

**INTERNSHIP ON DATA AND INTERNET SERVICE MAINTENANCE AND
WORKING PROCEDURE**

BY

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This Report 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

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APPROVAL

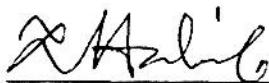
This internship titled “**Data and Internet Service Management and Working Procedure**”, submitted by J.U.M. Emam Hassan, ID No: 162-15-8110 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements 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 4th May, 2019.

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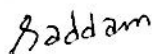
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DECLARATION

I hereby announced that, this internship report is prepared by me, J.U.M. Emam Hassan, ID: 162-15-8110 to the department of Computer Science and Engineering, Daffodil International University. Under the supervision of **Masud Rabbani Lecturer, Department of CSE**, Daffodil International University. I also declare that neither this internship report any part of this report has been submitted elsewhere for award of any Degree or Diploma. I also announce that, I collect information from Bangladesh Telecommunication Company Limited (BTCL) and Internet.

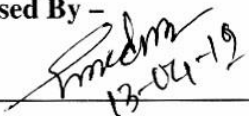
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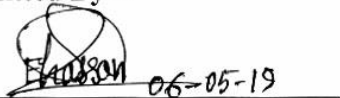
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I would like to express heartiest gratitude to **Dr. Syed Akhter Hossain, Professor and Head, Department of CSE**, for his kind help to finish my internship and also to other faculty member and the staff of CSE department of Daffodil International University.

I would like to thank entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

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

ABSTRACT

As a student of CSE, I have completed my internship at a reputed organization named 'Bangladesh Telecommunication Company Limited' and report on "Data and Internet Service maintenance and working procedure". This report requirement of the internship program for my Bachelor of Science course degree. The First part of internship report gives an overview about history of Bangladesh Telecommunications Company Limited, its role in IT sectors, Network administration and Security System. Described about running network system. Then discussed about the performed tasks and responsibilities during internship, finding problems during maintaining the system and way of solving them. There have main responsibilities data connection check, domain names, rules & regulation, bandwidth provides, Submarine cable capacity, Telephone's data exchange maintaining, Network operation controlling. That's why I choose this interesting subject "Data and Internet Service maintenance and working procedure". This report written about the purpose of the specific server using and service on GGC, NIX, GPON, ADSL, BRAS, NOC choosing software's, Bandwidth Transmission process and Domain creating, rules regulation.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

As part of my BSc, studies in Computer Science and Engineering I have already finished internship program in BANGLADESH TELECOMMUNICATIONS COMPANY LTD. I was doing my internship at networking division where I have performed network management and support. My main task was to support the senior network administrator and gather knowledge about bandwidth service maintenance. During my internship I have learned to implement routing protocols, connect various networking devices, domain, internet providing via telephone landline, virtual private network procedure, national internet exchange and various types of server.

1.2 Motivation

My internship program motivated B.Sc. students following degrees in Computer Science, Expert Systems, Hardware, Networking system Analysis to work in the CIA's Directorate of Science and Technology. Internship is not only give experience but also teach a student how to communicate, how to work properly, how to maintain official requirements. As an intern I'm proud on myself. Internship give me a vast knowledge, huge skill development in Networking site and of all how to maintain his duties rightly. An internship can make a student to become a responsible. A student can take field experience by doing intern. As a result internship grow the ability. I am very interested in Computer Network and want to build up my career as an IT engineer. Its demand in first world is too high and it is becoming a prior subject in our country also. Without strong networking system vision of making "Digital Bangladesh" is not possible.

1.3 Internship Objectives

Main objective of my internship program is to understand the current conditions of job market and also to prepare myself as a skilled person in the competitive job market. Internship is very essential for skill development. To achieve some special quality and real life job experience in order to prove myself as a skilled one internship is the only way. It have a largely effect on our IT sector, we will able to use Internet, Software export, Call center, E-Commerce, Tele -Education, Video Conferencing more vastly. By identifying these factors we can be sure about the revolutionary change over our IT sector, during our work in BTCL we achieved various experiences.

1.4 Introduction to the Company

Bangladesh Telecommunications Company has very big infrastructure for transmit data and internet service. Internet can be transmit via telephone land line connection or broadband wide. All of service provide by BTCL. It's most interesting part is only this company also transmit data or internet by telephone. So there are many servers' room and divisions for controlling all of these. There are many latest technologies for internet service. BTCL has management team certified and associated with Huawei and Cisco.

1.5 Report Layout

Chapter [1] in the report, I have portrayed objective of internship, Motivation of internship and introduction to the Company.

Chapter [2] in the report, I have portrayed the approach of my internship. About company, target group, organizational structure.

Chapter [3] I have written about daily task and activities.

Chapter [4] I have written about Conclusion and Future Scope. I also discuss about the Future Scopes of IT or network administration.

In the last pages have all references and appendices.

CHAPTER 2

ORGANIZATION

2.1 About the Company

BTCL is the leading public telecommunications company in Bangladesh. It has the largest infrastructure for providing with data and internet services which comprises of optical fiber network with high capacity routers and switches across the country.

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 internet.

2.2 Target Group

To turn BTCL into a vibrant dynamic organization and lead the country's telecommunication sector, Data & Bandwidth service by establishing a sound and cost-effective infrastructure. Provide telecommunication and Internet services to the nation with the state-of-art telecommunication technology at an affordable cost without compromising quality. To deliver customers with enhanced values, the following steps are being implemented:

- Improve quality of customer services ;
- Meet the demand of Telephone & Internet connections and develop proper infrastructure;
- Increase institutional efficiency ;
- Employ modern network planning ;
- Augment revenue management.

2.3 SWOT Analysis of BTCL

Strengths

- Customer service / support
- Flexibility
- Domain
- Internet service via Landline phone.

Negative

- Staffing levels.
- Lack of skillful planning.
- Technical training.

Opportunities

- Internet service provide at Upazilla & union.
- Increasing of systems.
- Optical fiber connection whole of the country.

Threats

- Man power environment
- More instruments to support
- Funding levels

2.4 Organizational Structure

BTCL is a big company. Its organization is also very big. It's organized by the government.

Description: The organizational structure of BTCL mogbazar exchange under given below in figure number 2.1.

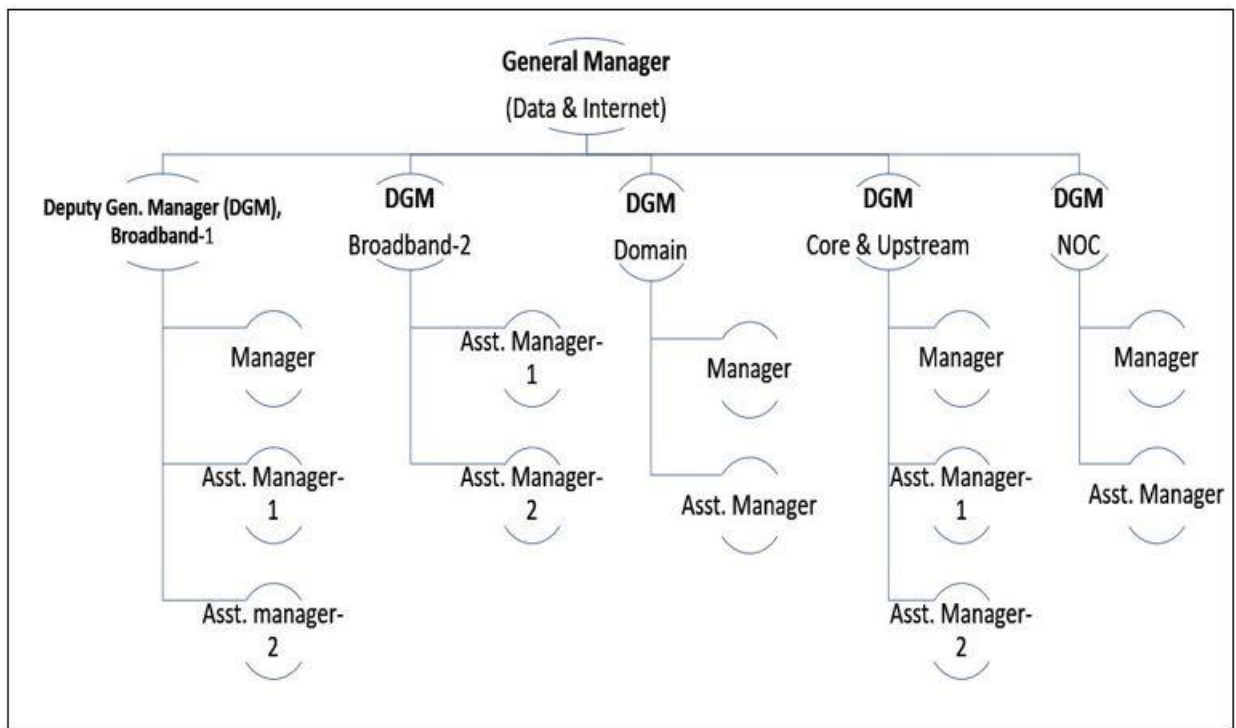


Fig 2.1 Organizational structure.

CHAPTER 3

TASKS, EVENTS AND ACTIVITIES

3.1 Daily Tasks and Activities

Month-1: At first month of internship on BTCL they have teach and exercise me the following topics:

- Informed the basic networking devices.
- Learned about basic routing configuration.
- SEA-ME-WE-4, SEA-ME-WE-5.
- International Internet Gateway (IIG).
- Service Provider of nationwide.
- Leased Line Internet (LLI).
- Virtual Private Network (VPN).
- IP Address.
- Google Global Cache (GGC).

Month-2: After one month of internship on BTCL they have trained under the given topics:

- National Internet Exchange (NIX).
- Domain.
- Asymmetric Digital Subscriber Line (ADSL) internet.

Month-3: The last month of internship on BTCL I have learned and exercise the following topics:

- Broadband Remote Access Server (BRAS).
- Digital Subscriber Line (DSL).
- Network Operation Center (NOC).

3.2 Events and Activities

- Maintaining Computer Systems and Network Service.
- User account, permissions and passwords.
- Monitoring Networking operation.
- Domain users and password maintaining.
- Client Support over the phone.
- Checking Server rooms.
- Checking optical fibers.

3.3 Project Task and Activities

- Foreign upstream providers traffic maintenance.
- Bandwidth support to ISP operators.
- Real IP providing.
- Secured network connection by VPN.
- Country Code top Level Domain in Bangla Language sell.
- Email Server Maintaining.
- ADSL Internet Provide.
- Billing Server maintaining.
- BRAS Server maintaining.

3.4 Basic Networking Components:

Internet: The Internet is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide.

Network: A network consists of two or more computers connected together and they can communicate and share resources.

Types of Network: Depending on one's perspective, there are classify networks in different ways:

- Based on **Transmission Media:** Wired (Coaxial cables, Fiber-optic cables and Wireless).
- Based on **Network Size:** LAN, MAN and WAN.
- Band on **Management Method:** Peer-to-Peer and client/Server.
- Based on **Topology:** Bus, Star, Ring etc.

Description: A cisco router can access internet so softly and it is use for routing configuration. Cisco has a number of different routers, amongst them are the popular 880 series, 2900 series and 3900 series. Collected from “<http://www.firewall.cx/cisco-technical-knowledgebase/cisco-routers/250-cisco-router-basics.html>”. Figure 3.1 given below a cisco router.



Fig 3.1: Cisco Router.

Description: A switch is used to connect segments of a LAN. A switch filters and forwards packets between. A network switch is a multiport network bridge that uses hardware addresses to process and forward data at the data link layer (layer 2) of the OSI layer. Collected from “https://en.wikipedia.org/wiki/Network_switch” There are various types of switches, Figure 3.2 given below a cisco switch.



Fig 3.2: Cisco Switch.

Showing IP addresses for any website:

- CMD mood
- nslookup (website name)
- **Description:** After input the command showing display is like given below a screenshot figure number 3.3.


```

C:\WINDOWS\system32\cmd.exe - nslookup
Microsoft Windows [Version 10.0.17763.379]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\PAVEL>nslookup
'nslookup' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\PAVEL>nslookup
Default Server: UnKnown
Address: 192.168.0.1

> nslookup facebook.com
Server: facebook.com
Addresses: 2a03:2880:f137:182:face:b00c:0:25de
          157.240.192.35

*** facebook.com can't find nslookup: No response from server
> nslookup google.com
Server: google.com
Addresses: 2404:6800:4003:806::200e
          172.217.194.101
          172.217.194.102
          172.217.194.113
          172.217.194.138
          172.217.194.139
          172.217.194.100

```

Fig 3.3: A screenshot of Server addresses.

Showing state lines with other sites:

- CMD mood
- netstat

Description: After input the command local addresses display as like given below.

```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.17763.379]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\PAVEL>netstat
Active Connections

Proto Local Address           Foreign Address         State
TCP    127.0.0.1:53191         PAVEL-PC:53272        ESTABLISHED
TCP    127.0.0.1:53272         PAVEL-PC:53191        ESTABLISHED
TCP    192.168.0.106:53193    52.230.83.250:https    ESTABLISHED
TCP    192.168.0.106:53218    a104-85-194-79:https   CLOSE_WAIT
TCP    192.168.0.106:53220    a104-85-194-79:https   CLOSE_WAIT
TCP    192.168.0.106:53221    a104-85-194-79:https   CLOSE_WAIT
TCP    192.168.0.106:53222    a96-6-76-23:http       CLOSE_WAIT
TCP    192.168.0.106:53223    a96-6-76-23:http       CLOSE_WAIT
TCP    192.168.0.106:53224    163.53.140.136:https   CLOSE_WAIT
TCP    192.168.0.106:53225    163.53.140.136:https   CLOSE_WAIT
TCP    192.168.0.106:53226    a96-6-76-23:http       ESTABLISHED
TCP    192.168.0.106:53227    a96-6-76-23:http       ESTABLISHED
TCP    192.168.0.106:53228    a96-6-76-23:http       ESTABLISHED
TCP    192.168.0.106:53229    a96-6-76-23:http       ESTABLISHED
TCP    192.168.0.106:53274    sb-in-f188:5228        ESTABLISHED
TCP    192.168.0.106:53276    172.217.194.100:https   ESTABLISHED
TCP    192.168.0.106:53277    172.217.194.94:https   ESTABLISHED
TCP    192.168.0.106:53287    sa-in-f102:https       ESTABLISHED
TCP    192.168.0.106:53302    172.217.194.189:https   ESTABLISHED
TCP    192.168.0.106:53470    a-0001:https           ESTABLISHED
TCP    192.168.0.106:53528    a23-53-160-32:https    CLOSE_WAIT
TCP    192.168.0.106:53547    sin10s02-in-f78:https  ESTABLISHED

```

Fig 3.4: A screenshot of Active connection state lines with other sites.

3.5.1 SEA-ME-WE-4

Description: South East Asia-Middle East-Western Europe 4 is an optical fiber submarine cable system. This cable is approximately 18,800 Km long and provide the primary internet backbone. SEA-ME-WE-4 that carries telecommunications between Singapore, Malaysia, Thailand, Bangladesh, India, Sri Lanka, Pakistan, United, Arab Emirates, Saudi Arab, Sudan, Egypt, Italy, Tunisia, Algeria and France. Collected from “https://en.wikipedia.org/wiki/SEA-ME-WE_4” Our country get Bandwidth speed 200 Gigabytes/sec. This optical fiber brings Cox’s bazar to BTCL Mogbazar telephone exchange. A SEA-ME-WE-4 diagram given below in Fig no 3.5.

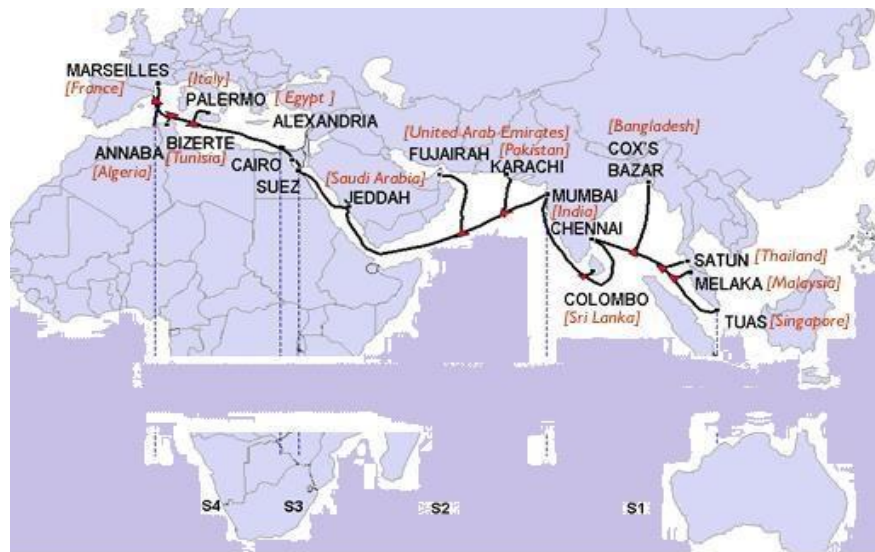


Fig 3.5: SEA-ME-WE-4 diagram.

3.5.2 SEA-ME-WE-5

Description: South East Asia-Middle East-Western Europe 5 is an optical fiber submarine cable system. This cable is approximately 20,000 Km long and provide the primary internet backbone. SEA-ME-WE-5 that carries telecommunications between Malaysia, Indonesia, Thailand, Myanmar, Bangladesh, India, Sri Lanka, Pakistan, United Arab Emirates, Oman, Qatar, Saudi Arabia, Egypt, Italy and France. Collected from “https://en.wikipedia.org/wiki/SEA-ME-WE_5” .Our country get Bandwidth speed 1500 Gigabytes/sec. BTCL financed project to provide SEMEWE-5 Backhaul, and Dhaka-Benapole and Dhaka-Akhaura transmission backbone. It provides nationwide transmission facility for ISP operators. Under given below a diagram in figure no. 3.6.



Fig 3.6: SEA-ME-WE-5 diagram.

3.6 International Internet Gateway (IIG):

BTCL is connected to foreign upstream providers which make in a gateway for users like:



Etc. All companies logo collected from “<https://www.google.com/>”

These all of companies connected in BTCL for International Internet gateway in our country and monitoring via BTCL. When any kind of need to disconnect this type of gateway, which can BTCL.

Description: I have learned about the block diagram of International Internet Gateway Block Diagram and also learned about the block diagram of BTCL’s connection to SEA-ME-WE - 4. I also get familiarized with core router, distribution router. Short descriptions about them are given in figure number 3.7.

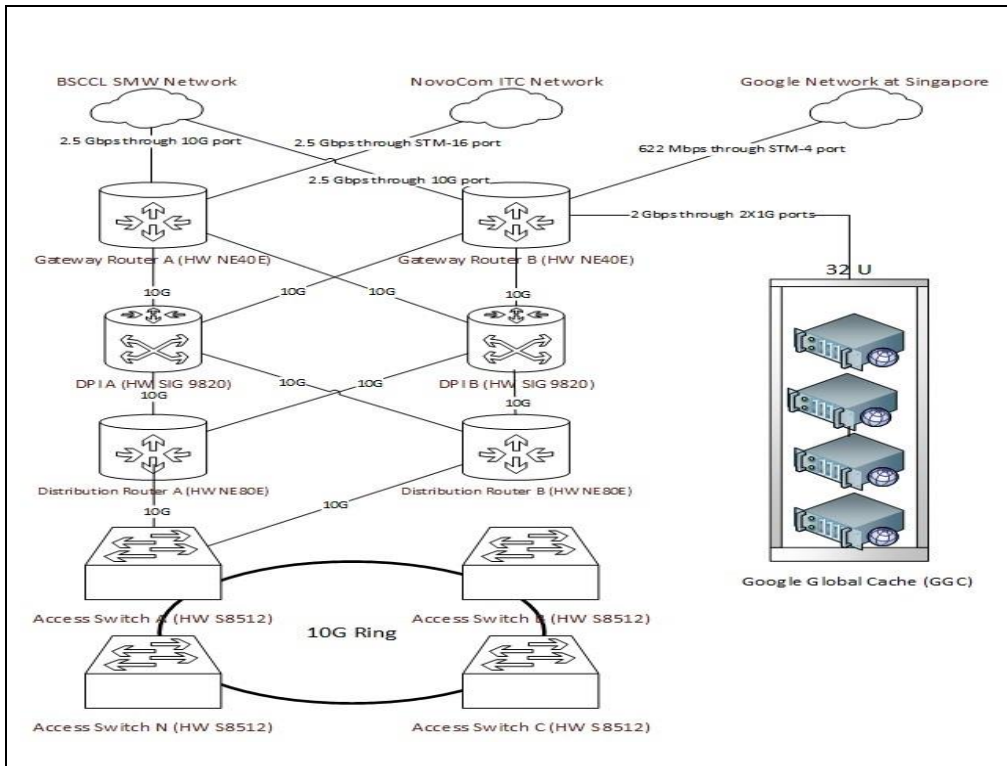


Fig 3.7: International Internet Gateway Block Diagram.

3.7 Nationwide Internet Service providing:

BTCL gives nationwide internet service various companies whole of the country like:

Description: Nationwide connection providing BTCL. Here given below a figure number 3.8. All logos collected from “<https://www.google.com/>” There are many ISP and private IT, telecommunication companies which purchase bandwidth from BTCL.



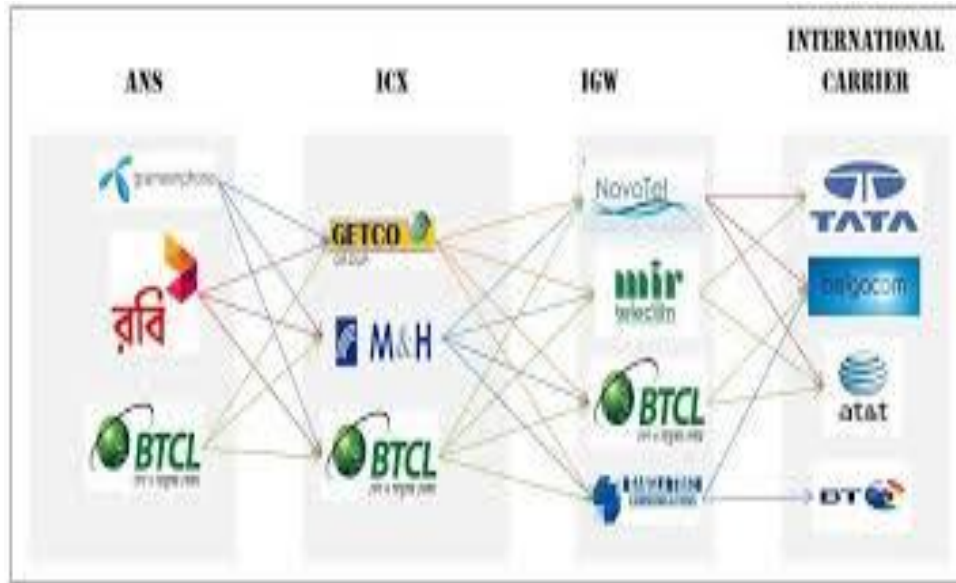


Fig 3.8: Connected nationwide companies by BTCL.

3.8 Leased Line Internet (LLI)

LLI service of BTCL is a premium internet service (Bandwidth 10Gbps+), usually provided by optical fiber.

Features:

- Dedicated bandwidth (Mbps to 10Gbps+)
- Full duplex (upload speed == download speed)
- Connected by real IP address

3.9 Virtual Private Network (VPN)

It is a network technology which creates a secure network connection over a public network or a private network owned by a service provider. It's can be layer2 or layer3.

Description: VPN mostly used in Administrator offices, Military, PM Office, Election commission office etc. A normal VPN diagram given in figure 3.10.1 under given below. Collected from "<https://www.conceptdraw.com/How-To-Guide/virtual-private-networks>".

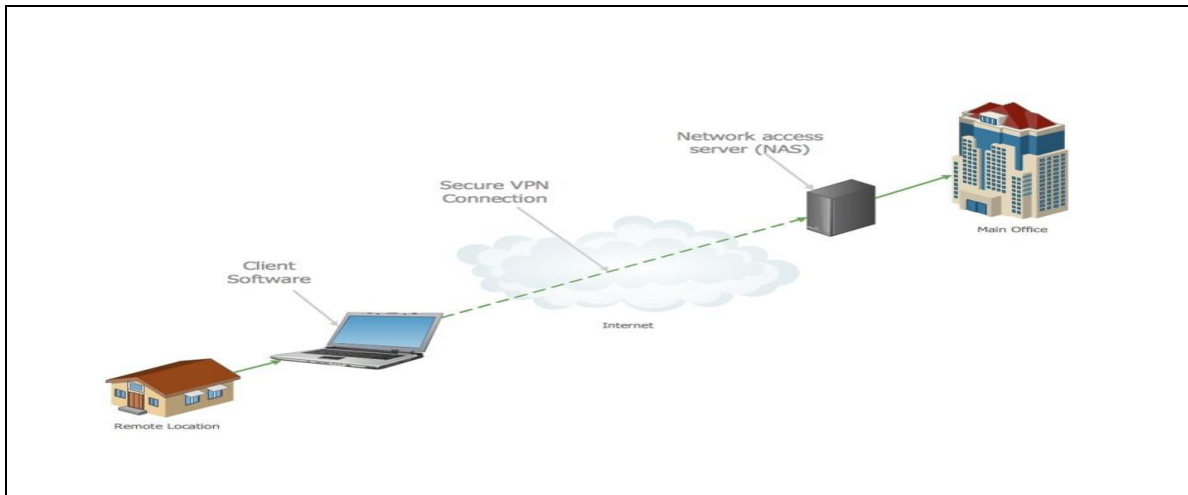


Fig 3.10.1: VPN Diagram.

Description: A screenshot given below figure number 3.10.2 where have routing configuration and there can be a VPN connection by command.

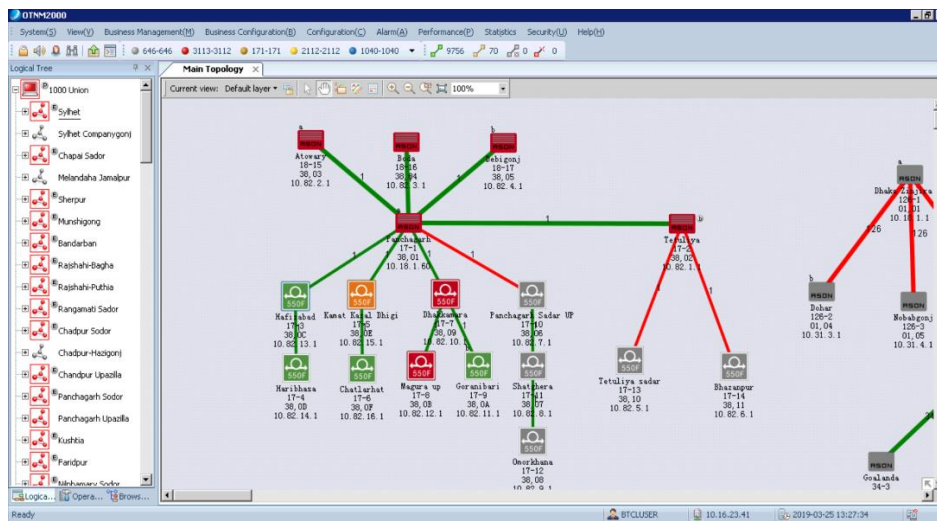


Fig 3.10.2: A screenshot of VPN connection configured.

3.10 IP Addresses Service

BTCL owns several blocks of Public IP address bought from APNIC who is the Asia pacific regional manager organization of public IP address.

IP address blocks owned by BTCL:

- 180.211.128.0 to 180.211.255.255
- 203.112.192.0 to 203.112.224.255
- 123.49.0.0 to 123.49.63.255

BTCL IPv6 block is: 2407: 5000 :: 9:0/ 32 which contains around 7.92×10^{28} IP's.

3.11 Google Global Cache (GGC)

BTCL has Google cache server in its own premises installed by Google Cache service is a temporary storage mechanism that speeds the delivery of web content to end users. Cache servers retain copies of content and rich media, including audio, video, images, and static text, at various points throughout the network for later retrieval.

Description: GGC Server picture given under given below in figure number 3.11.1 and 3.11.2.

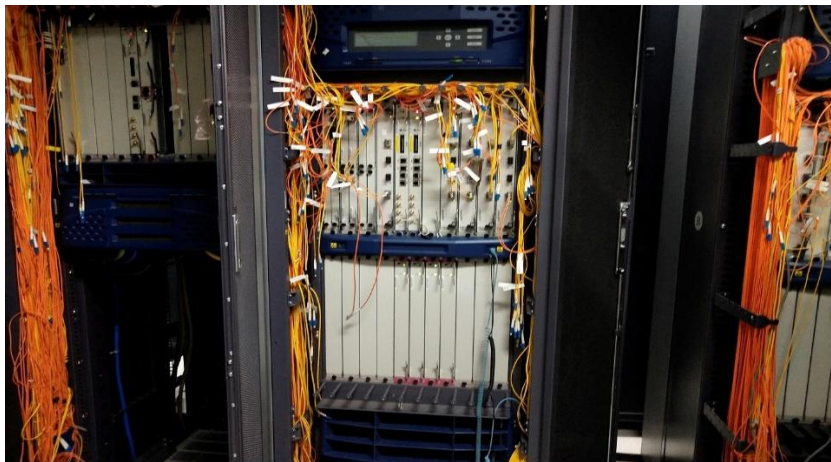


Fig 3.11.1: Google Global Cache server part 1.



Fig 3.11.2: Google Global Cache Server part 2.

3.12 National Internet Exchange (NIX)

BTC has National Internet Exchange (NIX) Service which acts as a neutral meeting point of the ISPs. Its main purpose is to facilitate exchange of domestic Internet traffic between the peering ISP members.

Description: Under given a flow diagram of NIX in figure number 3.7. This figure also same for LLI/VPN/GGC connection.

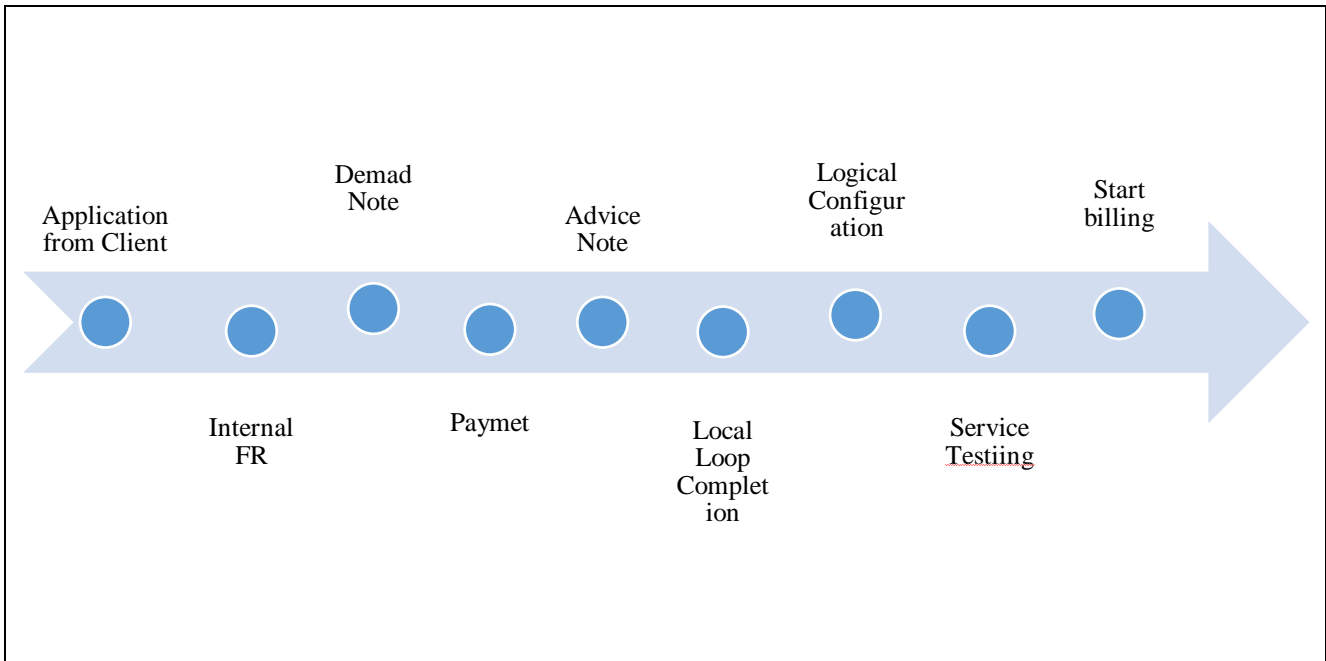


Fig 3.12: Flow diagram of a new NIX Connection process.

3.13 Domain

BTCL is the owner and seller of two CCTLD (Country Code Top Level Domain)

- .bd
- .বাংলা

Description: First step for creating a domain then show a form. A screenshot given in figure number 3.13.1.

The screenshot shows the 'BTCL Client Registration' form. At the top, it says 'Bangladesh Telecommunications Company Ltd.' Below that is a green header with 'Client Registration'. The main title is 'BTCL Client Registration'. There are two sections for selection: 'Service Type' with radio buttons for 'Domain' (selected), 'VPN', and 'LLI'; and 'Registrant Type' with radio buttons for 'Individual' (selected) and 'Organization/Institution/Company'. Below these is a link for 'Terms & Conditions and Privacy Policy' and a checkbox that is checked, with the text 'I have read and agree to the Terms and Conditions and Privacy Policy'. At the bottom right are 'Back' and 'Continue' buttons.

Fig 3.13.1: A Screenshot of first step for create an Domain

Description: After complete the first step, then give a second form. Under given a screenshot of figure number 3.13.2.

The screenshot shows the second step of the 'BTCL Client Registration' form. It is divided into three main sections: 'Person Info', 'Address', and 'Login Info'. 'Person Info' includes fields for First Name, Last Name, Father Name, Mother Name, Gender (set to Male), Email, Mobile Number (with a +880 country code dropdown), Telephone Number, Date of Birth, Fax, and Occupation. There are radio buttons for 'NID' and 'Passport'. 'Address' includes Country (set to Bangladesh), City, Post Code, and Address. 'Login Info' includes Username (with a red 'unavailable' message), Password (masked with dots), Confirm Password, and a Captcha field showing '7ff3g'. At the bottom are 'Reset' and 'Submit' buttons.

Fig 3.13.2: A screenshot of second step for create an Domain.

After get a mail for verification link via mail, then click the link and confirmed to create a Domain. When a domain request with verification accrued in server then administrator verifying everything.

BTCL has its own Email server from which it provides with below e-mail addresses to its internal users. Its uses for official work and give this types mail the customer when buy a domain. Mails are:

- xx@btcl.com.bd
- yy@btcl.gov.bd

3.14 Asymmetric Digital Subscriber Line (ADSL) internet

BTCL provides with broadband internet over telephone line known as ADSL (Asymmetric Digital Subscriber Line).

Asymmetric Digital Subscriber Line (ADSL) is a data communications technology that empowers quick information transmission over copper twisted pairs by employing high frequencies.

Collected from “https://en.wikipedia.org/wiki/Asymmetric_digital_subscriber_line”.

Features:

- Dedicated data speed (up to 1.5Mbps).
- Download speed is higher than upload speed.
- Connected via copper cable (telephone line).

Description: Numbers, characters, symbols, images etc., which can be processed by a computer. That's call Data. All data and telephone connectivity maintenance by ADSL section. ADSL connectivity diagram in figure 3.14 given below.

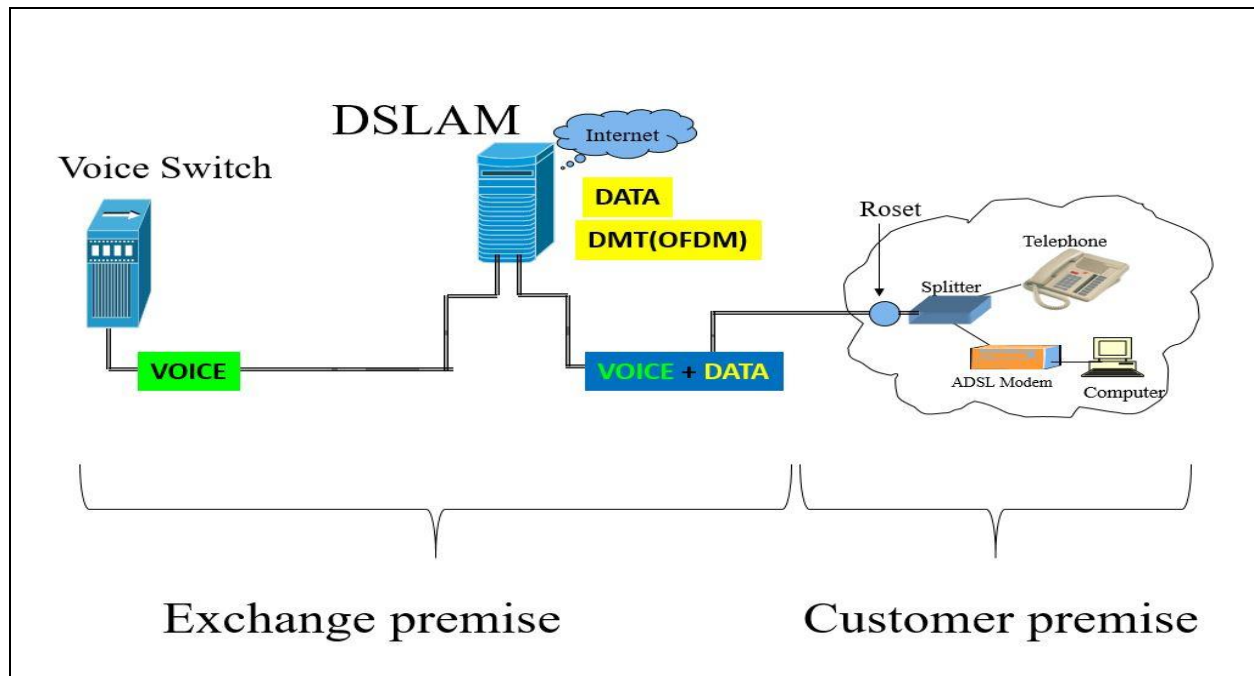


Fig 3.14: Asymmetrical Digital Subscriber Line (ADSL) connectivity diagram.

Description: ADSL (Asymmetrical Digital Subscriber Line) switch which Huawei brand maintaining the telephone exchange and landline bandwidth. The blue wire internet transmission rate 100Gbps and Orange wire internet transmission rate 10Gbps. Switch figure given in fig 3.15

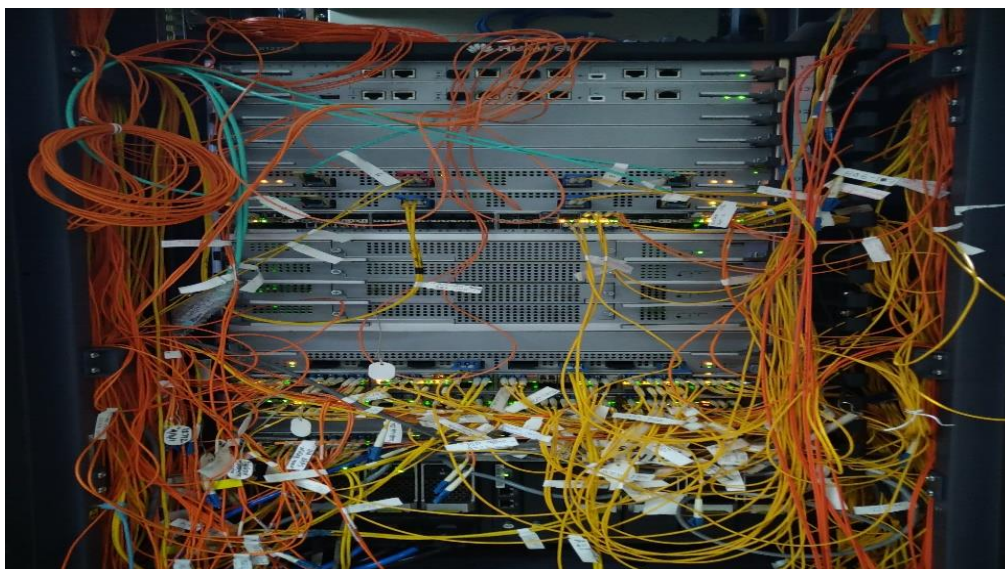


Fig 3.15: ADSL Switch.

Description: ADSL (Asymmetrical Digital Subscriber Line) AAA (Authentication, Authorization, and Accounting) server provides a management mechanism for network security) control all of landline bandwidth and telephone exchange configuration. Server figure no Fig 3.16.



Fig 3.16: ADSL AAA server.

3.15 BROADBAND REMOTE ACCESS SERVER (BRAS)

It estimates IP address for the customers. PPPoE enables multiple hosts on an Ethernet to connect to a broadband remote access server (BRAS).

PPPoE enables users virtually “dial” from one machine to another over an Ethernet network, establish a point-to-point connection and then data packets are securely transported through the connection.

Describe: A screenshot taken which given below fig 3.17.1 where users access internet displaying by BRAS.

```

<Mog_Bras_32>disp access-user
-----
Total users          : 1266
Normal users        : 1265
Admin users         : 1
Wait authen-ack     : 0
Authentication finish : 1266
Accounting ready    : 1
Realtime accounting : 1265
Wait leaving-flow-query : 0
Wait accounting-start : 0
Wait accounting-stop : 0
Wait authorization-client : 0
Wait authorization-server : 0
-----
Domain-name          Current-User      Online-User
-----
default0            : 0                  :0
default1            : 0                  :0
default_admin       : 0                  :0
info_test           : 1                  :0
btc1128             : 0                  :0
btc1256             : 16                 :16
btc1512             : 125                :125
btc11000            : 473                :473
btc11500            : 651                :651
-----
The used userid table are :
  4      108     542     661     706     747     777     812
 871     876     941     986     1017    1058    1060    1069
1161    1168    1189    1234    1255    1287    1342    1368
1422    1496    1571    1683    1695    1742    1807    1834
1923    1940    2037    2058    2125    2167    2261    2302
2325    2347    2424    2482    2535    2641    2677    2786
2982    3114    3227    3329    3341    3348    3440    3450
373e    3753    377a    380e    382c    383e    385c    4024

```

Fig 3.17.1: A screenshot show up the user's access the internet by BRAS server.

Describe: A screenshot taken where show up the users Name, Id, IP and MAC addresses by BRAS server that's given in figure no 3.17.2.

```

<Mog_Bras_32>disp access
<Mog_Bras_32>disp access-us
<Mog_Bras_32>disp access-user int gig 1/0/1.1
-----
UserID  Username                Interface      IP address      MAC
-----
5601    MOHAMMOD324@btc1512    GE1/0/1.1    180.211.155.200 60e3-279d-7a9e
9593    nbsk2008@btc11000     GE1/0/1.1    180.211.152.98  1844-e6cd-672b
9594    arad84@btc11500       GE1/0/1.1    180.211.155.74  c4e9-8437-da27
17196   addldg99@btc11000     GE1/0/1.1    180.211.153.238 f8e9-0391-aa8b
17205   syed9@btc1256         GE1/0/1.1    180.211.152.222 60e3-2728-e6d1
23687   dcbb99@btc11000       GE1/0/1.1    180.211.152.26  d46e-0ea9-2417
25200   dysec25@btc11500      GE1/0/1.1    180.211.152.166 0011-3b1d-fb4d
25665   deputy172@btc11500    GE1/0/1.1    180.211.165.21  14b9-6898-848c
28778   ae9333399@btc11000    GE1/0/1.1    180.211.153.124 18d6-c7fa-84cc
29811   bhuyan836@btc11500    GE1/0/1.1    180.211.153.3   8474-2a24-3b83
31897   pcd1977@btc11000      GE1/0/1.1    180.211.154.19  60b6-17ff-bd23
41654   baily47@btc1512       GE1/0/1.1    180.211.155.205 6c19-8f07-20ed
44005   dyspd90@btc11000      GE1/0/1.1    180.211.154.21  14da-e9b4-b639
48977   DyChief83@btc11500    GE1/0/1.1    180.211.154.50  60b6-17ff-c25b
51004   info@btc11000         GE1/0/1.1    180.211.154.82  001e-4fec-1f83
51407   sohel03@btc11500      GE1/0/1.1    180.211.152.99  60b6-17ff-cc2b
53360   smrh26@btc11500       GE1/0/1.1    180.211.155.222 0023-cd1d-9fd1
62175   basir12@btc1512       GE1/0/1.1    180.211.155.97  18a6-f7ec-b72f
-----
Total 18
<Mog Bras 32>

```

Fig 3.17.2: Screenshot of users ID, IP, Name and MAC addresses by BRAS server.

3.16 NIMS (NETWORK INTEGRATED MANAGEMENT SYSTEM)

Description: Customers ID details and physically map can be viewed and monitoring by this software. Under given below two screenshots in figure number 3.18.1 & 3.18.2.

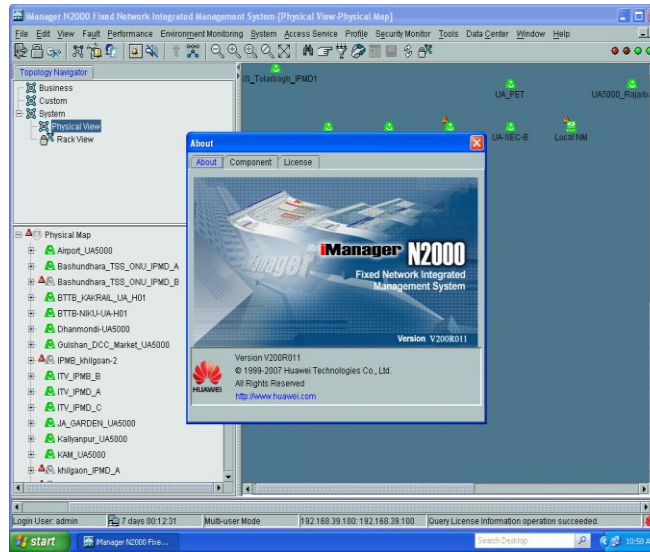


Fig 3.18.1: A screenshot of Network Integrated Management System (NIMS) part 1.

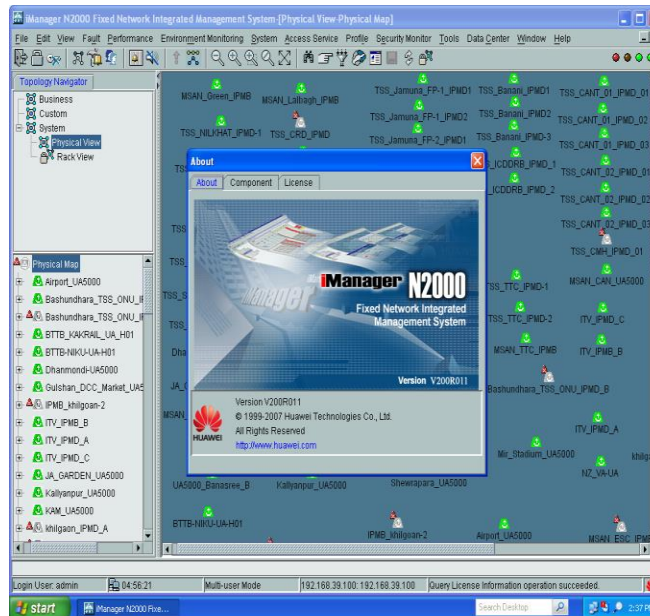


Fig 3.18.2: A screenshot of Network Integrated Management System (NIMS) part 2.

3.17 DIGITAL SUBSCRIBER LINE (DSL)

Digital subscriber line (DSL) is a family of technologies that are used to transmit digital data over Telephone lines. The most commonly installed DSL technology for internet access.

Description: Network Management System (NMS) software used for DSL monitoring and accessed. Here under given three screenshots of NMS software in figure number 3.19.1, 3.19.2, 3.19.3 which used by BTCL Authority.

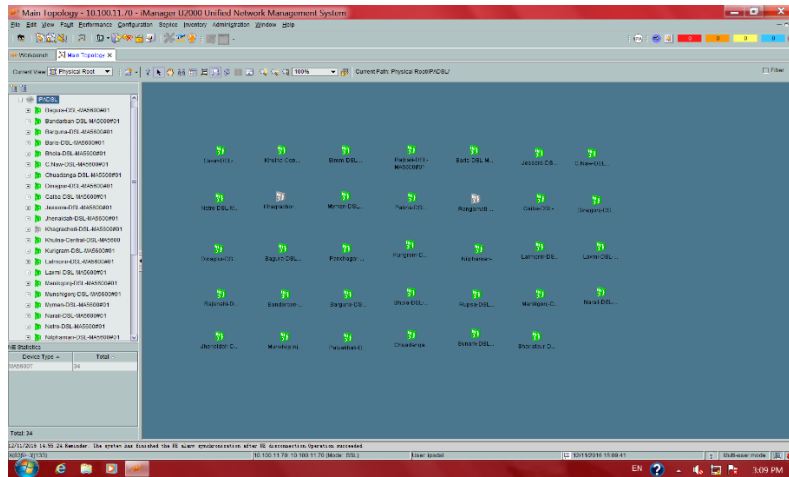


Fig. 3.19.1: A screenshot of NMS part 1.

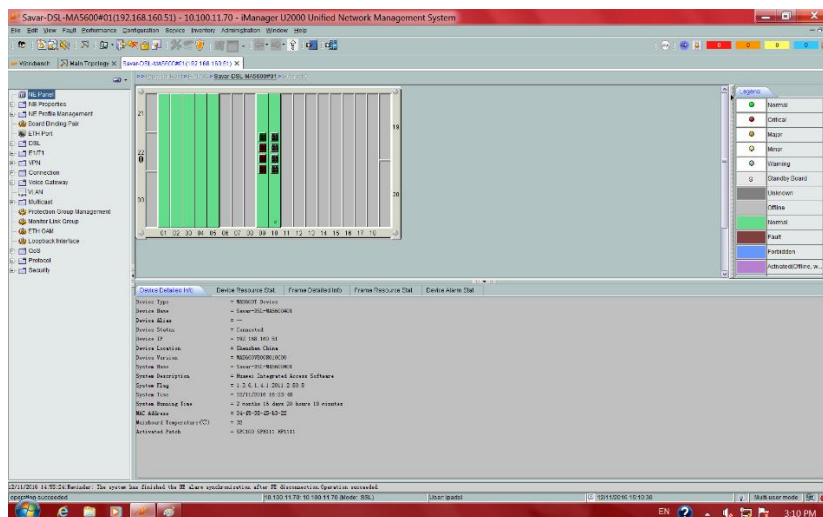


Fig. 3.19.2: A screenshot of NMS part 2.

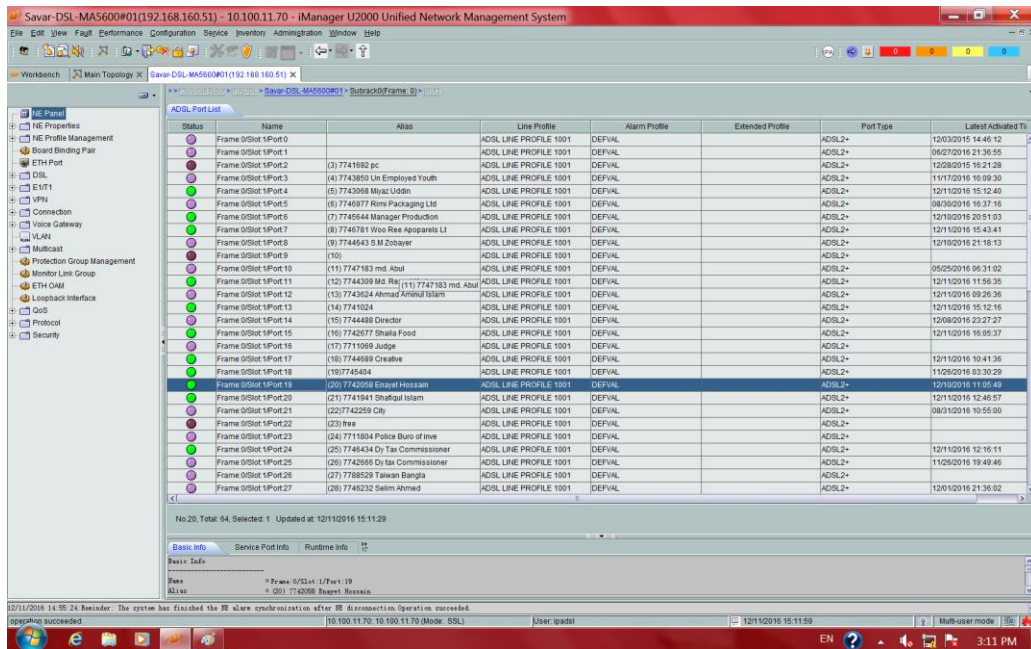


Fig 3.19.3: A screenshot of NMS part 3.

3.18 NETWORK OPERATIONS CENTER

Here whole of network system and telecommunication system monitoring fully. If any kind of fault (not only physically) can be solved by troubleshooting. Its division also called network management center.

Description: Cacti software used for networking operation monitoring. Here given below a screenshot figure number 3.20.1 where displayed Routers and Switches.

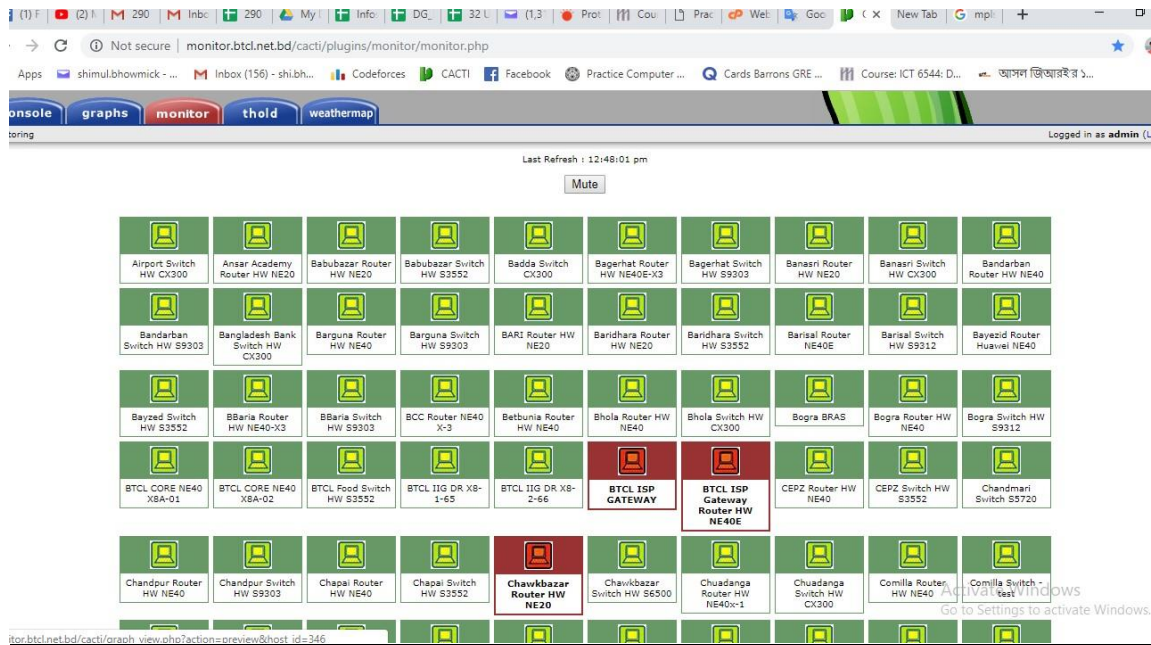


Fig 3.20.1: A screenshot of Router and Switch displayed.

Description: Cacti software where displayed Bandwidth transmit per second. A screenshot given below figure number 3.20.2.

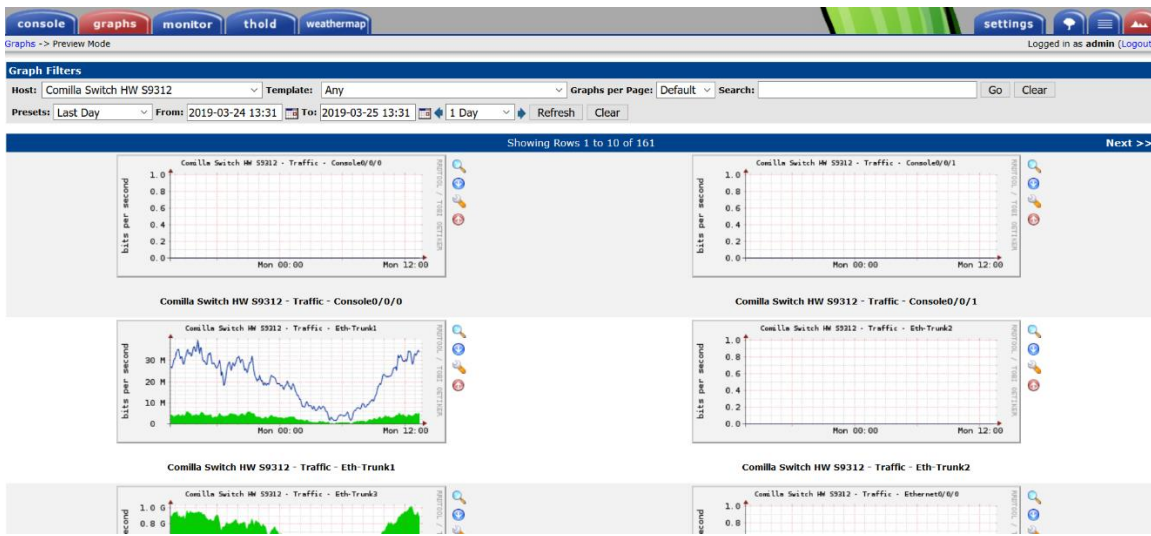


Fig 3.20.2: A screenshot of bandwidth passed per second.

Description: Error Code for ADSL Service. Wrong User Name or Password. Violation of Port Bind feature. User ID & Pass word was used and bind with a Port and now trying to login with a second Port.

A trouble shooting screenshot figure 3.21.1 given under below where showed error/invalid user name or password.



Fig 3.21.1: A screenshot of Error detecting.

N.B- Error code 678 will display after several unsuccessful attempts.

Description: Error Code for ADSL Service. Network Card might be disable. ADSL Port not active or not configured. The problem can sometimes come from antivirus software. A screenshot figure number 3.21.2 given below.

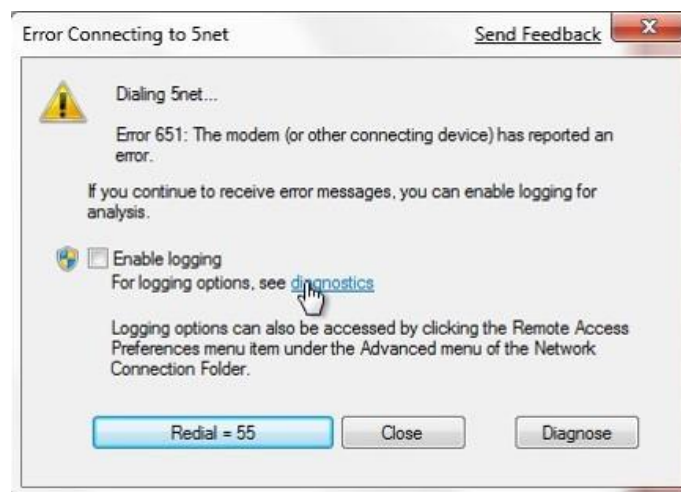


Fig 3.21.2: A screenshot of error code 651 for ADSL service.

CHAPTER 4

Conclusion and Future Career

4.1 Discussion and Conclusion

Transmission region is responsible to connect the submarine backhaul connectivity for international user, ITC connectivity, nationwide digital exchanges connectivity, internet connectivity, corporate connectivity and data nodes connectivity. BTCL has a strong nationwide transmission network up to Upazilla and Union Parishad level. This Nationwide transmission network (NTTN) of BTCL is mostly composed of Optical Fiber except Bhola district and a number of Upazilla, which were connected through Radio links. Though most of the Upazilla headquarters were connected to the respective district headquarters through radio links, but BTCL's ongoing two projects have changed the scenario from radio to optical one.

BTCL is also providing backhaul connectivity for submarine landing station of Bangladesh at Cox's Bazar through a high capacity of 240 GB/s which has redundant optic fiber transmission link between Dhaka (Mogbazar station of BTCL) and Cox's Bazar. Also BTCL is providing backhaul connectivity for 2nd submarine landing station at Kuakata through a high capacity of 200 GB/s which has redundant optic fiber transmission link between Dhaka and Kuakata. The redundancy of the links has been provisioned through Optical Fiber of the Power Grid Company of Bangladesh.

These all of reasons I have taken internship through this company and I have gathered many information and technical opportunities about Data and Internet service maintenance and working procedure.

4.2 Scope for Future Career

My future scope is exception a successful internship can help my future career and get an experience into a best career opportunity. My future scopes are intention.

- To be a Network Administrator.
- To be a Network Engineer.
- To be work Industrial Engineer.
- To be work in ICT Division.
- To be a Network Analystist.

References

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APPENDIX A

Internship Reflection

My internship period is 3 months. I am very pleased that I choose internship and worked at the Bangladesh Telecommunications Company Limited in Broadband-1, Broadband-2, NOC, Domain, Core and upstream divisions. Every Officers were very friendly. I think the experience in this area is a very good preview of my career and future. I have learn some important skills and find out something about myself. I have learned about the organization and also have a wide knowledge of job market. I have worked on my personal improvement including my theoretical and practical knowledge. I have practiced to improve my behavior and communication skill. I have observed the environment. Real life experience and practical knowledge are far more useful than having only theoretical knowledge. I had the opportunity to enhance my theoretical knowledge through practicing them I real life and implement them practically.

APPENDIX B

Company Details



Head Office

Name	Bangladesh Telecommunications Company Limited
Address	37/E Eskaton Garden, Dhaka-1000, Bangladesh.
Telephone	029320075-6
Email	ddt@btcl.net.bd , duralaponi@gmail.com
Website	www.btcl.com.bd

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