INTERNSHIP ON ISP (SUPPORT ENGINEER) NETWORKING SYSTEM

SUBMITTED 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

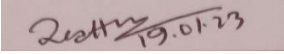**DHAKA, BANGLADESH**

JANUARY 2023

APPROVAL

This internship report of **"Internship on ISP (Support Engineer) Networking System"**, submitted by **Md.Arif, Id-201-15-13596** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment 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 January 19, 2023.
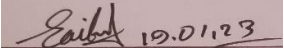
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DECLARATION

I hereby declare that, this internship has been done by us under the supervision of **Mr. Shah Md Tanvir Siddiquee, Assistant Professor, Department of CSE** Daffodil International University. We also declare that neither this internship report nor any part of this internship report has been submitted elsewhere for the award of any degree or diploma.

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First I express our heartiest thanks and gratefulness to almighty God for His divine blessing made us possible to complete the final year project/internship successfully.

I am really grateful and wish our profound our indebtedness to **Mr. Shah Md Tanvir Siddiquee**, **Assistant Professor**, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of "*Field name*" to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts, and correcting them at all stages have made it possible to complete this internship.

I would like to express our heartiest gratitude to **Dr. Touhid Bhuiyan**, **Professor and Head, Department of CSE**, for his kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University. I would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work. Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

I'm a CSE student who has finished an internship, and also completed an internship report in the ISP sector (Network Support Engineer). The report is a prerequisite of my bachelor's degree internship program. Organization consists of many devices and is linked via correspondence. A server room has many Mikrotik Routers , Switch's , OLTs, Hub's, Computer, printer, or some other gadget. ISP business Connecting people and organizations to the Internet and offering Internet services. An ISP also provide many types of services. Like web access to businesses and consumers, email service domain registration , web hosting , web browser service. Customers purchased access via a local ISP, but they paid a larger ISP for their own access. For access, this bigger ISP then paid an even bigger ISP. Tier 1 carriers that can access all network access points are found along the way. A local ISP company brings internet service to the customer's doorstep. It is a growing sector where new technologies and services are connected every day. Nowadays, ISP company are spreading their internet services to every corner of the country, making it easy for people to connect to more internet services. The main reason of my internship in ISP sector is here all network sector work is done, As a result I am able to make myself more efficient in the networking sector.

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Introduction

1.1 Introduction

The era of information technology is now. Nowadays, software-based communication and Internet technologies are used in every industry. We are unable to use the internet connection without a server. Today, many jobs are incomplete without the Internet and a computer. An internship is a stepping stone for an engineering student. CSE students must complete the Narcissus International University Internship Program in order to graduate. This research is a minor necessity for the CSE educational plan core position program at the global narcissus college. Gaining a foundational education in the realm of activities is the main driving force behind temporary employment. Since these were sub studies, the main challenge was to interpret hypothetical ideas into a real experience. The most crucial security goals are availability and privacy protection. Network security is the very means by which digital data resources are secured. In light of this, it is crucial that all networks are protected against threats and vulnerabilities in order to maximize a company's value. And I chose the network sector for my internship because today's internet world is almost stagnant without the network sector.

1.2 Motivation

In the observed period, the majority of understudies increased hypothetical learning, However, working as a rule is not a feasible substitute for daily activity. Therefore, the replacement should focus on a career decision that interests them before accepting the role and have some track record of work involvement in a key area. The real focus of DIU's internship offerings is this: Students are freed from the hypothetical universe of reading materials and classroom courses and guided into this contemporary reality of learning application. When hiring a full-time specialist, anybody benefits from the knowledge and experience earned through working in an organization. to support students in demonstrating consistency, activity, inventiveness, and polished methodology in the projects that they are given. This course tests your ability to work well with others and under the supervision of higher specialists.

1.3 Internship Objectives

An internship is a program that develops a student's ability and degree of common sense to work in a setting associated with the primary student to gain employment. In its educational curriculum, Daffodil International University includes a recognized course that serves as a graduate internship to give students the opportunity to interact with verifiable applications of the knowledge and skills they have learned in the school's theoretical and reasoning courses. Internships give students a fantastic open access into the world of organizations and give them a taste of the numerous extensions of that sector, which is particularly interesting to anyone after graduation. Co-workers are coordinated under a specific worker for the entire duration of their non-permanent activity. In addition, the task moves by sticking to the leader's instructions. The assistant gives a report on his efforts. The minimum tenure for a position at the passage level is three months. Throughout their temporary activity period, collaborator understudies are managed under a certain worker. Additionally, the assignment moves forward by adhering to the Supervisor's instructions. The understudy displays a report on their effort work. An entry-level role offers the chance to learn more about how the company ages, both dramatically and for a common cause. We may discover that we are grateful for this call and must take care of it, or we may realize that it is not what we had anticipated and decide to look for a different call. Choosing a definitive and educated decision about our career path should be the goal of understanding the position at the passage level.

1.4 Introduction to the Company

I've finished my internship at ISP company. The company name is "Shams It.net ltd." This is an Internet service provider company. Shams It.net ltd is a full-service supplier of IT solutions that has more than six years of experience in the ISP industry and a very high degree of success thanks to uncompromised service quality and client satisfaction. According to the demands of the customers, this organization offers quicker internet connections for both household and business users. In Bangladesh, Shams It.net ltd. is currently developing a national broadband network. The network is being developed to meet the broadband needs of both businesses and homes. Md. Nazmul Huda is the owner of this company. The Headquarters of "Shams it.net ltd" is 55/1,9/1 Dhanmondi, Dhaka-1209. Also, this company has many branches which are located in different places of Dhaka city. The number of current employees of the bank is over 200.

1.5 Report Layout

My report's is divided into 5 chapters.

Chapter 1: Conversation about Introduction, Motivation, Internship Objectives, Introduction to the Company and Report Layout.

Chapter 2: About Introduction to "Shams It.net ltd.", Market Situation, Organization Structure of "Shams It.net ltd.", Strategic Objectives, and Type of support.

Chapter 3: Daily Tasks and Activities, Events and Activities, Project Task and Activities, Challenges, Type of networking, router Configuration, switch Configuration, OLT Configuration, About IP Address, Mail and Phone call Support

Chapter 4: Competencies Earned, Smart Plan, and Reflection.

Chapter 5: Discussion and Conclusion and Scope for the Future Career.

CHAPTER 02
Organizational Profile

2.1 About Introduction to "Shams It.net ltd."

I completed my internship at ISP company. The company name is **Shams It.net ltd.** This is an Internet service provider company. **Shams It.net ltd** is a full-service supplier of IT solutions that has more than six years of experience in the ISP industry and a very high degree of success thanks to uncompromised service quality and client satisfaction. In Bangladesh, Shams it.net Ltd. is currently developing a national broadband network. The network is designed to satisfy both home and business broadband requirements. Shams it.net ltd. offers services for private network (intranet) solutions and broadband Internet access that make it possible to build high-quality, high-speed internet and intranet access at a very cheap cost by combining satellite, wireless, and optical technologies. Md.Nazmul Huda is the owner of this company. The Headquarters of "Shams it.net ltd" is 55/1,9/1 Dhanmondi, Dhaka-1209. Also, this company has many branches which are located in different places of Dhaka city. The number of current employees of the bank is over 200.

Corporate profile of Shams it.net ltd.:

 Name of the bank: **Shams it.net ltd**.

Owner of the company: Md.Nazmul Huda

Managing Director of the Company: Md.Faysal

The Legal status of the company: Private limited company Business

Registered office: 55/1,9/1 Dhanmondi ,Dhaka-1209

Office Phone Number: 01618150000

2.2 Market Situation

An ISP provides Internet services to a variety of individual and business customers. Shams it.net spoil. is an ISP that provides services such dial-up, domain name registration and hosting, and Internet transit. This company has also been growing rapidly in recent years. The number of broadband users increased especially during the Covid-19 pandemic, as dependence on the Internet continued to grow for essential tasks such as working from home, online courses, and meetings. This time Shams it.net ltd. considering the needs of customers, they provide very good internet due to which the reputation of this company has spread around in the last 2 years. Especially in Dhanmondi, Mohammadpur, Uttara, Gulshan, Mirpur, and also in different parts of Dhaka, their location and service are very good. Also, this company has many branches which are located in different places in Dhaka city. The number of current employees of the bank is over 200.

2.3 Organization Structure of "Shams It.net ltd."
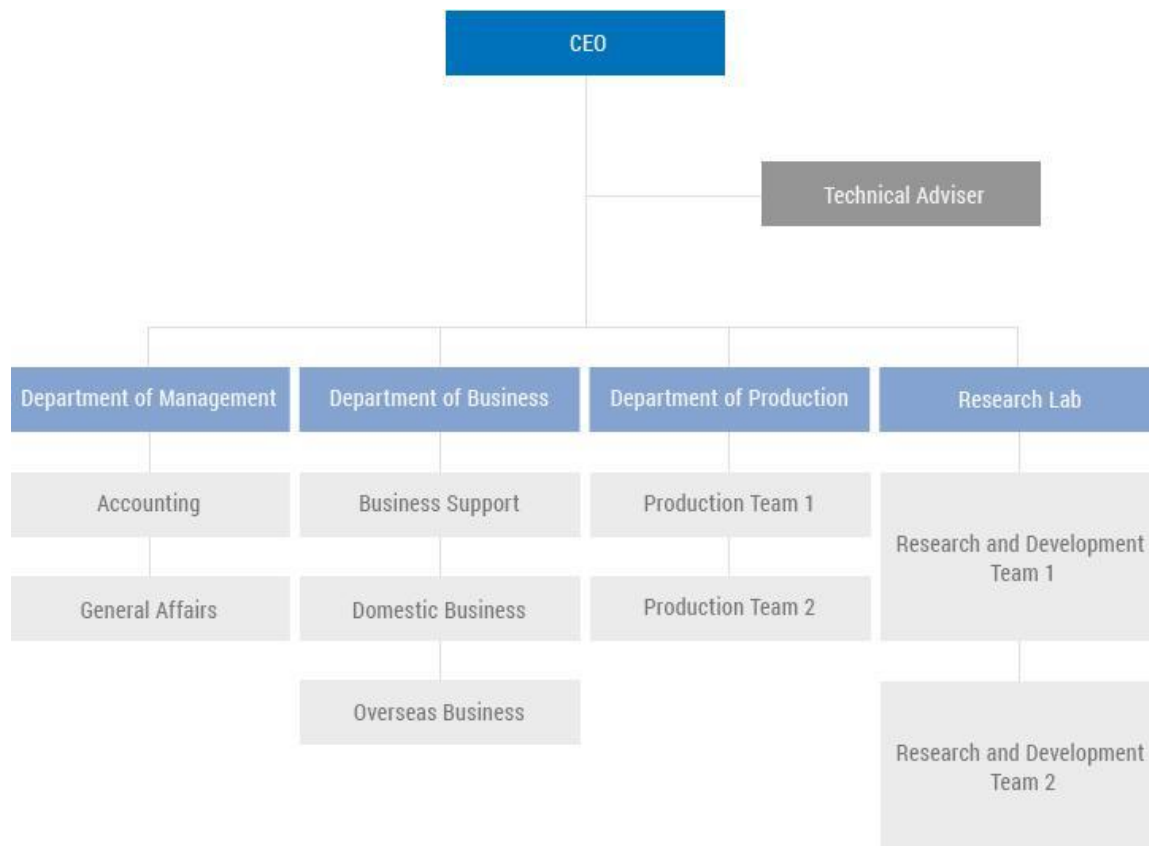
2.3 Figure Organization structure of "Shams It.net ltd."

2.4 Strategic Objectives

The main strategic goal of the company is to send Internet services to people and strengthen data communication

→Develop a customer-oriented service culture.

→Attract target customers and capture target market segments.

→Innovative products and services Development.

→Cost-effective operations.

→Increase market share with an effective growth strategy.

→Growing business through good service.

→Maintaining customer satisfaction.

2.5 Type of support

→Network Setup.

→Network Security.

→Network Maintaining

→Internet entree.

→Internet Transfer.

→Domain name record-keeping.

→Web hosting.

→Customer problem-solving.

CHAPTER 3

Tasks, Events And Activities

3.1 Daily Tasks and Activities

I completed my internship at **Shams it.net ltd.** as a **Network Support Center** under their IT department. This company is considering me as their employee. The network operating sector conducts its work 6 days a week with only Friday being a closed day. Working hours here are from 10 am to 7 pm. And my internship also starts at the same time from 10 am to 7 pm. Here I started my internship on 15 June 2022 and it is still going on.

The tasks I have been taught during the internship are:

→Managing a network.

→Managing different channels.

→Customer phone call support.

→Solving customer problems.

→Configure the Router.

→Configure the switch.

→Configure the OLT.

→Conduct the downline ISP.

→Solving downline ISP problems.

Before starting work every day observe the report of the previous day and at the end of the day prepare a report of today's problem and send the end-of-day report to the authority. This company uses a database called NOC database to store its data.

→The tasks I had to do during the internship were:

→Managing a network.

→Managing different channels.

→Customer phone call support.

→Hearing customer complaints and storing their information.

→Solving customer problems.

→Prioritize network security.

→Maintain constant communication with the technician team.

→Configure the Router.

→Configure the switch.

→Configure the OLT.

→Conduct the downline ISP.

→Solving downline ISP problems.

3.2 Events and Activities

The work environment here is compatible with the IT system which makes it much easier to work here. The work environment is made more exciting with new events and small challenges every day. There is always a technological environment. All work here is conducted logically.

Planning is an initial step for long-term positioning. Planning is more important when a company wants to expand its scope further. Also, the company should always be ready to handle bigger challenges. When a company is ready to handle the challenge then that company will be able to face the challenge very easily. Ability to plan, and improve thinking, even in small positions. During this short internship, I learned to take on that challenge and plan ahead for the challenge.

3.3 Project Task and Activities

I have had many achievements since Shams It.net ltd. Here I got the opportunity to work with a very nice NOC team. Here I also got a nice working environment. I was able to do some separate projects with the NOC team here and help the side.

→Configure Cisco Router
→Design Wide Area Network (WAN)

→Configure Mikrotik Router

→Configure OLT

→Create Database

→Summary report create

3.4 Challenges

I have faced various challenges while working here, which are highlighted below:

→Customer handling challenge.

Customer handling was a big challenge for me as I had no previous experience in customer handling and therefore I struggled to operate with customers.

→Server freezing for long periods of time.

→Ensuring periods security of the network.

→Maintain constant communication with the technician team.

→Working on various projects with the NOC team

→To maintain office period for a long time.

3.5 Type of networking

We know that when a device needs to communicate with another device, it follows a network. And this network has three types of LAN networks MAN networks WAN networks. A network used for a small area is a LAN network consisting of a small number of devices. A MAN network is a Metropolitan area network that may include a network that may include a network of cities. And WAN is a wide area network through which an entire country or if desired a network across the world can be included under it.

3.5.1 Local Area Network

Figure 3.5.1 Local Area Network

A LAN network is a network consisting of a few devices within an administrative arrangement within a small area. These LAN networks usually cover small areas area like Schools, Colleges, offices, universities, etc. LAN basically helps to share data between its user devices. File servers, printers, and scanners can be easily shared among different computers within a LAN network.It does not rely heavily on routing and uses private IP addresses. LAN employs either Token Ring or Ethernet technologies. LAN operates under its own local domain. LAN basically uses star topology.
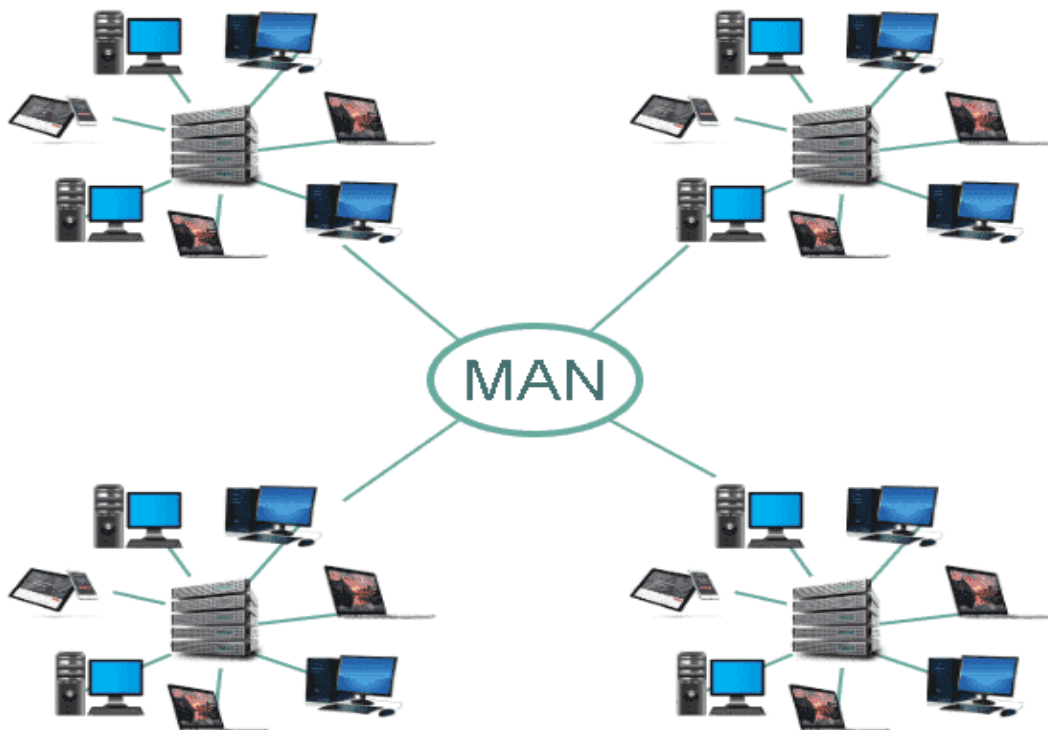
3.5.2 Metropolitan Area Network

Figure 3.5.2 Metropolitan Area Network

The metropolitan area network is a computer network that joins devices within a metropolitan area which can be a only large town or various cities. Metropolitan area networks usually span a city, as do cable TV networks. This is basically better than a LAN network but reduced than a WAN

network. It is a service provided by ISP. The MAN service helps users to extend their LAN. It also helps to connect multiple offices in a city. Its main backbone is high-speed fiber optic.
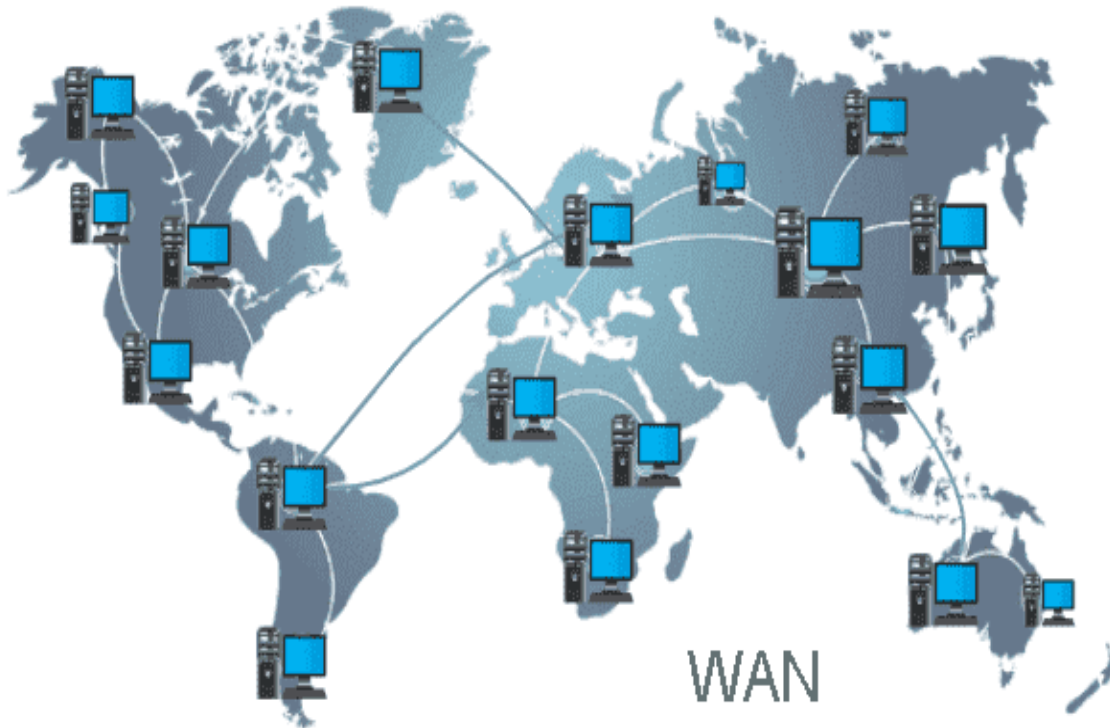
3.5.3 Wide Area Network

Figure 3.5.3 Wide Area Network

A wide area network, as the name suggests, covers a wide area that can cover an entire country or multiple countries. The telecommunications network that we see is essentially a vast network. Basically it works by establishing communication between LAN and MAN. It's an expensive network. It makes use of a number of cutting-edge technologies, including Synchronous Optical Network and Asynchronous Transfer Mode Frame Relay. It is managed through multiple administrations.

3.6 router Configuration

Step 1: Resetting the router and Connecting the power cord.

Step 2: Set up cables and Connect the computer to the WAN port.

Step 3: Access the router.

Step 4: Default Screen.

Step 5: Configure Wireless SSID.

Step 6: Configure Wireless with WPA Security Key.

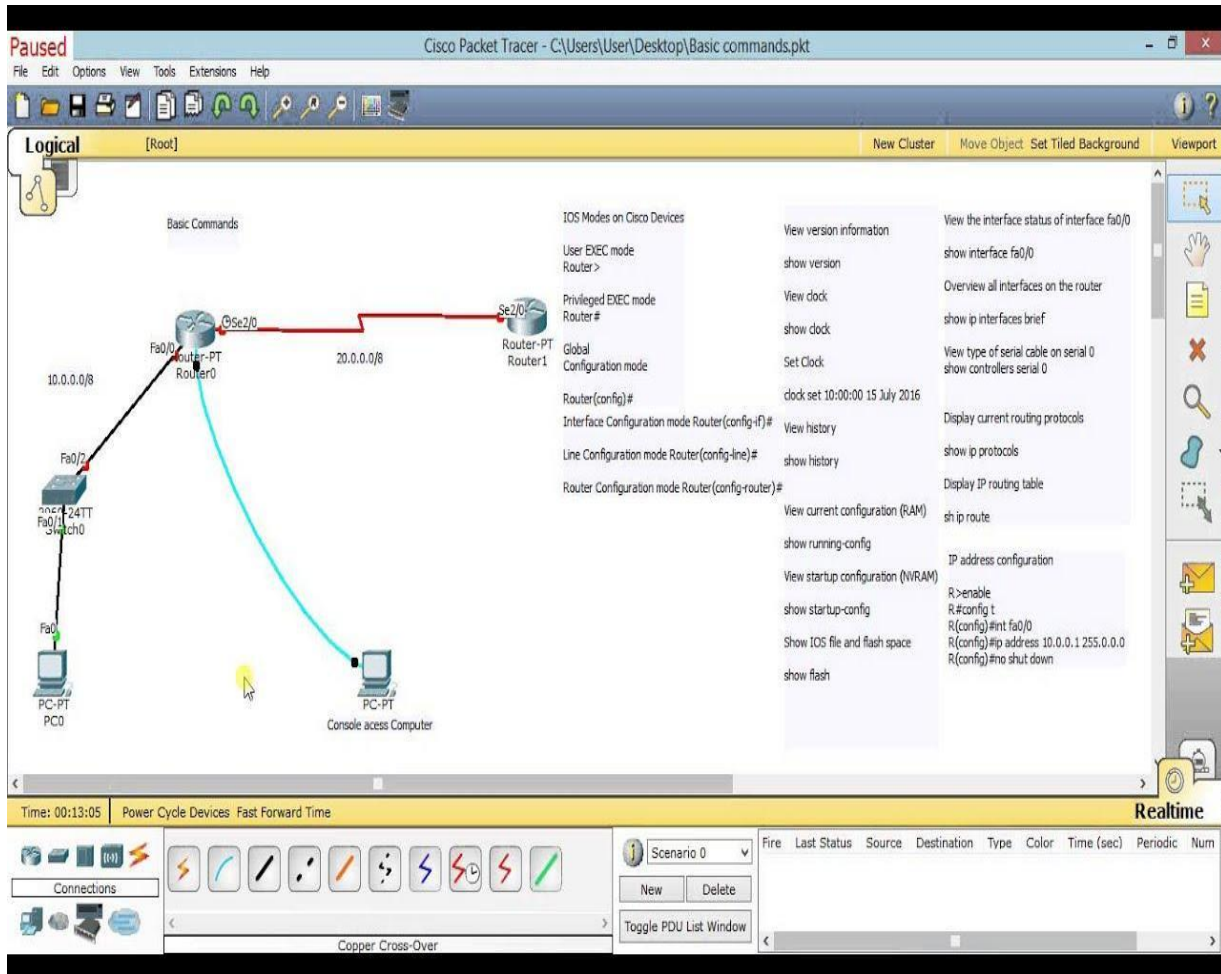Step 7: Final Cable Setup.

Step 8: Verification.

Figure 3.7 Router Configuration

3.7 Switch Configuration

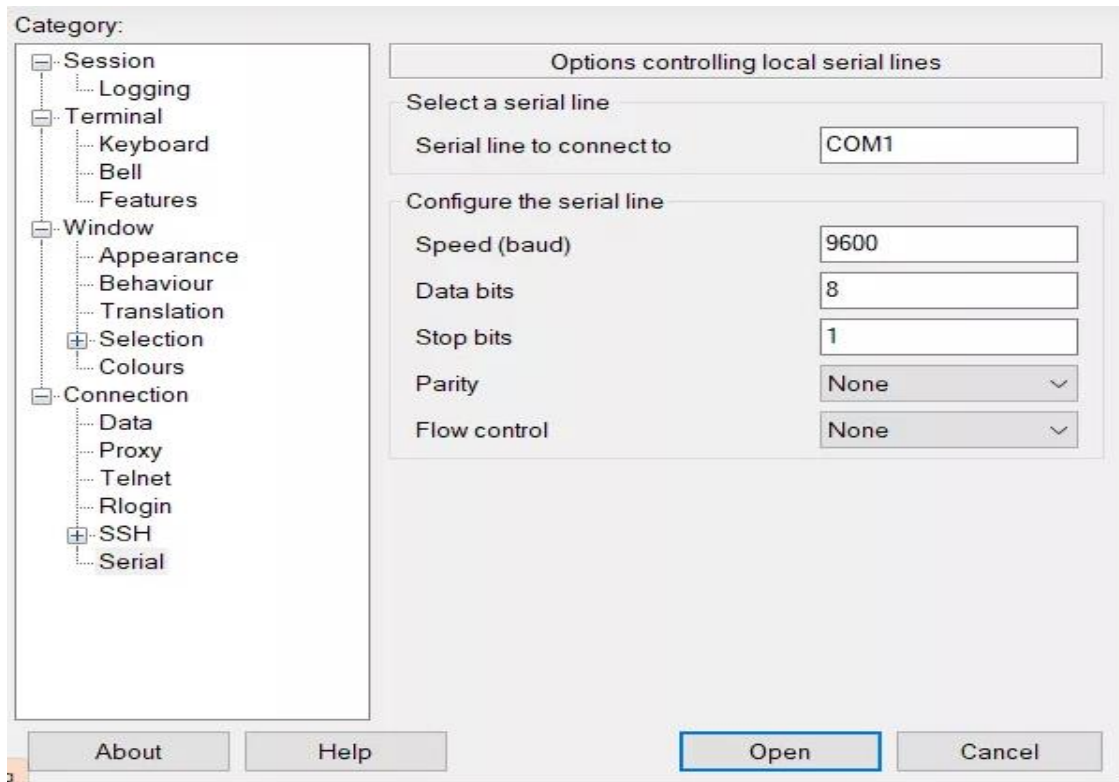**Step 1**: First of all connect to the console.

Figure 3.7 Switch Configuration 1st page

Step 2: A management IP and default gateway must be set.

Command:

switch (config-if)#ip address 10.10.11.11 255.255.255.0

switch (config)#ip default-gateway 10.10.11.11

switch(config)#

Step 3: A hostname and the domain name must be set.

Command:

switch (config)#hostname samsit. Switch

samsit switch(config)#

samsit switch(config)#ip domain-name samsit.net

samsit switch(config)#

Step 4: Set logins console and on VTY lines.

Command:

samsit switch(config)#line vty 0 15

samsitswitch(config-line)#password BigSecretForconsoleDon't samsit101214@

samsit switch(config-line)#

samsit switch(config-line)#exit

samsit switch(config)#line console 0

samsit switch(config-line)#password BigSecretForConsoleDon't samsit101214@

samsit switch(config-line)#

Step 5: Set Privileged EXEC password

Command:

samsit switch(config-line)#exit

samsit switch(config)#enable secret TopsecretprivEXECpassword

samsit switch(config)#

Step 6: VLANs create

Command:

samsit switch(config-line)#vlan 2

samsit switch(config-vlan)#name It.net

samsit switch(config-vlan)#

Step 7: Add access ports to a VLAN

Command:

samsit switch(config-vlan)#exit

samsit switch(config)#inrerface range fast

samsit switch(config)#interface range fastEthernet 0/5-7

samsit switch(config-if-range)#switchport mode access

samsit switch(config-if-range)#switchport access vlan 2

samsit switch(config-if-range)#

Step 8: Configure trunk ports

Command:

samsit switch(config-if-range)#exit

samsit switch(config)#interface fastEhernet 0/2

samsit switch(config-if)#switchport mode trunk

samsit switch(config-if)#

Step 9: Save configuration

Command

samsit switch(config-if)#exit

samsit switch(config)#exit

samsit switch#

samsit switch# copy running-config startup-config

Destination filename [startup-config]?

Building configuration..
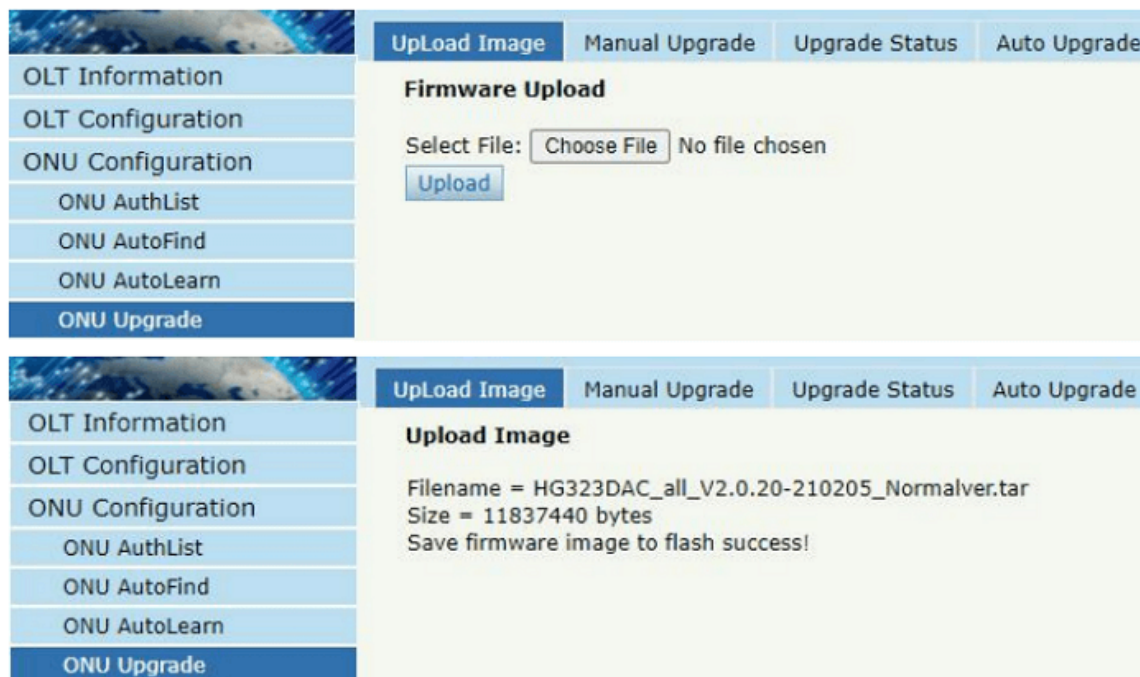
OK

samsit switch#

3.8 OLT Configuration

Figure 3.8 OLT configuration Graphical interface

Step 1: Start Configuration

Step 2: Config pvid and vlan for ge port

Step 3: Config vlan for PON port

Step 4: Config vlan for ONU

Step 5: Save the configuration

Step 6: END

3.9 Winbox

One of the router setup interfaces for the Mikrotik Operating System, known as Winbox, is currently well-liked on the Microsoft Windows and MAC operating systems. Both a console system and a GUI are more handy. Here are some details on a Mikrotik router that uses Winbox.

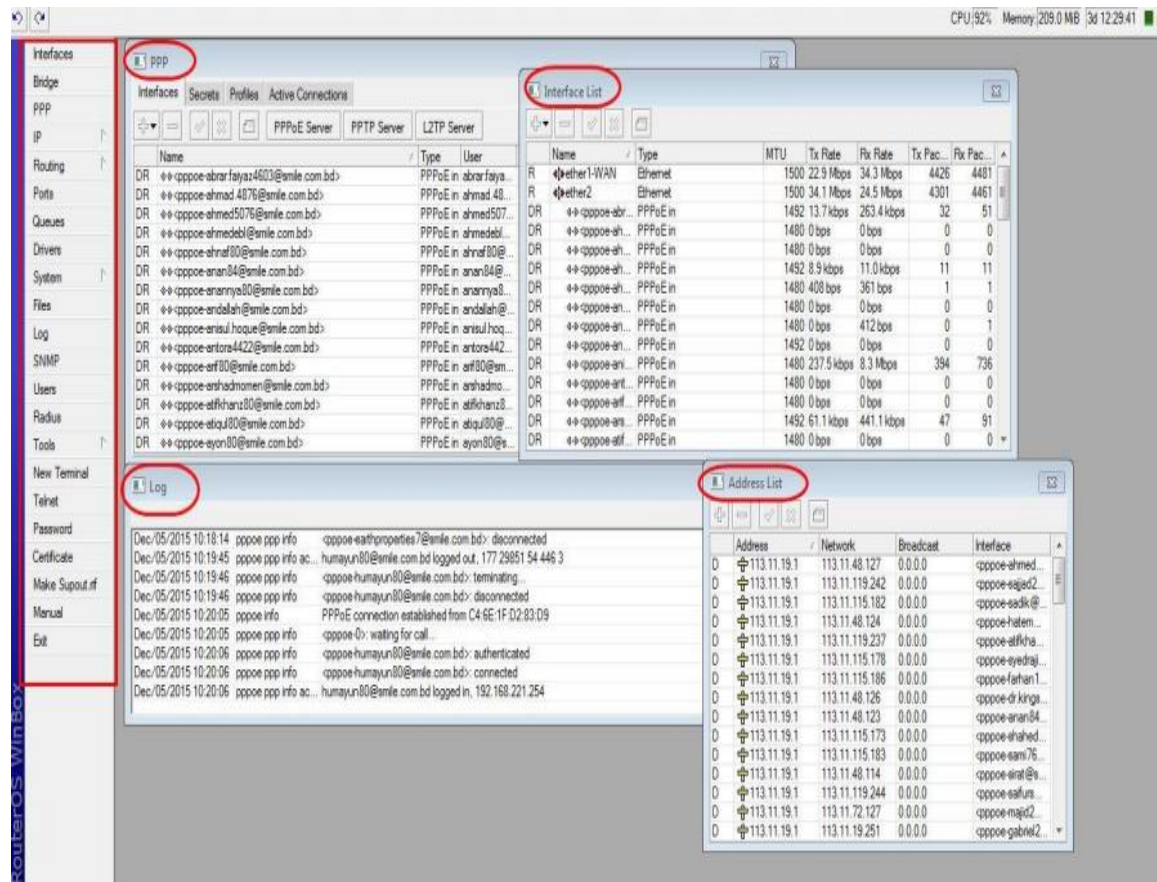### 3.9.1 Overview of a Winbox with PPP, interface list, router log, and address list

Figure 3.9.1 Basic Specification of Winbox.

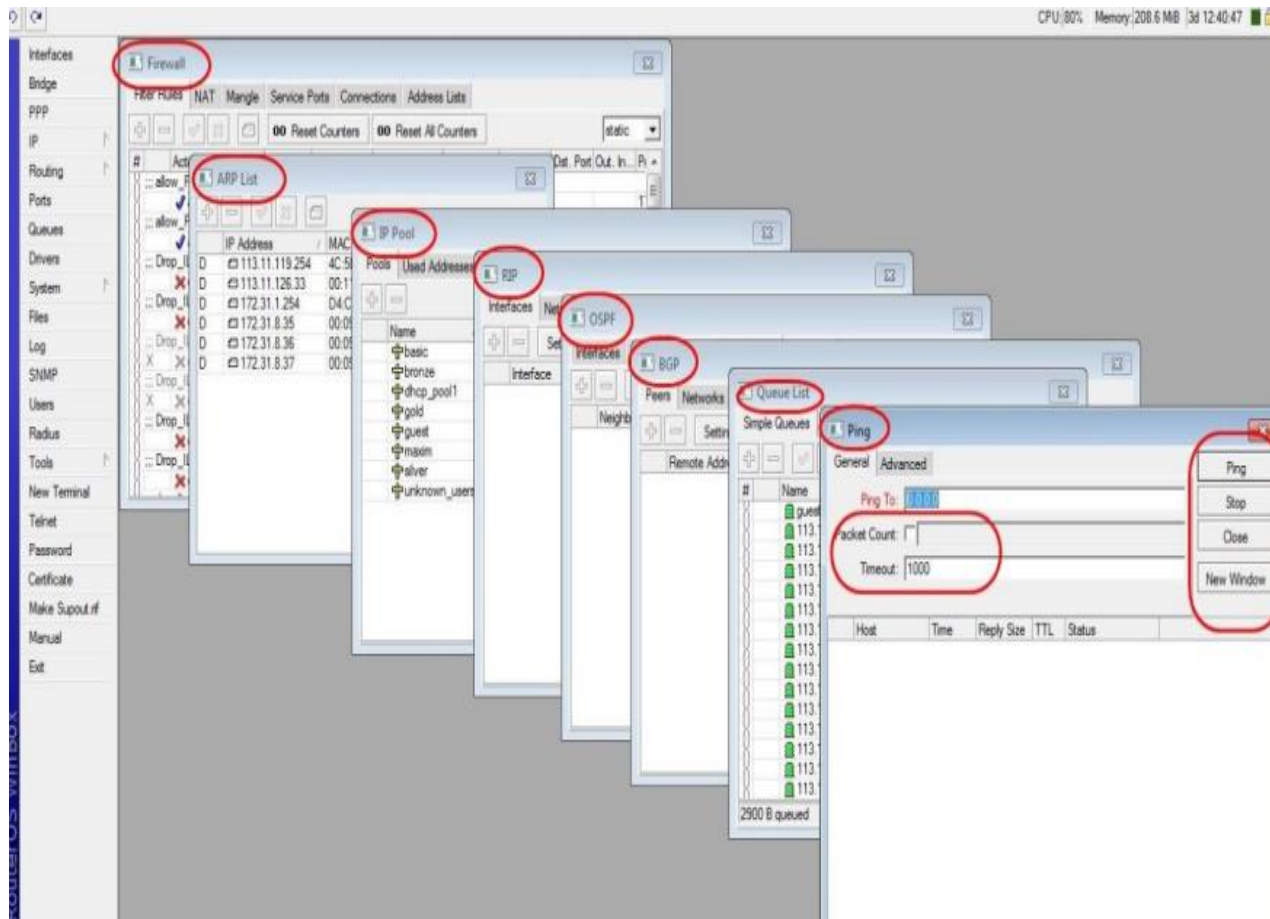### 3.9.2 Firewall, ARP list, IP Pool, RIP, OSPF, BGP, Queue list, and Ping

Figure 3.9.2 Many type of routing, firewall and monitoring on Winbox

3.10 About IP Address

One such special number is the Internet Protocol Address . The network address and the host address are the two components of an IP address. The host address in Class A is represented by the final three octets, whereas the network address is represented by the first octet. The network address in Class B is represented by the first 2 octets, and the host address by the final 2 octets. In Class C, the host address is contained in the final octet and the network address is contained in the first three octets. There are 2 versions of IP addresses IPV-4 and IPV-6. With 128 bits complete in 1995 and settled out as RFC 2460 out of 1998, IPV-4 is 32 bits and IPV-6 is 128 bits. Since the middle of the 2000s, the IPv6 association has been persistent about IP address.
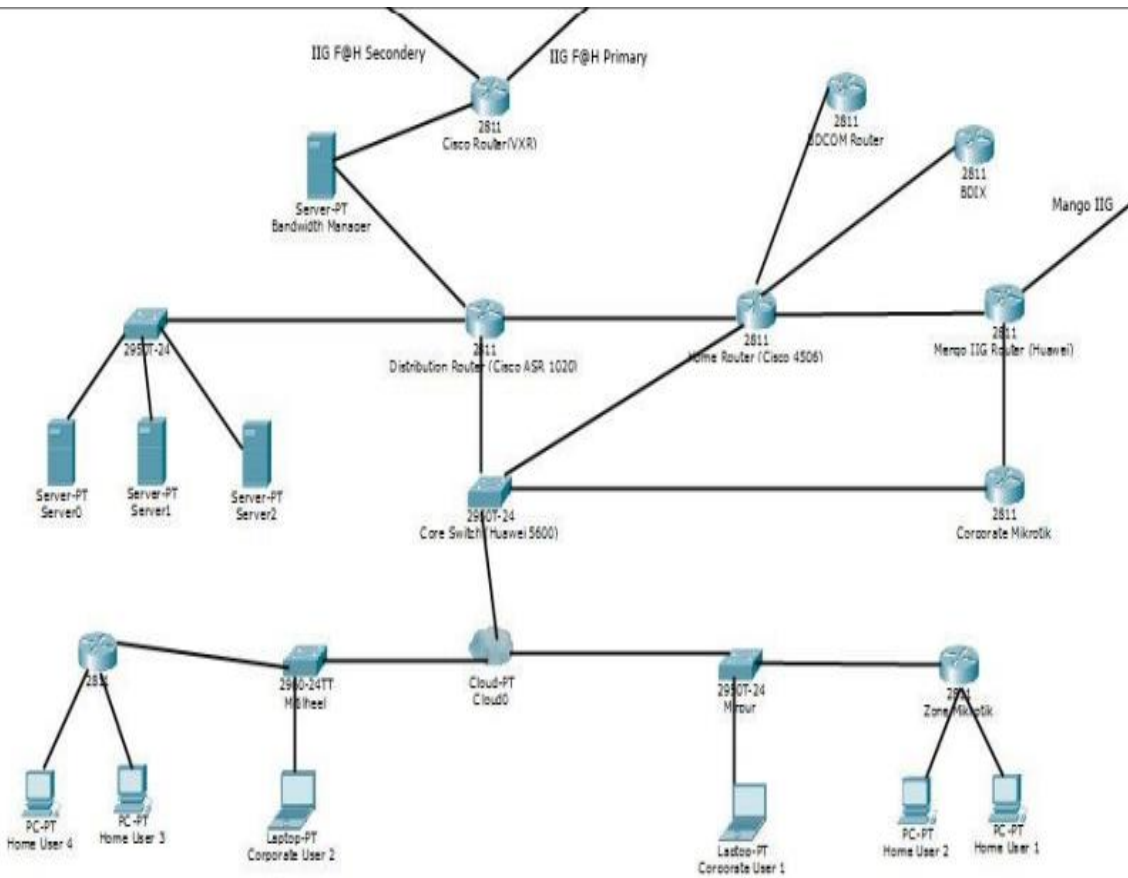
3.11 Complete Network Design

Figure 3.10 Complete Network Design

3.12 Mail and Phone call Support

One of the tasks that I am doing in this company is to provide customer support through phone calls. One of the tasks was to solve the problem after the customer complained about their various problems. And the problems that the technician team would need to solve should be reported to the technician team. Also various customers inform their problems through message or mail. Checking the mail at certain times every day is also one of the tasks and giving various information to the downline feeder through phone calls or mails. When their internet connection is down is any big customer office they inform the NOC team accordingly NOC team directs the technician team to work on the problem. In today's age of technology dependence it is very common and important to conduct customer service through phone calls, messages and mails.

CHAPTER 4

Competencies and Smart Plan

4.1 Competencies Earned

It is very important to increase one's ability to increase one's achievement depending on the quality and competitiveness of the job market. Similarly, there is no alternative to increasing your work capacity to sustain yourself in the competition of the networking market. Anyone providing a system and monitoring data is not responsive enough. If you can't change yourself with the change of technology you will lose your position but if you can change yourself with technology then your position will improve. The company will teach you how to do the job and you have to absorb that learning and add new knowledge to it.

☐ The ISP sector survives on customer satisfaction so you need to learn how satisfied customers.

☐ You have to learn teamwork to survive here.

☐ You have to make yourself more responsible.

☐ Increase your decision-making ability.

☐ increase your communication skills.

☐ Finally increase your leadership skills.

4.2 Smart Plan

➔ Most importantly NOC nursing system should be well known.

→ To perform better there should be an effort to learn all the tasks by oneself.

→ Systems engineers have to learn all the jobs up close.

→ If you get a teamwork opportunity, you have to take it and give your best performance.

→ If you get an opportunity to lead a project, you should take it.

→ Networking devices should be monitored daily.

→ New ideas must be created.

4.3 Reflection

I had the opportunity to work here in an entry-level position, but to broaden my knowledge base in the sector I was helped by an excellent NOC team who treated me as a colleague rather than an intern. But apart from that I have taken help of internet to learn different types of work. My highly organized portfolio is a trait of my creative work and another factor in my success. However, in

order to compete at the highest level as a consultant, one needs a portfolio that reflects his work. Every specialized designer and supporter needs a system portfolio as a prerequisite. It allows the executives or organization to decide on your validity by showcasing your greatest work before them. The majority of organizations conduct a comprehensive portfolio reflection as their very first step in determining whether or not a candidate is qualified for the position.

CHAPTER 5

Conclusion and Future Career

5.1 Conclusion

From that entry-level position, I have been trying to gain a lot of experience and continue to do so. This familiarity will serve me well in the future. I can use this experience to operate and maintain a system. I am this Shams It.net ltd. I got an opportunity to serve customers and learned a lot from that. Here was an opportunity to increase my knowledge in the network sector which I was able to utilize. In the computer field, I had the opportunity to learn network planning and design, internet connectivity, ensuring network security the configuration of various applications, etc. I was able to make good use of this opportunity. I have learned several crucial things from my supervisors and colleagues. My managers and coworkers taught me a lot of valuable lessons and regularly performed some tasks throughout my internship and eventually gained the confidence to take on tasks myself. This is a fantastic chance to apply your expertise. Additionally, I acquired fresh ideas and learnt how to deal with serious errors. I've discussed my background in network architecture, optimization, and system upkeep in my report. I would love to do this kind of work again because it is really beneficial to my career.

5.2 Future Career

Practicum areas give a very good understanding of the practical's also semantics of network base systems. I believe that I learned using my internship will take me to greater heights. During my practicum, I put a decision-make system that relies on replicated information to the test. An enormous amount of work's outcome can be a major challenge.

→Excellent communication

→Ability to teamwork.

→Perform network engineering work.

→Work as a security and specialist help supervisor.

→Work as a company that monitors networks.

→ISP-based stage of work.

→Work as an organization's IT manager.

→Becoming a network business at work

→Gathering of information.

Appendix:

The core determination of my rehearsal in the skilled situation is the specific response to the certification theme, which is the familiarity that is functional in the classroom. I am aware protests of customers, specialists, and skilled leaders, as fine as legislatures of the many legislatures who profit from sympathetic comportment and improved relations. In command to meet my internship requirements, I trained permitted corporate performers. They are the vital goal/vision of knowledgeable networks, how to interconnect with the buddies, how to control, how to establish, how to select, how to comprehend the lifestyle of the skilled union, and the level of accountability and influence to the union.

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