



Internship's Report On:

**Management and Maintenance of the Network System of Radiant
Communications Limited**



Department of Electronics and Communications Engineering

Submitted By:

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I'D# 2012-1-55-011

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17 April 2016

Letter of Transmittal

17 April 2016

To

Dr. Nahida Akhter Jahan

Assistant Professor

Departments of Electronics and communications Engineering

East West University

Subject: Submission of Project Report as Internship (ETE-498)

Dear Madam,

I am pleased to let you know that I have completed my Internship program at Radiant Communications Limited. My internship's title is *"Management and Maintenance of the Network System in the Radiant Communications Limited"*. This internship has given me a great opportunity to work in an environment that was fully networking based. I have applied my theoretical knowledge there and worked practically. I have attached some contents of the Internship Report that has prepared for your evaluation and consideration. Madam, your great consideration will be the best for my academic carrier.

I am very grateful to you for your guidance throughout the internship period, which has helped me to learn new things by doing. With Great Respect

Your sincerely

Hasanuzzaman

ID# 2012-1-55-011

Department of ECE

Declaration

This is certified that the internship report has done by me under the course ‘‘Research/Internship/Project (ETE498)’’. It has not been submitted elsewhere for the requirement of any degree or any other purpose except for publication.

Hasanuzzaman

ID# 2012-1-55-011

Department of ECE

East West University

Acceptance

This Internship Report has submitted to the Department of Electronics and Communication Engineering. East West University has submitted in partial fulfillment of the requirements for the degree of B.Sc in ETE under complete supervision of the undersigned.

Dr. Nahid Akhter Jahan
Assistant Professor
Department of ECE

Md. Lokman Hossain
Chief Executive Officer
Radiant Communications Limited

Acknowledgement

At first I wish to convey my cordial thanks and gratitude to Almighty Allah for everything. I would like to thank my faculty and everyone else who has supported me all the way through to complete the Internship program successfully and also those who rendered their cooperation in making this report.

I would like to thank **Dr. Nahid Akhter Jahan** [Assistant Professor, *Department of ECE, EWU*] for guided me with lots of effort and time to perform the internship program.

I want to convey my gratefulness to **Md. Lokman Hossain** [“**Chief Executive Officer, Radiant Communications Limited**”] who gave me the opportunity and helped me greatly by providing valuable suggestions to make this report based on “**Management and maintenance of the network system in Radiant Communications Limited**”.

I would also like to give the acknowledgement to the system Management Department of RCL. I am really thankful to this department specially to **Masudul Islam Akash** [“**Chief Technical Officer, Radiant communications Limited**”] for providing suggestion on how to work and what is the procedure to work in a practical manner and also how to make an internship report in a better way. Finally, I want to thank the entire Technical Support Team of Radiant Communications Limited. Without them it was not possible for me to complete my internship period with Success.

Abstract

In this report several key issues like maintenance, management and understanding of a complete Network system of Radiant Communications Limited [RCL] has been focused. The network system of RCL provides different kinds of services such as ‘Data connectivity’ service, ‘Internet’ service, ‘Security’ service, ‘Fiber optics network’ service, ‘Network infrastructure design and maintenance’ service, and Support. For proper network design two or three back up links were preserved in order to provide secure service during power instability problem. As a technical support I had to face most of the problems for data connectivity, internet service and fiber optics network. Authentication failure of a user was one the problem. By using ‘WINBOX’ software it was possible to see the details about that client and to solve that problem. Another technical problem was Fiber cut/break problem which happened several times. One of the plausible way to know about fiber cut is to first check the DB of that link. If there is no DB, then to use optical time-domain reflectometer (OTDR) machine. The OTDR machine inform us the total distance, from where the fiber is cut and the DB also. Besides there were many other technical problems. This internship has given me the opportunity to work and learn some software and hardware architecture practically and acquire a clear knowledge about understanding network system based problems and to find some credible solutions.

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Chapter-1

Introduction

Background of the study

In the broadest terms, people like to view the internet as a cloud, I put my data in one place, it comes out the place I want it to on the other side. In reality the internet is tens of thousands kilometers of fiber optics cable, hundreds of thousands to millions of kilometers of copper wire, and hardware and software connecting them all together in a redundant, fast, and self-sufficient network. But no need to worry, it's not bad: cause, I just have to worry about very small portion of the network, I can let someone else worry about the rest.

I had an opportunity to work with the most leading IT and Internet service provider[ISP] company that is Radiant communications Limited. I consider myself timely to get a chance to take a deep look to their development methods, working models, deals and industrial behavior. And I was intending to look into the networking industry and how it looks like practically, how they interact with their clients, how they design a system and what are their rules in their environmental works.

I got the chance to work in Network Operation Center[NOC] in Radiant communications Limited. we know computer networking is the principal part of our modern life. I have tried my best to know the commuter networking and how does it works, how to design a wide area network and backbone network, what are the important keys to design a beneficial network, how can I design cost effective network and how to mitigate downtime of a network.

About Radiant Communications Limited

Radiant Communication Ltd. (RCL) is a pioneer in the Information and Communication Technology industry of Bangladesh, having launched their computer and network services back in 2004. It has evolved their trade initiatives in the ICT sector with an aim to serve the market demands of a broad range of Business IT needs. RCL address all aspects of a product/project development lifecycle, ranging from preliminary analysis and design to programming, hardware and software specification, project implementation, and training.

RCL providing corporate IT solutions offering various IT services nation-wide. It has the expertise and specialization to provide world-class connectivity solutions such as WAN, VPN. RCL places special importance on quick adoption of new technology.

RCL continuously strive to deliver true business benefits by simplifying connectivity and providing cost-effective IT solution for maximum performance, security and convenience. It provides complete Web Solutions and information services to both local and foreign clients, as well as E-commerce capabilities, order processing, payment handling, product/services delivery, and all other pertinent services throughout the transaction cycle.

RCL ensures its clients an exceptional level of service using appropriate mix of world-class talent, strong management focus, dedicated business units and a strongly built financial platform. It endeavours to provide superior services by handling knowledge based and manpower intensive activities to improve the client's cost structure, competitive efficiency, price-performance and bottom line results.

Name and address in short

Company name: Radiant Communications Limited

Address: Suite#D5-6, Bashati Condominium, House#15, Road#17, Kemal Ataturk Avenue, Banani, Dhaka-1213, Bangladesh

Phone: +8809636221100 Web address: www.radiantbd.com Mail: mail@radiantbd.com

Chapter-2

Devices

Router :

A **router** is a networking device that forwards data packets between computer networks. Routers perform the "traffic directing" functions on the Internet. A data packet is typically forwarded from one router to another through the networks that constitute the internetwork until it reaches its destination node.



Figure 1.1: Router

A router is connected to two or more data lines from different networks (as opposed to a network switch, which connects data lines from one single network). When a data packet comes in on one of the lines, the router reads the address information in the packet to determine its ultimate destination. Then, using information in its routing table or routing policy, it directs the packet to the next network on its journey. This creates an overlay internetwork.

The most familiar type of routers are home and small office routers that simply pass data, such as web pages, email, IM, and videos between the home computers and the Internet. An example of a router would be the owner's cable or DSL router, which connects to the Internet through an ISP. More sophisticated routers, such as enterprise routers, connect large business or ISP networks up to the powerful core routers that forward data at high speed along the optical fiber lines of the Internet backbone. Though routers are typically dedicated hardware devices, use of software-based routers has grown increasingly common.

OTDR [optical time domain reflectometer] :

An **optical time-domain reflectometer (OTDR)** is an optoelectronic instrument used to characterize an optical fiber. An OTDR is the optical equivalent of an electronic time domain reflectometer. It injects a series of optical pulses into the fiber under test and extracts, from the same end of the fiber, light that is scattered (Rayleigh backscatter) or reflected back from points along the fiber. The scattered or reflected light that is gathered back is used to characterize the optical fiber. This is equivalent to the way that an electronic time-domain meter measures reflections caused by changes in the impedance of the cable under test. The strength of the return pulses is measured and integrated as a function of time, and plotted as a function of fiber length.



Figure 1.2: OTDR

The reliability and quality of an OTDR is based on its accuracy, measurement range, ability to resolve and measure closely spaced events, measurement speed, and ability to perform satisfactorily under various environmental extremes and after various types of physical abuse. The instrument is also judged on the basis of its cost, features provided, size, weight, and ease of use.

Switch:

A switch is a device in a computer network that electrically and logically connects together other devices. Multiple data cables are plugged into a switch to enable communication between different networked devices. Switches manage the flow of data across a network by transmitting a received message only to the one or more devices for which the message was intended. Each networked device connected to a switch can be identified using a MAC address, allowing the switch to regulate the flow of traffic. This maximizes the security and efficiency of the network



Figure 1.3: switch

A **network switch** (also called **switching hub**, **bridging hub**, officially **MAC bridge**^[1]) is a computer networking device that connects devices together on a computer network, by using packet switching to receive, process and forward data to the destination device. Unlike less advanced network hubs, a network switch forwards data only to one or multiple devices that need to receive it, rather than broadcasting the same data out of each of its ports.

Media Converter [MC]:

A **fiber media converter** is a simple networking device that makes it possible to connect two dissimilar media types such as twisted pair with fiber optic cabling. They were introduced to the industry in the 1990s, and are important in interconnecting fiber optic cabling-based systems with existing copper-based, structured cabling systems. They are also used in metropolitan area network (MAN) access and data transport services to enterprise customers.



Figure 1.4: media converter

Fiber media converters can connect different local area network (LAN) media, modifying duplex and speed settings. Switching media converters can connect different speed network segments.

Fiber media converters support many different data communication protocols including Ethernet, Fast Ethernet, Gigabit Ethernet, T1/E1/J1, DS3/E3, as well as multiple cabling types such as coax, twisted pair, multi-mode and single-mode fiber optics. Media converter types range from small standalone devices and PC card converters to high port-density chassis systems that offer many advanced features for network management.

Power over Ethernet (Poe):

power over Ethernet or ‘‘Poe’’ describes any of several standardized or ad hoc systems which pass electrical power along with data on Ethernet cabling. This allow a single cable to provide both data connection and electrical power to devices such as wireless access point or ip-cameras. Unlike standards such as universal serial bus which also power devices over the data cables. PoE allows long cable lengths. Power may be carried on the same conductors as the data, or it may be carried on dedicated conductors in the same cable.



Figure 1.5: PoE

Fiber Optics:

An optical fiber cable is a cable containing one or more optical fibers that are used to carry light. The optical fiber elements are typically individually coated with plastic layers and contained in a protective tube suitable for the environment where the cable will be deployed. Different types of cable are used for different applications, for example long distance telecommunication, or providing a high-speed data connection between different parts of a building.



Fiber Optic Cable

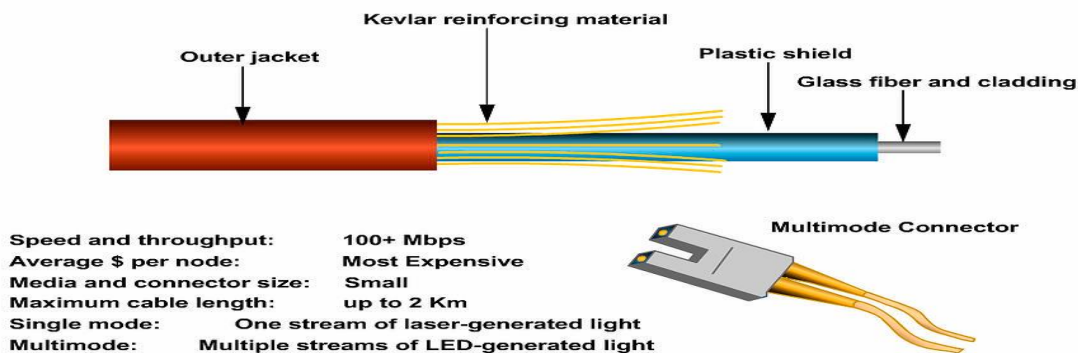


Figure 1.6: Fiber Optics

Advantages of optical fiber:

1. Greater bandwidth than metal cables, larger carrying capacity.
2. Less susceptibility than metal cable to interference.
3. Much thinner and lighter than metal wire.
4. Data can be transmitted digitally.
5. Fiber optics cable cost much less to maintain

Fiber optic Laser:

The condition of an optical fiber can easily be checked with the fiber tester FIBERCHECK by coupling in good visible laser light. If the beam hits a damaged part, most of the light is scattered out of the fiber. In this way a broken fiber can easily be recognized.



Figure 1.7: laser light

DB Meter:

Practically every measurement in fiber optics refers to optical power measured in db. Power in a fiber optic system is like voltage in an electrical circuit. It's important to have enough power, but not too much. Too little power and the receiver may not be able to distinguish the signal from noise; too much power overloads the receiver and causes errors too.

Measuring power

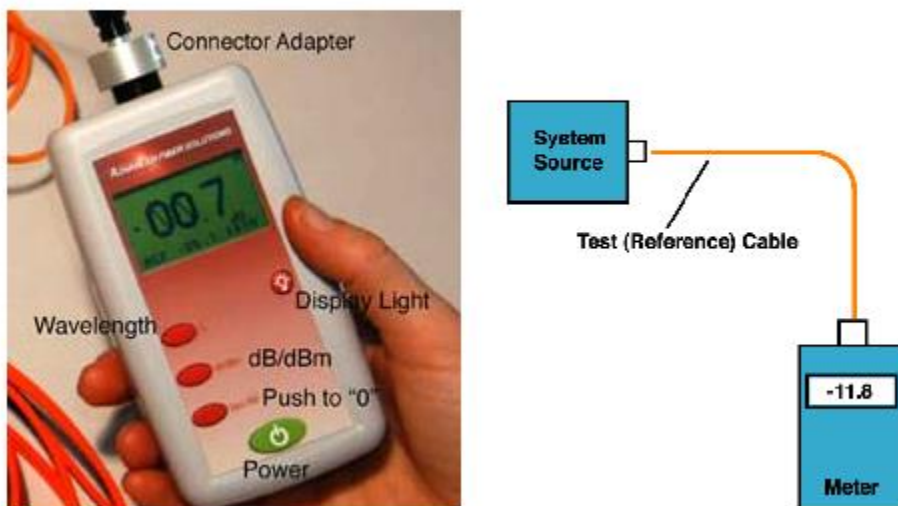


Figure 1.8: DB Meter

Measuring power requires only a power meter, a known good fiber optic cable and a little help from the network electronics to turn on the transmitter.

To measure power, attach the meter to the cable attached to the source that has the output you want to measure (see diagram to the right). That can be at the receiver to measure receiver power, or using a reference test cable (tested and known to be good) that is attached to the transmitter to measure output power.

Chapter -3

Design of a Network

The following steps are the design of a business network, that's will fulfill all the requirements of any organization.

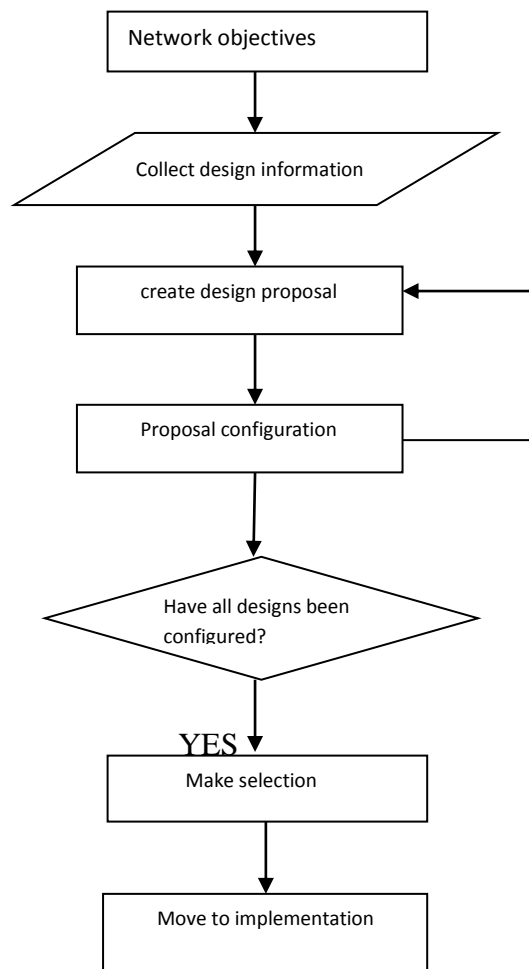


Figure 1.9: Design steps of a business network

Objectives of a network design:

- Who are the users of this network and what are the requirements?
- What types of application will be supported?
- Does the design replace of existing network?
- Overall responsible for network management.
- What is the budget?
- Design consideration.

Requirements to design a network:

- Bandwidth requirements
- Performance requirements
- Protocol required
- Quality of service/ Type of Service (QoS/ToS)
- Sensitivity to packet loss and delay
- Multicast
- Scalability
- Security

Backbone network design:

To design a network, we need to follow some rules or steps that create a network more efficient and give high performance. A designed network has some goals that are discussed earlier.

1. Scalability
2. Availability
3. Security
4. Manageability

To fulfill the fundamental goals of a network there must be built an architecture that allows for both flexibility and growth. Hierarchical networks have some advantages over flat network designs. The benefit of hierarchical design is that local traffic remains local. Only traffic goes to other networks and its moved to a higher layer. A flat network using layer-2 devices provide the control broadcasts or to filter undesirable traffic. As more devices and applications are added to a flat network, then response times degrade until the network become unusable. Keeping all of the above, we can use the hierarchical method to design of our desired network. There are some benefits of hierarchical network that are given below.

Actually hierarchical network is divided into three layers:

1. Core layer: connects distribution layer devices.
2. Distribution layer: Interconnects the smaller local networks.
3. Access layer: Provides connectivity for network hosts and end devices

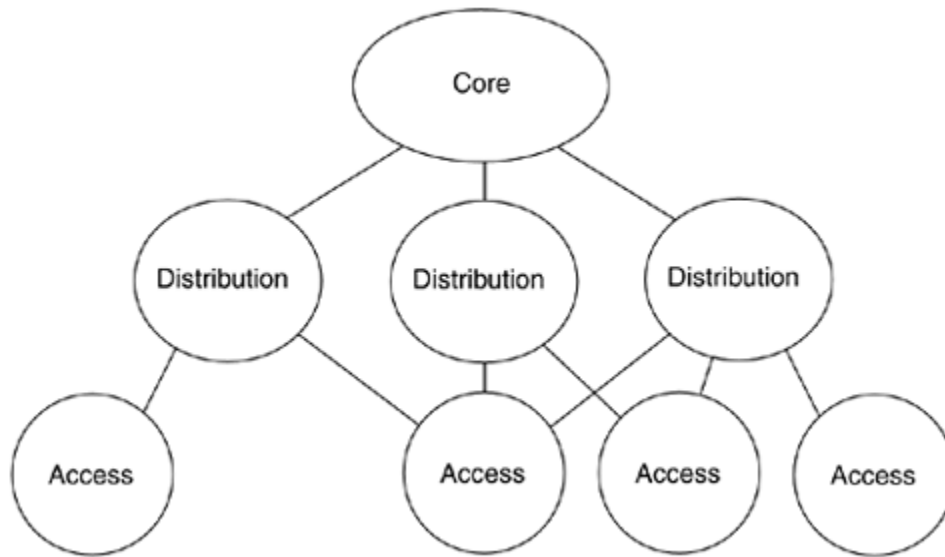
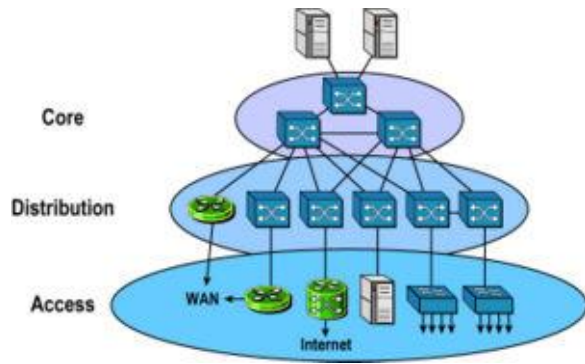


Figure 2.1: Hierarchical Design of Network

For long distance we can use fiber optic cable or radio connectivity for backbone connection. Fiber optics and radio connectivity is more efficient than Ethernet cable. Due to signal degradation we cannot use Ethernet cable long distance. On the other hand, by using optical fiber and radio connectivity we can transfer signal for long distance. Most of the backbone network is connected by fiber optic cable or radio connectivity.

Network planning:

A typical task has to follow to perform a proper planning of a network that can solve the complexity. A planned network has to perform of the business of an organization. In that case, a perfect network plan is followed to the proper business plan.

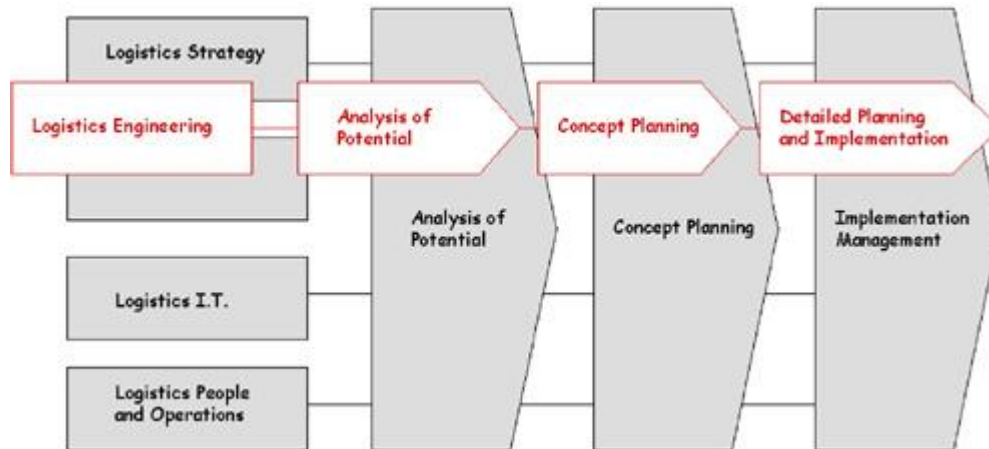


Figure 2.2: Network planning

Long term planning (LTP): long lifetime and large investments for their deployment.

Strategic planning:

- Technology
- Network mechanism
- Recovery mechanism

Fundamental planning:

- Topology planning
- Allocation of function in networks nodes
- Distributions functions in networks nodes
- Resource optimization
- Medium Term planning: Capacity upgrading of network nodes and links. This always follow the long term (LT) deployment strategies.

Overall design of a Network planning:

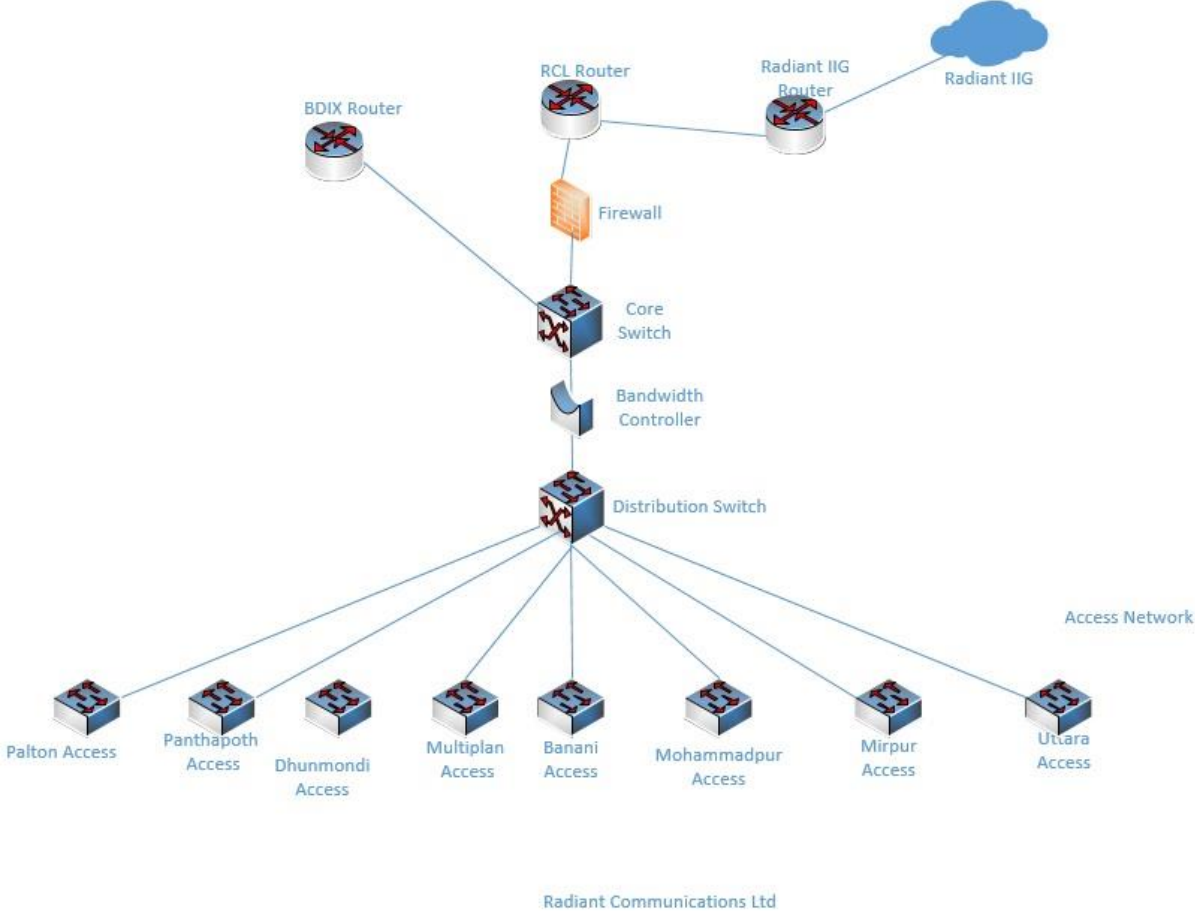


Figure 2.3: Overall design of a Network planning

Chapter -4

Internship activities

In this sector I have tried to focus the maintenance and management of the network system in an ISP company. My main task was to ensure high security, proper maintenance service and reliable connection to the clients.

ISP NOC Support System:

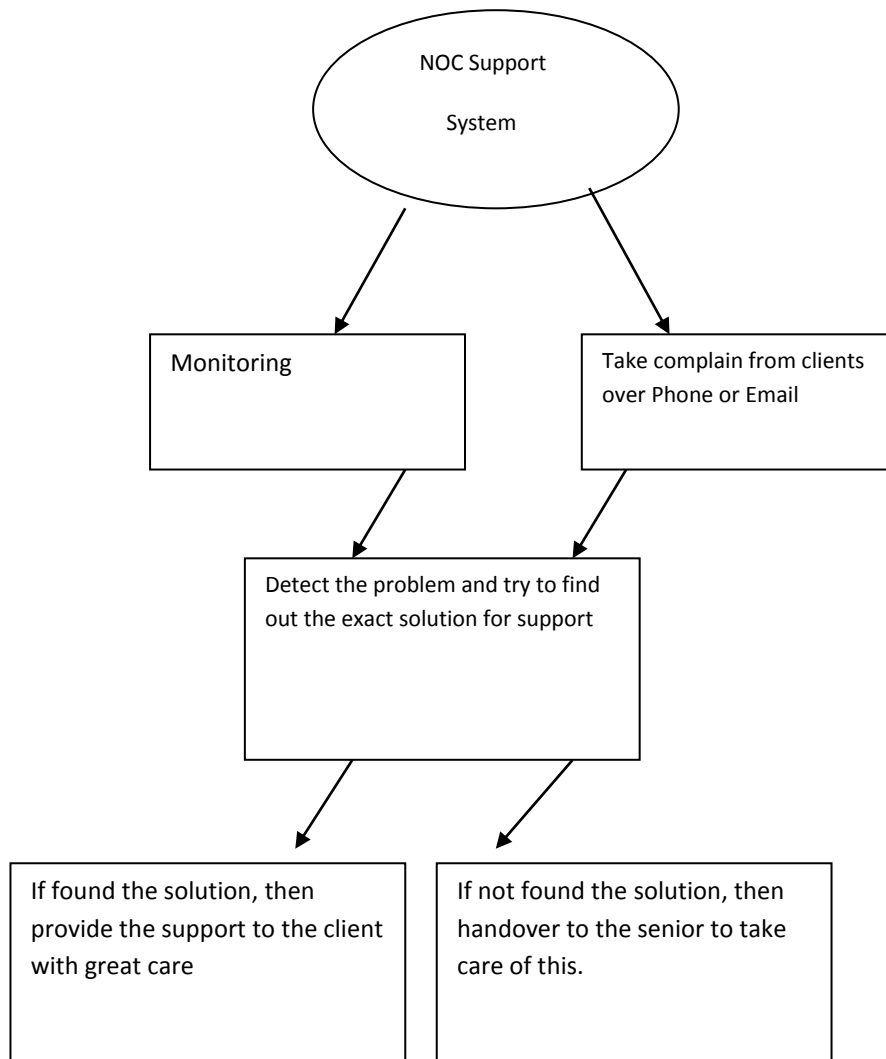


Figure 2.4: NOC support system of Radiant Communications Limited

There were some basic works of technical department. Some of these are following

Link check:

The whole backbone networks of Radiant Communications Limited is under monitored. We can check any link at any time by this page. There were some build-in system by those we can easily understand about network down and network up. By getting the information we can take the next steps for better support. It's also show the network up-down time.

The screenshot shows a 'LinkCheck' dashboard with a green header. The status is 'CheckNow' and the time is '00 : 01 : 04'. A list of links is shown, with 'LALMATIA-MULTIPLAN' and 'LALMATIA-KALLYANPUR' marked as 'Link Down'. The 'LALMATIA-KALLYANPUR' link is expanded to show a table of downtime events.

Downtime	Uptime	Duration
March 23, 2016, 7:49 pm		
March 17, 2016, 8:02 am	March 17, 2016, 8:03 am	00:00:36
March 17, 2016, 8:01 am	March 17, 2016, 8:01 am	00:00:14
March 17, 2016, 3:32 am	March 17, 2016, 3:33 am	00:00:37
March 16, 2016, 1:56 am	March 16, 2016, 1:57 am	00:00:37
March 15, 2016, 6:30 pm	March 15, 2016, 6:35 pm	00:05:00
March 15, 2016, 6:14 pm	March 15, 2016, 6:24 pm	00:09:59
March 15, 2016, 4:57 am	March 15, 2016, 5:19 am	00:21:44

Figure 2.5: Link Check page of Radiant Communications Limited

MRTG:

The Multi Router Traffic Graper (MRTG) is a tool to monitor the traffic load on network links. Radiant Communications Limited also maintains these tools for monitoring. By this tools we can monitor

- Traffic load on a network for specific client
- Total given bandwidth for a network
- Specific using data of client
- Inbound data rate, outbound data rate, average maximum/minimum data rate
- Switch port of a client from where he is connected
- An user is connected or disconnected

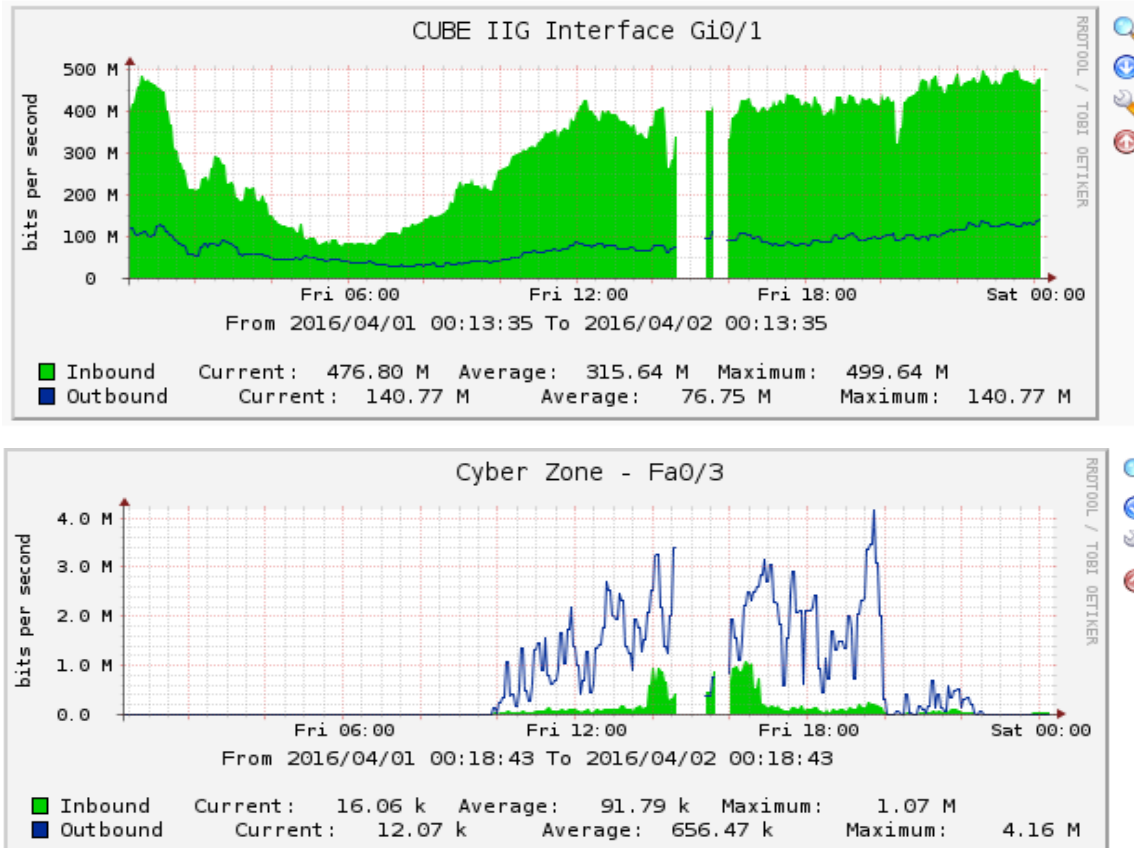


Figure 2.6: MRTG

Network Management Service [NMS]:

It's another site of Radiant Communications Limited. We can take care and monitor the whole network system of RCL by this site. I have used this page practically and I monitored the following things by this tools:

1. How many devices [switch/router] are using and using location.



















Device/Location	Platform	Operating System	Uptime/sysName
 bn-acc-sw1.radiantbd.com	 29 I6Q4L2	catalyst2950t24 Cisco IOS 12.1(22)EA14	250d 6h 27m 38s banani-access1
 bn-dc-acc-sfp-1	 28  120	cisco340024FSA METROIPACCESSK9 Cisco IOS 12.2(58)SE2	344d 17h 11m 50s bn-dc-acc-sfp-1
 bn-dc-acc-sfp-2	 28  60	cisco340024FSA METROIPACCESSK9 Cisco IOS 12.2(58)SE2	1y 12d 7h 50m 13s bn-dc-acc-sfp-2
 bn-gw2.radiantbd.com	 9	Level 5 Mikrotik RouterOS 5.22	Down 2y 190d 6h 13m 32s bn-mk.radiantbd.com
 gul-acc-sw1.radiantbd.com	 28	catalyst2924XLv C3H2S Cisco IOS 12.0(5.2)XU	24d 2h 25m 38s gul-access1
 mhp-acc-sw1.radiantbd.com	 28	catalyst2950t24 I6Q4L2 Cisco IOS 12.1(22)EA4	Down 63d 7h 4m 27s mhp-access
 mrtg.radiantbd.com Banani	 4	Generic x86 64-bit Linux 2.6.32-5-amd64	1y 195d 6h 18m 49s mrtg
 ns1.radiantbd.com	 4	Generic x86 64-bit Linux	120d 10h 2m 26s

Figure 2.7: NMS

2. Client connection port in switch, traffic of client, speed, mac address etc.

Device	Port	Traffic	Traffic %	Packets	Speed	MAC Address
gul-acc-sw1	FastEthernet0/2 <i>Dominant.Homes</i>	↓ 0bps ↑ 0bps	0% 0%	↓ 0pps ↑ 0pps	0bps 1500	Ethernet 00:30:85:45:97:82
utt-acc-sw1	FastEthernet0/3 <i>Sagor</i>	↓ 0bps ↑ 0bps	0% 0%	↓ 0pps ↑ 0pps	100Mbps 1500	Ethernet 00:14:1c:0f:7b:c3
pl-acc-sw1	FastEthernet0/2 <i>Delta-Traders</i>	↓ 0bps ↑ 0bps	% %	↓ 0pps ↑ 0pps	100Mbps 1500	Ethernet 00:02:b9:fb:2e:42
bn-acc-sw1	FastEthernet0/3 <i>Bangladesh Erectors House</i>	↓ 0bps ↑ 0bps	0% 0%	↓ 0pps ↑ 0pps	10Mbps 1500	Ethernet 00:15:2b:7e:38:c3
mhp-acc-sw1	FastEthernet0/3 <i>MR. Asif</i>	↓ 0bps ↑ 0bps	0% 0%	↓ 0pps ↑ 0pps	100Mbps 1500	Ethernet 00:13:c4:f7:81:43
utt-acc-sw1	FastEthernet0/4 <i>MR-Hi</i>	↓ 14.0kbps ↑ 182kbps	0% 0%	↓ 16pps ↑ 18pps	100Mbps 1500	Ethernet 00:14:1c:0f:7b:c4
gul-acc-sw1	FastEthernet0/3 <i>LFC_Telecom</i>	↓ 0bps ↑ 352bps	0% 0%	↓ 0pps ↑ 1pps	100Mbps 1500	Ethernet 00:30:85:45:97:83
mhp-acc-sw1	FastEthernet0/4 <i>eyevision</i>	↓ 0bps ↑ 0bps	0% 0%	↓ 0pps ↑ 0pps	100Mbps 1500	Ethernet 00:13:c4:f7:81:44

Figure 2.8: NMS

3. The real time using graph of a client:

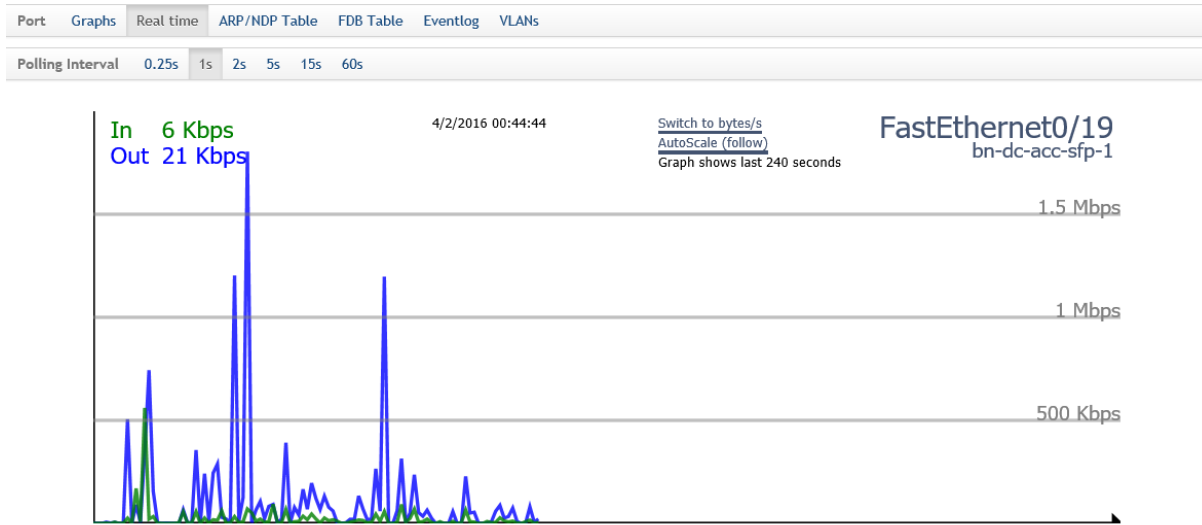


Figure 2.9: NMS

Besides, many other build-in system is attached with this tools by which we can easily detect the problems of clients and provide the best solutions.

Radiant IP-address management:

Radiant IP-address management is another website where the whole using ip-address is maintained. Besides this there are some other functions that we monitored:

1. The corporate network details of Radiant Communications Limited.

POLTON		POLTON		50M			
→ 122.102.32.88/30	→ Smart net	✓	✓	6	Core switch	60 mbps,150 mbps youtube	
→ 122.102.35.40/29	→ Sigma Group (Palton)	✓	✓	7	Palton Access Switch	5 mbps	
→ 122.102.35.192/29	→ Azmain Printers	✓	✓	FastEthern	122.102.37.13 (Palton Access)	5 Mbps	
→ 122.102.35.216/29	→ Aristopharma	✓	✓	3	Palton Access	5 Mbps /5mps	

Figure 3.1: RCL corporate network

Subnet	Description	VLAN	Requests	Hosts check	Port	Switch	Bandwidth
BANANI	BANANI						1024
→ 122.102.32.92/30	→ ICT Care	31	✓		1	SFP 1	10 mbps
→ 122.102.34.32/29	→ South Bay Properties Ltd.		✓	✓	3	Banani Access (122.102.37.6)	1Mbps/1Mbps
→ 122.102.35.0/29	→ Super Star Properties(MN Consultancy)	13			Fa0/7	Banani Access 2	1280/1280
→ 122.102.35.16/29	→ LFC	53	✓	✓	Fa 0/3	122.102.37.19	2 mbps
→ 122.102.35.48/28	→ DJ Agro	15			15	Banani Access 1	768/768
→ 122.102.35.64/29	→ EQMS	19			24	SFP 1	1280/1280
→ 122.102.35.80/29	→ ILM Services Ltd		✓	✓	FastEthernet	122.102.37.23	1Mbps (Dedicated)
→ 122.102.35.112/29	→ Mishnan Trading				22	SFP 2	1280/1280
→ 122.102.35.128/29	→ Europa Group	38			9	SFP 1	1024/1024

Figure 3.2: RCL corporate network








2. Provider network of Radiant Communications Limited.

Subnet	Description	VLAN	Requests	Hosts check	Port	Switch	Bandwidth
> 122.102.32.96/30	> Masul Telecom		✓	✓			B/w:3Mbps/3Mbps, You Tube:5Mbps/5Mbps
> 122.102.32.104/29	> Zohura Market (skylink)						30 Mbps
> 122.102.32.112/30	> Log in Dhaka		✓	✓	20	SFP .37.3	5 mbps
> 210.1.253.192/26	> Login Dhaka		✓				5Mbps/5Mbps
> 43.231.22.0/29	> Bhyrab Express						30 Mbps
> 43.231.22.0/29	> FaikPara Pop						30 Mbps
> 43.231.22.0/28	> Rose International						30 Mbps
> 43.231.22.4/30	> Bhairab Express Net			✓			15M Internet 30Mb youtube
> 43.231.22.16/28	> NSBD						30 Mbps
> 43.231.22.32/29	> NKC Pop						20 mbps
> 43.231.22.48/29	> Sathkhira pop						20 Mbps
> 43.231.22.64/29	> Shilmon pop						30 Mbps

Figure 3.3: RCL Provider network

3. We can see and monitored the details of client that are connected each and every port of specific access switch.

Folder details

Hierarchy	CORPORATE NETWORK / BANANI				
Folder name	BANANI				
Permission	Read				
Bandwidth	1024				
Actions	      				

BANANI has 31 directly nested subnets:










VLAN	Subnet description	Subnet	Used	% Free	Requests	
31	ICT Care	122.102.32.92/30	1/2	50	✓	
	South Bay Properties Ltd.	122.102.34.32/29	1/6	83.33	✓	
13	Super Star Properties(MN Consultancy)	122.102.35.0/29	1/6	83.33	✓	
53	LFC	122.102.35.16/29	0/6	100	✓	
15	DJ Agro	122.102.35.48/28	3/14	78.57	✓	
19	EQMS	122.102.35.64/29	2/6	66.67	✓	
	ILM Services Ltd	122.102.35.80/29	1/6	83.33	✓	
	Mishnan Trading	122.102.35.112/29	1/6	83.33	✓	
38	Europa Group	122.102.35.128/29	2/6	66.67	✓	

Figure 3.4: RCL corporate network details.

Radiant ticket:


When we get a problem from client then first we try to solve that instantly. If we fail then we take some times from client and create a ticket for showing this to the upper technical person. Radiant ticket is another technical tool where some unsolved problems are stored with priority based.

It's always keep in touch with the Radiant mail server. By this all the technical person can monitor the unsolved problems of client and can take some steps to solve that as soon as possible.

When some problem of Radiant ticket is solved then someone closed a ticket and the confirmation with details reached at radiant mail server automatically. By this all the technical person can show the solution against the problem and can learn also that, how to solve that.

[Read More](#) [View](#) ▾

[Delete](#) ▾ [Delegate](#) ▾ [Respond](#) ▾ [Defer 1 Hour](#) ▾ [Create Task](#) [?](#)

 **[#777122] Link Down** Mar 12

From: Radiant Help Desk

To: support@radiantbd.com

Radiant Support,

A customer support staff member has replied to your support request, #777122 with the following response:

Mitra Associate & GSA Link is up now.
Problem is solved by cable repairing.

We hope this response has sufficiently answered your questions. If not, please do not send another email. Instead, reply to this email or login to your account for a complete archive of all your support requests and responses.

<http://support.radiantbd.com/view.php?auth=01xaeaaaaafsa2aaa0vu2jyaPHtUNsA%3D%3D>

--
This message has been scanned
by Mail-Admin

Figure 3.5: Radiant Ticket

Win box:

Win box is a software for accessing and controlling the mikrotik router. Let's first know something about mikrotik router. We have used their Wi-Fi router and mikrotik router for connecting clients. For home users, or in small areas normally Wi-Fi router are used. But for Radiant's provider network and some corporate network there used mikrotik router. Mikrotik router is an advance level of router, where bandwidth can be specified for a specific network and also there many port for connecting many clients. By using win box software, we can add or detach a client from Radiant's network. We can also monitor that; a client how much bandwidth is using this instant or whose are now in offline. By getting the log information from win box we can identify the physical problem or authentication problem of a link or client.

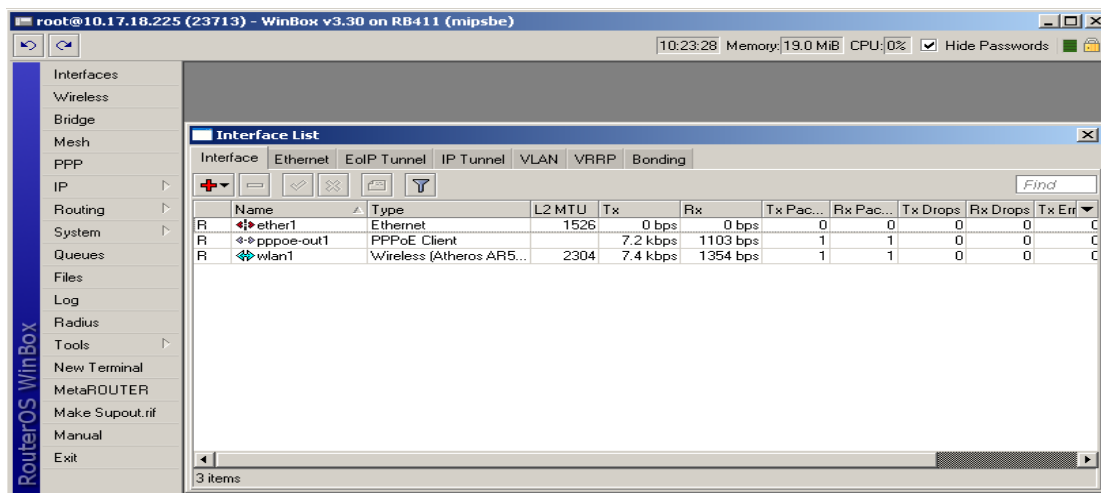
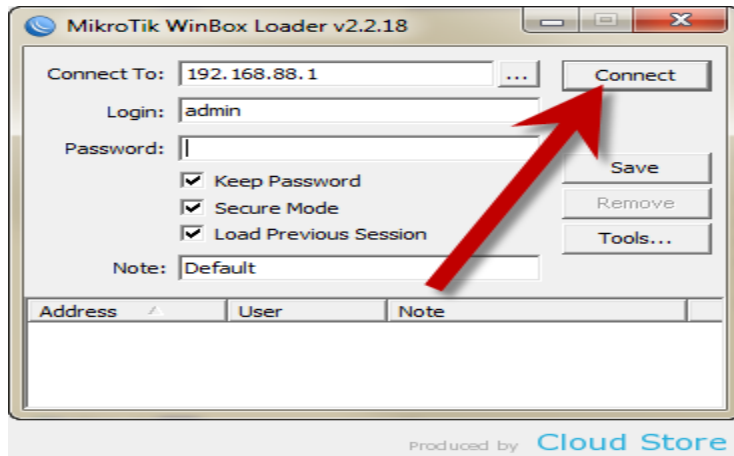


Figure 3.6: Win Box

Mail Server:

The most using tools at Radiant support is Radiant mail server. The maximum works of Radiant Communications Limited is done through this server. Some of these are following:

- Customer problem detection
- To provide customer's solutions
- To contact with the IIG license provider of our company for any problem
- To contact with the bandwidth service provider of our company for any problem
- To get the update news of ITC connection
- To get the update news of our own technical department
- Overall maximum works for maintenance and management system is done by the mail server.

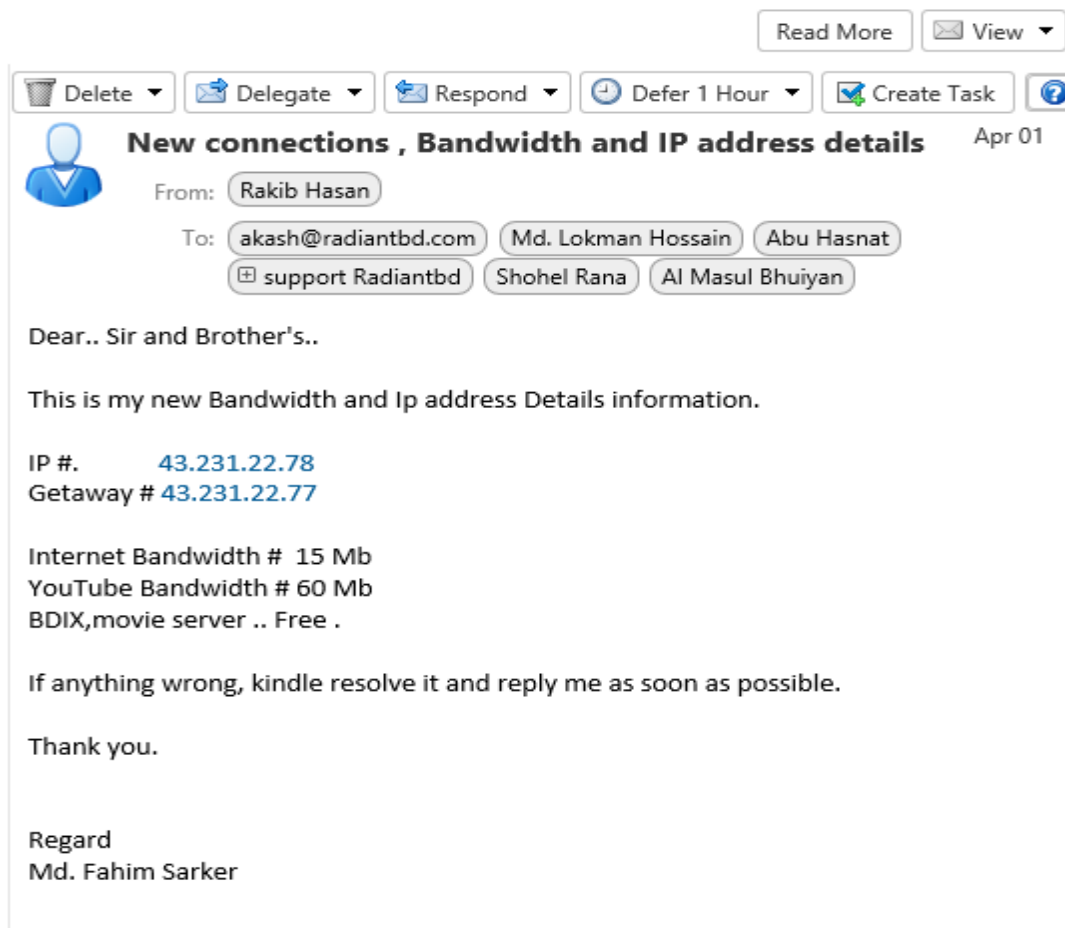


Figure 3.7: Radiant Mail Server

Chapter -5

Additional services

Web Technology:

Domain Names

We are domain name experts. After all, we had the first government contract to assign domain names in 1993. We know that for our customers, a domain name is a valued business asset which represents their image on the Web. With advanced search tools and expert advice, we help our customers find that perfect name.

Web Hosting

Building a Web site is typically the next step after acquiring a domain name. Web hosting, which provides the physical storage of Web site content, makes this happen. We offer Linux Web hosting with a confirmed and tested greater than 99.99% uptime rating. This unsurpassed reliability helps our customers trust us to get them online and keep them online.

Email

Everyone wants a memorable email address; one that says “I’m a professional business person.” We make this possible for millions of customers by offering an easy way to match a domain name to an email address

Web Site Design

Many small business owners want to do everything themselves. Others need more hand-holding and support. That’s why our Web site solutions run the gamut from easy do-it-yourself site building tools to full-service, professional Web site design, creation, and maintenance.

Web Site Security

Online safety is top of mind for people surfing the Net as well as people running an online business. Our Web site security solutions are state-of-the-art and allow our customers to secure their sites for transactions, protect their sites from hackers, and preserve their reputation in the process.

IP Telephony Solutions:

Radiant Communications for the enterprise Success in business these days takes more than the telephone and traditional PBX equipment. It requires IP telephony solutions to support voice over IP (VoIP), open standards like SIP, mobile workers and the unified voice and data communications business now demands. Interactive Intelligence offers everything the modern enterprise needs in your choice of all-in-one IP telephony solutions to fit your organization, scaling from 100 users to more than 15,000 users:

1. The highly scalable Customer Interaction Centre(CIC) IP platform provides a complete phone system for your business users, combining Microsoft application integrations, and messaging along with remote and mobile access, too. Additionally, if you need advanced features for your contact centre, CIC includes IVR, screen recording, workforce management, multi-site routing and more.
2. More than simply a voicemail system, Messaging Interaction Centre(MIC) allows organizations in business, higher education, healthcare, and other sectors to streamline every aspect of messaging from a single standards-based platform



Key benefits:

- Our IP PBX telephony solutions offer broad integration to business systems and expanded mobility, which is a benefit to any business. It's even more beneficial when that same IP PBX telephony solution lets your business:
- Replace multiple legacy hardware communication systems with a single all-in-one platform and application suite architected for SIP and networked VoIP
- Reduce your total cost of ownership by centralizing system administration to one interface, converging voice and data on a single network, and lowering overall maintenance
- Increase security with advanced voice encryption methods and fewer access points for system "break-ins"
- Support business growth and enterprise expansion with simple application licensing, not additional hardware, middleware and costly capital expenditures

Security

IP surveillance: It is quite affordable, since companies already have many components of the system in place (such as an IP network and broadband connectivity). With the simple addition of this technology, a whole new list of features and functions becomes available:



- Remote access of images utilizing the computer network—eliminating the need for dedicated security monitors in a central office
- Password-protected access anywhere there is an Internet connection
- Connect to a remote control station to view what is going on and control cameras and other aspects of the surveillance system
- Ease of integration with other systems and applications
- Lower TCO (total cost of ownership) by leveraging existing network infrastructure and legacy equipment
- Creates a future-proof system, so no more complete system overhauls

Firewall:

A firewall is a part of a computer system or network that is designed to block unauthorized and unwanted communication. It is such a device which is configured to permit or deny computer applications based upon a set of rules and other criteria. Firewalls can be implemented in either hardware or software, or a combination of both. They are frequently used to prevent unauthorized and unwanted Internet users from accessing private networks connected to the Internet. It specially used in the intranet. All messages entering or leaving the intranet pass through the firewall, it examines each message and blocks those that do not meet the specified security criteria.

There are several types of firewall techniques:

- Packet filter: Packet filtering inspects each packet passing through the network and accepts or rejects it based on user-defined rules. Although difficult to configure, it is fairly effective and mostly transparent to its users. It is susceptible to IP spoofing.
- Application gateway: Applies security mechanisms to specific applications, such as FTP and Telnet servers. This is very effective, but can impose a performance degradation.
- Circuit-level gateway: Applies security mechanisms when a TCP or UDP connection is established. Once the connection has been made, packets can flow between the hosts without further checking.

Proxy server:

Intercepts all messages entering and leaving the network. The proxy server effectively hides the true network addresses.

Data backup and Recovery:

Data backup is an insurance plan. Important files are accidentally deleted all the time. Mission-critical data can become corrupt. Natural disasters can leave your office in ruin. With a solid backup and recovery plan, you can recover from any of these. Without one, you're left with nothing to fall back on. Because data is the heart of the enterprise, it's crucial for you to protect it. And to protect your organization's data, you need to implement a data backup and recovery plan. Backing up files can protect against accidental loss of user data, database corruption, hardware failures, and even natural disasters. It's your job as an administrator to make sure that backups are performed and that backup tapes are stored in a secure location.

Now we are able to provide you the following security software:



VPN:

Why VPN:

Every day when you check your e-mails or chat over Skype, shop online or simply browse some sites you exchange millions of bytes of information through the Internet. Luckily, to protect your information you don't need to become a net safety expert or buy expensive equipment. You can simply buy VPN solution where all your incoming and outgoing traffic goes through a secure VPN connection. This technology is often used by companies which need to provide access to their internal network from all over the world and not just from the office. But what if you want to use the Internet for your own private needs? There's a simple and accessible solution - the Radiant Communication Ltd. provides - reliable protection and guide in the "ordinary" Internet.

What is special about Radiant here?

As by using other VPN solutions all information you will send through Radiant will be encrypted.

But, when you connect to Radiant you also get access to Internal Network Resources with exclusive content not be found in the "ordinary" Internet. Also, if you have your own interesting content, then once you've registered you can get involved in the partnership programme. This will allow you to get maximum profit out of your traffic and attract new users. And you'll be able to get new domain zones with simple and intelligible domain names and the necessary amount of IP-addresses.

Conclusion

Radiant Communications Limited is an ISP company of Bangladesh. It is a great pleasure to me that i have got chance to work there as a Technical Support Engineer. Among four years what i have learnt from my university, i practically applied there. My main task was to learn maintenance and management of the network system. By this internship, I have learnt how to maintain a whole network system of a company. Besides, I have learnt to work under pressure and also work with dedication which is so much important for any corporate life. I wanted to gain a professional experience by serving a challenging company and i think so ‘RCL’ was the perfect place for me. Finally, I want to mention, this internship period was the great opportunity to gather fruitful knowledge for my future career. I hope, this experience will help to make my career a better and prosperous one.

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