

Internship – Network Monitor Center and Tech Support

by

Abishek Roy
20301329

A thesis submitted to the Department of Computer Science and Engineering
in partial fulfillment of the requirements for the degree of
B.Sc. in Computer Science

Department of Computer Science and Engineering
Brac University
December 2025.

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Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. We have acknowledged all main sources of help.

Student's Full Name & Signature:

Abishek Roy

20301329

Approval

The internship titled “Network Monitor Center and Tech Support.” submitted by

1. Abishek Roy (20301329)

of Summer,2025 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of B.Sc. in Computer Science in Fall 2025 Year.

Examining Committee:

Supervisor:
(Member)

Md. Tawhid Anwar

Senior Lecturer
Department of Computer Science and Engineering
Brac University

Thesis coordinator:
(Member)

Md. Golam Rabiul Alam

Professor
Department of Computer Science and Engineering
Brac University

Head of Department:
(Chair)

Dr. Sadia Hamid Kazi

Chairperson and Associate Professor
Department of Computer Science and Engineering
Brac University

Ethics Statement

The highest rules of ethics, which include maintaining confidentiality and carrying out all responsibilities with integrity, have guided me during this internship. I produced original material that was truthful and compliant with the organization's policies and the law. To make sure that my actions always reflected positively on the company and on myself, I kept clear of any conflicts of interest and handled clients and coworkers with professionalism and respect.

Abstract

An summary of the professional experience obtained at Stardust Telecom Ltd. at the Network Monitoring Center (NMC) and Technical Support Department is provided in this internship report. Understanding Internet service provider (ISP) architecture and operations, including MikroTik router configuration and management, optical line terminals (OLTs), and fiber-to-the-home (FTTH) networks, was the main goal of the internship. Experience with routing protocols like OSPF and BGP, live network monitoring using programs like Cacti and The Dude, and customer technical support was acquired. The study outlines the difficulties faced and the methods used to solve them when troubleshooting in real time, communicating with customers, and configuring networks. Overall, the program improved my technical expertise and professional skills, bridging the gap between academic knowledge and networking business realities.

Keywords: Network Monitoring, ISP Infrastructure, MikroTik Router, FTTH, OLT, BGP, OSPF, Network Troubleshooting, Cacti, The Dude, Technical Support.

Dedication

I would like to express gratitude to my parents for helping me get through this difficult time. I am now able to finish my graduation because to their hardships and hard work. Additionally, I dedicate this internship report to my esteemed supervisor, Mr. Tawhid Anwar, who has always supported and pushed me to learn via work.

Acknowledgement

By mentioning the many people that helped create this internship report and made the project a success overall, the author thanks krishna for the help that went into it. Next, I would like to extend my profound gratitude to Mr. Tawhid Anwar a Senior Lecturer at BRAC University and my supervisor, for helping me with the composition of this report. Without his help, this report may not appear to be feasible to write. Additionally, I want to convey my sincere gratitude to everyone at stardust telecom .ltd for treating me like one of their own and to all of the wonderful individuals who oversaw my internship.

Table of Contents

Declaration	i
Approval	ii
Ethics Statement	iii
Abstract	iv
Dedication	v
Acknowledgment	vi
Table of Contents	vii
List of Figures	ix
List of Tables	x
1 Introduction	2
1.1 Preamble	2
1.2 Objective of the Report	3
1.3 Methodology	3
1.3.1 Primary Data Source:	3
1.3.2 Secondary Data Source:	3
1.4 Scope of the Report	3
2 Company's Background	4
2.1 Overview	4
2.2 Mission of the Stardust Ltd :	4
2.3 Vision of the Stardust Ltd :	5
2.4 Internship Objective:	5
2.5 Technical Objectives:	6
2.6 Customer Support and Communication Objectives –	8
3 Core Devices Used in ISP Infrastructure	9
3.1 International Internet Gateway (IIG) -	9
3.2 Router -	10
3.3 Switch –	10
3.4 Border Gateway Protocol (BGP)	11
3.5 Tier 1 network	11

3.6	Tier 2 network	12
3.7	Tier 3 network	12
3.8	Routing Through Peering	13
4	An Introduction to Network Devices and What They Do	14
4.1	Optical Line Termination (OLT)	15
4.2	Major Criteria of OLT	16
5	New Internet Line Installation in Stardust Telecommunication Ltd Standard Operating Procedure	17
6	My Key Roles and Responsibilities at Stardust Telecommunication Ltd.	18
6.1	MikroTik Router Configuration and Management-	18
6.2	Setting up a FTTH service fiber network and an OLT-	19
6.3	Analysis of the Routing Protocol-	19
6.4	Live network surveillance includes tools, alerts, and traffic studies – .	19
6.5	Remote Support Executive—Internet connectivity and Troubleshooting-	20
6.6	Procedures in Daily Reporting and Fault Documentation -	20
6.7	Learning and Teamwork –	21
7	Challenges Faced and Solutions	22
7.1	From Obstacles to Outcomes: My Technical Journey –	22
7.2	Learning to master OSPF and BGP: Core Routing Protocols to ISP Networks –	23
7.3	Fiber Optic Fundamentals and OLT Setup for ISPs-	23
7.4	Handling Real Customer Complaints –	24
7.5	Limited Access in Systems	24
8	Conclusion	25
	Bibliography	26

List of Figures

2.1	Winbox GUI	6
2.2	Tracking tools Cacti	7
3.1	Router	10
3.2	Switch	10
3.3	Border Gateway Protocol (BGP)	11
3.4	Tier 1	12
4.1	Network Switch	14
4.2	Optical Line Termination	15

List of Tables

1	Student Information	1
2	Internship Information	1
3	Internship Company Supervisors' Information	1

Overview of Internship

Student Information

Name:	Abishek Roy
ID:	20301329
Program:	Bachelor of Computer Science (CS)
Major:	Computer Science and Engineering (CSE)
Minor:	N/A

Table 1: Student Information

Internship Information

Period, Company name, Department, Address

Period:	4 May - 4 September 2025
Company Name:	STARDUST Telecom Ltd.
Department:	NMC and Tech support
Address:	Awal Center, 34, Kemal Ataturk Avenue, Banani

Table 2: Internship Information

Internship Company Supervisors

Name:	Tanvir Hasan Anik
Position:	Deputy Manager,NMC

Table 3: Internship Company Supervisors' Information

Chapter 1

Introduction

1.1 Preamble

To gain a meaningful real-world experience, an undergraduate always chooses to do an internship and open their fresh corporate experience. Every university offers paths that a student can acquire corporate experience from corporate industries. An internship is an option that enables students to apply what they have learned in university to real-world situations. To do a bachelor's degree at BRAC University, Students can sign up for their internship offers. Whereas, for those who do not want to do an internship, they can register a thesis paper by recommended faculty. Students can ultimately showcase the goals of the internship, what they have learned during their academic days, and their personal career growth during the internship periods. The goal of the internship program and study is to give students organized, detailed information about what they need to do on the job. This lets the student figure out how well the real world fits with what they've learned at BRAC University. Students who choose to do a job instead of writing a thesis paper still need to meet the requirements for the Bachelor of Computer Science and Engineering (CSE) Program. Here is the reason they select the real-world experience in their major course. BRAC University gives students tools and knowledge about internship programs, as well as help when they need it with working together. As a student at BRAC University, I chose an internship for the CSE400 study. I did my internship at Stardust Telecom Ltd as an NMC (Network Monitor Center) and Technical Support Department. Being able to learn and work in a professional setting during this internship was very helpful. I also got real-world practice in networking and customer service. It's a good chance for me to work for this company as an intern. I'm excited to use the things I've learned at university. Besides that, some of the professional skills I'll learn through this internship, along with my technical skills, will come in handy in my future work.

1.2 Objective of the Report

The aim of this report is to give details regarding my internship layout. Therefore, I talk over how I enlarged my potential via this internship program and the challenges I faced in the professional sector. Furthermore, I have corresponded about attainment, tasks, and proficient development of mine. The objective of the report is for the students to get functional and practical detailed information about Stardust Telecom Ltd.

1.3 Methodology

According to the report, I gave you the information that I could obtain. Therefore, I have divided them into two categories, such as primary and secondary data sources. Due to my internship, practical knowledge and statement have been provided to the primary data. Whereas, working on the secondary data added the information from the internet and other website resources. The most detailed resources have come from websites, online media, and employees of Stardust Telecom Ltd.

1.3.1 Primary Data Source:

- *Observation and interactivity with coworkers.
- *Meeting with clients as a team.
- *Working with ISP Infrastructure and Operation team.

1.3.2 Secondary Data Source:

- *Website and employees of Stardust Telecom Ltd.
- *Internet.

1.4 Scope of the Report

This report goes into excellent depth about what I did during my internship, including the important tasks, tools, technologies, and protocols I came across. It talks about how the different parts of an ISP network work, how problems are found and fixed, and how customers are kept happy through help with technology. The study also discusses the issues faced, lessons learned, and ways to improve.

Chapter 2

Company's Background

2.1 Overview

STARDUST Telecom Ltd. is a national internet service provider (ISP) that sells the "M!ME" brand of very fast and reliable internet connections to both homes and businesses. A company owned by Confidence Group is STARDUST Telecom Ltd. STARDUST Telecom Ltd.'s main goal is to strengthen human connections by making it easier for people to share joy in the everyday events of their lives with others. Sharing our experiences with each other makes life more fun. That's why STARDUST Telecom Ltd. is so committed to supplying people with flawless connections so that they can enjoy enhanced multimedia interactions with one another[1].

2.2 Mission of the Stardust Ltd :

We intend to serve the customers when they have more needs. Our services include delivery, marketing, customer support, and technology, in which we are dependable. We want to find the right people and offer numerous useful solutions. We are focusing on value and quality for our customers. In this way,by working in these areas, we assist clients to succeed and capitalize on our competency. We believe in effective, practical and customer-centered service.

2.3 Vision of the Stardust Ltd :

Stardust Ltd is a local firm that deals with such industries as the transmission of fibers and internet technology. It is concerned with making the experience of its customers better through innovative smart data solutions and progress. The company employs modern tools to enhance the speed, ease, and reliability of its services. Stardust Ltd is also a socially and civically responsible company. It helps in community development and promotes community involvement via technology. The company is of the opinion that it needs to establish good relationships with the local community areas. Stardust Ltd will ensure that it provides quality services to its customers. It strives to keep up-to-date in the technological industry and satisfy the target market. With the power of innovation and responsibility, Stardust Ltd would be able to expand and have a positive influence. Its plan incorporates the application of wide knowledge and innovative systems to provide enhanced output. In sum, Stardust Ltd aspires to become a reliable brand in technologies and communication, as well as to make people and communities go towards the future[1].

2.4 Internship Objective:

The internship's main goal was to give students experience working in the real world and give them a chance to use what they had learned in university in practical and technical situations. As part of my internship prospect at Stardust Telecom Ltd., I set the following goals.

2.5 Technical Objectives:

1. Learn about the infrastructure and operations of an ISP –

- Find out how the core and edge networks of a national ISP work
- Know the path from the customer to the network, such as FTTH (Fiber to the Home), OLTs, switch, router, and ONU.

2. Setting up and managing a MikroTik router–

- Set up NAT, DNS, DHCP (with static bindings), IP addresses, and firewall block rules.
- Set up and control bandwidth with simple PCQ (Per Connection Queue), burst, and priority levels of queues.
- Set up and resolve problems with PPPoE server and client connections.
- Learn how to use both the Winbox GUI and the command line interface to get to know MikroTik RouterOS.

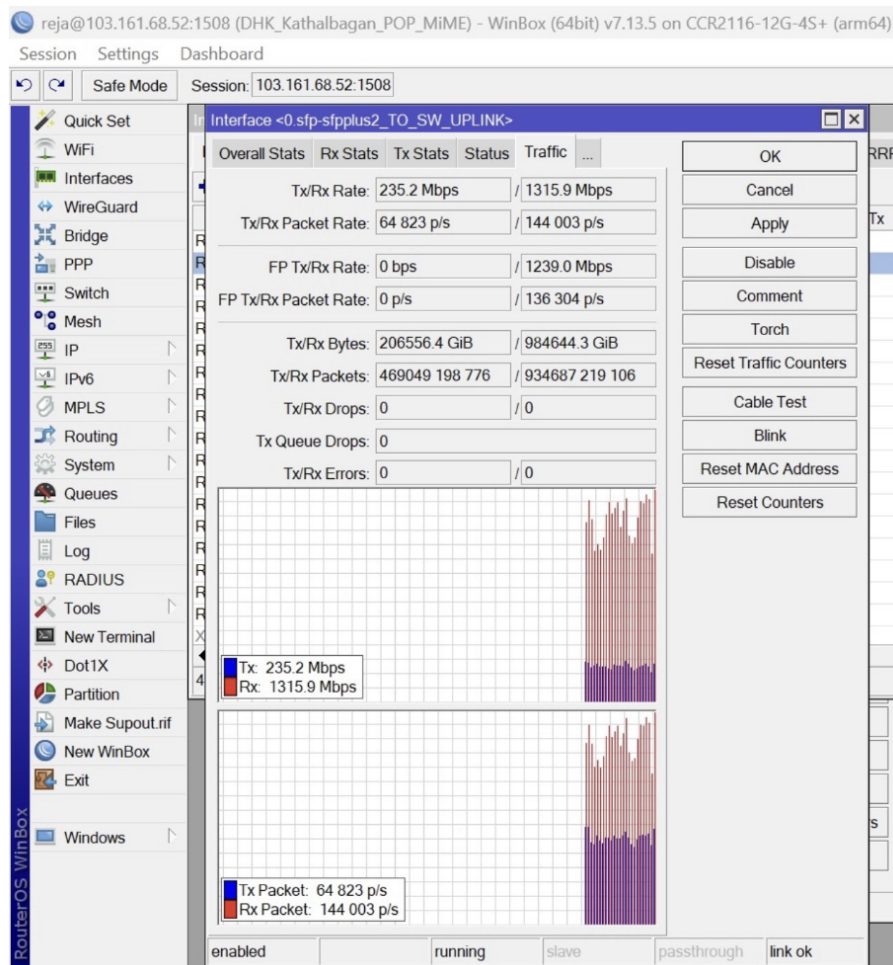


Figure 2.1: Winbox GUI

3. Study and learn about routing protocols–

- Look into how Open Shortest Path First (OSPF) and Border Gateway Protocol (BGP) are used in ISP networks.
- Learn about route advertising, metric-based path selection, backup, and stopping loops.
- Get used to correcting routing mistakes and learning how real routing tables work.

4. Setting up an OLT and fiber optic technology–

- Know how Optical Line Terminals (OLT) and Optical Network Units (ONU) are put together in a simple way.
- Find out how FTTH networks connect people to the internet.
- Check the signal strength and look at the power bills.
- Know what splicing, attenuation, and OTDR-based debugging mean.

5. How to Use Tools for Monitoring and Managing Networks –

- Use tracking tools like Cacti (for SNMP-based bandwidth and device monitoring) and learn how to use them by doing.
- Use The Dude tool to map the network's layout, receive status updates, and monitor traffic.
- Monitor the traffic load, device health, and link state in real-time.
- Use reports and logs to find problems in the network and make it

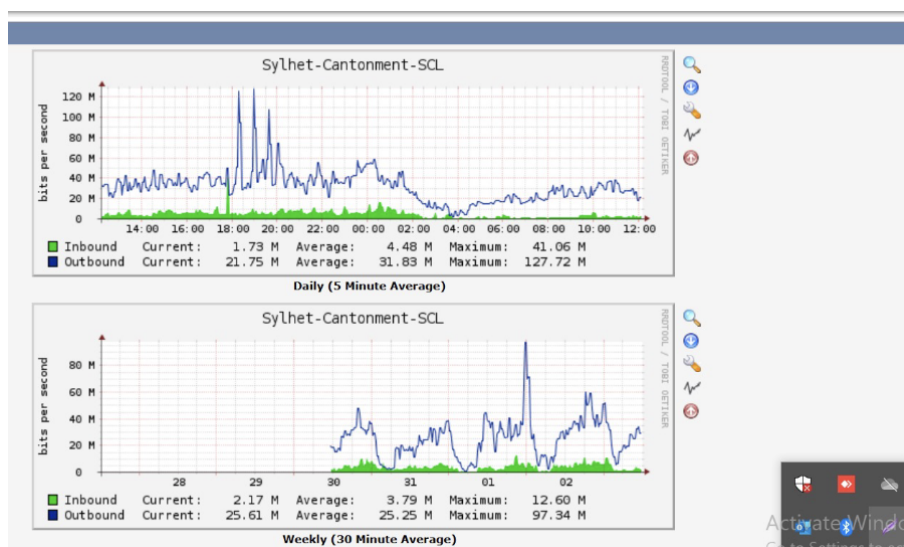


Figure 2.2: Tracking tools Cacti

2.6 Customer Support and Communication Objectives –

1. Strengthen your skills in dealing with customers and helping them-
 - Answer and fix calls from clients about problems with internet access, like slow speed, disconnections, or issues with configuration.
 - Get used to fixing problems online step by step with home users as well as company clients.
 - Prepare help notes and forward unresolved issues to the field assistance department.
2. Better technical instruction and paperwork-
 - Figure out how to use simple language to describe complicated networking terms to people who aren't tech-savvy.
 - Keep issue logs and write up documentation for daily calls and cases that have been solved.

Chapter 3

Core Devices Used in ISP Infrastructure

This chapter presents what we got to know in ISP device training. The tools used were like JIG, router, switch, BGP and the tier system. The education was based on recommendations from a DDN representative. It taught us the functioning of these devices and how to apply them in real-life scenarios.

3.1 International Internet Gateway (IIG) -

The use of an International Internet Gateway (IIG) is beneficial to facilitate the international phone calls by making them less expensive through special networks. International phone calls via Voice over IP (VoIP) may appear as local numbers, even when they are international calls. Some calls this technology has been applied in legal applications, it is also applied by fraudsters. Lottery fraudsters and individuals who demand fake payments caller ID some of the scammers as who employ IGs to conceal their true location. The caller ID sometimes not displayed at all. When you attempt to call the number back, it is likely to call telling you that it is disconnected. This complicates the tracking of the caller. The suspicious nonetheless, nevertheless they can be checked with the help of making websites. IGs may be helpful; taking calls, they are also the means of the help of making websites. IGs may be helpful; taking calls from unknown people abroad.

3.2 Router -

An internet connection router is a device that helps computers send and receive data. It connects different parts of a network, like switches, modems, and hubs. The little bits containing information that the devices send and receive govern the flow of information. These packets could have files, messages, or papers in them. The router looks at every order data packet closely and directs the best way to send it to the right place. Routers can also stop it. uses IP that could harm the system and restrict information that isn't desired. They can control which websites are allowed while cleaning up the whole system. Routers play a significant role in accessing the internet and communication between gadgets. They ensure the flow of data is easy and safe. Routers maintain network speed and security by selecting the intelligent paths and avoiding attacks. In general, routers are important in ensuring that people remain connected and thus enabling them to make good use of the internet.



Figure 3.1: Router

3.3 Switch –

A switch is a device applied in computer networks. It links several computers and assists in sharing information in the computers. Switches operate in Layer 2 of the OSI model. Upon arrival of the data, the switch examines which computer to transmit it. To the appropriate computer, it allows various forms of communication, such as broadcast, multicast, and unicast. Switches facilitate management of data flow in businesses and ensure that their networks run without hiccups.



Figure 3.2: Switch

3.4 Border Gateway Protocol (BGP)

Border Gateway Protocol (BGP) routing information that is shared between networks known as autonomous systems (AS). It assists in determining the optimal route to take when data is to be sent through the Internet. BGP has been referred to as a path-vector protocol. It is similar to updating and comparing the selection of efficient routes in order to select the optimal one. This guarantees effective and speedy communication. BGP links networks, unlike OSPF, which reroutes within case of network. BGP also provides backup paths and OSPF, which reroutes within one network. BGP also provides backup paths to ensure the Internet continues to operate effectively and efficiently.

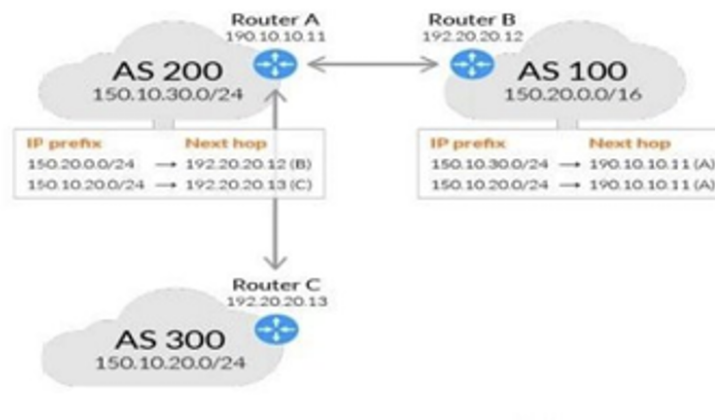


Figure 3.3: Border Gateway Protocol (BGP)

3.5 Tier 1 network

The Tier 1 network is a high-level Internet Network. It links up with the other networks without charges, and this procedure is referred to as settlement-free peering. The Tier 1 companies freely interchange traffic amongst themselves. They do not have to purchase the access of other networks. Tier 2 or Tier 3 networks frequently pay to connect to or utilize Tier 1 networks. The Internet is based on Tier 1 networks. They assist in the transportation of information in the world in an effective manner. They are strong and self-reliant since they do not depend on other people. Such an arrangement keeps international communication efficient and affordable for large Internet service providers.

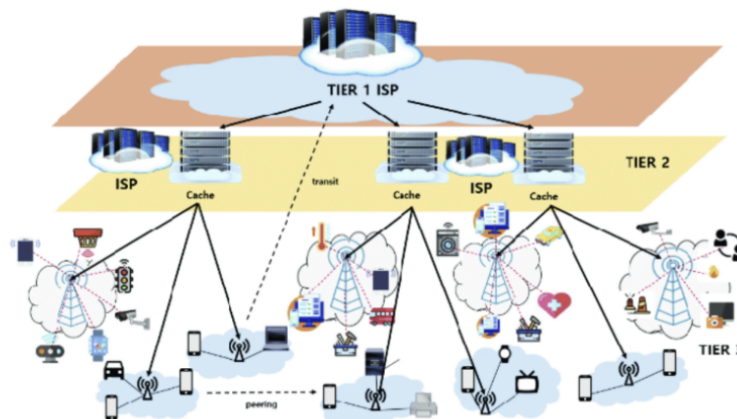


Figure 3.4: Tier 1

3.6 Tier 2 network

Tier 2 network shares information with other networks. It must IP a Tier 2 network openly shares information with other providers to have full access to the Internet. It's partly independent.

3.7 Tier 3 network

Tier 3 networks are smaller networks that have links to the Internet by paying more to join the network. Early days networks had the ability to enter the Internet by transit or peering with others. One of the earliest significant networks was ARPANET (1984), and then in the UK JANET (1984) and in the US NSFNET (1985). These assisted in defining the form and regulations of the Internet. The system eventually evolved out of ARPANET to TCP/IP which became the standard protocol. Border Gateway Protocol (BGP) was later introduced. BGP enabled networks to be more flexible and decentralized. It also made it simpler and less expensive to go to the online community. People usually utilize Tier 3 connections in personal companies or over immense distances. They need higher-level connections to get to the whole Internet. This layered approach helps us manage the movement of data throughout the world and keep the Internet working well in different areas and with multiple service providers.

3.8 Routing Through Peering

When two ISP networks decide to portion bandwidth without suffering each other, it is called peering. Often, Tier 1 networks transmit enlightenment through the pipeline and an encrypted peering gateway. The idea behind such a consensus is that the capacity of traffic should be same on both sides. If one party dispatches a lot of traffic, another side can pull off. This process is called De-peering. De-peering could be a concern. When orders stop peering, it can take so long to get at the data, which impacts more time and less accuracy. It's especially worst for the specific organization that need fast connection right now. When an ISP network is disadvantaged of peering, it must be using different routes, which would either be time consume or costly. Peering network helps in maintaining the Internet's speed, and it would be cooperative. If it settles, users can experience such as low speeds or poor performance. Therefore, maintaining best and proper network peering connections is crucial for Guarantee a smooth flow.

Chapter 4

An Introduction to Network Devices and What They Do

Network switching devices are used by the internet service providers (ISPs). The data connection layer is the second tier of the Open Systems Interconnection (OSI) framework, and they work there. Switches help move data between computers and other things on an internet connection. It uses a method called packet shifting for sending, receiving, and carrying on the information. There can be multiple ports on each switch that connect to different gadgets. When a data frame gets to a port, the switch checks the IP address for its destination before sending it. It subsequently sends the frame to the right device. This is true because data goes where it needs to go. Switches make it possible for several (one-to-one), multicast (one-to-many), and broadcast (one-to-all). During the training of ISP, they are important for administering and offering Internet services well. Switches are vital for keeping the network organized and traffic moving smoothly.



Figure 4.1: Network Switch

4.1 Optical Line Termination (OLT)

An Optical Line Termination (OLT) is a significant part of an ISP network connection. It is the basic center controller for the ISP network operations worldwide. The OLT links the customer's network devices or routers to the ISP service provider's network equipment. There are two key things in OLT. Firstly, it swaps fiber optical signals into electrical signals so that other network equipment can read and use the information. Secondly, it holds communication with network devices on the opposite end of the ISP networks, such as optical network terminals and optical network units. Those network devices are put in place at the client's location. The OLT also manages complex networks, which means combining multiple transmissions into one for efficient transmission. It provides organization and control of how network data flows through an ISP network. Therefore, the OLT is important for delivering high-speed ISP and other services over optical fiber connections. That keeps the OLT system running smoothly and authentic communication between clients and ISP providers.



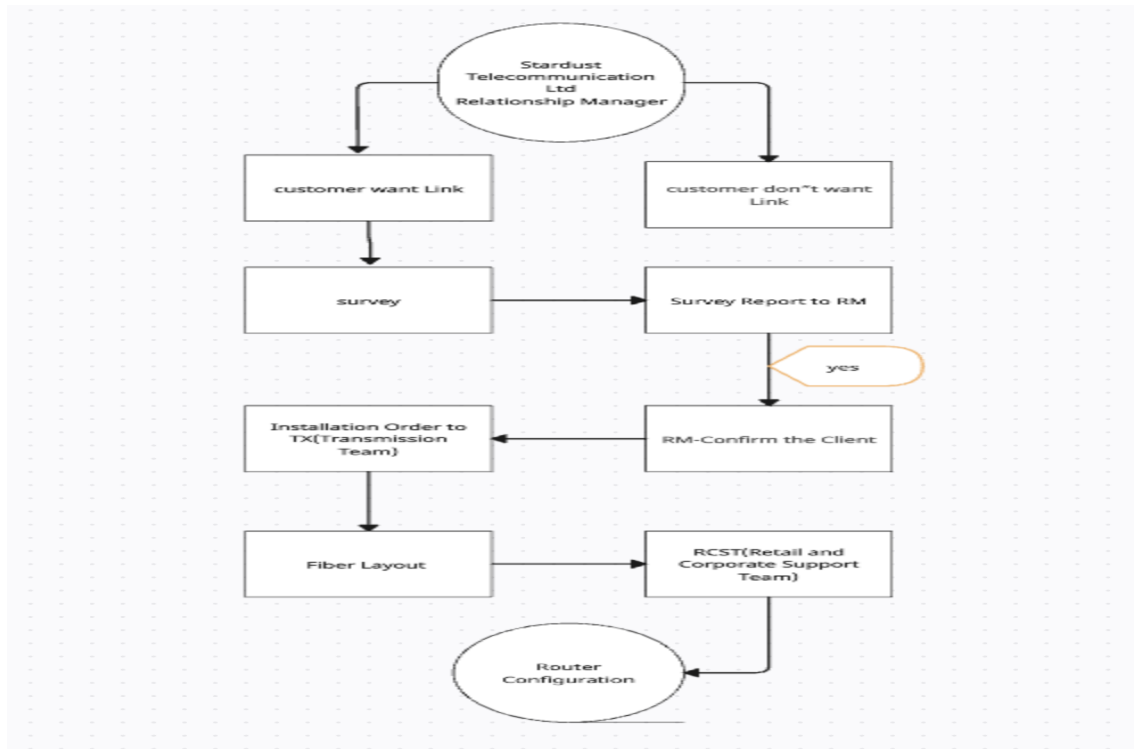
Figure 4.2: Optical Line Termination

4.2 Major Criteria of OLT

The fiber network in the optical line terminal organizes data going down and upstream. Optical Line Terminal provides structures going downstream and upstream. It converts internal signals into usable information and employs frequency division multiplexing to transmit more than one signal at a time. In the case of upstream communication, the OLT isolates signals, verifies additional data fields, and determines the source of each signal. It also handles special control cells known as PLOAM (Physical Layer Operations, Administration, and Maintenance) cells. These are used to control and spy on the network. The OLT is based on Media Access Control (MAC) policies to regulate timing and signal flow. It generates timing signals to regulate the downstream and upstream data. The following measures will guarantee the effective data transfer in general; the OLT is important in the organization, conversion, and regulation of signals in a fiber-optic network.

Chapter 5

New Internet Line Installation in Stardust Telecommunication Ltd Standard Operating Procedure



This is what the relationship manager (RM) operates when a customer calls Stardust Telecom Ltd (M!ME) to get a new internet connection. The call center does a poll to get all the necessary information (RM) is what the customer if the customer agrees to it. The relationship manager (RM) is then given this survey report to look over and sign. As soon as the permission is given, the technical team (TX) will be told to start setting up. The fiber distribution is set up, and the ONU device is driven to the user. Following the actual link, the tool and Corporate Support Team (CST) steps in to set up the router. Using tools like Winbox or Mine Connect, they give steps if needed. The personal or shared IP numbers and do sub netting based on what the customers need. The goal of this step is to make sure that the internet link has been set up and is safe to use[3].

Chapter 6

My Key Roles and Responsibilities at Stardust Telecommunication Ltd.

6.1 MikroTik Router Configuration and Management-

For setting up and managing MikroTik network routers are a huge part of how the ISP network works efficiently, especially for client location and internal routing systems. Therefore, from the help of the winbox GUI equipment and command-line from the interface (CLI), technicians at Stardust Telecommunication Ltd. build up and control these routers properly. The most important tasks are giving out IP numbers and subnetting to make sure that the network is properly divided into sections. When the NAT rules are set up, they make sure that both internal and external access is safe. DNS configurations will be improved for both the server and the client. DHCP servers, on the other hand, will use static bindings to give IP addresses to devices. To control communication and make things safer, NAT rules and firewall filters are turned on. Simple Queues, PCQ, and burst methods are used to make sure that everyone gets a fair chance to use bandwidth. The PPPoE servers are also set up to verify users' identities and manage access. These networks make sure that the IS infrastructure is always connected, that resources are shared well, and that data is sent safely[4]

6.2 Setting up a FTTH service fiber network and an OLT-

When it comes to Stardust Telecommunication Ltd., consistent FTTH (Fiber to the Home) services rely on the way the fiber optic and OLT are set up. Technicians help set up the Optical Line Terminal system and learn how to register the ONUs (Optical Network Units), make service ports, tag data with VLANs, and divide it into groups. They make it possible to set bandwidth limits and service settings that are unique to each customer. The OTDR test results need to be decoded and signal loss, high noise, and fiber link problems need to be searched for. Those who work on a team also learn about passive and active fiber parts and how they can change the quality of the signal. This hands-on training will make sure that services are delivered quickly and correctly, that downtime is kept to a minimum, and that both home and business users can connect to the internet quickly.

6.3 Analysis of the Routing Protocol-

The managing of changing ISP networks at Stardust Telecommunication Ltd. needs to do routing protocol analysis. Open Shortest Path First (OSPF) and Border Gateway Protocol (BGP) are being set up and analyzed by engineers in order to find the best way to route data. They learn about how to set up BGP neighbors, advertise an AS path, and create an OSPF area and link-state database that are in sync. To stop routing loops, engineers use methods such as split horizon and route filter. To make sure the network is stable, the convergence and breakdown mode of routing are watched. Real and simulated labs are both used to learn about path selection logic so that the team can get the best internal and external routing performance out of the technology they use.

6.4 Live network surveillance includes tools, alerts, and traffic studies –

Stardust Telecommunication Ltd. depends on managing traffic and keeping an eye on the network to keep service quality high. Performance tracking tools based on SNMP, like Cacti, are used. The Dude is used to see how the network is set up and keep an eye on the state of devices. Techs keep an eye on the traffic on uplinks and customer interfaces to find nodes that are overloaded or not linked. The ISP's system is set up with limits on bandwidth and queues to make sure that the Quality of Service (QoS) is good enough to avoid congestion and keep connections stable.

6.5 Remote Support Executive—Internet connectivity and Troubleshooting-

At Stardust Telecommunication Ltd., customer technical help is an important part of making sure that the services are reliable and that users are happy. The support staff will help both household and business clients remotely over the phone with problems like not being able to connect to the internet, slowness, packet loss, incorrect router configuration, and PPPoE logins. A step-by-step process is used to fix problems, such as turning the device off and on again, clearing the files, and resetting passwords. The complaint logs are kept in order, and help tickets are made so that they can be tracked. If something goes wrong, the field experts will work together to make sure there is a quick fix on-site. Even during the process, you should always be nice and professional, even if you feel rushed. For this job, you need to be very good at both technology and talking to people so you can solve problems and make customers feel informed and secure.

6.6 Procedures in Daily Reporting and Fault Documentation -

Documentation and daily reporting are very important at Stardust Telecommunication Ltd. to make sure that processes are clear and that they are done correctly. Team members keep track of customer issues, network problems, and how they were fixed so that they can keep an eye on the quality of the services and the problems that need to be found regularly. Reports on uptime and downtime can be used to keep an eye on how reliable technology is. Technicians also write down examples of how to set up routers, set up a routing lab, and use tracking tools so that a reference library can be made that can be used for future training and troubleshooting. The documentations make it uncomplicated for technical teams to share information and keep technical network processes and running out smoothly. For many organizations, IT supervisors get always updates on ISP network progress often, which constructs them more supervise and assist them keep observing on the work flow of daily reporting. This following formalized documentation process can help the ISP organization work, together bet tier 1 network and offer better services more quickly and based on real data, that helps to identify the problems as well as solve them more rapidly and effectively.

6.7 Learning and Teamwork –

Teamwork and learning are really necessary for expertise and ISP operational success at Stardust Telecommunication Ltd. The ISP team members are steadily involved in ISP technical meetings, group discussions, and internal workshop that helps everyone to learn more. To get more hands-on training in stardust and learn how to solve issues, real-time ISP troubleshooting of the network should be done with the IT support team and senior engineers. paying attention, asking questions from meetings, and participating in session, all the things helps to remember complex information in detail. A mentor is someone who helps to learn major principles such as MikroTik RouterOS, fiber optics waves, and primary Linux tools that are provided in OLT structures. Furthermore, it provides a good environment where employees want to keep learning about the network, doing group work together, and people feel more confident about their profession and ability to solve difficult issues in network problems.

Chapter 7

Challenges Faced and Solutions

7.1 From Obstacles to Outcomes: My Technical Journey –

Challenges:

For me, in the time of internship days, I had no experienced regarding with MikroTik routers, OLT devices, and real client networks. Therefore, I had some personal experienced what's going on behind the scenes. Additionally, I saw Stardust's high ranking and well qualified engineers who read the documentation and test the devices to fix the problems. Day after day, I was gaining their skills how they were working and became more self-assurance to handle clients' issues step by step on my own.

Solution:

During internship days, i was encouraging to take the significant steps study hard and developed skills to cover up for the fact where I had no initial in real time experienced from corporate world and network related works. Afterwards, I spent lots of times with Stardust's high ranking and well qualified engineers, and attending virtual coaching to understand MikroTik material. Meanwhile Stardust's high ranking and well qualified engineers are where setting up routers for clients and asked several inquires to learn about how they work and do multitasking at a time. This experienced was helping the bridge of the gap between what I learned in university and real life works. Subsequently, the supervision phase, I was skillful setting up the routers on the test machine, which made me feeling confident myself without putting the test systems at any danger situation. After a while, I learned how to fulfill simple objects bit by bit until I could do it by my own. Following these methods, which has helped my technical skills, solve problems and work in a real-world network setting. After improving self-learning progress, mentorship and working under Stardust's high ranking and well qualified engineers were helped me to become useful member in technical team.

7.2 Learning to master OSPF and BGP: Core Routing Protocols to ISP Networks –

Challenges:

At the beginning, I was not confident to set up OSPF and BGP, whereas it was so hard and complicated. After improving, I became more confident and learning about Stardust's structure, behavior, and importance in ISP networks by doing online coaching, practicing in the stardust's lab and got helping from Stardust's high ranking and well qualified engineers.

Solution:

Having some ideas in CCNA and other networks to understand about OSPF and BGP better. Got helping from Stardust's high ranking and well qualified engineers, I set up Cisco Packet Tracer and Mikrotik labs, on route propagation, metric calculation, and path selection. Furthermore, I discussed about doubts with mentors and used actual time network diagrams to learn about complex routing actions, which helped me improving practical apprehension.

7.3 Fiber Optic Fundamentals and OLT Setup for ISPs-

Challenges:

There is some new information which included like OLT structures, power budgeting, and ONU provisioning. Afterward, I was fully confident to understand significant telecommunications propositions well.

Solution:

I got training and hands on works to learn about fiber optic technologies and OLT pattern. First, I started with reading the manuals and vendor material and focus on the primary things of fiber transmission. I have noticed Stardust's high ranking and well qualified engineers who are working OLT arrangement and keeping information records of signal flow, bandwidth profiles, and VLAN structures. Moreover, I focused on OTDR demo sessions to understand and more in details. These discussions helped me how signals were lost and saw how much they were being diminished. These trials assisted me slowly ways learning about important ideas such as fiber loss, link solidity, and optical allot.

7.4 Handling Real Customer Complaints –

Challenges:

From the beginning, it was tough for me to figure out the answer clients calls and fix the issues in front them with practice and patience. I understood how to be elegant and bargain well.

Solution:

Sometimes, for me, it became very tough to figure out answer the customers' complaints over phone and when they became very angry. For dealing this situation, I learned stay cool and calm when I was on the calls. I used the troubleshooting script the technical assistance gave me, and it helped me stay concentrated and organized. Lastly, following the instructions from stardust network team, I finally learned how to deal with similar issues such as PPPoE logins, IP differ, poor connections, and problems with setting up routers.

7.5 Limited Access in Systems

Challenges:

I didn't have done any real configurations because the corporate policy doesn't let me give the core access systems and clients routers. Therefore, I focused on senior engineers works, reading documents, and guided practice where I could build my primary technical knowledge

Solution:

Following restricted rules from Stardust, in initial stage I could not take some parts in sophisticated steps as much as I didn't have such access to enter core systems and client's routers. Whereas, I focused and monitored on senior engineers doing significant works and wrote down in my notes. I was only permitted to work on things that I was expected to do, so I was able to establish trust slowly. By the end, I was able to work on live systems, which helped me gain more confidence and technical skills.

Chapter 8

Conclusion

My stay with Stardust Telecom Ltd gave me a look at how real-life Internet Service Providers (ISPs) work. During my internship, I could use everything I had learned in university. I acquired most of the practical skills I used during my internship on my own, except for the intellectual ideas that helped me understand. I did a fantastic job of being involved in innovation at the Network Monitoring Center (NMC) and the Technical Support Department. The best parts of the internship were setting up the Mikrotik router and connecting OLTs and fiber networks. I learned how to use complex routing protocols (OSPF and BGP). Moreover, I also became good both writing and working with others to figure out primary goals. Furthermore, during internship days, Stardust gave me a lot more experiences with the task and responsibilities that comes with working in an ISP configuration. I learned about routing and fiber technology facts, as well as how to help stardust's customers over the phone. These stuffs are what I'm most interested in during working. During internship days, I played a role as a network engineer. This internship helped me to see how significantly CCNA and MTCNA certifications are wishes. Before ending, I'm happy and grateful for doing internship with Stardust Telecommunication and my university who to gain primary foundation of networking.

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