Empirical Study on ISP Operation and Maintenance With MikroTik Router

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In Sectional Gratification of the Requirements of the Degree of Bachelor of Science in Electronics and Telecommunication Engineering, this Report was presented

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APPROVAL

This report title **"Empirical Study on ISP Operation and Maitenance With MikroTik Router"** submitted by Md.Mehedi Hasan to the department of Electronics and Telecommunication Engineering (ETE),Daffodil International University,has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. Electronics and Telecommunication Engineering and approved as to its style and contents. The presentation will be held on March 2021.

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DECLARATION

I want to note that **Md. Mehedi Hasan** is preparing me for this internship study. **ID: 171-19-1970** to the Department of Electronics and Telecommunication Engineering (ETE), **Md. Taslim Arefin**, **Associate Professor and Head**, Faculty of Engineering, Department of Electronics and Telecommunication Engineering (ETE) under my honorable supervisor. I shall also declare that I do collect data from my internship at an ISP-based company, Atova Technology Ltd.

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At first, I want to express my gratitude to the almighty Allah for charitable everything to me. In the true spirit of achievement, through quality commitment and time to the internship program, a goal of completion is achieved.

Without the coordination, assistance, and support provited to may be many personalities, I am so grateful for carrying out my mission. This internship report is not consume possible without the provision and direction of **Md. Taslim Arefin, Associate Professor and Head,,** Department of Electronics and Telecommunication Engineering(ETE), Daffodil International University Dhaka. Under the direction I choose this subject, In the staff of the department of Electronics and also to other faculty participants, must grant this for final internship with the pertial support of my family members.

ABSTRACT

The operating system is the MikroTik Router and is designed for a network router. The main objective of this report is to manage Mikrotik router's network and bandwidth setup. For the purposes of the ip and addressing, In this report work based on Networking, Os Mikrotik, Mikrotik Ethernet Route, then basic configuration of Mikrotik, Installation of Mikrotik, Winbox Dashboard, Interface, Ip addressing, DNS server Firewall, IP routing, Ip Ping, Winbox interface menu, DHCP configuration, Bandwidth management, PPPoE configuration, Wireless connection, ARP/AP configuration, IP service, User ID and many other features are included.It is really equipment are connected to computers, and useful for everyday life.In the critical network of basic networks, network equipment are connected to computer and several devices, switches, routers, and wireless access point. One machine can communicate with another computer and with other networks, such as the internet, on a network connected system. Now today, there are a vast number of people with everyday lives all over the world with intenet technology.So,right now,networking is so much of a major reality. Thats why it is a machine variable. To form a network, the computer system is connected. The Mikrotik router is a multitude of DNS server Bandwidth control features.etc.

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Chapter 1

Introduction

1.1 Introduction

This is internet information technology that is part and parcel of our everyday life. It is the vast number of people who use it all over the world. It relies on the server for internet communication. Internet service interface technology is not possible without a DNS server.

In the internship, the practice of making student the real work is the practice. That is the area of internship employment in a vital position of accounts, engineering medical science. each of them is there importance in internship and before degreenaward. This is a showfocused on software and internet networking technology for e-commerce.

Different types of services such a banking software, credit card, ATM technology, debit card, mobile banking, online transaction, etc. To the prepare myself for the competitive network and system management job market in my internship program mikrotik platform. The appropriate opportunity is provided by Atova Technology Ltd. In this ISP based company. knowledge is gathered from the network

1.2 Motivation of Report

I am currently monitoring my degree in Electronics and Telecommunication Engineering (ETE) at Daffodil International University. The key reason for the interest in the network system of mikrotik is to ensure that the people in Bangladesh have a better and faster source of networking. I am pursuing the importance of expanding national data, in which the learning of the path book continues and cables me to stand in the oftenbroad subject of the mikrotik network .I was completely capable of learning the Mikrotik Networking of the Mikrotik router from the day it was announced. As a web enters the supplier, I have communicated to a great standard sound. What is at the lead of my thoughts, interacting with individuals paying attention to their requiements and giving them better organization. In my collecting knowledge of my ability to evaluate and cover the state of the law broadly and quickly but then specifically of Mikrotik.

1.3 Objectives:

ICT is currently one of the main elements necessary for building a career. The objective of this work on the Mikrotik Network is:

i)To control the operating system Bandwidth to Achieve User Prosperity Prevalent.MikroTik, as a network router. The use of a machine to become a reliable network router is the operating system and software for that. A range of features for the IP network and wireless network are included in the computer.

ii) To run on the Router OS-based system intended for installation on the MikroTik Router Board. It can also be installed on a PC and converted into a firewall router, a VPN server client, and an access point. A capable portal based on a wireless access device will support the system.

iii) To learn how to install, configure, manage and optimize the solution from Mikrotik Network. This is a very high level for network protection systems. For that reason, and for the subject, I chose an internship.

1.4 Report Layout :

In the **Chapter 1** I have described Introduction,Objective and Motivation of the Internship.

In the **Chapter 2** I have described the Networking,types of networking which is using for Mikrotik ,Introduction of Mikrotik and types of the so many Router.

In the Chapter 3 I have described basic configuration of Mikrotik such as the,

(os installation,Winbox Dashboard,Interface,IP Addressing,DNS Server of the Firewall IP Route IP Ping) etc.

In the **Chapter 4** I have described the Mikrotik fundamental charge at the operation and Maintenance about various kind of operation,

setup(DHCP,Bandwidth Management,PPPoE,ARP,Firewall) etc.

In the Chapter 5 Depict about of my report decision and future extent of MikroTik.

CHAPTER 2

Introduction to Mikrotik

2.1 Networking

In the present era, networking is also an important thing to communicate. I can not think of sharing data from one place to another without networking. Through networking, data can now be easily exchanged from one location to another. By distributing data between many computers, I can create a network. [1], MikroTik is a Latvian company founded in 1996 to build routers and wireless ISP systems. In most countries around the world, MikroTik currently offers network ownership hardware and software systems. The perception of standard laptop hardware and complete routing systems in the victimization industry allowed America to develop the Router OS computer code in 1997 that provides intensive stability Controls for all types of interfaces and routing of information. I appear to set out to build their own hardware in 2002, and the whole router board was born as well. In most parts of the world, there are resellers, and most likely buyers in each country on the planet.[2]

2.2 Types of Networking

2.2.1 LAN (Local Area Network)

In our everyday lives, it uses the local area network. It is mainly intended to use titlemedium workplace-court and business trade networks to form small medium office lamps and share information and resources between system time and could be saved for electronic printer equipment scanner, etc. The native space network will not improve computers and alternative network devices so that the system will share one of the other resources. The computer network is that because of the design of the computer network, the sole use of the cable is limited by the computer network at most distance and spare choice .[3]



Figure 2.2.1 Local Area Network (LAN)

2.2.2 MAN (Metropolitan Area Network)

MAN stands for Networks in the Metropolitan Region, one in each of a number of networks. An person may be a fairly new category of a network. MAN is the wider space network than a local area of a neighborhood} and, as its name suggests, encompasses the city's world. MAN seldom reaches over 100 kilometers and instead requires a mixture of varied hardware and transmitting media. It's one form of cable TV network network or it's a method of connecting a number of PC networks to an even larger network, so in addition to device-to-device, resource area unit shared PC networks to LAN. A community network such as Cable TV Network, covering the entire city or a gaggle of several indigenous networks, is created by a person. The resource is shared from network to network and from laptop computer to laptop computer to boot during this process. MAN is typically owned by large corporations to interconnect different branches within a city. [4]



Figure 2.2.2 Metropolitan Area Network (MAN)

2.2.3 WAN (Wide Area Networks)

The Large Area Network is established with LAN and MAN in the broad geographical field. This form of network is built with the use of the telephone company only because it is difficult to grow a wide-area network, with special areas and technology used to connect to various LANs. It is very difficult to handle WAN of the plans to build more than the LAN because it is important to create a LAN across the globe, so the satellite is used in many cases. Most Wide Area networks run at a speed of 1,544 Mbps at 56kbps.

The features of Wide Area Network are

1. These networks can expand in a large region and their costs can be distributed across the world.

2. Generally, these are slower than the local area network.

3. Any Internet-wiring system such as router-modem switches, etc., must be used by the Wide Area Network.



Figure 2.2.3 Wide Area Network (WAN)

2.3 Training Served

For my internship, I chose Atova Technology Ltd. There are three months of training and MikroTik Router Training is done about networking MicroTouch switch configuration. Training is done because I was accepted here at first and began lessons. At first, we have no idea about networking First, we learn about IP configuration We get different IP subletting and reconciliation information Then we started to mount the micro-router in the virtual box And we gather all sorts of micro-router information. Second, if a new configuration can be forwarded by a MikroTik router, then the device would have to be reset to give it first. In the Mikrotik router, it is important to first get an Internet connection, to check the IP on the interface, and then to provide the DNS and the gateway. We have no idea about the different Mikrotik router setups, so we have the PPPoE DHCP configuration service that I know all sorts of bandwidth management configurations and how I can pick or share bandwidth. How to configure and block Facebook and YouTube bandwidth through the MikroTik router that our teacher doesn't know. We didn't shake it again by experimenting despite learning all the types of configurations. I have a full understanding of the MikroTik router configuration after completing a three-month course..

We learn about networking and IP sub-netting properly in the first month and switch VLAN setup and switch management.

> Learning and understanding of Network Components.

- > MikroTik Basics Analysis and Comprehension.
- > Centos Simple Commands Key Commands.

We learned the second month from Atova Technology Ltd MikroTik training Basic MikroTik setup and OS installation in VMware :

- > Installation of MikroTik by OS
- > Website Faltering
- > The IP Addressing Principle.

IP Address Concept Last month we learned the very important MikroTik hole configuration for the management of the MikroTik router.

- > IP Configuration
- > Sub netting
- > Networking Binding
- > VLAN
- > PPPOE

- > Static and DHCP
- > Bridge
- > Bandwidth Management
- > ARP/AP
- > PPPOE
- > Wireless Configuration
- > Firewall
- > Firewall security

2.4 OS of Mikrotik

The operating system is MikroTik OS. There are various license levels for the operating system, ranging from 0 to 6, where 0 is a 24-hour trial version. You can test all Router OS features free of charge in the trial mode. The different license level characteristics can be compared here. It's very quick to install the Router OS. You can either download the ISO file, burn it to a CD, and boot it. Alternatively, Router OS will be written to any secondary drive you have connected to our Windows PC by Net Install. Switch and boot the drive to our Router PC. You can find all installation methods, plus update files and more here.[4]

2.5 Mikrotik Ethernet Route

2.5.1 HEX lite

In a nice plastic case, HEX lite might be a tiny 5 port LAN router. Its value is alone under the Router OS license-there is simply no alternative once it involves managing your wired home network, not only is it in expensive, small, reasonable and easy to use-it is most likely the most inexpensive MPL-capable router on the market, no more compromise between values and options-each RB750R2 has. It works perfectly in any SOHO atmosphere with its compact style and clean appearance.



Figure 2.5.1 HEX lite

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2.5.2 HEX PoE

HEX PoE is a Gigabit Ethernet 5 port router for locations that do not require wireless connectivity. To add optical fiber connectivity, the computer has a USB 2.0 port and an SFP port. Other PoE capable devices can be powered by ports 2to5 with the same voltage as applied to the unit. It is affordable and simple to use, but comes with a very powerful 800 MHz CPU at the same time, capable of all the advanced configurations supported by Router OS. Ethernet ports are shielded and fewer power adapters and cables are 1A per port to worry about Max current. Passive PoE input and passive or 802.3 af/at PoE output are also provided. Other PoE-capable devices can be powered by Ethernet ports 2-5 with the same voltage as applied to the unit.



Figure 2.5.2 HEX PoE

2.5.3 RB2011

The RB2011 is a multiport device series that is low-cost. Designed for indoor use, and accessible with a multitude of options in many different cases. With 5 Gigabit Ethernet ports, five Fast Ethernet ports, a power jack and PoE support, the RB2011iL is the most basic model. It's powered by the new 600MHz 74K MIPS network processor of the next generation Atheros. For port 10, there is a PoE output function - it can be the power of another PoE

Capable devices with the same voltage as the unit being applied. The maximum load capacity for the port is 500mA.



Fig:2.5.3 RB2011

2.5.4 CCR1036-8G-2S

With the new CCR1036-8G-2S(+) now having two SFP(+) ports for 10G interface support, our fastest router has now become even better. It uses the same Tiller CPU 36 core as our other model CCR1036 and delivers the same performance, but ten-gigabit links are now likely. The device has two SFP(+) ports, eight Gigabit Ethernet ports, a serial console cable, and a USB port, and comes in a 1U rackmount case. The CCR1036-8G-2S(+) has two sodium slots and is shipped with 4 GB of RAM by default, but in Router OS there is no memory limit (will accept and utilize 16GB or more). Also available now, the 16 GB RAM EM model supports both SFPPs..



Figure 2.5.4: CCR1036-8G-2S

Chapter 3

Configuration of Mikrotik

3.1 Basic Configuration of Mikrotik

Step 1: The first install VMware application and then open it and after that click on File>New virtual Machine>Tyical>Next



Figure: Basic Configuration of Mikrotik

Step 2: The disk image file(ISO) installer and then click next.then create a name for the virtual machine and select the location where iot installs, click next.Now configure the hardware requirement.

Guest Operating System Installation A virtual machine is like a physical compu	iter; it needs an operating	Name the Virtual Machine What name would you like to use for this virtual machine	6
system. How will you install the guest ope	erating system?		
bistali nom.		Virtual machine name:	
O Installer disc:		Test02	
CD Drive (H:)		Location:	
	N	C:\Users\Mahmud\Documents\Virtual Machines\Test02	Browse
	La	The default location can be changed at Edit > Preferences.	
Installer disc image file (isu):			
E:\MikroTik\MikroTik\mikrotik-6.22.iso	< Browse		
The virtual machine will be created with a Holp < Back	blank hard dick. Noxt > Cancol	< Back Next >	Cancel
-			
Hardware		×	
Hardware Device	Summary 256 MB	X Manuary Specify Magemeant of memory allocated by this urban	
Flatchair Device Process Film Control Film C	internativ control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control control	Theory Transmission of a mean of a m	

Figure: Basic Configuration of Mikrotik

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3.2 OS Installation of Mikrotik

Step 3: Click on the **power of virtual machine**. A welcome screen come where click **a** for select all and then **i** to install after press "n" to not configure and continue the process press **y**. When installation is complete see a login screen where press MikroTik.

Login:admin

Password:admin

Then go in,



Figure: installation of Mikrotik

3.3 Winbox Dashboard

Step 4: Install router os and run winbox first to download winbox and router OS ISO image file in VMware, preferably in the login window on the MAC address form admin and user password.

Colo Mad											
Sale Mod	de										
afaces											
eless											
lge											
Р											
sh											
1	E.	Terminal						_			
6 1	2	MANUAL AND									
LS	E		1225	1443				12	1222		
ting (P	MMM	MMM	FKK		1	TITTTT	T T	REE		
ten i	2	1991 1999	H MMM II	I FEEK KEEK	REFERRE	000000	TTT	III	REKE HEREK		
ues		MMM MM	MMM II	I KKKKK	RER RER	000 000	TTT	III	KKHKK		
8		MM	MMM II	I FEEK KEEK	RRR RRR	0000000	TTT	III	KKH KKK		
						10000		1997	1975		
41.m	-	M1kToT1	k Routero	5 5.20 (c) .	1999-2012	http:/	/www.mikr	otik.c	oom/		
de (÷.	The follow	wing defa	ult configu:	cation has	been instal	led on yo	ur rou	iter:		
- Tomical		IP address	192.168	88.1/24 15	on ether!						
N Channals		etherl is	enabled	C							
	-									13	
n Dinasan		You can tr	ype "v" t	o see the en	tact comman	nds that are	used to	add an	nd zemove		
te Supour n	-	this defai	ult confi	guration, or	r you can t	view them la	ter with				
nual		To repove	this def	ault config	a print' contration two	ommand. pe "r" or hi	t any oth	er key	to continue.		
e.		If you are	e connect	ed using the	e above IF	and you res	nove it, y	ou wil	1 be disconned	te	

Figure: Winbox Dashboard

3.4 Interface

At first click on **interface >General-ether 1>Type-ether>MTU-1500>Apply ok.**So the Mikrotik router OS supports a wide range of network cards and virtual interfaces.Each has its own sub-menu but the general interface menu can be used to configure and read the standard properties of all interface.

Quick Set	Interface (ether1)			×				
🕵 CAPsMAN	General Ethernet Statu	Traffic	ОК	1				
Interfaces	Name	ether1	Consul					
🖞 Wireless	Type	Ethernet	Cancei	-				
Bridge	MTU	1500	Apply					
PPP	MIU.	1300	Disable]				
Mesh	LZ MTU:		Comment	Ť.				
IP N	Max L2 MTU:		Torrh	f				
IPv6	MAC Address:	00:0C:29:29:D4:A9		-				
MPLS 1	ARP	enabled	₹ Cable Test					
Routing 1			Blink					
System 1	-		Reset MAC Address					
Queues								
Files	Interface List							
Log	Interface Ethernet EoIP	Tunnel IP Tunnel GRE Tu	nnel VLAN VRRP Bonding L	TE				
Radius	+ * * (7						
Tools 1	Name / 7	vpe L2 MT	TU Tx Rx	Tx Packet (p/r	s) Rx Packet (o/s) FP Tx	FP Rx	FP Tx Packet
		line of the second	23.3 kbps	20.9 kbps	5	10	0 bps	0 bps
New Terminal	R «i>ether1 E	memer	and the second					
New Terminal KVM	R <pether1< td=""><td>themet</td><td>25.4 kbps</td><td>27.4 kbps</td><td>13</td><td>12</td><td>0 bps</td><td>0 bps</td></pether1<>	themet	25.4 kbps	27.4 kbps	13	12	0 bps	0 bps

Figure: Interface

3.5 IP Addressing

Then click on **IP address**> **add IP on Address** >**Network and Interface**>**Apply ok**. The IP addresses **192.168.1.1/24** and the network address are added **192.168.1.0** and next followed by the interface Ether 1.In IP networks,IP addresses are used to identify hosts in general.

Address List		
+ - / 🗱 🖪 🍸	Find	
Address / Network Interface		
	Address <192.168.1.1/24>	
	Address: 192.168.1.1/24	OK
	Network: 192.168.1.0	Cancel
	Interface: ether1 F	Apply
		Disable
		Comment
		Сору
1 item		Remove
	enabled	

Figure: IP Addressing

3.6 DNS Server

Then **IP>DNS>ADD Server IP address>click on Allow Remote Request>Apply Ok**.So the settings of server is 8.8.8.8 click on alliw remote request, the added of max UDP pack size of 4096, Query server timeout are 2000, total timeout are 10,000, max concurrent Queries are 100, then Max concurrent TCP session are 20, Cache size 2048kib, Cache max TT1 7d.00:00:00 and used 17kib, it's the DNS server.

DNS Settings			
Servers:	8.8.8.8	\$	ОК
Dynamic Servers:			Cancel
	Allow Remote Rec	quests	Apply
Max UDP Packet Size:	4096		Static
Query Server Timeout:	2.000	s	Cache
Query Total Timeout:	10.000	s	
Max. Concurrent Queries:	100		
Max. Concurrent TCP Sessions:	20		
Cache Size:	2048	КB	
Cache Max TTL:	7d 00:00:00		
Cache Used:	17 KiB		

Figure: DNS Server

3.7 firewall

Click on **IP>Firewall>Add>Action and Select masquerade>Apply Ok**.So the Mikrotik router OS Firewall uses stateful Filterig technology to detect and block a variety of stealth scans,SYN floods.When a foreign packet claims to be part of an existing link and attempts to reach the network,the firewall consults its list of connections.



Figure: Firewall

3.8 IP Routing

Click on **IP>Route>Add New Route>Dst-Address,Gateway>Apply Ok.** There are three parts of ip routing: a new route with the dst address 0.0.0.0/0 and the gateway 103.100.0.1, a gap 1 scope 30 and a target scope 10, and the dst address 103.100.0.0/30. It's reachable over ether 2 and the last of the dst addresses, 192.168.1.0/24, is reachable over ether 1.

Route List	Route <0.0.0.0/0>	
Routes Nexthops Rules VRF	General Attributes	ОК
➡ ∅ ⋈ ⋈ ⋈ Dst. Address / Gateway AS ▶ 0.0.0.0/0 103.100.0.1 reachable	Dst. Address: 0.0.0.0/0 Gateway: 103.100.0.1 ▼ reachable ether2	Cand
DAC 103.100.0.0/30 ether2 reachable DAC 192.168.1.0/24 ether1 reachable	Check Gateway:	Disable
	Type: unicast	Comment
	Distance: 1	Сору
	Scope: 30	Remove
	Target Scope: 10	
	Routing Mark:	
	Pref. Source:	
3 items		
	enabled active	

Figure: IP Routing

3.9 IP Ping

After finishing then checked by **New Terminal>Terminal=ping(IP)>ok**. When communicating with a remote host, Ping uses the Internet Control Message Protocol (ICMP) Echo messages to decide whether it is active or inactive, as well as the round-trip delay.so the check of ip ping are below in figure.

5	Cal Safe Mode	Session: 4C.5E:0C:2B:84:83	
	Quick Set		
	T Wireless	Terminal	
	Bridge		٠
	PPP		
	ge Switch	V V_1_1_1 \/V 1_1_1_ (c) 2013	
4	Mesh	MikroTik RouterOS 6.41.1 (c) 1999-2018 http://www.mikrotik.com	
1	¶ ¶ ₩	[?] Gives the list of available commands	
	MPLS N	command [?] Gives help on the command and list of arguments	
	Routing ト	[Tab] Completes the command/word. If the input is ambiguous,	
4	🍪 System 🗈	a second [Tab] gives possible options	
	Queues	/ Move up to base level	
	Files	Hove up one level	
	Log	/command Use command at the base level	
	Radius	SEQ HOST SIZE TTL TIME STATUS	
-	Tools 1	0 192.168.50.1 56 64 0ms	
2	New Terminal	1 192.168.50.1 56 64 0ms	
2		3 192.168.50.1 56 64 Oms	
	MetaROUTER	4 192.168.50.1 56 64 0ms 5 192.168.50.1 56 64 0ms	
ŏ	Partition		٠

Figure: IP Ping

3.10 Basic Configuration of Mikrotik

I first go to the MikroTik dashboard for the basic setup of the MikroTik router, then go to IP and from here to there. **addresses**.

0		
Interfaces		
Wireless		
Bridge		
PPP		
Mesh		
IP	ARP	
IPv6	Accounting	24
MPLS	Addresses	
VPLS	DHCP Client	
Routing	DHCP Relay	
System	DHCP Server	
Queues	DNS	
Files	Firewall	
Log	Hotspot	
Radius	IPsec	
Tools	Neighbors	
New Terminal	Packing	
Make Supout.rif	Pool	
Manual	Routes	
Exit	SNMP	

Fig3.2 Basic Configuration of MikroTik

When open the Address List dialog window, this window will click on the place to open the IP Address window, as shown below.

	- 4 2 13	T		Find
	Address	/ Network	Broadcast	Interface
<u>.</u>	骨10.0.1.245	10.0.1.1		I2tp-out1
	骨192.168.0.1/24	192.168.0.0	192.168.0.255	wlan1
	192.168.1.33/24	192,168,1.0	192.168.1.255	ether1

Fig3.3 Basic Configuration of MikroTik

3.11 Basic Configuration of Mikrotik

ddress		
0.0.0.0/0		ок
		Cancel
	-	Apply
ether1	(Disable
		Comment
		Сору
		Remove
	ddress	ddress

When open of the IP address dialoge then enter the address details and then click ok

Fig3.4 Basic Configuration of MikroTik

This is a tutorial that shows how to set the new Mikrotik Winbox user's password. As shown below, click on the menu object :



Fig3.5 Basic Configuration of MikroTik

3.12 Winbox Interface Menu

The administration of MikroTik Router OS using an expedition is a diminutive usefulness of the sanctions in Winbox. It's in the native binary of Win32. All Winbox interface functions represent console functions as closely as possible, which is why there are no Winbox sections in the manual. Most of the systems and advanced ones.

■ The Winbox is signed with a Mikrotik-issued Extended Validation certificate. For key exchange and authentication, WinBox uses ECSRP for.

■ Both sides check if the other side knows the password..

■ In RoMON mode, Winbox allows Vice Regent to be the latest version to be able to connect to the latest version of the router. As an encryption algorithm, Winbox utilizes AES128-CBC-SHA

Sessio	isjanis@[fe80::4e5 n Settings Da	shboard	ab%s] (3C18-Krisjanis_GW) – WinBox v6.36rc6 on CCR1036-12G-45 (tile)	6TR	
60 0	Safe Mode	Session:	e80:4e5e.cfffef6:c0ab.3]	Memory 15.4 GiB	CPU 0% 📕 🛅
10	Quick Set				00010
T	CAPSMAN	Story CDA			
Terre	i Interfaces	Routes	Nexthops Rules VRF		
-	Wireless			17710	d all 🔻
-	Dedae		Dist Address (Gateway Dist	tance Bouting Mark	Pref. Source
adr 19	broge	AS	Interface List		
100	PPP	DAC		and the life area	
.15	Meah	DAL	Filerace Ethemet Foll' Funnel IP Tunnel GHE Tunnel VLAN VHRP B	onding Lit	
1122	IP P	AS	i 🛨 🚽 🗶 🚨 🍸		
1 ye	IPv6	DAC	Name / Type L2 MTU Tx	Rx	Tx Packet (p/s)
2	MPLS P	DAC	ether3 Ethemet 1580 0.b	ops 0 br	ps
20	Routing	UNC	Alberbar5 Ethemet 1580 Ob	ops Ob	pa pa
(R)	Contam 1		49-ether6 Ethernet 1580 01	apa 0 b	05
101	System		5 49 ether7 Ethemet 1580 0 b	aps 0 b	ps
	Queues		S •i+ether8 Ethemet 1580 0b	opa Ob	ps
	Files		S 4Pether9 Ethemet 1580 01	aps 0 b	pe
	Log		S ditemport0 Ethemet 1590 01	0.5	
00	Radius	8 items	MT local	404 M M	
200	Tasia	-	R •[•ether11_GW Ethemet 1580 152.2 kb	ops 168.2 kb	ps
6 ^	TODIS		; Local - SW - Slave -> PC		
<u>00</u>	New Terminal		RS (Pether12 Ethemet 1580 363.9 kb	aps 177.5 kb	ps
相同	LCD		H HIGGE BROGE 1060 363.9 KE	2ps 177.4 Kb	28
1	Partition		18 items (1 selected)		
8	Make Supout.nf				
L	Manual				
100	TTTN TOTAL				
100	Now Mto Rev				

Figure 3.1: Winbox Interface Menu

Chapter 4

Operation and Maintenance

In this chapter I have described,

- DHCP Configuration
- Bandwidth Management
- PPPoE Configuration
- Wireless Connection
- Wireless Configuration
- ARP/AP Configuration
- Firewall Configuration
- IP service
- User ID etc.

The Mikrotik router is used for both setup and maintenance, and it has been demonstrated here how to configure it.So Shown down it step by step all different configuration is out.

4.1 DHCP Configuration

Step 1: Login with Winbox software then,

Step 2: Go to IP > DHCP Client

Step 3: See a new window.

Step 4: Click on the + button to add a DHCP client

Step 5: After clicking in the red (+) button, and another window will appear.

Step 6: In the first setting, let's pause. Ethernet LAN port 1 is an interface, for instance. Our Wireless Card is an interface that is attached to the WAN board. If our Mikrotik Ethernet port 1 is connected by an Ethernet cable to our ADSL router, then the Mikrotik Ethernet port 1 should be a DHCP client, as this port receives an IP address from the ADSL router. Pick Ether 1 under Gui, press Submit and OK.[5]

Step 7: See Ether 2 now in search of an IP address. In the picture below, ether 2 is the measuring mechanism and one of the network links is the controlling contact to prevent the connection from being filled.

Step 8: Then Queues Open the Winbox The easy queues, then, Then press the plus open site, this gui of the ether 2, and the click on Interface-ether 2 and click on add default route, Then apply>ok

.

DHCP Olient		
🕂 🗕 🖌 🗶 🍸 Release Renew	Find	
ether2 no yes 192.168.0.	DHCP Client <ether2></ether2>	
	DHCP Status	OK
	Interface: ether2	Cancel
	Hostname:	Apply
	Client ID:	Disable
	Use Peer NTP	Сору
	Add_Default Route	Remove
	Default Route Distance: 0	Release
	-	Renew
•	-	
1 item (1 selected)		
	enabled Status: bound	

Fig: 4.1 DHCP Configuration

4.2 Bandwidth Management

There are 2 ways to bandwidth management,

i)Add multiple queues(1 per IP).

	ode								
Quick Set									
🔔 CAPsMAN									
🛲 Interfaces									
🗼 Wireless									
Bridge									
FT PPP		-							
° 💲 Mesh		Ques	e List						
iss IP	1	Simp	ole Queues Interfa	ace Queues Queue Tree	Queu	ue Types			
vé IPv6	1	+	- 0 8	🖅 🖾 Reset (Counters	s 00 Reset All Counters	3		
MPLS	1	#	Name	Target Uploa	d Max	Limit Download Max Lin	nit Pack	et Marks	Upload
Routing	1	0	Simple Queue <us< td=""><td>er_A></td><td></td><td></td><td></td><td></td><td></td></us<>	er_A>					
System	7		General Advan	ced Statistics Traffic	Total	Total Statistics			20
Queues			Name:	User A				Cancel	
Files			Target:	192 168 1 10			-	[∓] ≜	Apply
Log			Det						1000 C
🍄 Radius			Dst						Disable
X Tools	1			Target Upload		Target Download			Comment
New Termin	al		Max Limit:	512k	₹	512k	₹	bits/s	Сору
KVM			- A - Burst	I					Remove
🛓 Make Supo	.t.rif		Burst Limit:	unlimited	Ŧ	unlimited	•	bits/s	
Manual		•	Burst Threshold:	unlimited	Ŧ	unlimited	Ŧ	bits/s	Reset Counters
Exit		1 ite	Burst Time:	0		0		S	Reset All Counte

Fig:4.2 Bandwidth Management

ii) Define the two new types of queues for PCQs. (1 for download and 1 for upload) and I almost always use a winbox. After that, the exact CLI commands will not be remembered. Winbox, however. We're going to have to go to Queues and then add Queue Forms (+) to give it a name to say. Download 10M, sort-PCQ rate-10M, Classifier-Dst. Default Address for Rest is OK.[5]

Add another one:

name -10M-Upload, kind-PCQ, rate-10M, Classifier-Source Address

4.3 PPPOE Configuration

In the network protocol for Point-to-Point Protocol (PPP) encapsulation frames within the Ethernet loop, PPPoE stands for the Point-to-Point Protocol over Ethernet. Usage is use

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In a network protocol for Point-to-Point Protocol (PPP) encapsulation frames within Ethernet frames, often the DSL services where PPPoE stands for Point-to-Point Protocol over the Ethernet. It is primarily used for DSL devices where individual users link via Ethernet to the DSL modem. Network Ethernet is packet-predicated and has no link capacity. They lack all the security features for IP and MAC disputes and rogue DHCP servers. Separate users are wired over Ethernet to a DSL modem. The Ethernet networks are packet-based and have no connection capabilities. To defend against IP and MAC conflicts and DHCP server conflicts, they also lack basic security features.

Step 1.

Build a PPPoE client and presume that Ether1 is our WAN port. Click on PPP and then click on plus symbol. Plug our WAN cable into Ether1. Add (+) Then pick the Client PPPoE. Next We will see Gui in General tab, then select it as ether1 Now go to the Dial Out tab, and then fill in the User and Password tab, then press Submit, and at the bottom, we'll see Linked status.

🔘 admin@00:0C:29:72:CE:7B (LAN_Router) - WinBox v5.20 on x86 (x86) 5 0 Safe Mode Interfaces Wireless Bridge PPP Mesh IP Ň IPv6 Þ MPLS Þ Routing Þ System Queues Files Log Queue List Radius Simple Queues Interface Queues Queue Tree Queue Types P. Tools 🖅 🛛 🏹 🛛 🗁 Reset Counters 🛛 00 Reset All Counters + New Terminal Target Address Rx Max Limit Tx Max Limit Packet # Name -ISDN Channels 1M 10.0.1.0/24 0 unlimited unlimited **KVM** 10.0.2.0/24 1 unlimited unlimited 2 🔳 3M Make Supout.nf 10.0.3.0/24 unlinkted unlimited Manual Exit 3 items 0 B queued 0 packets queued

Fig:4.3 PPPoE Configuration

Step 2.

Set DNS - click on IP and choose DNS - Fill in the $DNS \ IP \ addresses$

Step 3.

Set DNS, click IP, and pick DNS - Fill out the IP addresses of the DNS. Then one, then When you click on the "Ports" tab, click the "Add (+) symbol" button to add the port to the bridge. Choose the interface we want to add to the bridge, choose the bridge we built earlier, then click OK.

Step 4.

Add IP address for LAN, click on IP then selected Addresses,

To add a new IP address, click on the add (+) sign, fill in the IP address and then choose the bridge name we created earlier.

Step 5.

Create on **DHCP** Server, Click on **IP** then choose **DHCP** Server Click on **DHCP** Setup, then choose our bridge and click next.

Step 6.

NAT,LAN network Click on the **IP** then choose of Firewall.In the general tab, select **scant** and choose PPPoE-out 1 (PPPoE name of that we have created earlier) in out interface. - In the action tab, choose **masquerade** then click ok.[5]

Nev	w PPP Secret			
	Name:	pavel		OK
	Password:	123456	_ ▲	Cancel
	Service:	рррое	₹	Apply
	Caller ID:		•	Disable
	Profile:	PPPoE	∓	Comment
	Local Address:	192.168.1.1	•	Сору
Re	mote Address:	192.168.1.2	•	Remove
	Routes:		_ ▼	
	Limit Bytes In:		-	
L	imit Bytes Out:		-	
La	st Logged Out:			
ena	bled			

Fig:4.4 **PPPOE Configuration**

Sonnect PF	PoE-Dialer	X
User name:	pavel	
Password:	•••••	
Save this u Me only Anyone	user name and pas y e who uses this co	ssword for the following users:
Connect	Cancel	Properties Help

Fig:4.5 **PPPOE Configuration**

4.6 : Wireless Connection

Radio waves are used by a wireless local area network (LAN) to connect devices such as laptops and cell phones to the Internet and to the business network and its apps. You connect to the company's wireless network when you connect to a Wi-Fi hotspot at a cafe, a hotel, an airport lounge, or another public location.

Step 1: create a new security profile, and go to **Wireless**>**Security Profile** and add a new profile. Then the create of a virtual access point go to **Wireless**>**Interfaces** and then add a Virtual AP.

New Security Profile		Interface «wian-phones»			
General RADIUS FAP Static Kave	OK	General Wireless W	/DS Status Traffic		OK
		SSID:	ligos phones	•	Cancel
Name: wpa2-phones	Cancel	Master Interface:	wian	•	Apply
Mode: dynamic keys	Apply	Area:		-	Disable
Authoritantian Tunan WIRA PSK WWRA2 PSK		Security Profile:	wpa2-phones	Ŧ	Comment
WPA EAP WPA2 EAP	Сору	WPS Mode:	disabled	Ŧ	Сору
Unicast Ciphers: 🔽 aes com 🗌 tkip	Remove	Max Station Count:	2007	1	Remove
Construction Contraction Contraction	L	WMM Support:	disabled	Ŧ	Simple Mode
Group Opners. (•) aes com		VLAN Mode:	no tag	-	Torch
WPA Pre-Shared Key:		VLAN ID:	1		
WPA2 Pre-Shared Key:		Default AP Tx Rate:		tops	
		Default Client Tx Rate:	[]·	• bps	
Supplicant Identity:			Pelault Authenticate		
Group Key Update: 00:05:00			Default Forward Hide SSID		
		Multicast Helper:	default	-	
Management Protection: allowed			Multicast Buffering		
Management Protection Key:			Keepalive Frames		
		enabled	nunning	stave ;	

Fig: 4.6 Wireless connection

Step 2: A network interface is not so much use without in IP address.

Then go to **IP** > **Address** and then add a new address. Go to the **IP** > **Pool** and then add on a **new pool** and click **ok**

New IP Pool	×
Name: mypool	ОК
Addresses: 192.168.1.2-192.168.1.200	Cancel
Next Pool: none 두 🔺	Apply
	Сору
	Remove

Fig: 4.7 Wireless Connection

Step 3: Go to **IP menu**, then **DHCP Server**, then **DHCP** and (+) a **DHCP Server**, set a name of server and select the **DHCP Interface** and the last of introduce **DHCP** and **pool.**

New DHCP Server	
Name: mydhcp	OK
Interface: ether5	Cancel
Relay:	Apply
Lease Time: 3d 00:00:00	Disable
Bootp Lease Time: forever	Сору
Address Pool mypool	Remove

Fig 4.8 Wireless Configuration

C# Safe Mode	Season: D4 CA 6D 53 65 A5					
All Quack Set Jill Anertaces I Wretens Galage HE PPP HE Switch HE Switch HE Switch HE Switch HE Switch HE Switch	Hermine Print Hermines Natione Dual Access Lat Reputation ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Connect Lat Security Publics Channels on Unage Algorised Vivolese Suffer VIVU 75 424 here 2250 424 here	Westess Scoper To Packet Diges	(p.n) y PerPecket (p.n	MAC AN O DATEAN C	Network Connected Broadband Connection 2 Broadband Connection
Routing System Counces Counces Files Log Status Rodue Solution	Server Active Address Active MAC Addre 1922 108 425 00 22 25 35 46 46 4 192 108 425 CB 3D 04 3B C727 1 192108 4253 CB 3D 04 3B C727 1 192008 4253 CB 3D 04 3B C727 1	Owen Same Express After Marken Stree Reals DESKTOP-AGITET2 24 23 56 30 T WDS Marken MV2 Same Toffe	End Sense bound bound	(in 13	a.	Shuvo Connected, secured Properties
I fiew Terminal	Mode	ap bridge	10)	Carcel		Disconnect
Patton	Band Channel Width	2004-8 2004-9 2412	[*] [*]	Analy Dealtre	G.	NO PAIN Secured
Manual North	SSD	(Page)		Comment	6	Asif hasan
Est	Scan Lat	Induce		Advanced Mode	Not	work & Internet settings
	Winiess Potocol	any .	(*)	Tenth	Chine	pe settlegs, such as Haking a connection evolution.
	Security Profile	Shire		Scen		10x 0x0
	Bridge Mode	mabled		Field Usage		Mobile
				Align	and the second	Arplane mode hotspot

Fig 4.9 Wireless Configuration

4.10 ARP/AP Configuration

ARP binding places a static IP to MAC address entry in the ARP table of a computer. When making DHCP requests, DHCP reservations allow a computer on the network to always get the same IP assignment. They are not linked.

I first go to the IP address and select ARP, then click (+) to sign and add information on the screen and press ok, then select Static IP Address, System MAC Address Interface Ether 1

admin@00:0C:29:29:D4:A9 (mikrotik) - WinBox v6.34.6 on x86 (x86)

C ^a Safe Mor	de Se	ession: 00:0C:29:29:D4:A9				
Quick Set						
I CAPSMAN	- 8		ARP List			
Interfaces	- 1			a 🔽		(Cont
🚊 Wireless					1	Find
Bridge	- 11		C 192 168 1 10	/ MAC Address 00-0C:29:9A:92:AF	ether1	•
🚅 PPP						
°t <mark>8 M</mark> esh						
IP	1			400 400 400 4 40		-
ve IPv6	4			ARP <192.168.1.10>		L
	12			IP Address: 192.168	3.1.10	OK
MPLS	6			10/00/00/00/00/00/00/00/00/00/00/00/00/0	and all the second s	Un
MPLS	1			MAC Address: 00:0C:2	9:9A:92:AF	Cancel
MPLS Routing System	7			MAC Address: 00:0C:2 Interface: ether1	9:9A:92:AF	Cancel
MPLS Routing System	1 1			MAC Address: 00:0C:2 Interface: ether1	9:9A:92:AF	Cancel
MPLS Routing System Queues Files		of any 1 M		MAC Address: 00:0C:2 Interface: ether1	9:9A:92:AF	Cancel Apply Disable
MPLS Routing System Queues Files Log		erface List		MAC Address: 00:0C:2 Interface: ether1	9:9A:92:AF	Cancel Apply Comment
MPLS Routing System Queues Files Log Radius		erface List terface Ethernet EoIP Tunnel	1 item	MAC Address: 00:0C:2 Interface: ether1	9:9A:92:AF	Cancel Apply Disable Comment Copy
MPLS Routing System Queues Files Log Radius Yools	7 7 7 7	erface List terface Ethemet EoIP Tunnel	1 item	MAC Address: 00:0C:2 Interface: ether1	9:9A:92:AF	Cancel Apply Disable Comment Copy Remove

Fig4.10 ARP/AP Configuration

Then,

Click (+) to sign and add the details needed on the DHCP Server page, Static IP Address and MAC Address, and then click Use Static IP Server: The DHCP 1 Comments: show the username to be found,

4.11 Firewall Configuration

The firewall incorporates packet filtering and thus offers security features that are used to control the flow of information to, from and through the router. Together with the Network Address Translation, it accommodates the router itself as an implementation for preventative unauthorized access to directly installed networks, and as a filter for outgoing traffic..

Rule-1:

Chain: Input

Source Address: 192.168.1.0/24 and Dst address: 202.4.96.25

Then go to the Action tab and select Accept and click OK. This will create a rule a filter rule.

New Firewall Rule	New Firewall Rule
Chain: forward Src. Address: 192.168.1.0/24 Dst. Address: 1 202.4.96.25	General Advanced Extra Action Statistics Action: drop
Protocol: 6 (tcp) Src. Port:	



Rule-2:

Chain: Input

Source address: **192.168.1.0/24** Address of source: (your LAN's IP block) Action, Accept **Apply**> **Action**> All right. **OK**. You can now reach our router from the IP/IP block on the WAN side and the IP block on your LAN side. In addition, you can access the Internet anywhere, but because our aim is to prevent unauthorized IP access from routers, we need to establish two guidelines as well as two rules. So that, without any other IP block other than IP, it can not be reached from the router Similarly, then, press Add (+),

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Rule-3:

Chain: Input Src Address 203.99.15.100/30 Action: Tec tunes Ads Drop Ads Apply> ok.

Rule-4:

Chain: Input Source Address 192.168.1.0/24 Address 192.168.1.0/244 Action: Drop Apply> Apply> Action OK Currently, except for 203.99.15.100/30 and 192.168.1.0/24 IP blocks, our router is not accessible from other IP/IP blocks. More filter rules such as brute force attack on your router, port block of various virus spam, special port block of some particular network can be generated. The screenshots of several spamming virus port blocks below

Here, Rule-14 has blocked the 192.168.1.0/24 3129 ports of this IP block. That means it is difficult to use those 3131 ports in the port. This port is usually used on a proxy server. Many network administrators want to avoid their users from using a proxy server so that they can block the appropriate ports..

2000	Session: 152 168 0 120											
Quick Set	Filter Rules NAT Mand	e Service Ports Connection	a Address Lista	Laver71	interesta							
Wreiesa	+ * * *	00 Reset Courters	00 Reset Al Co	ounters							nor lat	- 12
onge PPP Switch Mesh p P P MPLS P System P Dueuee Files Loo	Action C Action C Action C Action fit Action	Joan Src. Address Wreed sward sward 192.168.4.254 orward 192.168.4.254 orward 192.168.4.0.24 orward 192.168.2.20	Dat. Address	Proto 6 ttop) 6 ttop)	Src. Port 53	Dat. Port	in, inter	Out Int	0 8 0 8 4572 3 KiB 186 8 KiB 65 2 KiB 368 4 KiB	Packets 0 49 857 1 295 269 523		•
in .	6 items (1 selected)											
oola Ierw Terminul	Src. Address Lat. Det. Address Lat	-	Cance	¢.		Chain Src. Address	forward	168.4.0/24		Ca A	ncel pply	
MAROUTER	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.											
letaROUTER attion ake Supout if anual	Layer/7 Protocol	()•	Disable	e rit	-	Det. Address Protocol				Cor	uable	
taROUTER tition ke Supout iff nual v WinBox	Layer/7 Protocol Content: Connection Bytes		Comme Comme Copy	e rt		Det. Address Protocol Sec. Part			•	Cor Cor C	able ment opy	
NetaROUTER Sattion Iake Supout of Ianual Iew WinBox at	Layer7 Protocol Context Connection Retex Connection Rate	www.youtube.com	Disable Comme Copy Remov	e rit re ritera		Det. Address Protocol Sec. Port Det. Port Any: Port			•	Cor Cor Reset	able ment opy move Counters	
MaROUTER antition lake Supput of lanual lew WinBox at	Layer? Photocol Content Connection Rates Connection Rates Per Connection Classifier Sirc. MAC Address	www.youtube.com	Disable Comme Copy Remov Reset Cou Reset All Co	e nt rtens suntens		Det. Address Protocol Sec: Port Det. Port Any: Port P2P In Interface			• • • • • •	Cor Cor Rea Reat A	able opy move Counters If Counters	

Fig:4.12 Firewall Configuration

4.13 : IP Services

Safe Mode Session 19	2 168 0 120		
Guick Set			
interfaces			
L Wreiess			
Bridge			
PPP	IP Service List		
E Switch			(first
2 Mesh	Name / Port Avail	able From Certificate	
I IP I	9 api 8728		1.5
MPLS 1	• api sal 8729	none	
Routing	9 mh 22		
System P			
Queues	• winbox 8291 • www 80		
Files	X @www.est 443	hore	
Lon			
A Radan			
Toola			
New Terrical			
MaraBOUTER			
Patton			
Make Sport of			
Manual Manual			
Manual			
FILE AND AND DOK			

Fig: 4.13 **IP Service**

4.14 User ID

C* Safe Mode	Session: 192.168.0.12	0				
Guick Set	Liter Litt					
Im Interfaces	Users Groups SSH	Keys SSH Private Keys	Active Users			
T Wreless	+	AAA				
2 Bridge	Name / Group	Allowed Address	Last Lopped In	1		
PPP	system default use	*	1			
Switch	admin full		Jan/U2	1970 00:54:09		
*: Mesh	New User					
1 9 重	Name:	user1				OK
MPLS 1*	Group:	read			Ŧ	Cancel
減 Routing	Allowed Address	full				Analy
💮 System 🗈	Lock Loosed In	write				мрру
Queues	Last Logged in:					Disable
Files	Password:					Comment
E Log	Confirm Password:				1	Copy
Radus						Bamoue
🗙 Tools 🗈						rasisove
New Terminal						
MetaROUTER						
Partition						
Make Supout If						
Manual						
New WinBox						
Ext						
	Constant of					
	er dureu					

Fig4.14 User ID

CHAPTER 5

Conclusion

5.1 Conclusion

The role level of the section revolves around Network Security and Services Arrangement, and some more. After completing my internship, I can claim that if anyone has completed his training from Atova Technology Ltd, he will be able to fully operate the Mikrotik router to be able to operate and he/she will be able to manage the different jobs he/she can with all his arrangements on a regular basis. I am very good at running Mikrotik Router after completing my internship. Because of the configuration of all types of microcontroller router, I can now run the Mikrotik router itself. I even learned the way to build a network institution through ISP during this session. Internal knowledge for foreign community, service life management and planning, my gift would be able to u se it.

5.2 Future Scope

Networking provides a lot of job opportunities. Creation of Desktop Software, development of kernel and system drivers Open source software and developers of open source software and network engineers are also in demand. There are many companies in Bangladesh that rely on IT Infrastructure Solutions, Data Center Solutions, Network Solutions, Software and Database Solutions, Information Security (IS), Backup Solutions, Hardware Delivery and Intelligent IT Services (ITES) and have developed day by day. It generates the impression of MikroTik, and is a marvelous and gigantic working structure that you can literally learn by preparation. On the machine, MikroTik is presented, which will allow customers to switch their imparity on Mikrotik condition in a matter of seconds. Internet connectivity gadgets would have this condition,

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For example, encouraging clients to tackle the Web without booting the separation into the simple working framework of their contraption - paying little attention to whether Windows is the working method. Meanwhile, on adaptable Internet computers, MikroTik is showing up. This is a mix of contraptions, such as cell phones and netbook computers. Small workstations make up machines that segment the inner value of their larger accomplices in a more essential, beneficial bundle.

References

[1] Networking(Access Time 1.00AM20/4/18):

"https://openbookkproject.net/courses/intro2ict/networking/intro.html"

[2] Types of Networks and importance (access
 Time11.04AM15/4/2019):
 "<u>https://study.com/academy/lesson/types-of-networks-lan-wan-wlan-man-sanpanepn-vpn.html</u>"

-

[3] Networking Device(Access Time 11.25PM 21/4/2019):

"https://www.geeksforgeeks.org/network-devices-hub-repeater-bridge-switch-routergatewayzs"

[4] MikroTik Networks(Access Time12.14PM21/5/2019): "<u>https://mikrotik.com/"</u>

[5] MikroTik Configuration Rules, which can be found at <u>https://systemzone.net/mikrotik-</u> routerbasicconfiguration-using-winbox, Access on 07/7/2020 11.12PM



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Date: January 02, 2021

INTERNSHIP CERTIFICATION

This is to certify that Mr. Md. Mehedi Hasan, Son of Md. Menhaz Uddin, a student of ETE, Daffodil International University, Dhaka, Bangladesh has successfully completed 12 weeks (From 15th September, 2020 to 15th December, 2020) long internship program from Atova Technology. During this period we found he was punctual, hardworking and inquisitive.

We wish his every success in life.

2021

Ferdosh Alam Managing Director Atova Technology

Ferdosh Alam Managing Director Atova Technology







RUPER BAZAR