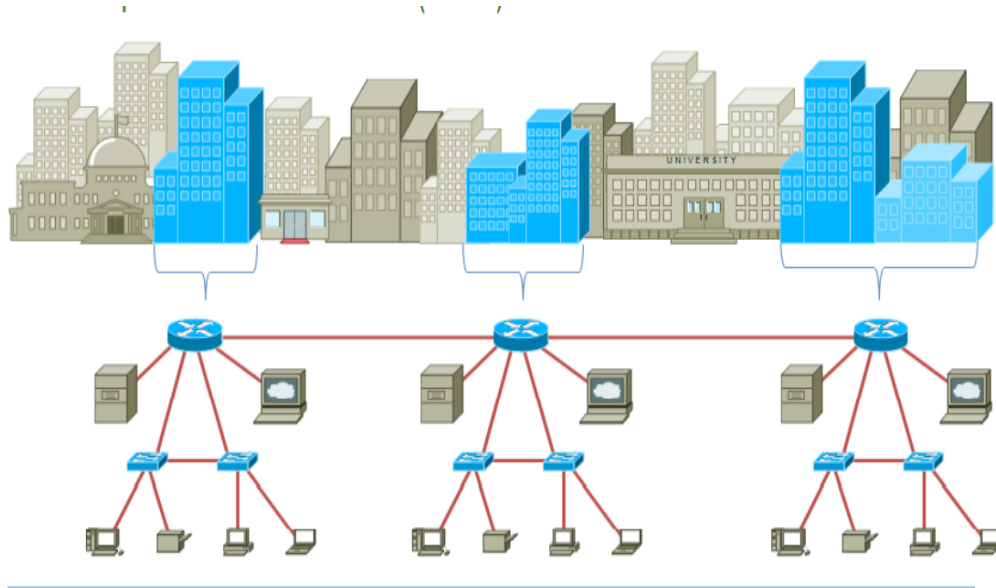


Figure 3.3.2:Metropolitan Area Network Topology Design

MANs are prevalent around the world (typically a town or city, but sometimes a campus).Ownership and upkeep are managed by a single individual or business (a local council, a large company, etc.)

### 3.3.3 Wide Area Network (WAN): A WAN links computers together across greater

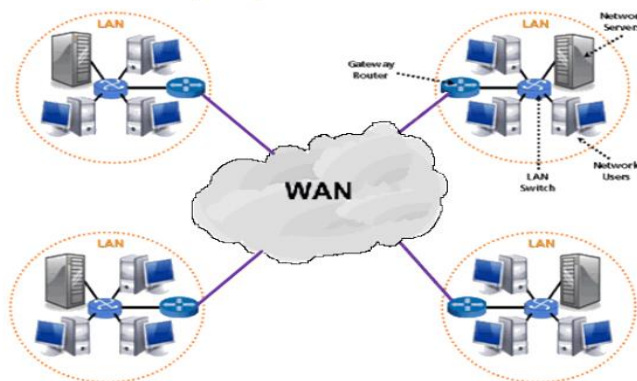


Figure 3.3.3:Wide Area Network Topology Design

physical distances than a LAN. It is a little more complicated. As a result, computers and low-voltage devices may be remotely linked to one another over a vast network and communicate with one another from a distance. The simplest WAN is the Internet, which links all computers on the planet together. A WAN is often owned and managed by a number of administrators or the general public because to its extensive reach.

### 3.3.4 Peer To Peer Network

There is no server connection in a peer-to-peer network. A peer-to-peer (P2P) network is established when two or more PCs are linked and share resources without using a separate server computer. To share data, two computers can join ad hoc through a Universal Serial Bus to form a P2P network.

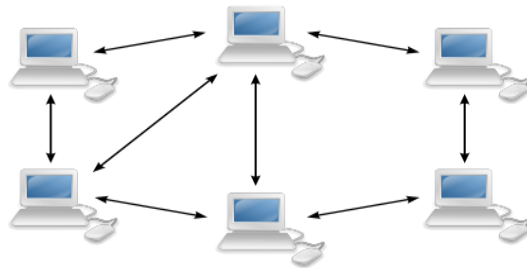


Figure 3.3.4 : Peer To Peer Network Diagram

### 3.3.5 Client server network

In a client-server network, there is a central server or powerful computer to which all computers are linked. The hub is connected to all of the computers. Clients can be servers, but servers cannot be clients, and there are significant differences between clientserver networks and peer-to-peer networks.

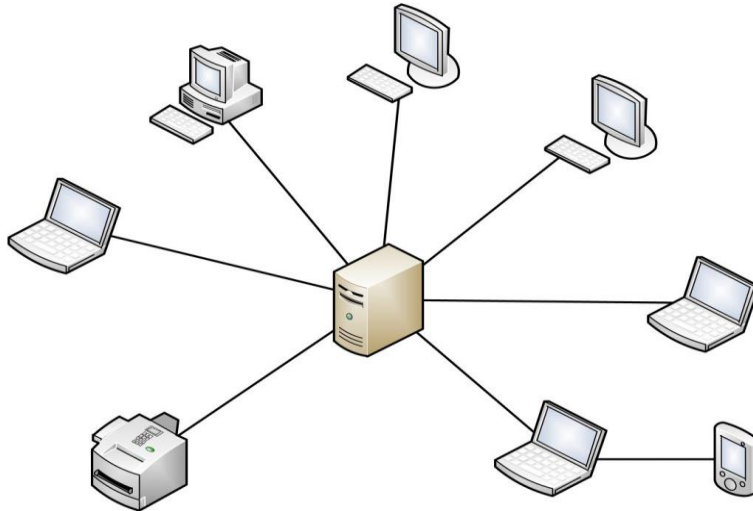


Figure 3.3.5 :Client Server Network Diagram

### 3.3.6 Network Protocol

Data flow between devices linked to the same network is governed by a set of rules called a network protocol. In general, it makes it possible for linked devices to communicate with one another despite differences in internal procedures, organization, or design. Network protocols are crucial to contemporary digital communications because they make it possible for you to communicate with people all over the world.

**Routing Protocol:** Routing Protocols are a set of guidelines that routers adhere to when communicating with one another. They update the routing table, which maintains information, rather than transferring data from a source to a destination.

Routing Protocols are two Types.This Are-

- Static Routing Protocol
- Dynamic Routing Protocol

### 3.3.7 Static Routing

A network administrator puts routes into the router's routing table for the router to utilize when transmitting packets to a destination network. This is known as static routing.

Tools Requirement:

- Three Router
- Three Switches
- Six Computer
- Copper Straight-Through Cable
- Serial DCE

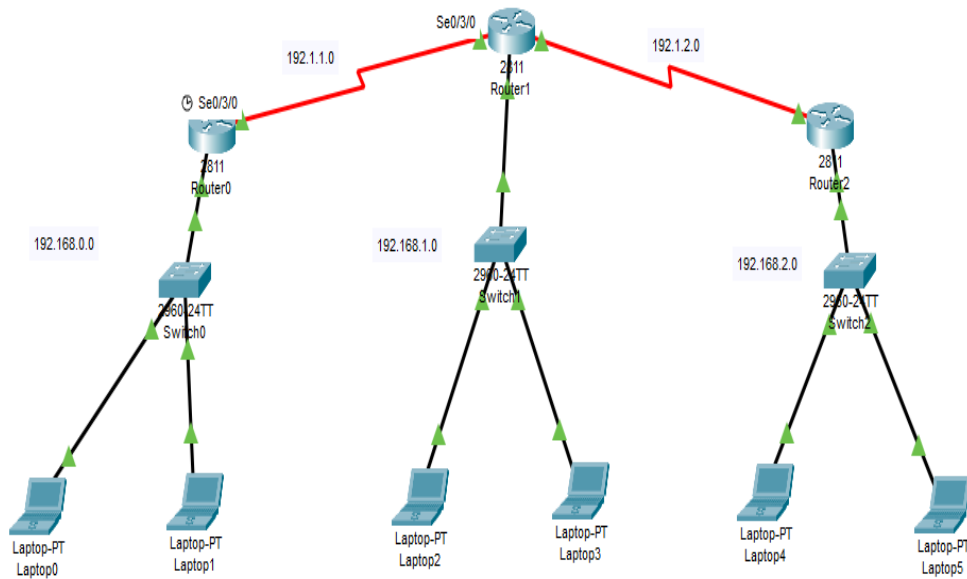


Figure 3.3.7 : Static Routing Diagram



Result:

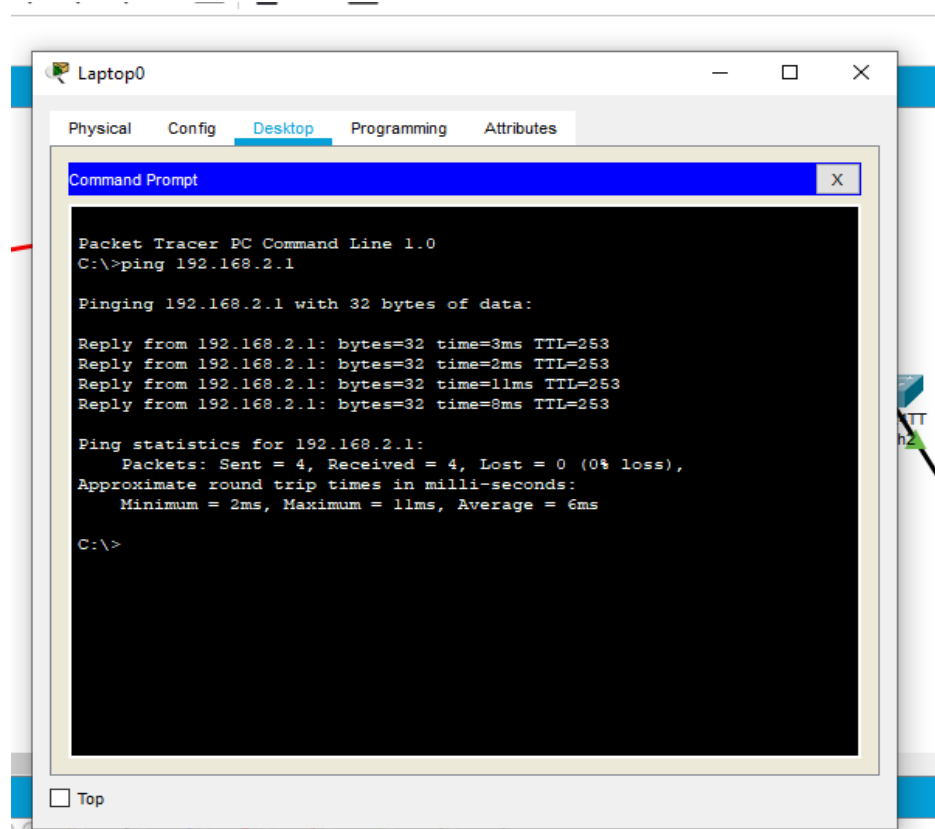


Figure 3.3.7.1 :Packet Tracer Communication Stablish Result

Static Routing Protocol Used In:

- A router's advertised route count must be reduced.
- If the main route is unsuccessful, create a backup route.
- To connect a proxy router or a proxy network
- a device's connectivity with a particular network

Boundaries of Static Route:

- It may be exceedingly challenging to configure and add a static route to the routing table in big networks.
- The network administrator must have prior knowledge of the network topology in order to configure static routes.
- Static routes are prone to errors.

### **3.3.8 Dynamic Routing Protocol**

Through the use of dynamic routing, a router may learn about routing information on its own and add the best possible path to its routing table. A router that employs a dynamic routing protocol may identify a backup route in case the primary one fails and stores the best route to its routing database. Dynamic Routing Protocols are basically two types. These are –

1. IGP-Interior Gateway Protocol: IGP is basically used to communicate within the same domain or group. Under IGP, the following protocols are working:

- a. RIP = Routing Information Protocol
- b. EIGRP = Enhanced Interior Gateway Routing Protocol
- c. OSPF = Open Shortest Path First

2. EGP – Exterior Gateway Protocol: EGP is basically used to communicate between different domains or groups. Under EGP, the following protocols are working:

- a. BGP = Border Gateway Protocol .
- b. IS-IS = Intermediate System to Intermediate System.

### **3.3.9 Routing Information Protocol (RIP)**

In both LAN and WAN networks, RIP is used. It also runs on the OSI model's Application layer. The Routing Information Protocol is the full name of this protocol. RIP has two versions: RIPv1 and RIPv2. The initial version, also known as RIPv1, supports the determination of network paths based on IP destination and hop count travel. RIPv1 also communicates with the network by broadcasting its IP table to all network routers. Because it delivers its routing table to a multicast address, RIPv2 is a little more advanced.

We're going to build up a Rip (Routing information protocol) connection in this lab. We're using Rip to connect six hosts.

### Tools Requirement-

6 Computer

3 Switches

3 Router

Straight Through Copper Cable

Serial DCE

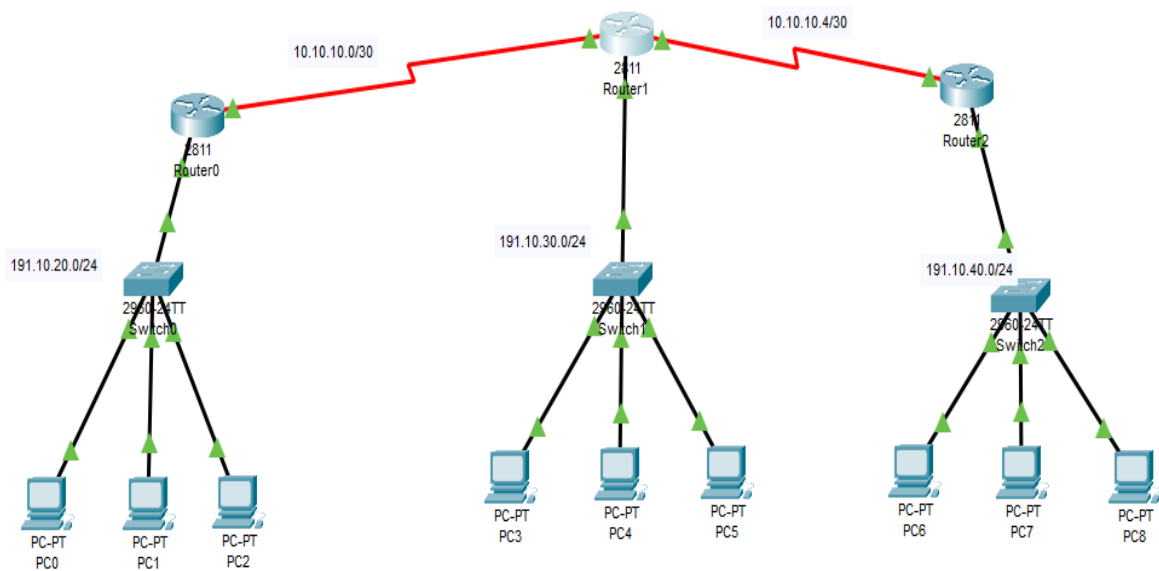
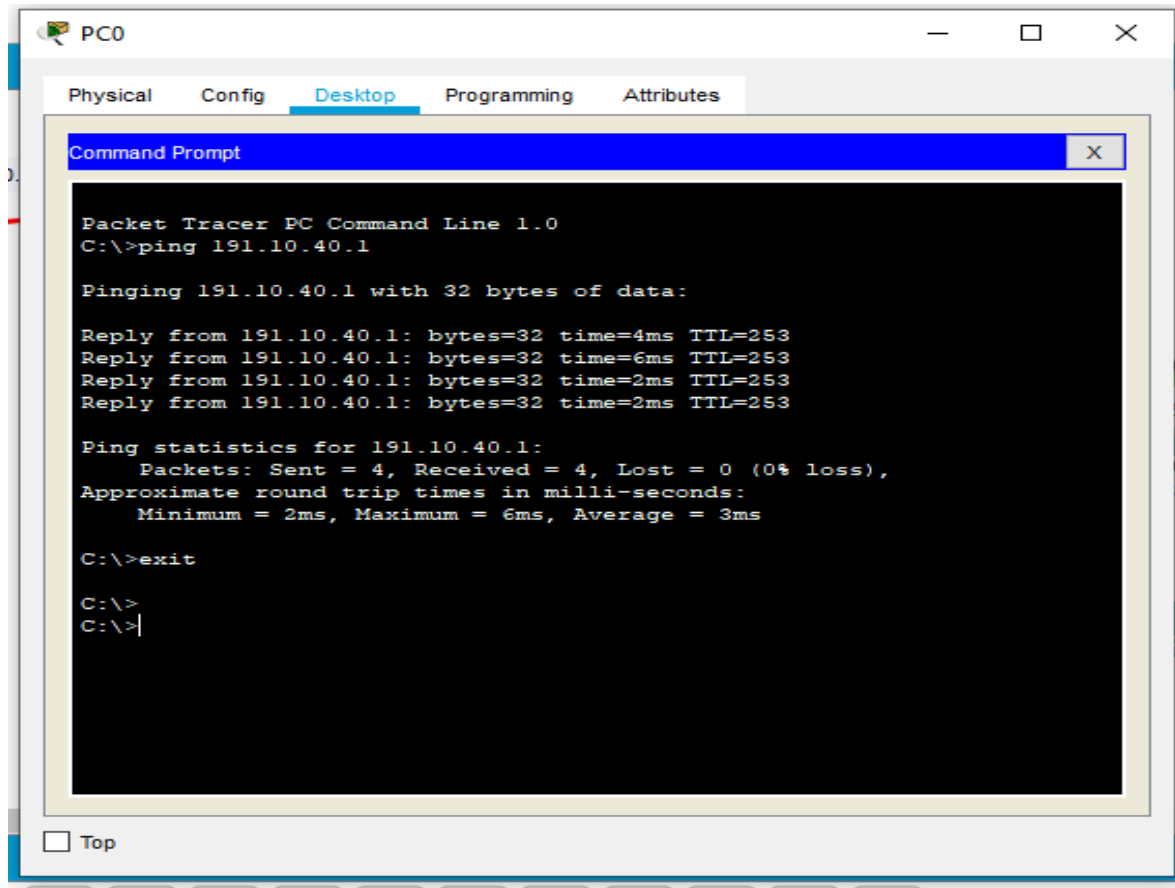


Figure 3.3.9 :RIP Packet Tracer Diagram

Result:



```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 191.10.40.1

Pinging 191.10.40.1 with 32 bytes of data:

Reply from 191.10.40.1: bytes=32 time=4ms TTL=253
Reply from 191.10.40.1: bytes=32 time=6ms TTL=253
Reply from 191.10.40.1: bytes=32 time=2ms TTL=253
Reply from 191.10.40.1: bytes=32 time=2ms TTL=253

Ping statistics for 191.10.40.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 6ms, Average = 3ms

C:\>exit

C:\>
C:\>|
```

Figure 3.3.9: RIP Packet Tracer Communication Established Result

- Advantages Of RIP: The simplicity of RIP's configuration and implementation is its most notable advantage. stable routing tables. It is straightforward to understand and set up. It frequently lacks loops. To conserve bandwidth, smaller routing updates are transmitted and received. The routing table's size was decreased, enabling a quicker lookup.
- Disadvantages Of RIP: The difficulty of RIP to grow to large or extremely large networks is its primary drawback. 15 hop counts Does not handle discontinuous networks due to the maximum hop count used by RIP routers. Another

disadvantage of RIP is the long time it takes to recover. In larger networks, convergence is slow.

### **3.3.10 Open Shortest Path First (OSPF):**

The optimum route between the source and destination routers is found by using Open Shortest Path First (OSPF), a link-state routing protocol. The Internet Engineering Task Force (IETF) created OSPF as an Interior Gateway Protocol (IGP) (IETF). A big autonomous system or routing domain is what this protocol aims to transport packets inside. It is a network layer protocol that uses port 89 and the AD value 110. For ordinary communication, OSPF uses the multicast address 224.0.0.5, and for updates to designated routers (DRs) and backup designated routers, it uses 224.0.0.6.

Equipment For Configure OSPF Routing Protocol

- 7 Routers
- At least 3 Switches For Practice
- At least 3 Computer For Practice
- Serial DCE
- Copper Straight Cable



Result:

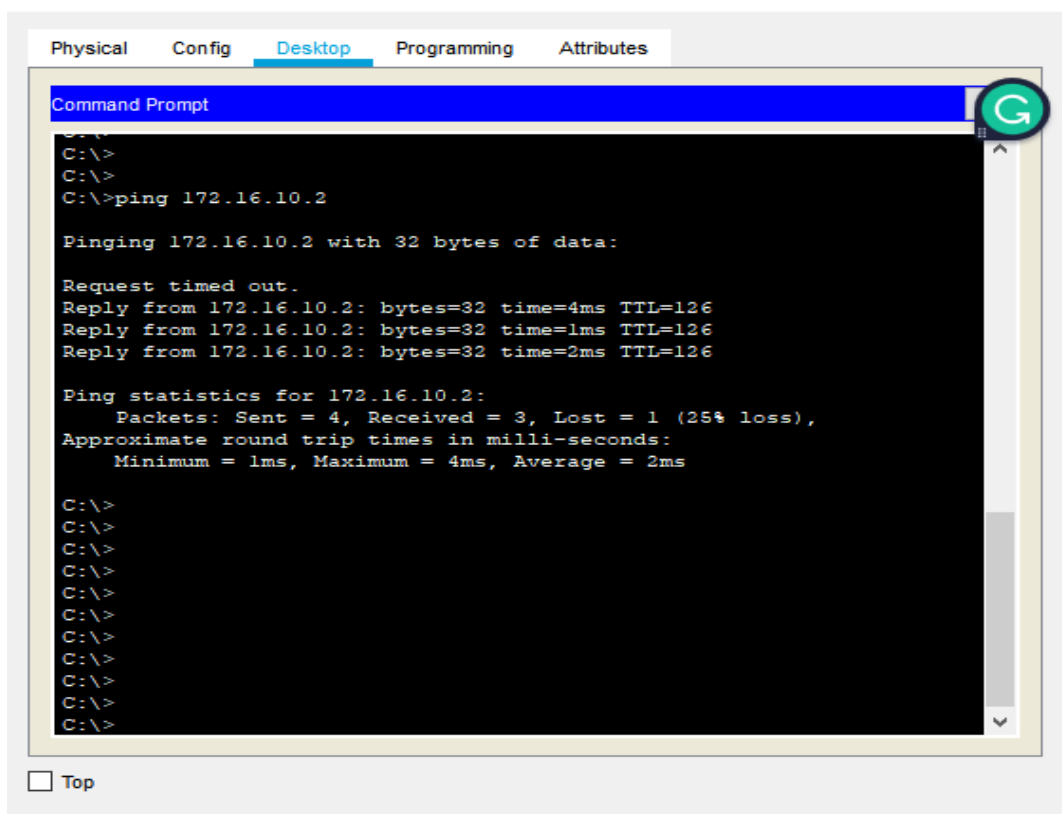


Figure 3.3.10.1: OSPF Routing Communication Result

### 3.3.11 DHCP

The Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically assigns an IP address and other configuration data, including the subnet mask and default gateway, to an Internet Protocol (IP) host. To supply IP automatically, DHCP must be configured, but the server IP remains constant because everyone has permission to access it.

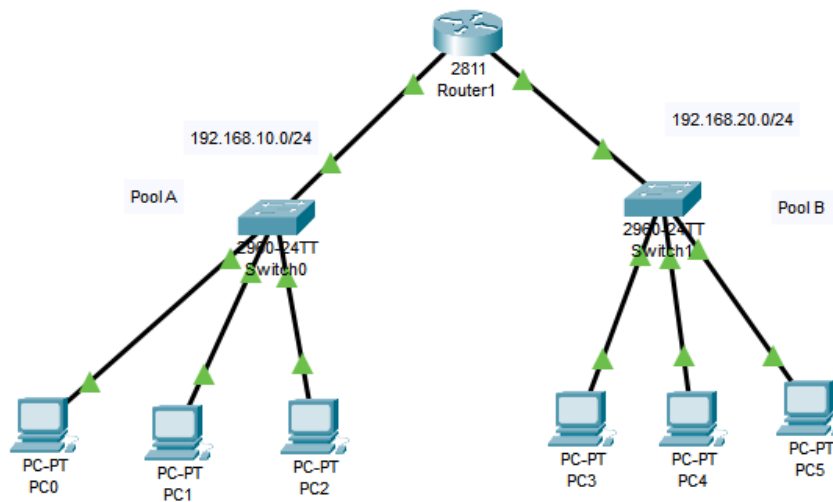


Figure 3.3.11 :DHCP Design Diagram

DHCP Automatic Host Configuration Result:

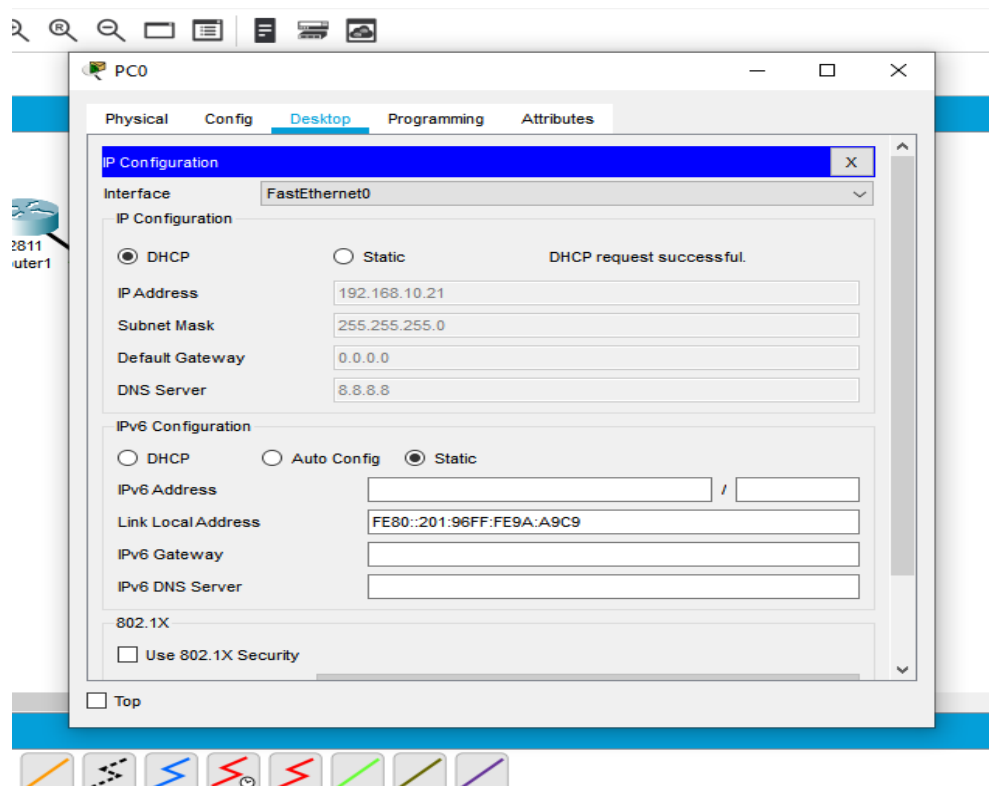


Figure 3.3.11.1:DHCP Auto Configure Host Result



### 3.3.12 Wireless Local Area Network (WLAN)

WLANs employ WiFi and other wireless network technologies to perform LAN-like functions. These networks, which are frequently used in applications similar to LANs, don't need that devices connect to the network through physical wires.

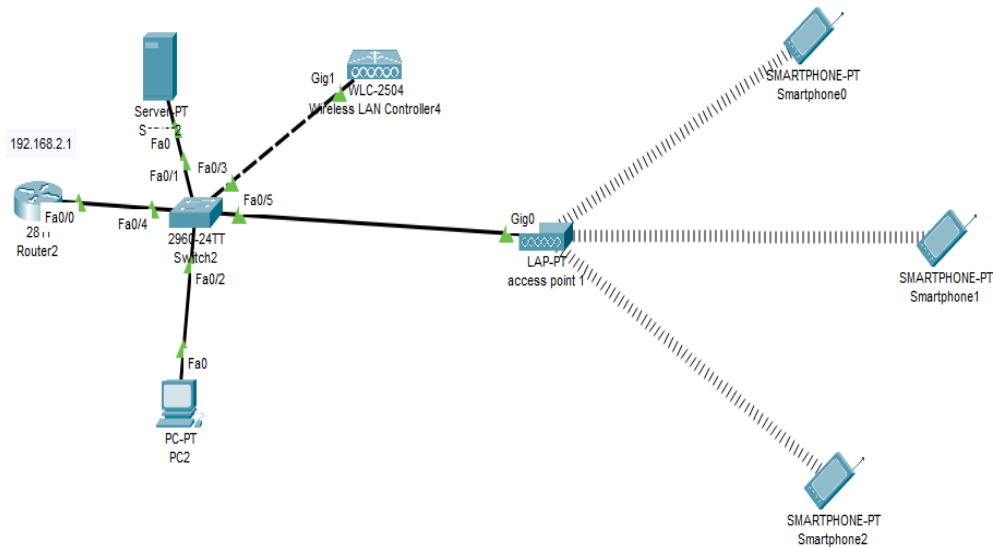


Figure 3.3.12: WLAN Diagram Design

Result:

```
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.3

Pinging 192.168.2.3 with 32 bytes of data:

Reply from 192.168.2.3: bytes=32 time=36ms TTL=128
Reply from 192.168.2.3: bytes=32 time=17ms TTL=128
Reply from 192.168.2.3: bytes=32 time=17ms TTL=128
Reply from 192.168.2.3: bytes=32 time=4ms TTL=128

Ping statistics for 192.168.2.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 36ms, Average = 18ms

C:\>
```

Figure 3.3.12.1: WLAN Wireless Host Access Internet

### 3.3.13 Software Tools To Troubleshoot Connectivity Problems

**Throughput Testers:** This is actually a software based tool where we can measure the traffic and also determine which types of traffic are eating bandwidth.

**Protocol Analyzer:** A tool or measuring apparatus known as a protocol analyzer collects and keeps track of data flowing across a communication channel. It gathers information from the communication channel and transforms the bits into a logical protocol sequence.

**Ifconfig/ipconfig:** This is one of the most helpful IP commands on Windows. It shows a lot of information about the device's current network settings, including IPv4 and IPv6 addresses for all network interface cards . default gateway, subnet mask MAC address, , DNS server, and DHCP information.

**Tracert/Traceroute:** Traceroute display the path of route .

**Nslookup:** uses for find out a name servers and quickly find out which name against which ip address.

**Route:** To see the routing table on windwos devices.

**Netstate:** To see on my computer Inbound and Outbound Tcp/ip connection.

**Ping:** Ping is a command-line utility ,we use it command prompt to see which host is responding and if I can reach a host.

### 3.4 Challenges

Understudy internships are often challenging, but when the chance presented itself, I took it as an opportunity and pushed myself to work with the stream. I have encountered a variety of situations and events that were unfamiliar to me. I have found new ways to cope with my problems, and I am excited about the future. As my kindred superiors walked me through everything in this entry-level position, I learned better methods to survey challenges.

"PeopleN Tech Company Ltd" is a group of people who are known for their expertise in system administration and investigations. As a result, starting my days while I was new

was actually a test. However, after only a few weeks, I found it to be quite natural and simple for me to accept things as they are. I have never complained about anything when working a temporary job since I do not want my respected instructors to be embarrassed for me. I was able to go through the situation and complete the task.

I am dealing with a variety of hardware issues, as well as software and networking issues, which I will attempt to resolve. I dealt with a variety of mailing configuration issues and was able to resolve them.

I am relieved that I have worked out how to balance my career and my college exams. It appears that all of your hard work has paid off. Throughout all of the conditions, the Professionals proved to be beneficial. I am glad I was given the chance to fill in as an assistant.

## Chapter 4

### Competencies And Smart Plan

#### 4.1 Competencies Earned

I need to improve my knowledge and abilities in order to survive in today's employment environment. In order to do so, I need to improve my talents by collecting knowledge and experience regarding the present work market. I need a clear picture of how I'll run my business, especially in terms of decision-making roles and responsibilities. I should do some research on management and supervision skills. By further growing my skills, I need to strengthen my skills in a certain field related to the employment market. I'll be able to advance my career if I can use all of my skills at the appropriate time and in the right locati

#### 4.2 Smart Plan

Everyone has a plan, and I have one as well. Using my skills in the hardware and networking sectors, I aspire to one day be a specialized system analyst or the head of one at a large corporation. Following my internship, I decided to pursue more education in this field.

#### 4.3 Reflection

When I feel committed to a job, I feel professionalism and precision come into play. It is the job's emotional attachment.

If I think back on my entry-level job, I can only say that I learnt a lot and had the opportunity to contribute at various levels and in different situations. When we expertly join any work in the field, experience is truly important. Working there also gave me the opportunity to address some of my personal shortcomings and come around. I can now confidently assert that I have an once-in-a-lifetime opportunity to demonstrate my abilities and efforts. I have also had the opportunity to demonstrate my dedication, as well as to figure out what I want to accomplish in the future and to establish my career.

The importance of teamwork and communication among team members cannot be overstated. It is necessary to understand how to communicate with senior and junior members of a team in order to obtain better results.

To get a better result, you must first grasp the system. The system's output will be severely impacted. Seniors at work helped us a lot to understand the system; responsibility is satisfied when employees understand the system, how to tackle significant challenges, and how to keep the team together.

## Chapter 5

### Conclusion and Future Career

#### 5.1 Discussion and Conclusion

We all know that books are the most important tool for gathering knowledge. However, in technical subjects, the book is too little to gain expertise. We obtain just theoretical knowledge in computer science when we study books. However, when we apply what we have learned in class to real employment, it helps us much more. My internship taught me a lot of fresh information. That was my first time doing something like that. During that time, I learned about the corporate world and was able to meet all of my goals. During this internship, I attempted to learn "Network Server, Hardware & Software, System Security Error Classification of Networking Systems" I have attempted to address a number of difficulties by breaking them into separate categories and analyzing the results. The majority of hardware-related issues develop when the computer hardware becomes old and obsolete.

The goal of this internship is to build networking design skills and get real-world software knowledge. In this report, I have outlined the goal and target, as well as an overall perspective that I have gained from my internship work, and we will go through the background and profile of this company. In this internship, I believe I have effectively learned or obtained the conclusion result "Network solves many problems by dividing distinct categories Server, Hardware & Software, System security." I have attempted to address a variety of difficulties using distributive various categories. I gained extensive knowledge of how to manage the Company Sector IT and give Client support, as well as real-world Company IT experience. That really is the extent of my achievements.

#### 5.2 Scope for the future Career

As a CSE student, I need to learn practical information from my internship, and I believe I have achieved this. Now I am confident that I am distinct from other recent graduates; I

can confidently assert that I have gained sufficient experience through my internship. Now I am capable of taking on significant difficulties in networking and hardware. I gained a lot more practical knowledge because of which I was able to apply to several well-known companies in the IT sector, ISP companies, business-related companies in the IT sector, colleges, universities, and banks. On The Other Hand Government expedite investments in English and IT instruction, beginning in primary schools. Improving transportation, communication, and the physical infrastructure of major IT hubs, as well as implementing work ethics, transparency, and accountability regulations, strengthening regulatory functions, and maintaining homeland security. Therefore, I will create a Future in It Sector as a Network Administrator.

## Appendix

**Internship Reflection:** My entry-level role was simple because I had a wonderful day deal of knowledge from my daily employment in different places. Despite my previous experience, I had learned a great deal, which is evident in my report. I have mentioned some of my findings and meetings, which have been blessings in my life. An individual should be able to do his or her job properly, and entry-level positions can help us understand what expertise is and how we can put it to use. I believe that the knowledge we receive from close proximity experience is just as significant as conventional education. We are always seeking out simplicity techniques, but we did not think that attempting the interaction described in the books would be difficult. Those are quite beneficial right now. Our fundamentals have provided us with a wealth of information. My temporary job taught me how to follow through on goals, how to deal with difficult situations, and how to live a real life. It also taught me many approaches and solutions to issues. I had the chance to look at a variety of circumstances that were not discussed in class, which was a beneficial learning opportunity. Temporary positions allow us to put our long-term experience and knowledge to good use.

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