

**WORKING ON TELECOMMUNICATION SERVICE MANAGEMENT OF  
BTCL**

**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 Internship titled “**Working of telecommunication service management of BTCL**”, submitted by Mahmudul Hasan, ID No: 182-15-11628 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 03-06-2021.

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## DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Ahmed Al Marouf, Senior Lecturer, Department of CSE** Daffodil International University. I also declare that neither this Internship nor any part of this Project has been submitted elsewhere for award of any degree or diploma.

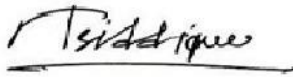
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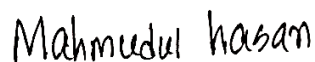
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Finally, I must acknowledge with due respect the constant support and patients of our parents.

## **ABSTRACT**

This internship is going on “Working on telecommunication service management of BTCL” which is a kind of experience in a telecommunication network. I was interested in an internship with Basic Telecommunication Company Limited (BTCL). Because nowadays communication world is talking. In this report, I am trying to tell you what I am learning about the real-world field installation and working process of telecommunication networks in BTCL during this internship period. BTCL has to have a basic telecommunication service period all over the country. I had a great opportunity to work at BTCL. This company provides telephone services all over Bangladesh. The company has the largest telecommunications in-fracture comprising copper cabling, microwave link, satellite link, and optical fiber network.

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## **CHAPTER 1**

### **Introduction**

#### **1.1 Introduction**

Computer networks play an important role in this digital age. Once there we can't think about it there will be a device that will reduce our work and do more of the same work Effective approach. By doing this internship I benefits in the working environment, and it also builds my professional network. Internships provide a great environment to meet professionals in the career field that I wanted to pursue. The internship offers me practical work experience. I have learned how to install software, update a software, maintaining, and providing user support for hardware, software applications, and some network issues. I have gain experience to choose my career field and work in a learning environment. Learn how a professional workplace operates. This internship will involve challenging opportunities, practical technical support projects and interactions with staff. This is a great opportunity to gain hands-on experience in the field of computer IT. This internship provides an opportunity to gain experience in system support of Bangladesh Telecommunication Company Limited (BTCL).

#### **1.2 Motivation**

I chose the internship because I wanted to further my career as a networking engineer. Network engineering is a very exciting field to be a part of. Since I love technology and appreciate the daily challenges and projects it can be a suitable career option for me. A demand field for working in network engineering believe I believe this area is extremely visionary and important because we have networks everywhere right now. Working with safety and effectiveness makes me happy in my daily life. It is easy for me to understand any network. Networks I really enjoy solving problems and I believe that as a network engineer I can give a lot of value to my employer. Computer networking is an ever-evolving field. Computer technology can be an exciting and rewarding career path with new technological advances.

### **1.3 Internship Objectives**

Having an internship gives you the experience of the career you want to pursue. When applying for a job it give people important those who are done internship than other candidates, it prepares them for what is expected of them and builds confidence in their work. Internships benefit you in the work environment and it also builds your professional network. Internships provide a great environment to meet professionals in the career you want to pursue. Internships can provide students with the necessary soft skills in the workplace and in leadership positions. It's learn how to manage a professional workplace.

### **1.4 Introduction to the Company**

Bangladesh Telecommunication Company Limited is the government and largest telecommunication company in Bangladesh. This organization was established in 1971 with the independence of Bangladesh Telegraph and Telephone Board. On July 1, 200, BTTB became a public limited company and was renamed BTCL. The Bangladesh government initially owned all the BTCL shares, but said it would sell the shares to the public next year. Bangladesh Telecommunication Company provides land-line telephone service in Bangladesh.

### **1.5 Report Layout**

In the first chapter, I have described the introduction of internship, motivation, internship objectives, I described the company. After that, I have described the organization where I did my internship. Where I introduce some products which are my organization's produce. This project has a target group. In this section I explained about them. After that organization structure. In my internship, I had some tasks. In chapter three I mention my daily task and activities, event and activities, I mention which was my task in those projects and what was the challenges. Chapter four is about competencies earned, smart plan, and reflections. Chapter five is about discussion and conclusion and scope for further career.

## **CHAPTER 2**

### **Organization**

#### **2.1 Introduction**

The Telegraph branch under the Department of Posts and Telegraphs was established in then British India in 1853 and was later regulated under the Telegraph Act-185. The Telegraph Branch was reorganized in 1962 as the Pakistan Telegraph and Telephone Division in the East Pakistan. Bangladesh Telecommunication Company Limited started its journey on July 1, 2006. Although the Bangladesh government initially owns all the shares in BTCL, it will offload the shares to the public in the next year. The value of BTCL has been estimated at Taka 15,000 core. BTCL has a total of 12, 63636 officers and employees. BTCL provides dial-up internet access in all 4 districts of the country, making it the most accessible internet service provider in the country with a total of 26, 6559 dial-up subscribers as of June 2008. It also manages .bd domains. In May 2008, the total number of Bangladesh telecommunication company limited subscribers was 6.8.0 million.

“Bangladesh Telecommunication Company Limited (BTCL)” was incorporated and registered in Bangladesh under the companies Act, 1994 as a public limited company having its registered head office situated at 37/E, Telejogajog Bhaban, Eskaton Garden, Dhaka-1000. BTCL is connected with global upstream through SEA-ME-WE4, SEA ME-WE5, and ITC. BTCL has PoPs around the whole country, even at Upazilla and Union levels which ensure minimum fiber length to connect each customer of the internet.

## **2.2 Product and Market Situation**

### **2.2.1 List of Products**

- Telephone with internet.
- Data and Internet.
- Transmission
- Domain & Hosting
- International Private Leased Circuit (IPLC)
- ICX & IGW
- Gigabit Passive Optical Networks (GPON)
- Asymmetric Digital Subscriber Line (ADSL)
- ALAAP Apps

### **2.2.2 Market Situation**

Bangladesh Telecommunication Company Limited's revenue declined by 22.23 percent to Tk 666.71 core in the last financial year, again another sign of the steady decline of profitable state-owned enterprises. In the financial year 2008-09, when it was declared as a state-owned enterprise, its revenue was Rs 1668688.3.3 core and net profit was Rs 10.15 core. Ten years later, it has incurred a loss of Rs 389.39 core.

The company has a disadvantage for its aging assets: in the fiscal year 2011-19-1, according to its annual report, it had to spend Rs 56060.7373 core for the reduction. 56.15 percent of BTCL's total revenue for the last financial year came from the depreciation of its assets and organization: Rs 560.6060 core. The devaluation in the financial year 2017-1-18 was 591.61 cores, 201-17-1. 465.833 core in 2011-12, and 201-16-1. 514.51 core in the year. 2015-1. BTCL faced a loss of around Tk 1,200 core from the financial year. In one year, the depreciation of state-run landline suppliers was much higher than its actual revenue: BTCL's total revenue in FY 2014-1-15 was Rs 504.49 core and depreciation was Rs 5,563.13 core.

The state-run company now has 5.5 lakh customers. However, some BTCL officials expressed doubts about the depreciation of the huge amount shown in the books every year. To increase the fortunes of BTCL, the government has recently decided to increase the number of users by making landline connections and reconnections free of cost. In 11 years, BTCL as an independent organization has occupied the top seat of 19 top persons and some have been re-appointed more than once. The government may not always be able to pick the best leaders, but fortunately, a young leader has made the ship stronger.

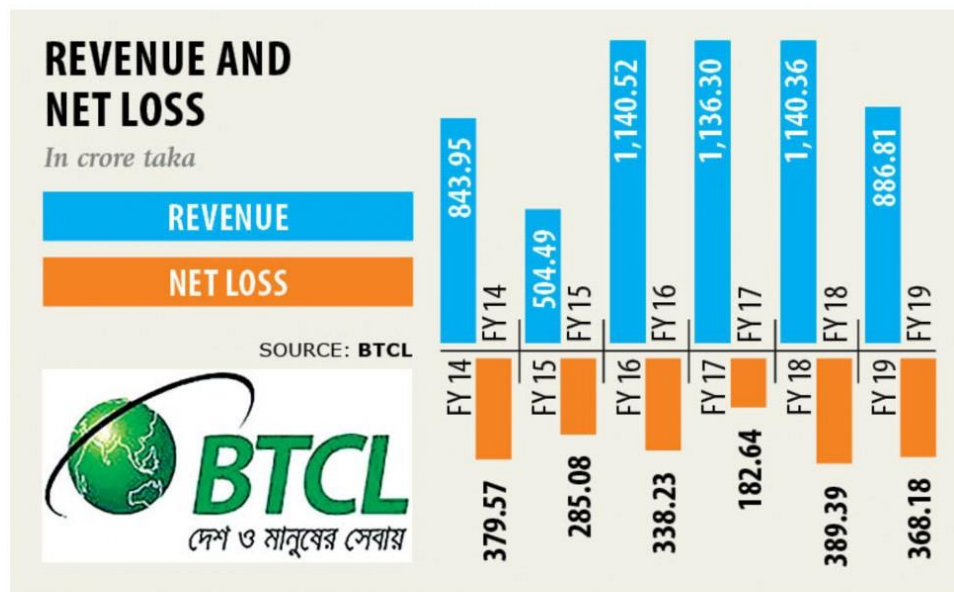


Figure 2.1: Market Situation

### 2.3 Target Group

- Goals are the core of any organization. Honesty is the best thing for the company so you want to provide the best service to any client and any organization.
- We provide domain and hosting for Bangladeshi companies. We have also .bangla & .bd domain.

- We provide telephone service to keep in touch with your family and acquaintances using the most reliable mode of communication at home and office using BTCL landline telephones.
- We offer companies to host their web pages using BTCL Server. Different packages have been defined to meet the needs of different sections of the user.
- Bangladesh Telecommunication Limited Company provides International Private Leased Circuit (IPLC) services that can be used for internet access, business data exchange, video conferencing and, communication types. The IPLC (International Private Leased Circuit) is a point-to-point private line used by an organization to communicate with offices scattered geographically around the world.
- Bangladesh Telecommunications Company Limited provides space/rack space rental building/floor, optical fiber rental, cooling, power, bandwidth, and physical protection. This facility is provided considering the equipment, power consumption, floor loading, and other technical feasibility. Our clients are mainly IGW, ICX, IIG, ITC, DDCP, NTTN IPTSP, ISP, mobile operator, etc.

## 2.4 SWOT Analysis



Figure 2.2: Swot Analysis

**Strength:**

- BTCL is the state-owned largest operator providing fixed phone services in Bangladesh.
- BTCL is the only landline service that offers fax and internet facilities and it has networks and offers telecom installations throughout the country.
- BTCL has the ability to provide customers truly integrated service package that includes fixed lines, Internet facilities, and non-payment channels.
- Experience in the telecom sector since 1979.

**Weakness:**

- BTCL's brand image is worse than other types of companies.
- BTCL does not have the necessary equipment to be available in large quantities.
- The CSR activities of the companies are poorer compared to other telecommunication companies.
- The waiting time for BTCL connection is longer than that of private mobile companies.
- BTCL's private mobile companies have insufficient skilled staff.
- The absence of a strong independent regulatory body for BTCL.
- The quality of service is poorer than that of other telecommunications companies.
- Corruption of employees in BTCL made the organization exemplary.
- BTCL did not have adequate interconnection capacity to meet the demand of mobile service providers.

**Opportunities:**

- The government has recently corporatized BTCL and appointed a new board of directors to improve the service quality.

- The government has fixed the call rate for all NWD calls that is 0.30 Tk/min land phone and 0.65 TK/min for mobile phone at any time.
- The government has increased the tax and tariff on mobile set and sim in the new budget.
- There is plenty of untapped potentials in the telecom sector that can be exploited through quality network and low tariffs by BTCL.

**Threats:**

- Mobile phone growth and personal land phone introduction.
- Huge investments in promotional activities like advertising and CSR activities of mobile companies make a better impression on the minds of customers than BTCL.
- The services and other facilities of mobile companies are better than BTCL.
- People can get a mobile connection with a set at a lower price than before. So they prefer mobile phones to land phones.

**2.5 Organizational Structure**

BTCL is the biggest company in Bangladesh. It also the largest company. Bangladesh Telecommunication Company limited organized by the government. The organizational structure of BTCL exchange is the figure.



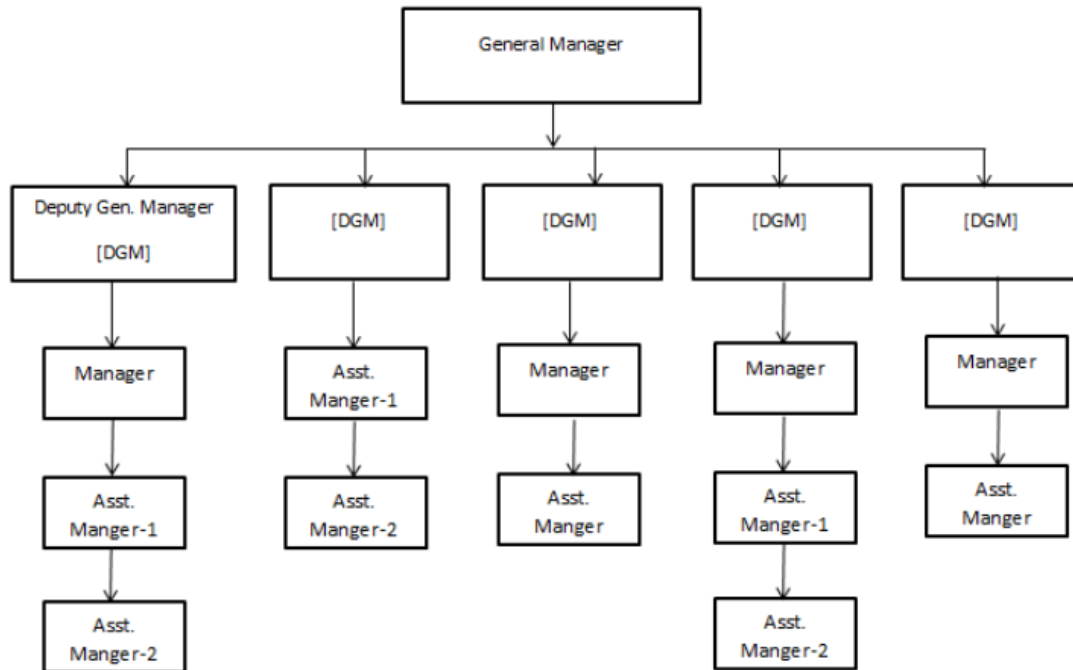


Figure 2.3 Organizational structure

## CHAPTER 3

### Tasks, Project and Activities

#### 3.1 Daily Task and Activities

My office starts at 9.30am and close at 5 pm. I am working with SOFT SWTCH Division. In my internship period in Bangladesh Telecommunication Company Limited (BTCL), they taught me and practiced the following:

- Basic of Telecommunication Switching
  - Switching System Inlets and Outlets
  - Fundamentals of Outside plant & MDF
  - Overview of different digital exchanges BTCL
  - Soft switch, ICX & IGW
  - Basic commands for routine work
  - NGN General Alarms & maintenance.
  - Managing social media and emails: I had to manage the company's social media accounts, write customer emails, and talk to clients on the phone, and so on.
  - Troubleshooting networking and solving network connection problems. And configure network collections.
  - Check device connections and any errors.
  - Research: Interns retain up-to-date knowledge through university education. I had to find a new project and give my recommendations on how to implement it.
  - Take on increasing responsibility: Over time, expect to shoulder the growing amount of responsibility. Initially, they set my current skill set and reliability with my initial workload.
- **3.2 Event and Activities**
- Initial routing configuration.

- Asymmetric Digital Subscriber Line (ADSL) internet
- International Internet Gateway (IIG).
- Nationwide service providers.
- Leased Line Internet (LLI).
- Virtual Private Network (VPN).
- Broadband Remote Access Server (BRAS).
- Network Operation Center (NOC).
- Google Global Cache (GGC).
- National Internet Exchange (NIX).
- Domain and Hosting.
- Managing social media and emails.
- Digital Subscriber Line (DSL).

### 3.3 Project Task and Activities

#### 3.3.1 Basic of Telecommunication Switching

Switching systems known as telephone exchanges (analog/digital / etc) are based on the idea that not every end-user (subscriber) will call at the same time. A statistical method is used to determine the dimensions of switches and signaling/transmission networks.

Switching systems are used to receive, process and route calls to their specific destination. Most networks now use a time-space-time approach to help digital and incoming time slots (time intervals) connect to outgoing time slots.

As discussed by Sohail, technology is changing rapidly and this means that telecommunication networks are now using a lot of IP Internet technology. Just look at LTE, Volte / VLTE (voice / video), SDN / NFV, 5G etc.



Figure 3.1: Switching systems in telecommunication networks

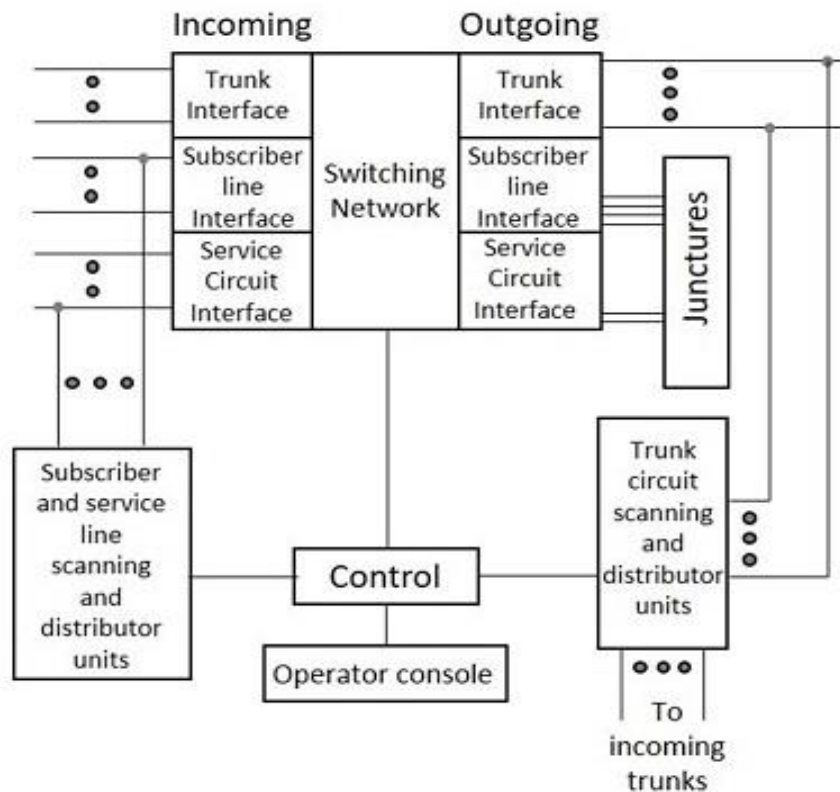


Figure 3.2 switching system elements

### Classification of Switching System

In the early stages of a telecommunications system, the switching process and steps play an important role in making or breaking connections. In the early stages, the switching systems were operated manually. The classified system are given bellow

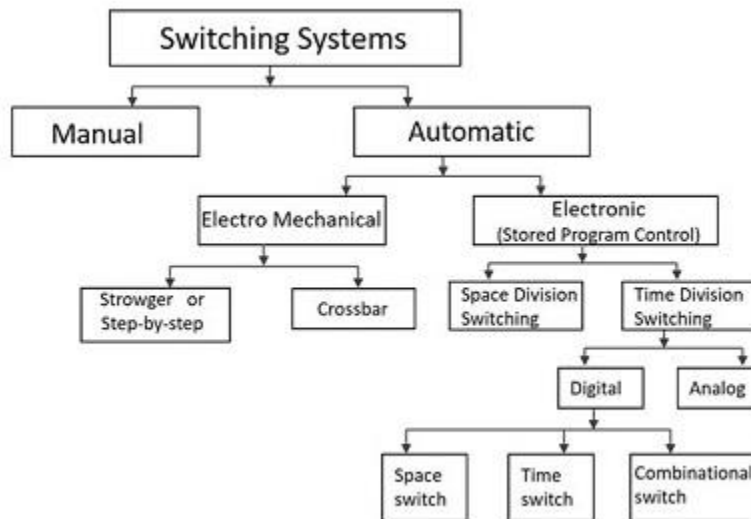


Figure 3.3 classification of switching systems

### Telecommunication Network

A telecommunication network is a system that places a remote call. It is a part of a telecommunications network.

Switching stations provide connections between different customers. it can be grouped to form telecommunication networks. Switching systems are connected using trunks and lines. The lines that run on the subscriber premises are called subscriber lines.

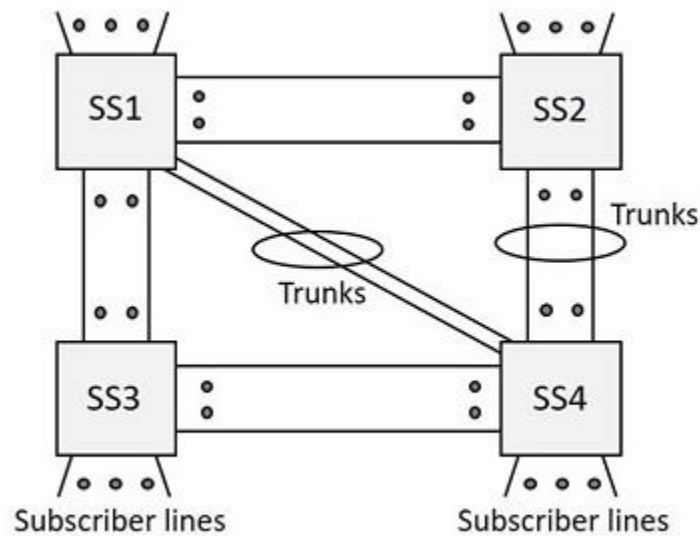


Figure 3.4 Telecommunication network

### 3.3.2 Switching System Inlets and Outlets

The key components of a switching system or exchange are information formats And blade circuits which say inlet and outlet. The required capacity of a switching system Creating is the development of electrical means within a given inlet-outlet pair. The The tools used to set up such associations are known as exchanging lattice or Exchange company. Figure 3.5 shows a model of a switching network.

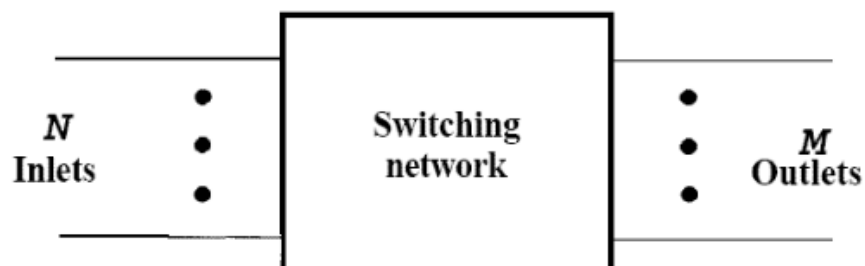


Fig: 3.5 Switching Network

### 3.3.3 Fundamentals of Outside plant & MDF

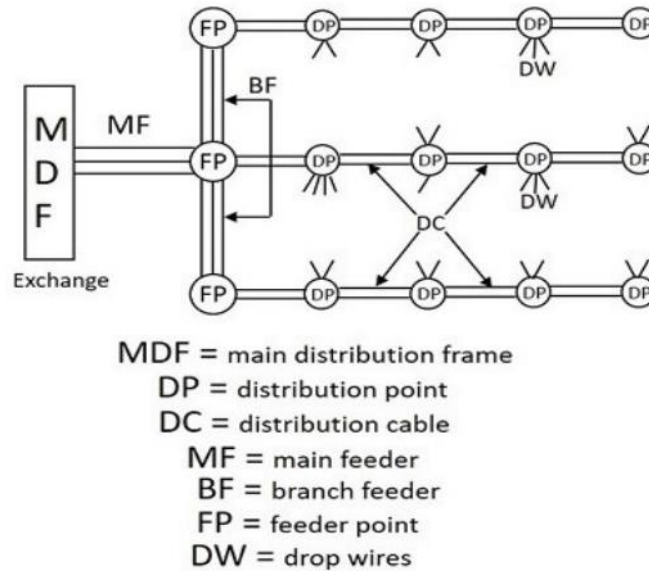


Figure 3.6: Fundamentals of outside plant and MDF

Telecommunication cable between yourself and any number Intermediate distribution frame and cabling from the telephony network It supports operate by the Main Distribution Frame is a signal distribution frame or Wire racks used in telephones to interconnect. MDF connects internal equipment to a telecommunications facility with cable and customer carrier equipment. Each cable provides. User telephone line services are terminated and delivered in MDF via MDF on instruments in local exchanges. Historically it would be the equivalent of telephone switchboards Hatters where telephone operators are connected to one of the wires Matrix of the socket on the patch panel to connect the call. Today's jumpers More sustainable, allocating a line to each individual customer account and for re-evolution only people need to change as their numbers change network, dedicated line, or for maintenance purposes.



Figure 3.7 Modern main distribution frame

### 3.3.4 Overview of different digital exchange

Data exchange includes a control device (ST, GST) capable in a telecommunication system to connecting terminal devices, and accessory control device (HS), and a memory (SP). The control devices affect the connections connected by two user channels and a signaling channel through a terminal device (T, PC, VP) and/or transmission line (VL) through a hierarchical coupling field (KF).

Routine transmission signals in telephone equipment (T), computer (PC), or the like are affected by the address of the transmission connected to the channel. For special functions or transitions, a unique code is inserted into the signaling data, allowing the control device (GST, ST) to pass the signaling data to the ancillary control device (HS).



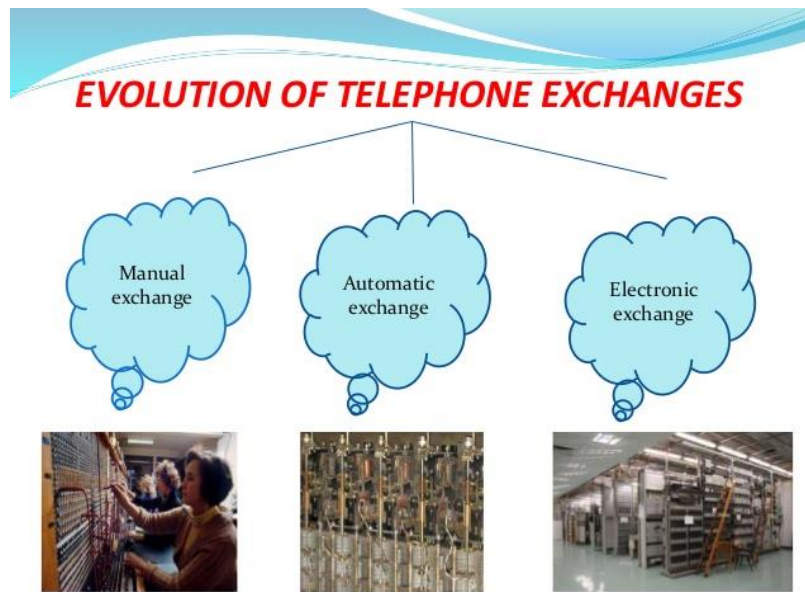


Figure 3.8: overview of different digital exchange

### 3.3.5 Soft switch, ICX & IGW

**Soft switch:** A Soft switch Voice over IP (VoIP) provides call control intelligence for setting, maintaining, routing, and terminating sessions on networks. Soft switches were originally hired by service providers as part of next-generation IP network initiatives. As the name implies, a software switch is a software-based solution that runs on industry-standard hardware. Soft Switch implementation provides inherent economic benefits over legacy monolithic telephony equipment based on proprietary hardware.

Soft switches have a limited area in each communication system. Talk about setup

Enter BTCL Sher-e-Bangla Nagore (SBN) below.

**Installed Equipment/System**

Soft Switch	02	Nos
Trunk Gateway (TGW)	07	Nos
Access Gateway (AGW)	195	Nos
Installed AGW	197	Nos
Uninstalled AGW	01	Nos
Gigabit Passive Optical Network (GPON) OLT	07	Nos
<b>Total Telephone Capacity</b>	<b>139072</b>	Nos
AGW Based	196672	Nos
Gigabit Passive Optical Network (GPON)	42000	Nos

**Existing connectivity**

Voice Subscriber	65041	Nos
GPON Subscriber	54	Nos
PRA Subscriber	29	Nos (1225)

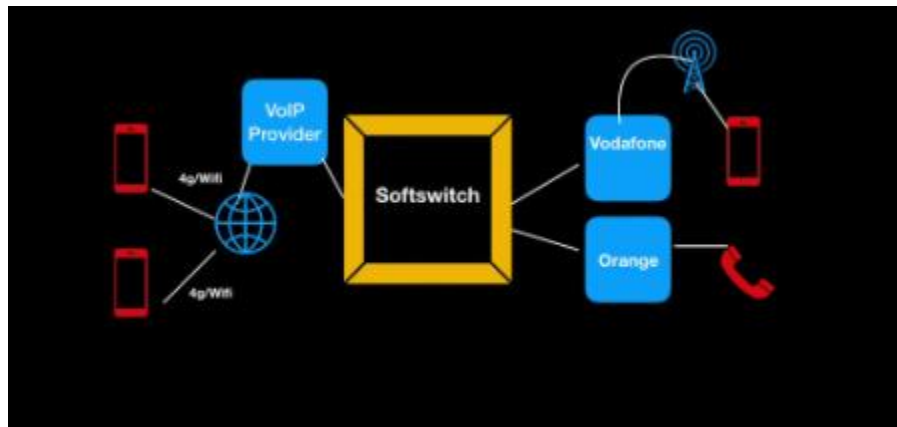


Figure 3.9: Soft switch

**ICX:** ICX Telecom Company in Bangladesh has no subscribers and is not directly connected to any foreign operator. So the traffic of Access Network Services and International Gateway is also the traffic of ICX.

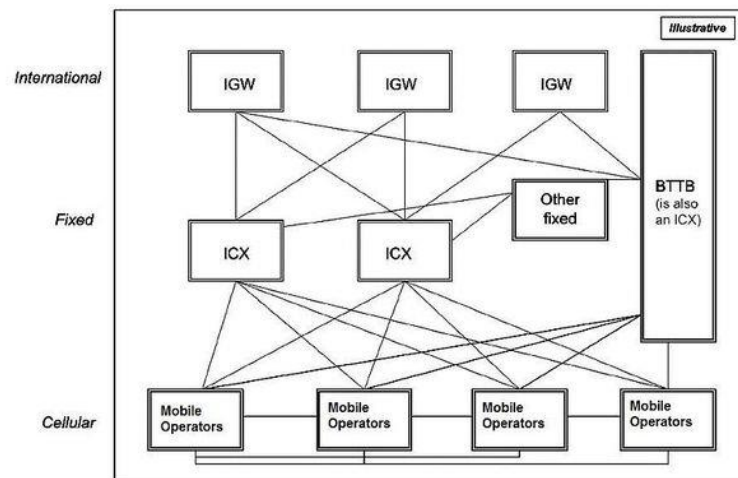


Figure 3.10: Interconnection exchange

### 3.3.6 NGN Next generation Network

Core architectural transformation into telecommunications core and access networks is The next-generation network is an organization. The general idea behind NGN is that a network binds them to similar IP packets used on the Internet and transports all the information and services.

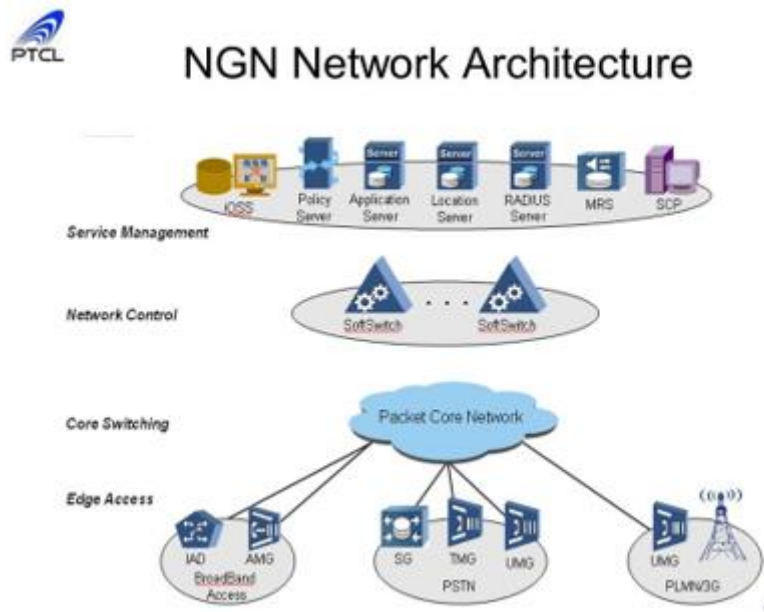


Figure 3.11: NGN

### 3.3.7 NGN Model

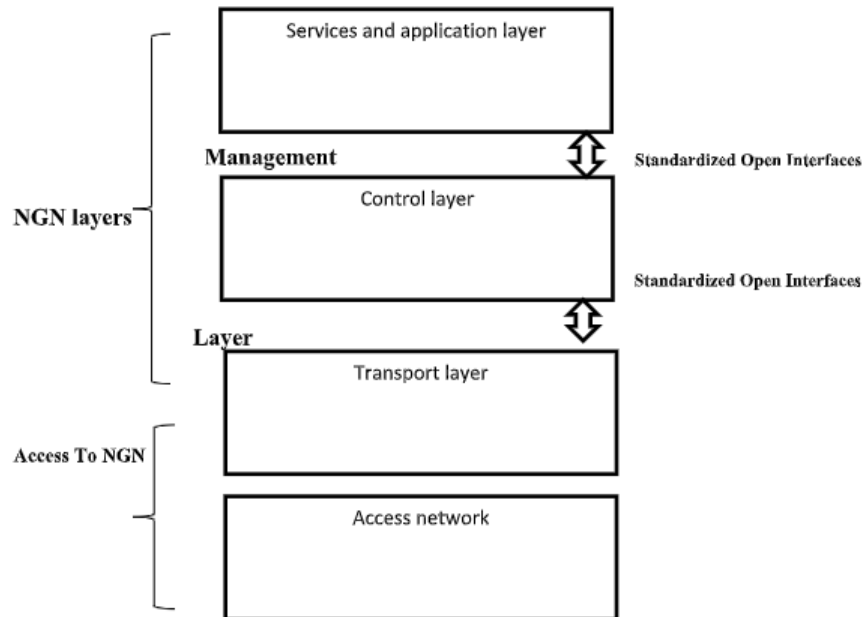


Fig: 3.12 NGN Model

### 3.3.8 NGN Soft Switch Based Architecture

One of the primary gear that offers voice application in NGN network is Soft switch. The Soft Switch's main function is to provide call control capabilities on VoIP calls. Soft Switch NGN empowers a mix of different conferences within the organization to call subtleties for emp Charging soft switches are also produced. Another notable task is to create interfaces PSTN (Public Switched Telephone Network) with Existing Communication Networks With signaling doors and media access.

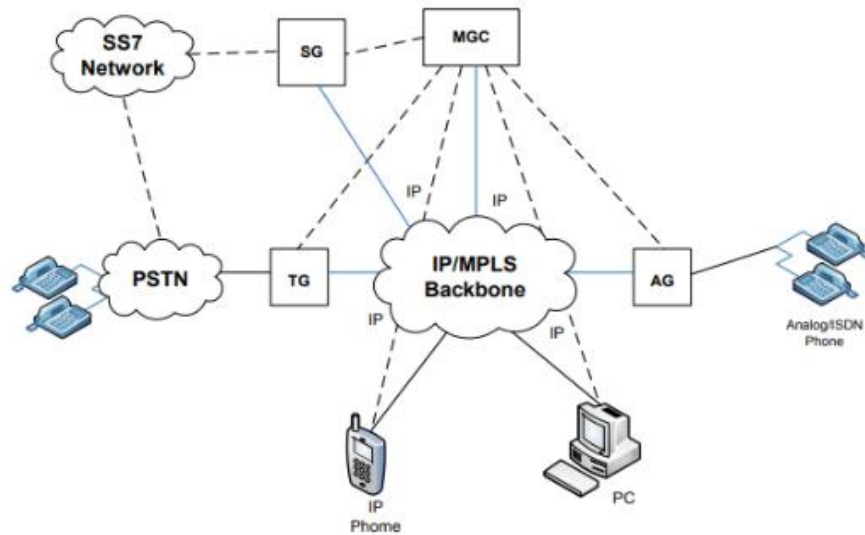


Fig: 3.13 NGN Soft Switch Based Architecture

### 3.3.9 SoftX3000

As a soft switch item, the center of the SoftX3000 NGN is located at the control level Planning.

SoftX3000 goes about as a conventional Call Controller in the parcel exchanged organization, upholds the interworking between PSTN, H.323, SIP, and MGCP spaces.

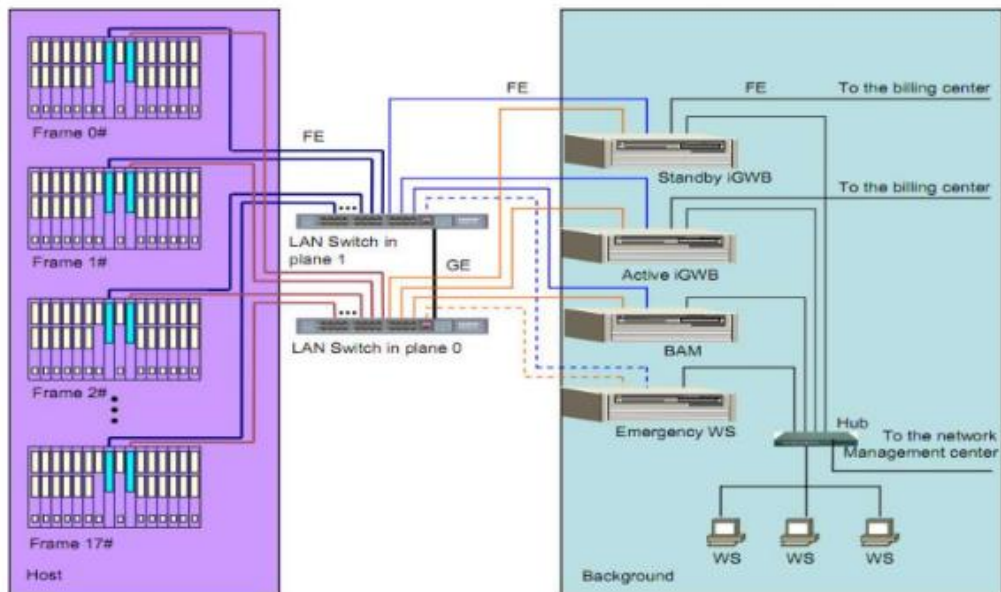


Fig: 3.14 Hardware & Structure of SOFTX3000

### 3.4 Challenges

Main Distribution Frame A signal distribution frame for connecting devices (inside the plant) MDF is a very sensitive and secure place in cable and customer carrier equipment because of all data, voice, and sensitive information go through MDF so, not everyone is allowed entry without skilled engineers. It was very difficult to work in this situation.

With it, we visited the switches, servers, and firewall rooms. These places were very safe and secure region.

## CHAPTER 4

### Competencies and Smart Plan

#### 4.1 Competencies Earned

If I want to be professional, I need to develop my skills. I should develop my skills the way I need to know about the current marketplace. I need to know about the decision-making responsibilities, responsibilities and authority that I need to do a lot of research on work skills for management and supervisory positions. I need to know the status of the marketplace and develop my skills appropriately. If all my skills are right, I can do a good job and develop my career. If the skills are not right I will never be able to develop my career so I have to keep in mind the market situation and situation. During this short internship period, I was trying to learn communication and networking and we could learn something. The present world is very developed and it continues with it. Strong computer knowledge is desperately needed in the competitive job market.

#### 4.2 Smart Plan

Here I will discuss the future of my career. During the internship period I gained practical knowledge, which will help me in my career. Everything is becoming modern day by day. So there will be a huge demand for information technology. I was with a team during the internship period

I learned a lot about information technology, telecommunications and networking. These are things I want to use in my career and improve my skills

#### 4.3 Reflections

The internship acquires practical skills in network engineering. It helps Increase experience in engineering work. Learned during internship Network practical knowledge Information technology is a smart and dynamic the profession is currently. This experience will help me find a smart job. The internship provides advanced techniques and trips practiced by professionals. And overcome critical situations and gain experience in this field on a Professional team.



## **CHAPTER 5**

### **Conclusion and future career**

#### **5.1 Discussion and Conclusion**

My internship ended on April 20, 2021 gain knowledge about all these conversations in the previous chapter. Currently, all communication systems rely on the Internet. So we should improve Internet speed. This internship gives me the opportunity to test help in a specific field Profession before taking charge of permanent. Consider, for example, how We use a lot of data extensively in heavy functions like video conferencing Cloud-based applications, access video streaming, watch BDIX TV server, or download lots Files on various websites. Our bandwidth is charged for that high-requirement Activities. In fact, a bandwidth problem may appear at the bottom of your organization Skills, waste your employee's time and result in sales leads. I have gathered a lot of information and technical opportunities about telecommunication service maintenance and work process.

#### **5.2 Scope for Further Career**

Bangladesh Telecommunication Company Limited (BTCL) is the biggest public telecommunication company in Bangladesh. They provide many services such as landline telephone and dial-up internet over Bangladesh. I think they need more manpower to provide service in Bangladesh. So there have many chances to build my carrier in telecommunication and it sector.

## APPENDICES

### Appendix A: Internship reflection

I am very grateful for completing my internship. I need to thank my supervisor who was always ready to answer my questions and show me how to facilitate the tasks assigned. A lot has changed for me over the months. This internship has made sense because I am about to enter the real world. After spending so much incredible time with the BTCL team, this adventurous idea is slowly fading. Reflecting on my internship and taking action based on what I have learned and experienced can be just as important as the internship.

### Appendix B: Company Details



It is my company logo. My internship company name is “Bangladesh Telecommunication Company Limited”. Bangladesh Telecommunication Company Limited (BTCL) started operations on 1 July 2008 as PLC (Public Limited Company). now assumes all assets and liabilities that have disappeared

Bangladesh Telegraph and Telephone Board (BTTB), initially a sole telecommunication service operator of Government of Bangladesh.

Head Office:

37/E, Eskaton Garden

Telejogajog Bhaban

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