DEPARTMENT of COMPUTER SCIENCE & ENGINEERING

SOUTHEAST UNIVERSITY

CSE4000: Research Methodology

Study about ISP Broadband Internet Networking System in Bangladesh

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A dissertation submitted to the Southeast University in partial fulfillment of the requirements for the degree of B. Sc. in Computer Science & Engineering

Submitted by

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LETTER OF TRANSMITTAL

Date: October 27, 2022

To
The Chairman
Department of Computer Science & Engineering
Southeast University
Banani, Dhaka-1213.

Through: Mou Mahmood (Research Supervisor)

Subject: Submission of CSE4000 Research Report.

Respected Sir,

It is our immense pleasure to submit our research report on "Study about ISP Broadband Internet Networking System in Bangladesh". It was much satisfactory for us to work on the aforesaid topic. By following the instructions given by yours and fulfilling the requirements of the Southeast University, this research work has been performed.

We have prepared this report with our earnest exertion. We request your kind approval for this research report to complete our study program.

Sir we hope and pray that you will permit our report and oblige thereby.

Sincerely,
Rahul Chandra Das
Md. Sabbir Hossain
Md. Abu Rayhan

Supervisor:
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Table of Contents

List of Figure

Abstract

The main reason for the digital image we see of Bangladesh today is the Internet. The young population of Bangladesh is moving this country forward by connecting with the real world through this internet, to accelerate this forward we want fast internet we can realize better and better after covid-19. And the service that plays the most important role for the fastest and low-cost internet is the broadband internet that is provided by the ISP of our country. But the quality of this service is going down day by day, the main objective of our research is to highlight the beginning of this networking system and come up with a solution by identifying how the quality of this service can be made better and faster at less cost. In this report, we discuss how to improve customer-level connectivity and bandwidth management systems, as well as speed up bandwidth delivery by connecting more global tech and content domain giants to the Internet by setting up data centers in our country. We have tried to highlight that. In this report we will cover networking arrangements from ISP to end user.

Introduction

The Internet is a social and economic base that was ostensibly desired for human contact and communication. People feel more in control as a result, which strengthens democratic principles.

In addition, it promotes sustainable economic development, governance, e-commerce, banking, public utility services, and a range of ICT-enabled online services. It is intended to enable more interactive and inventive ways for individuals to do what they do in real life.

It goes without saying that the Internet has currently evolved into a potent and practical tool for empowering people and generating wealth in poor nations. Today, the human society has undergone significant transformation as a result of digital technologies. These have a very different impact on society than past scientific advancements did. It is hard to say that the internet has become a popular and useful thing among users right now.

Bangladeshi citizens use the Internet to access the information they need, including students, doctors, engineers, businesspeople, researchers, and politicians. The current state of the Internet in Bangladesh as well as some current problems with the subject will be thoroughly discussed in this essay.

History of the Internet in Bangladesh:

The Internet was created in 1970, but it did not arrive in Bangladesh until 1993, when UUCP (Unix-to-Unix copy) email connectivity and 1996, when IP connectivity were implemented. In June 1996, the Bangladesh Telegraph and Telephone Board (BTTB) licensed two Internet Service Providers (ISPs).

In May of 2006, Bangladesh became a participant in the SEA-ME-WE 4 project, which involved the installation of new fiber optic connectivity provided by submarine cables. The Submarine Cable Project became Bangladesh Submarine Cable Company Limited (BSCCL) in July 2008, and it currently manages all services connected to the submarine cable.

Even though expanding access to and use of the Internet is hard for many reasons, developing the Internet and Information Technology is a high government priority. In March of 2021, the number of Internet users in Bangladesh rose to 116 million. [1] (at the time, there were 167 million people living in Bangladesh; around 70 percent of the population had access to the internet) On February 19, 2018, 4G network service began in Bangladesh.

Mobile Internet:

The majority of Bangladeshis are anticipated to encounter the internet for the first time through their mobile devices because fixed line adoption rates are currently low and are expected to remain so for the foreseeable future. Approximately 90% of Bangladesh's Internet users accessed the web via mobile services in 2010.

Teletalk, Grameenphone, Robi, & Banglalink offer 3G and 4G services in 64 districts of Bangladesh. Others offer 3G, 4G Internet in select places and EDGE or GPRS GSM in the rest. Operators are aiming to increase the availability of 3G and 4G services everywhere. Before the government shut down Citycell in 2016, the lone CDMA provider, it provided EVDO. Robi and Airtel Bangladesh combined.

Broadband Internet:

Broadband is wide bandwidth data transmission that carries numerous signals at a wide variety of frequencies and Internet traffic kinds, used in rapid internet connections. Mediums include coaxial cable, optical fiber, wireless Internet (radio), twisted pair, and satellite.

Internet expansion and online business in Bangladesh are still in their infancy. There were 50,000 fixed broadband customers in 2009. However, there were 3.112 million ISP/PSTN customers as of March 2016. According to the BTRC, there were 5.73 million broadband connections in November 2018. The costs for high-speed connections are greater than in other south Asian countries, despite the availability of broadband Internet access, though this is changing. In Bangladesh, broadband is legally defined as 128/128 kbit/s, which differs from the ITU's definition. Many broadband Internet services may not be recognized as true broadband worldwide.

ISP Industry Overview:

The voyage of the internet in Bangladesh began in June of 1996. Very small aperture terminals, often known as VSAT-based data circuit technology, were the first method of Internet access. VSAT is a data transmission technology that lets you connect to the Internet by talking to satellites in Earth's orbit. In the same year, the Bangladesh Telegraph and Telephone Board (now known as Bangladesh Telecommunications Company Limited, or BTCL) gave licenses to two service providers, ISN (Internet Services Network) and Grameen Cyber Net Ltd., so they could offer internet service through VSAT. ISN is also credited as being Bangladesh's first internet service provider. In June 1996, they began providing the very first Internet services utilizing 64 kbps VSAT technology via a Hong Kong gateway.

Bangladesh was originally connected to the SEA-ME-WE 4 underwater cable in 2006. (South East Asia – Middle East – Western Europe 4).

Later, a large number of ISPs began using BTCL to link to underwater cables, making the internet more widely available and reasonably priced. Bangladesh was linked to the second submarine cable, known as "SEA-ME-WE 5," in 2017. According to a September report in The Daily Star, Bangladesh now consumes approximately 2600 Gigabytes per second broadband speed. The first and second undersea cables deliver 1,800 Gbps of the entire volume, and the international terrestrial connection from India delivers the remaining 1,800 Gbps. Additionally, the third submarine cable of Bangladesh, known as SEA-ME-WE-6, will be launched by June 2025, according to BSCCL (Bangladesh Submarine Cable Company Limited). According to BSCCL Managing Director Mashiur Rahman, the third cable would increase bandwidth capacity by an additional 6,000 Gbps. This should satisfy Bangladesh's rising need for internet access in the future.

Bangladesh's international submarine cables are run by BSCCL. This business began operating in the nation as a public limited company in July 2008. Additionally, to providing underwater cables, BSCCL acts as the nation's IIG (International Internet Gateway). IIG essentially acts as a broker of internet bandwidth for ISPs. An article that appeared in The Daily Star in October 2021 states that there are currently roughly 2,000 registered ISPs and about 37 registered IIGs in Bangladesh.

According to BTRC, in January and February of 2020, out of the country's 100 million Internet users, there were more than 5.7 million ISP or broadband Internet users, which climbed to more than 8 million in March. It is clear that the nation's ISPs added an additional 2.3 million new members in just March. It should be mentioned that the shutdown related to COVID-19 was initially announced in Bangladesh in March 2020. Since then, the nation's broadband internet users have been steadily growing, reaching a high of over 9.8 million in March 2021. According to BTRC, there were over 10 million broadband customers in October 2021.

BTRC Guideline:

Bangladesh Telecommunication Regulatory Commission (BTRC), an independent Regulatory Commission established under the Bangladesh Telecommunication Act, 2001 (Act no18 of 2001) published by the parliament in the Bangladesh Gazette extraordinary in the news on April 16, 2001. BTRC started its journey on January 31, 2002, to conduct the activities of the said act. According to the Telecommunication Act, the Commission is assigned various responsibilities. Out of those, the major ones are establishing, operating, regulating, maintaining telecommunication establishments, and providing various telecom services in the country. Besides, fixing charges on the subscribers, ensuring the benefits for the subscribers, and ensuring people's rights are also tasks of BTRC.

According to the BTRC's Regulatory and Licensing Guideline for Internet Service Providers in Bangladesh, which came out in December 2020, there are now four types of licenses for ISPs in the country:

- Nationwide
- Divisional
- District
- Upazila/Thana

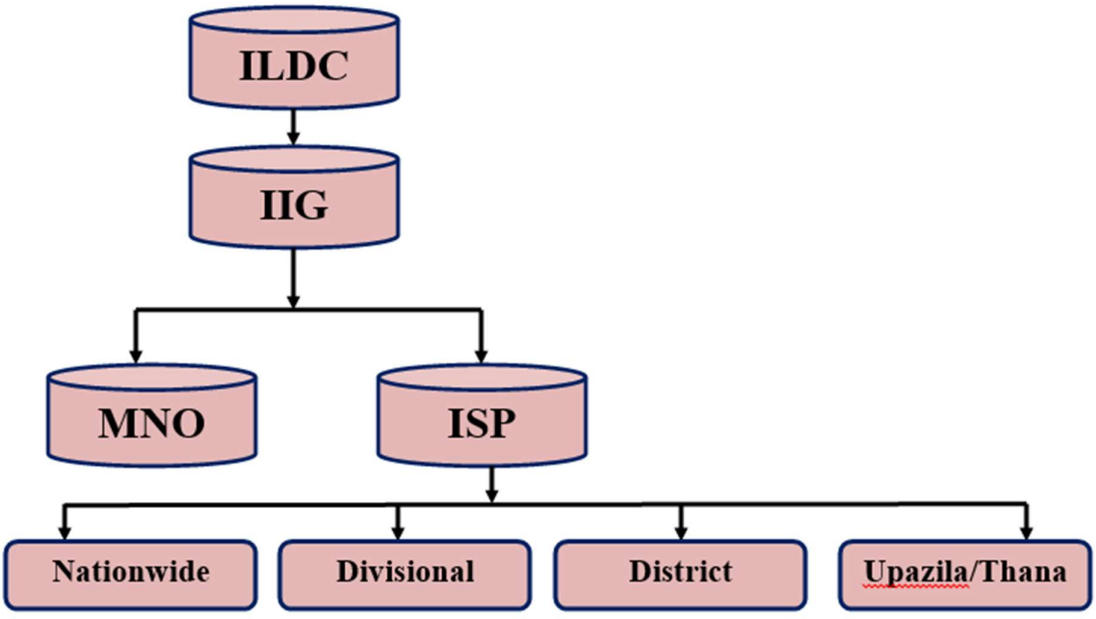

Figure 1: BTRC Licensed system connectivity

Among these, ISPs with national licenses can offer services anywhere in Bangladesh, and ISPs in other categories would do so only in their specific administrative and local areas. ISPs typically provide project-based Internet connectivity in addition to a range of business and

family package options. For instance, XYZ, one of the most well-known ISPs in the nation, offers Internet connectivity to people all across the country and businesses operating in various industries and government initiatives.

To ensure service and internet costs in rural areas, BTRC also fixed the bandwidth price and NTTN cost all over the country. Last year BTRC passed rules all over the country about internet pricing called the One Country, One Rate Tariff. Tariffs for all types of ISPs across the country are approved by the Department of Posts and Telecommunications when the BTRC prepares the draft tariff.

Bandwidth (Minimum)	ISP Tariff, BDT/Month (One Country, One rate)			
Maximum Shared (Contention Ratio) 1:8	Metro	District	Upazilla/Thana	Union
5 Mbps	500 (Maximum)	500 (Maximum)	500 (Maximum)	500 (Maximum)
10 Mbps	800 (Maximum)	800 (Maximum)	800 (Maximum)	800 (Maximum)
20 Mbps	1200 (Maximum)	1200 (Maximum)	1200 (Maximum)	1200 (Maximum)

Figure 2: Bandwidth price list

There is no need for the support bandwidth that you provided us last Friday night. Please roll back it. We will update you later if any bandwidth is needed.

Bandwidth Management System:

Bangladeshi ISPs typically bundle three types of bandwidths into a single package for consumers who receive the Internet at the customer level. It should be noted that ISPs offer global Internet for use by everyone, cache bandwidth based on the busiest websites for content usage, and domestic data centers, wave hosting, or BDIX for use by people in the United States. Together, these bands provide a bundle that appeals to consumers and meets the needs of home users.

IP transit or International Internet Bandwidth: IP transit refers to linking ISPs to larger networks, whereas IP transport is concerned with the physical conveyance of data between networks. Most ISPs must acquire IP Transit from some of the larger Internet backbone networks to deliver the full Internet routing table to end customers. Some of the more local or regional traffic may benefit from traffic exchange at local peering exchange points (also known as IXs). in order to get to these peering sites.

CDN or Cache Bandwidth: A CDN (content delivery network), also known as a content distribution network, is a collection of geographically spread and interconnected servers. They deliver cached internet content from a network location near a user's location. Without CDNs, which can copy and store information from origin servers and then bring digital content close to where users access the web, the internet might slow down to a crawl.

A CDN's goal is to minimize latency. The irritating lag you encounter while trying to access a website or video stream before it has finished loading on your device is known as latency. Despite being measured in milliseconds, it can seem like an eternity and potentially cause a load fault or time-out. Some content delivery networks reduce latency by shortening the physical distance over which the content must travel to reach you. So, bigger, more widely distributed CDNs can deliver web content more quickly and reliably because they can put the content as close to the end user as possible.

Without CDNs, which replicate and store data from origin servers and provide digital content near to users, the internet could slow to a crawl.

Since CDNs can manage more traffic and prevent network issues than the origin server, the availability of material is increased.

BDIX (Bangladesh internet exchange): For the fastest internet speed on national internet exchange, BDIX was created. The first Internet Exchange Point (IXP) in Bangladesh is called BDIX. It was created so members could share and route local Internet traffic through it. ISPs, mobile carriers, and content providers are some of the categories that are peering through BDIX. The Sustainable Development Networking Foundation (SDNF) Bangladesh has created BDIX as a non-profit endeavor. More than 110 Organizations of various types (ISPs, mobile operators, content providers) are currently peering through BDIX.

Bangladeshi visitors can access the BDIX server-hosted website via the BDIX Exchange Point, eliminating the need for foreign bandwidth. If there are any problems with the International Internet access point on the ISP/IIG side, your hosted website will continue to function smoothly throughout the country at full speed. As a result, your local Bangladeshi visitors won't experience any disruptions.

End user connectivity system:

The illustration above demonstrates how a typical ISP offers the Internet to its customers. All ISPs in Bangladesh, regardless of size, utilize at least one MikroTik router for customer connection.

First, it takes the primary connection from the upstream to its MikroTik router, then it receives the bandwidth from that connection, and last, it connects the end users through a variety of switch devices.

Here, short Ethernet cables from distribution switches to media converters through optical fiber to remote places and drop cables to customers' houses, and from there to conventional tiny non-manageable switches with Cat-6 or Cat-5 Ethernet connections. Connection is effective. The client connects to the home server at home or connects to the Internet via his PC.

There are two types of connection models that are widely employed in our nation:

1. Typical Giga Switch and Media converter used in network layout:

   A media converter is employed here to connect cat-5 or cat-6 cable transmission to optical fiber signal; the media converter is utilized for signal conversion. Initially, uplink connects to one port of the switch and the other port connects to users underneath the device. The maximum data transmission speed that can be handled by that piece of networking hardware is indicated by the 10/100/1000 Ethernet connector. Also, a Gigabit network switch can negotiate connections with slower devices that operate at 10 Mbps or 100 Mbps. This kind of networking setup and equipment cannot provide more users with faster speeds. When more users are connected to the same device port, it is no longer possible for it to provide such services to clients.

Figure 3: Switch

Figure 4: Media converter

2. FTTH (Fiber to the home) Networking system:

Fiber to the Home (FTTH) has recently begun to receive serious consideration from telecom firms all over the world, and supporting technologies are being created quickly. Two significant categories of systems enable FTTH broadband connections. Passive optical networks (PON) and active optical networks (AON) are these (PON). The vast majority of FTTH projects, both in terms of planning and actual deployment, use a PON to reduce the cost of fiber. PON has received a lot of attention lately because of its affordability and performance. The OLT, ONT, ONU, and ODN are some of the core PON components that will be covered in this post's ABC of PON introduction.

Figure 5: Optical Laser Transmission device

It is important to start with giving a quick overview of PON. PON, in contrast to AON, connects several clients to a single transceiver via a branching tree of fibers and passive splitter/combiner units, working purely in the optical domain and without power. The two main PON standards in use today are the Gigabit Passive Optical Network (GPON) and the Ethernet Passive Optical Network (EPON). However, all PONs shares the same fundamental topological structure. In general, a Gigabit Ethernet Passive Optical Network (GEPON) system consists of an optical line terminal (OLT) at the service provider's central office, a number of optical network units (ONUs) or optical network terminals (ONTs), as well as the optical splitter. The optical distribution network (ODN) is additionally used for transmission between the OLT and the ONU/ONT.

Figure 6: Optical Node Unit (ONU)

Optical Network Terminal

For GPON, which is the new generation of PON equipment and is mostly used by telecommunications operators in the FTTH project, there are many types of OLT, ONU, and ONT equipment. Fiber store supplies all of this gear, which is highly integrated, adaptable, reliable, and capable of providing quality of service (QoS), web-based management, and scalable resources.

Problems and Solutions

The country's Internet infrastructure is currently hampered by poor communications. Infrastructure, high rate of internet connection, lack of computing and networking equipment, few human resources, lack of government decisions, a language barrier, and restricted online internet facility in Dhaka, Chittagong, Sylhet, Rajshahi, and Khulna city, but the government has made steps to remedy these issues quickly and has issued a tender for the online internet to expand in all 64 districts so that rural people can gain internet access. To have a well-off and progressive business tomorrow, Bangladesh always needs to keep in touch with modern technology, even though it is a poor and densely populated country in the world. We found some major problems, barriers, and drawbacks, and we studied those problems and we found some solutions. Some of these are already implemented in the modern world, and some solutions and statements can make our ISP operation easier and consumers get reliable and fastest service from providers.

1. **Overselling and low amount bandwidth capacity of local ISP:**

In the Bangladesh ISP industry, there are too many local ISP systems; they buy very low amounts of bandwidth and they do not have any own CDN. After that they create some packages for selling local home users. They can do it by obeying BTRC guidelines or also without any rules. But the problem is created when they sell over, and also when they connect more users that time, they cannot distribute enough bandwidth to customers because their amount is not enough. Here, we collect some data from these types of small ISPs in order to describe the environment. The ISP has just 1500 customers and mainly sells 5Mbps to 20Mbps internet packages. These packages are integrated (Transit Internet+Cache bandwidth+BDIX), but bandwidth amounts are accordingly 650Mbps of transit/global internet, 2000Mbps of Google worldwide cache, 1500Mbps of Facebook cache, and 1000Mbps of BDIX bandwidth. The XYZ ISP created some enticing packages, but when most people join, they are starved for bandwidth.

If there are 1500 users and the average package speed is 5 Mbps, then the total amount of data needed to support everyone would be 7500 Mbps, but the actual amount being used is only 5150 Mbps (650 Mbps + 2000 Mbps + 1500 Mbps + 1000 Mbps).

Customers experienced slow performance and a buffer when using content at the time when bandwidth was restricted. Therefore, these ISP types are primarily to blame for Bangladesh's sluggish internet bandwidth speed. There is no locally-based bandwidth reseller ISP system in other south Asian countries like India. Some well-known providers of Internet service or telephone services are among those listed. They have local ISP MAC resellers that franchise to their clients, giving them access to high-speed Internet. Distributed network elements assist link users to Internet service providers.

2. **ISP network bandwidth traffic distribution System:**

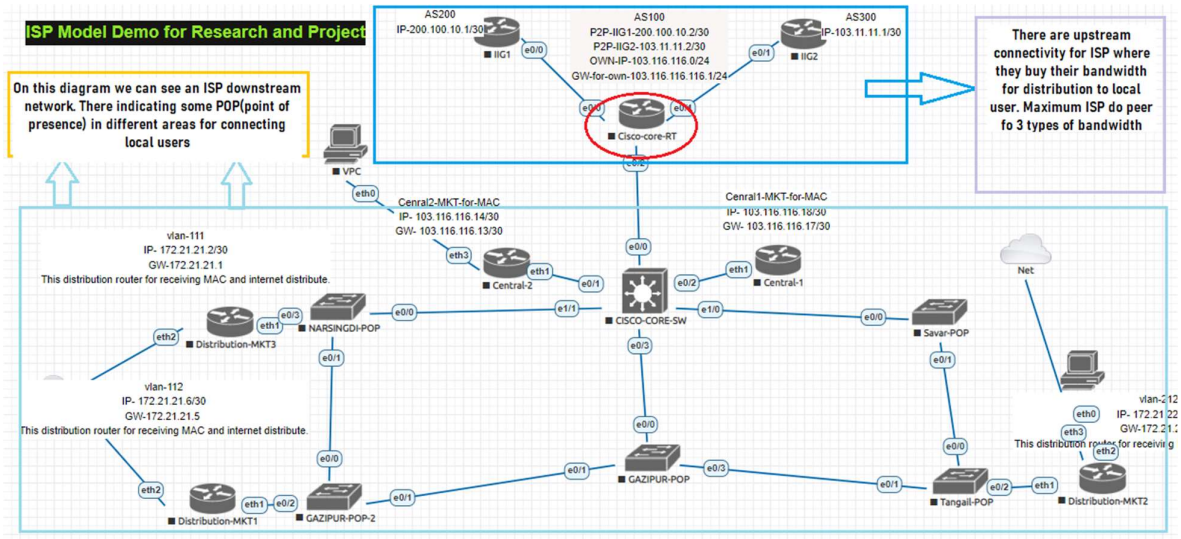

Figure7: ISP network bandwidth traffic distribution System

In this picture we can see on the marked portion there are indicating upstream IIG connectivity that need to be avoided because it makes our internet price costly. If the government wants it, it is gradually phased out of the guidelines and make it easier for ISPs to connect the global According to the needs of their consumers because they work with local customers and they know which route will be better for their consumers. Also when there is no IIG then price will drop because of no mediation cost local consumers also get the lower price.

We need another change in this ISP industry that has a low amount of illegal non licensed bandwidth resellers. The main reason is for their very limited shortest bandwidth the local customer suffers more they use much capped bandwidth in the peak time. But this problem can be solved by BTRC very strict statement.

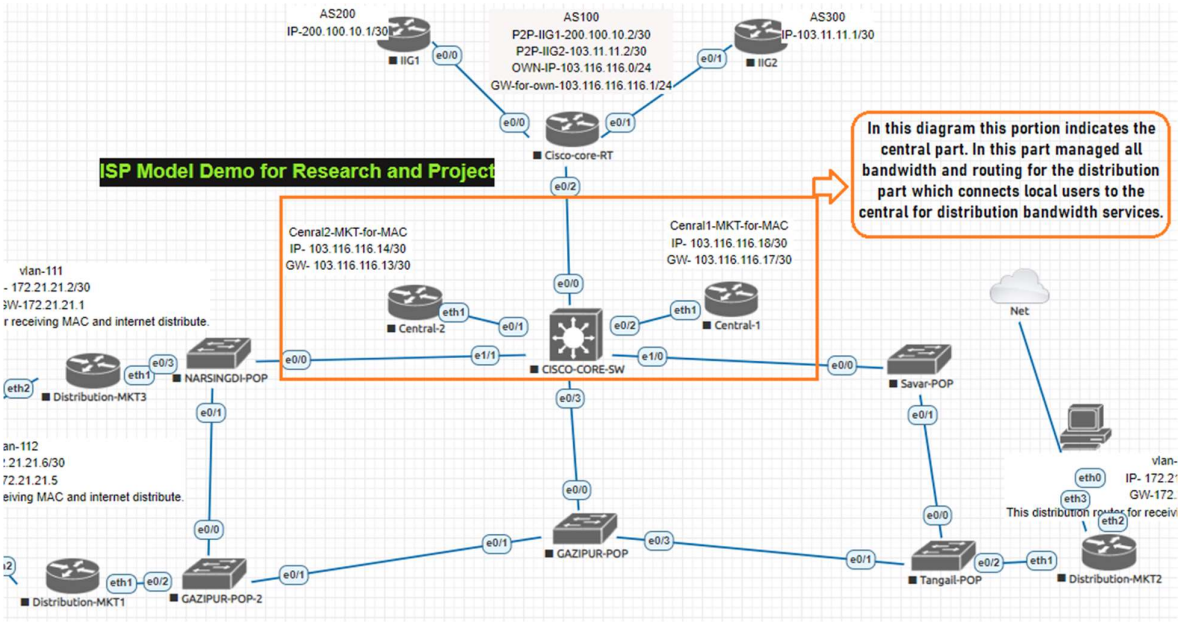

Figure 8: ISP Model demo

Also, nowadays ISP can use the central and distribution system to connect users from anywhere in the country and distribute the bandwidth from central router to distribution router for serving consumers.

When you centrally manage it there you have a huge amount of your total bandwidth that time customers can use full of bandwidth as per their packages.

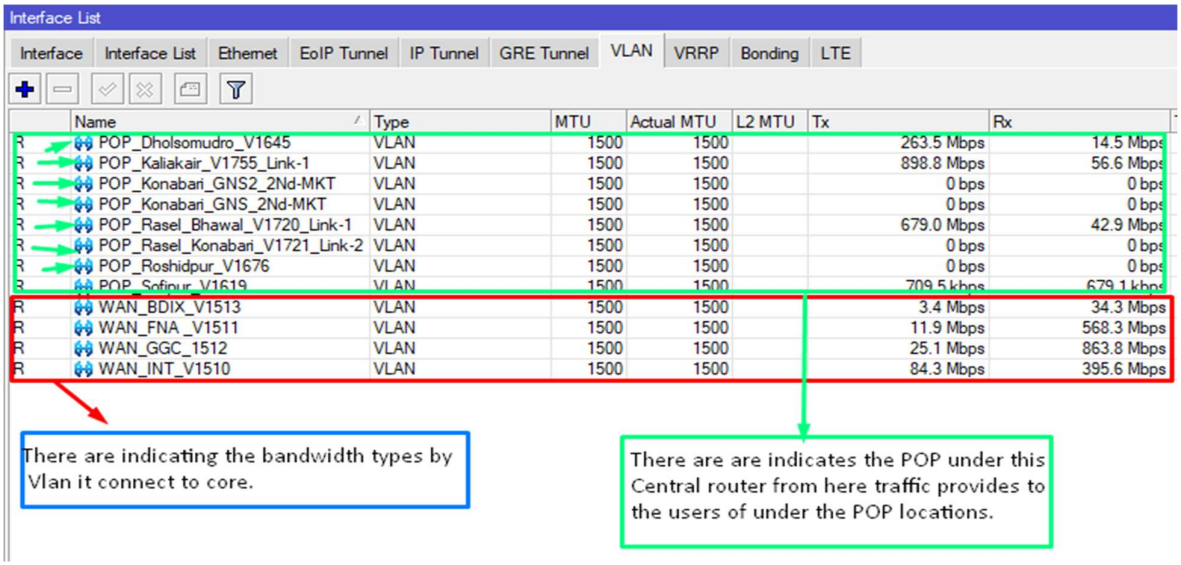

Figure 9: ISP distribution system

The main advantages of this system of any ISP, Although the bandwidth request is less in the rural areas at night, the request is more towards the city and because these system POP locations are in different areas, ISP's can provide their customers with high-speed packages which local

small ISPs cannot do because of their One device runs in an area at the same time and cannot fulfill the requirements of all customers at the same time.

3. **CDN service and LAN cache less from demand:**

A CDN (content delivery network), also known as a content distribution network, is a network of servers that are geographically distributed and interconnected. They deliver cached internet content from a network location near a user's location. The cache server's primary function is to shorten the distance between the main server and the users. In addition to managing server and internet bandwidth pressure.

Mostly used CDN are:

- Google cache server provided by google.
- Facebook cache server.
- Akamai web content and hosting-based cache server.

There are 36 IIGs and 129 licensed Nationwide ISPs in the nation, according to BTRC. Furthermore, there are a lot of regional ISPs. There will be more than 300 local ISPs with cash servers.

However, the issue is that, as of last year, BTRC only allowed IIG and Nationwide ISPs to offer CDN services to their customers, and all of their other category ISPs were required to purchase CDN traffic from them. The Daily Star, January 3, 2022

But before, any ISP with a license could set up CDN peering with the content tech behemoth (Google, Facebook.). In December 2021, BTRC prohibited all cache servers from these ISPs, which caused an immediate problem for CDN traffic in Bangladesh. The main issue is because IIG and Nationwide ISP are unable to accommodate the following request with as much traffic. We are slipping in the world's rankings for high-speed internet primarily because of this.

Rural locations need cache servers for faster speed.

4. Transmission:

In our country ISP connect a home user mainly 2 ways there respectively;

Type 1: A typical Ethernet connection using a cat-6 or cat-5 cable:

Therefore, the Type 1 connectivity method has a significant flaw. This is an extremely outdated type, and the system on this connection has very limited transmission capacity and typically high TX dBm loss. Customers who experience this issue have excessive packet loss and severe latency, which leads to very low speeds for all users. However, for this strategy, the ISP makes use of things like GIGA switches, 10M/100M switches, and media converters. These kinds of devices are limited to 1Gbps transmission speeds. When more people utilize these devices, the uplink transmission path becomes overloaded, causing slow speeds. Additionally, some ISPs primarily use cat-6 or cat-5 Ethernet cables. When a connection is made over a distance of more than 60 meters, this type of cable experiences loss.

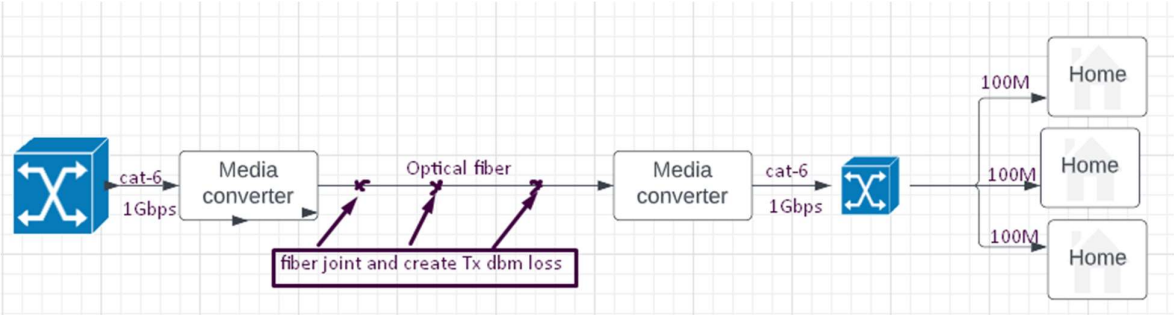

Figure10: MC (Media Converter) Networking Model

Type 2: Contemporary FTTH (Fiber to The Home) connection techniques:

When the bandwidth problem is solved then the main part comes that is the connection type of user to ISP connectivity system. Using the GIGA switch, Media converter & cat-5,cat-6 cable the transmission path gets narrowed and it cannot transmit speed as well but, By the OLT system we can overcome this problem. The main reason for OLT is that every optical node unit can transmit up to 1Gbps bandwidth.

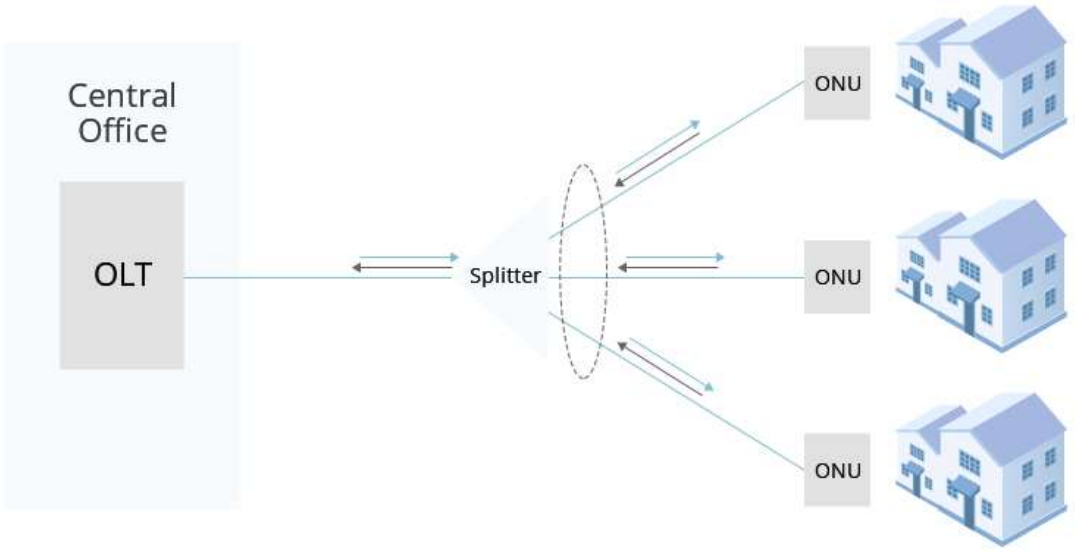

Figure 11: FTTH OLT Networking Model

On overhead optical fiber cut concerns and fiber junction loss issues for the joint loss are a very prevalent difficulty in this technology. TX dbm gets high, so customers have problems with internet packet loss, and when fiber cuts happen, customers have long periods of downtime. Also, ISP's need to reduce overhead transmission systems because this type of communication TX loss is more that can be interrupted on high transmission performance. BTRC needs to take action and make rules for this type of transmission system and also help the ISPs to build the underground infrastructure as soon as possible by working with NTTN licensed organizations.

Limitation:

1. **BTRC license system cons:** The BTRC licensing system had a license type IIG (International Internet Gateway). By the BTRC guideline, every ISP must purchase bandwidth from IIG. This is the major problem of internet high price issues, and for this reason, the BGP hop count is increased.

   If any ISP is capable of using a direct bandwidth circuit from ITC or BSCCL, they can bring bandwidth at a low price by directly connecting to international vendors. For this reason, the bandwidth price automatically increased. If there were no IIG system at that time, ISP could directly establish peering for international bandwidth and get the actual price since there is no mediation; that's why reduce the extra cost of ISP, and they are also able to give low prices and better service to consumers. Actually, there is no need for any IIG layer in BTRC guidelines.

2. **International transmission submarine cable capacity issues and bandwidth shortage:** Day by day, nationwide internet requests and demand are very much increasing. The main reasons are increasing demand; local consumers are using high graphics content-based web media, and social media and youth are connected to the internet very rapidly and widely all over the country.

   Bandwidth use increased by 513 times in the country in the last 14 years, "International internet bandwidth usage in the country was 7.5 Gbps in 2008, which hit 3,850 Gbps in May 2022," Statement by Chairman of BTRC.

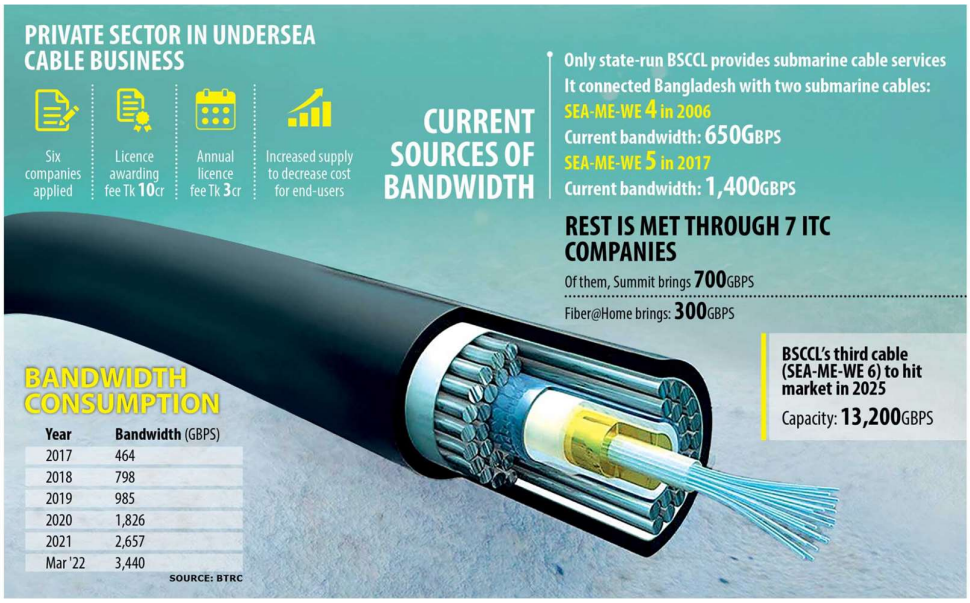

Figure 12: Submarine cable overview

But now, our SEA-ME-WE-4 and SEA-ME-WE-5 capacities are almost at the finish line. Six International Terrestrial Cable (ITC) operators in Bangladesh take bandwidth

from BSCCL and abroad. The ITC operators almost bought the bandwidth use surged to 3,440 Gbps in March this year, up from 1,000 Gbps before the pandemic, according to the BTRC. Sources say the problem will be solved after the country's third submarine cable, SEA-ME-WE-6, arrives in the middle of 2025. Also, the problem will be solved if the GOVT. Very recently passed, the rules that licensed institutes can bring a private submarine cable.

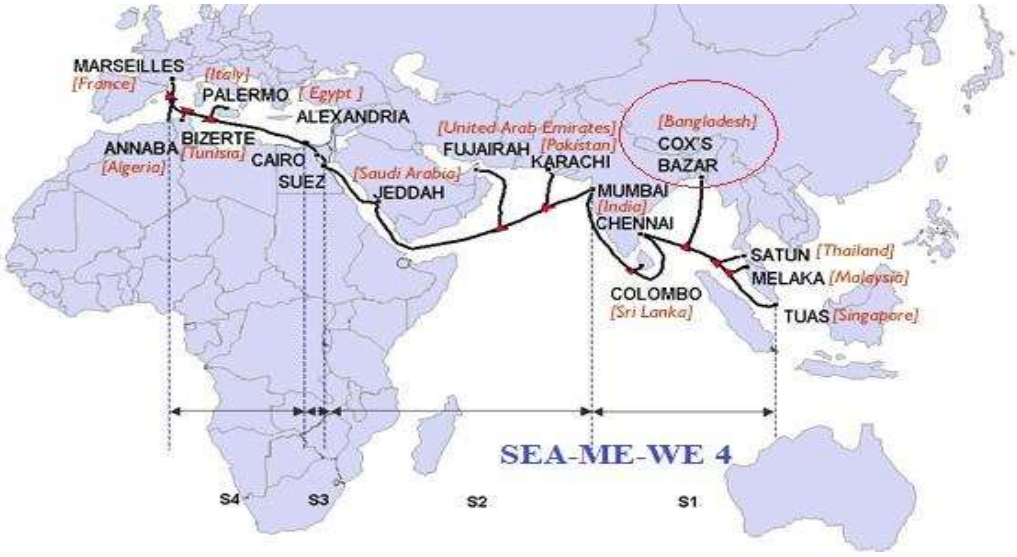

Figure 13: SEA-ME-WE-4

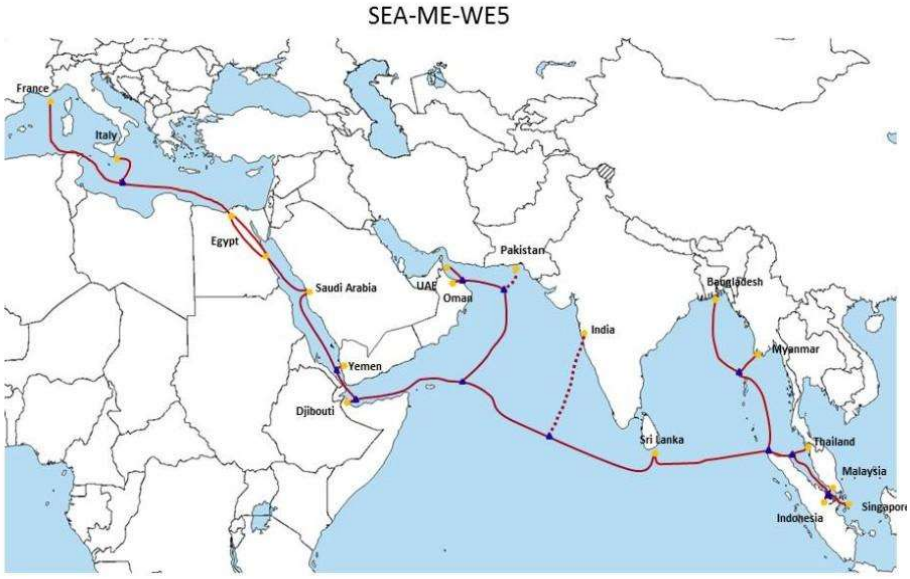

Figure 14: SEA-ME-WE5

3. **Global data center issues:** There is no global data center in our country. If the tech giant comes to our country and place their data center at our premises on that point our consumer most of the request no need to go the global route, we can make inter-connection route and get fastest data speed and low latency. Mostly our global internet protocol transit goes to
    - Google Data Center
    - Amazon Cloud Data Center
    - Akamai Data Center
    - Microsoft Cloud
    - Zen layer and many more.

    Our neighbor India has almost every global giant data center and in favor of these data centers they can reduce their global bandwidth transit and route.

    Example: When a user requests such a service provided by Google at that time, the requested search may apply to the local cache, and then it searches on the premises of the Google data center. If they find it, the reply packets come from the on-premises data center. If the request cannot be found from the data center, then the request goes to another google data center, and this time needs international bandwidth to fill up the request.

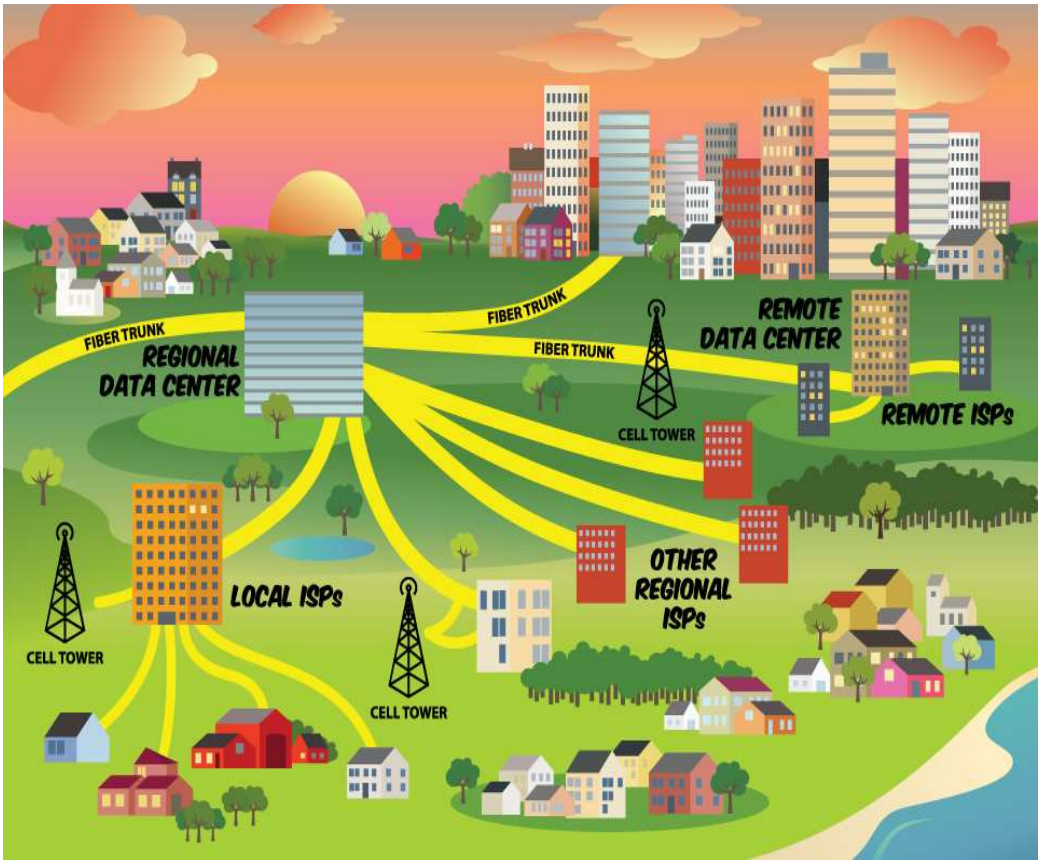

Figure 15: Data center overview

Conclusion

The overall Internet system in Bangladesh is the fastest accessible and cheapest available only through broadband Internet. Still, we are running down internationally every year, and the internet service providers in Bangladesh are providing this service from the grassroots to the rural level. Through our report, we have tried to identify several aspects and know about this network infrastructure, from upstream connectivity to the home consumer. Some significant changes in this management system can speed up the network process and fulfill our goal of digital Bangladesh. Global tech and content giants from the government can be interested in setting up data centers in Bangladesh. The more cloud data centers are in our country, and the more dynamic our internet infrastructure will be. As soon as we get more submarine cable connectivity or private sector ones to get approval from BTRC, our country's internet expectations will be fulfilled, as our current global internet demand will be around 6000 Gbps by 2025. There is no development of the fastest and lowest cost internet for Bangladesh to keep pace with digital and the next world. The Internet has helped and continues to further our communication with the world and replace us with the outside world. It has more speed, reliability, and more work to do on its core infrastructure.

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