MIKROTIK ROUTER CONFIGURATION IN ISP

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Internship report titled "MIKROTIK ROUTER CONFIGURATION IN ISP" submitted by "**ABUJAFAR" ID: "172-15-10029"** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 08-10-2020.

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DECLARATION

I hereby declare that, this Internship report paper has been done by me **ABUJAFAR**, Id: 172-15-10029 the department of Computer Science and Engineering, Daffodil International University under the supervision of **Mst. Eshita Khatun**, Lecturer, **Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

I collect information from the **Fareast Islami Life Insurance Company Limited**, Books & Internet.

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ABSTRACT

This internship is on MIKROTIK ROUTER CONFIGURATION IN ISP. I am performed here with Mikrotik OS based. Mikrotik started his journey from 1996. Mikrotik Router using for faster working. This route is helpful for the administrator. This report can be used as a good guide for interested professionals for all time. This report is a TCP / IP protocol network for professionals This report of mine is not for any other work for both academic and a professional audience. We understand the network department, topology Network and Basic Concepts Internet. The section on Protocols and Standards provides the first overview of organizations that set standards for data communication and networking. Two and more PCs are interconnected and ready to trade data then we call Network. These functions include IP distribution and addressing process, Domain Name System, Dynamic Host Configuration Protocol, File Transfer Protocol, Firewall, networking, NAT, Routing, Bandwidth control, Point to Point Tunneling Protocol (PPTP), Point to Point Protocol Over Ethernet (PPPoE), VLAN. OLT, Server room maintain of ISP.

The report for the particular server utilizing on ISP, equipment for the server, picking programming, establishment procedure of the product, well ordered server setup process and straightforward investigating of the server.

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CHAPTER 1 INTRODUCTION

1.1 Introduction

The Internet is now the first place to search for anything in the world. Uses Internet and servers to accomplish tasks. Servers are where information is stored and we get it through the internet. DHCP and DNS servers play a very important role in the Internet. Our country is moving towards development and our country is now Digital Bangladesh. At present, internet connection has been established everywhere from small or big organizations to educational institutions. Everyone now uses the internet for communication. The biggest contributor to this country is e-commerce, online shopping business. Network security works handled is very sensitive work. I work Mikrotik Router PC based, Firewall, Bandwidth Control the Bandwidth, WAP, Hotspot Gateway.

1.2 Motivation

There are many jobs in the networking sector in our country including around the world. Thesystem is easy for the mikrotik handler to used. It can simply control the bandwidth. Now we communicate properly everywhere. I think with the help of Fareast Islami Life Insurance Company Limited I will be able to successfully prove my experience.

1.3 Objectives

The Internship gives me eight to ten hours of work experience and it will benefit me a lot in my job sector. The internship is a kind of job experience. My four-month internship will benefit me a lot experiences of my future. The internship taught me to be a skilled employer and skilled leader.

- ✓ Association the skills found there for writing each unique resume purpose.
 Find the skills to resume an interesting training internship in the list below:
- \checkmark To create skilled employers
- \checkmark Learn how to work and lead a team
- \checkmark Develops the strength and attitude to work consistently.

- \checkmark All about IT and networking systems
- \checkmark Get a better idea of how networking works in all areas.
- \checkmark Know all router configurations.
- \checkmark Know the responsibilities of an IT officer.
- \checkmark Professional skills will be good.

1.4 Introduction to the company

Fareast Islami Life Insurance Company Limited is the largest business corporation in Dhaka, Bangladesh. A leading 3rd generation company for insurance area, The Company created on 29/05/2000 and gained Certificate on May 29/05/2000 as a Public Limited Company under the Companies Act, 1994 and succeeding registered with the DSE and CSE Stock company Ltd in the year 2005.

1.5 Report Layout

In the chapter (1) I shown chapter 1 introduction, motivation of internship, internship object and introduction to the company.

In the chapter (2) I shown in chapter 2 the company introduction, bank organization and banking weakness, strangeness and threats.

In the chapter (3) I shown in chapter 3 how to exercises, Events and work of internship.

In the chapter (4) I shown in chapter 4 Competencies Earned, Smart Plan, and Reflections.

In the chapter (5) I shown in chapter 5 Conclusion and Future Scope.

CHAPTER 2

ORGANIZATION

2.1 Introduction

Fareast Islami Life Insurance Company Limited is the largest company in Dhaka, Bangladesh. A leading 3rd generation company for insurance area, The Company created on 29/05/2000 and gained Certificate on May 29/05/2000 as a Public Limited Company under the Companies Act, 1994 and succeeding registered with the DSE and CSE Stock company Ltd in the year 2005. The rules and procedures are based on digital process. My Internship branch is (Head Office) Paltan in Dhaka, Bangladesh. At presence the official assets of the organization is taka 1 billion and payable assets is taka 747 million and 420 thousand. In the year 2018 total numbers of stockholders were 8066. The company are dealt both in DSE and CSE Stock Ltd in A category. The whole market price of the companies' stocks is tk 723 million 740 thousand in 2018.

2.2 Product and Marketing Situation

The various operations are being functioned and the major functions of the organizations can be described briefly-

- ✓ Deposit System,
- ✓ Payment function,
- ✓ Online Statement,
- ✓ Mobile Activities,
- \checkmark Online payment,
- ✓ Business Analysis,
- \checkmark Collection function,
- ✓ Fund Transfer,
- ✓ Investment functions,
- ✓ Issuing Letter of Credit (LC),
- ✓ Issuing Bank Guarantee,
- ✓ Foreign trade services e.g. export, import, remittance etc.

2.3 SWOT Analysis

Strength:

Strong Board of Director: The Board of Director of that Fareast Islami Life Insurance Company Limited is stronger of than other insurance company.

Top Management: The top management of the Fareast Islami Life Insurance Company Limited Bangladesh. They contributed yearly towards the growth and development of the company.

Positioning of , Fareast Islamic Life Insurance Company Limited: Strong positioning of the Bangladesh. in the insurance company of Bangladesh.

Financial stability: The employers of Fareast Islami Life Insurance Company Limited Bangladesh. are very stable business persons in Market such on Nassa Group, Bexine group of industries etc.

Weakness:

Important weakness for Fareast Islami Life Insurance Company Limited. this weakness pushes the insurance for behind from the other competitor. Advertised are –

Billboard: There are few Billboard of Fareast Islami Life Insurance Company Limited. It is not sufficient marketing Activities.

Incorporate Image: Save the environment by young plant seedling.

Opportunity:

There are framework for business success of Fareast Islamic Life Insurance Company Limited Bangladesh.

Threats:

Does it stay to remain apparent how remote purchasers can prove to grip the Cyberspace. The Monetary Disaster - Homeowners more averse to develop their Broadband associations stock marketplaces lack of faith in the on-screen interchanges advertise.

2.4 Organizational Structure

Fareast Islami Life Insurance Company Limited is type of business is organized according to location. It has 552 branches. **Fareast Islami Life Insurance Company Limited's** Organizational Structure below:



Figure: 2.1 Organizational Structure of Fareast Islami Life Insurance Company Limited

CHAPTER 3

INTERNSHIP TASK, PROJECT AND ACTIVITIES

3.1 Daily Task and Activities

Month=> 1: In the first month of internship I learning.

- ✓ Networking Equipments.
- \checkmark Routers.
- ✓ Media Converter.
- ✓ Fiber.
- ✓ Switching
- ✓ Knowledge of PoE.

Month=> 2 and 3: In the second and third month of internship I learning.

- ✓ Designing of the network.
- ✓ Concept of the networking connectivity.
- ✓ Lan connectivity
- ✓ ISP NOC support system.
- ✓ Radius Sever Maintained
- ✓ MikroTik Router.

Month=> 4: In the this month of internship on my company I have learning. performed

the following tasks:

- ✓ Knowledge of Mikrotik Router.
- ✓ Knowledge of IP addressing.
- ✓ Knowledge of DNS server.
- ✓ Knowledge of Route.
- ✓ Knowledge of Bandwidth Manage.

3.1.1 Basic Router Configurations:

Set router clock to the current date and time

Router#clock set 03:35:00 13 mar 2020 Router#show clock *3:35:3.965 UTC Wed mar 13 2020

Configuring the router hostname to Fareast1 Router(config)#hostname Fareast1

Set Banner Message of the Day to Unauthorized Access Prohibited!

Fareast1(config)#banner motd #Unauthorized Access Prohibited!

Newly-entered passwords must have a minimum length of 6 characters.

Fareast1(config)#security passwords min-length 6

Protect device configurations from unauthorized access with the encrypted password. Set the password to Ars@123. Fareast1(config)#enable secret Ars@123

Secure all the ways to access the router. Set the passwords to Ars@123.

Prevent all passwords from being viewed in clear text in device configuration files.

Fareast1(config)#service password-encryption

Prevent device position messages from interrupt command line entrances at the device console.

3.1.2 Assign IP address to Hosts and test Intra-VLAN communication

Assign IP address to Sales PC1, MKT PC1, Printer, Sales PC2, and MKT PC2 from their corresponding subnet. At this point you should be able to reach the hosts of the same VLAN. But you able to reach hosts of other VLAN. In order for you to reach hosts of different VLANs, you now need to configure Inter-VLAN routing.

Try to ping Sales PC1 (172.16.1.66) to Sales PC2 (172.16.1.67) and you should be successful.

PC>ping 172.16.1.67 Pinging 172.16.1.67 with 32 bytes of data: Reply from 172.16.1.67: bytes=32 time=0ms TTL=128 Reply from 172.16.1.67: bytes=32 time=3ms TTL=128 Reply from 172.16.1.67: bytes=32 time=0ms TTL=128 Reply from 172.16.1.67: bytes=32 time=1ms TTL=128 Ping statistics for 172.16.1.67: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 3ms, Average = 1ms

Now try to ping Sales PC1 (172.16.1.66) to MKT PC1 (172.16.1.98). It will not be successful.

3.1.3 Configure Inter-VLAN Routing VLAN, Voice VLAN, VTPs

Configure Trunk on SB1DLSW, SB1ALSW1 and SB1ALSW2 Trunk ports for SB1DLSW, SB1ALSW1 & SB1ALSW2 are altogether ports attached to alternative switch or router. Setup all the Trunk ports to trunk mode, and assign VLAN 6 as the native VLAN. On SB1DLSW, configure port Fa0/1-4 and Gig1/1 as trunk port. The series command critically decreases the quantity of repetitive command essential enter when configure the same command on various ports.

SB1DLSW (config)#int range g1/1, f0/1-4 SB1DLSW(config-if-range)#switchport mode trunk SB1DLSW(config-ifrange)#switchport trunk native vlan 6 SB1DLSW(config-if-range)#exit On SB1ALSW1, configure port Fa0/1-4 as trunk port. SB1ALSW1(config)#int range f0/1-4 SB1ALSW1(config-if-range) #switchport mode trunk SB1ALSW1(config-if-range) #switchport trunk native vlan 6 SB1ALSW1(config-if-range) #exit On SB1ALSW2, configure port Fa0/1-4 as trunk port. SB1ALSW2(config)#int range f0/1-4 SB1ALSW2(config-if-range) #switchport mode trunk SB1ALSW2(config-if-range) #switchport trunk native vlan 6 SB1ALSW2(config-if-range) #exit

To view trunk ports, use the following command: SB1ALSW2**#show interfaces trunk**

3.1.4 Configuring Syslog:

Network admin has a various of opportunity for stored, interpreted & displayed this message. And alerting to individuals message that possibly will has the extreme impression on the network structure. The greatest common technique of editing system message that network policies deliver to use a protocol called system log.



Figure 3.1: Syslog Server

- Every syslog message contains a severity level and a facility.

Severity Name	Severity Level	Explanation	
Emergency	Level 0	System Unusable	
Alert	Level 1	Immediate Action Needed	
Critical	Level 2	Critical Condition	
Error	Level 3	Error Condition	
Warning	Level 4	Warning Condition	
Notification	Level 5	Normal, but Significant Condition	
Informational	Level 6	Informational Message	
Debugging	Level 7	Debugging Message	



3.1.5 Configuring SNMP:

S.N.M.P is an application layer protocol that offers a message setup for communication among managers & agents. The S.N.M.P system entails of 3 basics:

- ✓ SNMP manager
- ✓ SNMP agents (managed node)
- ✓ Management Information Base (MIB)

Resides for SNMP agents and MIB networking device clients. Network devices such as switches, routers, servers, firewalls, and workstations must be managed, equipped with an SMNP Agent software module. MIBs are meant to store information about device operation and be made available to authenticated remote users. The SNMP agent is responsible for providing local MIB access to objects that reflect resources and activity. Uses UDP, port number 162, to send SNMP recovery and management information. To run SNMP, you must have NMS MIB access. To confirm that the access request is not valid, some form of authentication must be in place. The community string MIB using SNMPv1 and SNMPv2c controls access to them. No community string plain password. For the SNMP community string authentication access object in MIB.

3.2 Activities and Events

3.2.1 SSH Configuring:

Use SSH version to 2. Use the value 1024 for encryption key strength. Set time out to 60 seconds and limit authentication retries to 5.

fareast1(config)#ip domain-name smaviation.com Fareast1(config)#crypto key generate rsa

The name for the keys will be: Fareast1.smaviation.com

Choose the size of the key modulus in the range of 360 to 2048 for your General-Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes. How many bits in the modulus [512]: 1024

% Generating 1024-bit RSA keys, keys will be non-exportable ... [OK]

Fareast1(config)#ip ssh version 2 Fareast1(config)#ip ssh time-out 60

Fareast1(config)#ip ssh authentication-retries 5

Create a user having username: admin and password: admin123. Configure user

authentication for in-band management connections.

Fareast1(config)#username admin secret admin123

Fareast1(config)#line vty 0 4

Fareast1(config-line) #transport input ssh Fareast1(config-line) #login local

Fareast1(config- line) #exit

3.2.2 Fareast Router Information:

Basic Router Configuration

- \checkmark Set router clock to the current date and time
- ✓ Configure the router hostname: Fareast1
- ✓ Set Banner Message of the Day to Unauthorized Access Prohibited!
- \checkmark A new enter passwords must be minimum length of 6 numbers.
- ✓ Secure device configure from illegal access with the encrypt password, Set the password to ars@123.
- \checkmark Secure all the ways to access the router. Set the passwords to ars@123.
- \checkmark All the password view in clear text in device.
- ✓ Prevent device status messages from disturbing command line at console.
- \checkmark The router from trying to solve the command line entries to IP addressing.

Frame Relay DLCI Mapping:

Data link connection identifier (DLCI) for a 10-bit wide frame relay link-local virtual circuit identifier to a particular PVC or information to be used in the frame. Frame Relay Network DLCIs to use statistical multiplex frame. DLCIs act as load and travel frame road signs in each switch.



Figure 3.3: DLCI Mapping

3.2.3 About ISAKMP:

ISAKMP simply provides a framework for authentication and key exchange and is designed to be independent of key exchanges; Protocols such as Internet Key Exchange and Key Carburized Internet discussion refer to establishing Security Association SA and cryptographic keys using an Internet environment with a protocol providing key elements authorized for Internet Security Association and Key Management Protocols as defined by RFC 2408.



Figure 3.4: ISAKMP Working System.

3.3 Project Task and Activities

3.3.1 PC based Installing process used VMware

- ✓ VMware software
- ✓ MikroTik Router x86 file
- ✓ Winbox software

The process of installation is shown below.

#Step1:



Figure 3.5: Virtual Machine Installing process



Figure 3.6: Virtual Machine Installing process

Virtual machine hardware	compatibility		
Hardware compatibility:	Workstation 15.x 👻		
Compatible with:	ESX Serv	/er	
Compatible products:		Limitations:	
Fusion 11.x Workstation 15.x	*	64 GB memory 16 processors 10 network adapters 8 TB disk size 3 GB shared graphics memory	*

Figure 3.7: Virtual Machine Installing process

New Virtual Machine Wizard
Guest Operating System Installation A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?
Install from:
Installer disc:
No drives available
© Installer disc image file (iso): C:\Users\MD BABU\Downloads\mikrotik-6.47beta19.isc ▼ Browse
I will install the operating system later.
The virtual machine will be created with a blank hard disk.
Help < Back Next > Cancel

Figure 3.8: Virtual Machine Installing process

Select a Guest Operation Which operating system	ng System em will be installed on this virtual machine?
Guest operating system	
Microsoft Windows	
🔘 Linux	
VMware ESX	
Other	
Version	
Other	•

Figure 3.9: Guest OS selection

lew Virtual Machine Wizard	×
Name the Virtual Machine What name would you like to use for this virtual machine?	
Virtual machine name:	
Mikrotik	
Location:	
C: \Users\MD BABU\Documents\Virtual Machines\Mikrotik	Browse
< Back Next >	Cancel

Figure 3.10: Virtual Machine Name

×
essors for this virtual machine.
1 -
1 -
1
< Back Next > Cancel

Figure 3.11: Number of Processor



Figure 3.12: Memory Size

New Virtual Machine Wizard
Specify Disk Capacity How large do you want this disk to be?
Maximum disk size (GB): 1000
Allocate all disk space now.
Allocating the full capacity can enhance performance but requires all of the physical disk space to be available right now. If you do not allocate all the space now, the virtual disk starts small and grows as you add data to it.
◯ Store virtual disk as a single file
Split virtual disk into multiple files
Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.
Help <a>Back Next > Cancel

Figure 3.13: Disk Size

New Virtual Machine Wizard	×
Specify Disk File Where would you like	to store the disk file?
Disk file	
A 10 GB virtual disk be creat automatically named based	ed using multiple disk files. The disk files will be on this file name.
Mikrotik.vmdk	Browse
Help	< Back Next > Cancel

Figure 3.14: Disk File Name

Location: C:\Users\MD BABU\Documents\Virtual Machines\Mikr Version: Workstation 15.x Operating System: Other
Version: Workstation 15.x Operating System: Other Hard Disk: 10 GB, Split
Operating System: Other Hard Disk: 10 GB, Split
Hard Disk: 10 GB Split
nara biaka 10 abi apin
Memory: 1024 MB
Network Adapter: Bridged (Automatic)
Other Devices: CD/DVD, Sound Card

Figure 3.15: Virtual Machine Interface



Figure 3.16: Virtual Machine Interface overview

Deutice	Summary.	Memory
Device IMMemory IProcessors →Irvar Disk (DDs) O CD/Dio (DDE) Shetwork Adapter (4) Sound Card → Doplay	Summary 1 GB 1 GB 4uto detect Bridged (Automatic) Auto detect Auto detect Auto detect	Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB. Memory for this virtual machine: 1024 MB Generation of the memory for this virtual machine: 1024 MB Generation of the memory for this virtual machine: 1024 MB Generation of the memory for this virtual machine: 1024 MB Generation of the memory for this virtual machine: 1024 MB Generation of the memory for this virtual machine: 1024 MB MB MB MB MB MB MB MB MB MB
	Add Remove	

Figure 3.17: VM HW

Hardware Type What type of hardware do you	u want to install?
Hardware types: Hard Disk CD/DVD Drive Floppy Drive VBE Controller USB Controller USB Controller USB Controller Serial Port Parallel Port Printer Generic SCSI Device Controller Control	Explanation Add a network adapter.
	Finish Cancel

Figure 3.18: Finish

#Step2:

Select all the option-

	To direct	input to this virtual machine, press Ctrl+G.
Welcome	to MikroTik Router So	ftware installation
Move around menu using Select all with 'a', mi cancel and reboot.	'р' and 'n' or arrow k nimum with 'м'. Press	eys, select with 'spacebar'. 'i' to install locally or 'q' to
[X] system[X] ppp[X] dhcp[X] dhcp[X] advanced-tools[X] calea[X] dude[X] gps	[X] hotspot [X] ipv6 [X] kvm [X] lcd [X] lcd [X] mp1s [X] mµlticast	[X] ntp [X] routing [X] security [X] ups [X] ups [X] user-manager [X] wireless@
systeм (depends on noth Main package with basic	ing): services and drivers	
	configuration? [u/n]	

Figure 3.19: MikroTik Install

Let's see the MAC address "User1"

Que	ue List													
Sin	ple Queues	Interface Queues	Queue Tree	Queue T	ypes									
÷		× 🖻 🍸	00 Reset C	ounters	oo Rese	t All Counters							F	ind
#	Name	Target		Upload M	lax Limit	Download Ma	x Limit	Packet Marks	Upload Queued B	Download	d Queue	Total Max	Limit (t	bi 🔻
0) 🔒 Use	1 172.16.10.5	0	5M		5M								
1	🚊 Use	2 172.16.10.6	0	8M		8M								
							ARP	List					×	
							÷					Find		
								IP Address	∠ MAC Address		Interface		-	
							D	172.16.10.50	40:8D:5C:1D:E	8:4D	LAN			
							DC	192.168.1.1	14:59:C0:C7:13	:03	WAN			
1							DC	192.168.1.6	40:8D:5C:1D:E	8:4D	WAN			
1														
2 ite	ems		0 B qu	eued										

Figure 3.20: ARP List

Network Connections						_		×	
🔶 🔶 🕐 🌪 > Co	ntrol Panel > Net	twork and Internet > Netw	vork Connections		マ ひ Search Netwo	ork Conn	ections	2	
Organise 🔻 Disable thi	is network device	Diagnose this connecti	on Rename this connection	View status of this connection	Change settings of this connection		. 🛄	?	
Organise	s network device terminal terminal	Diagnose this connecti Is Network Connection Details Property Connection specific DN Description Physical Address DHCP Enabled IPv4 Address IPv4 Sadnet Mask IPv4 Detail: Gateway IPv4 DDNS Server IPv4 DWIS Server IPv6 Detail: Gateway IPv6 DDNS Server	on Rename this connection Rename this connection Brown	View status of this connection Connected Connected Microsoft Windows (c) 2019 Microsoft C:\Users\fazly>pin Pinging 172.16.10. Reply from 172.16. Reply from 172.16.	Change settings of this connection Ethernet Network: Killer E2400 Gigabit Ethernet (O S2/cmd.exe - ping 172.16.10.1 -t [Version 10. 0. 18362.657] Corporation. All rights ress g 172.16.10.1 -t 1 with 32 bytes of data: 10.1: bytes=32 time<1ms TTL= 10.1: bytes=32 time<	64 64 64 64 64 64 64 64 64 64 64 64 64 6			
			Close						
7 items 1 item selected									
L				and the second se					

Figure 3.21: Network Connection Details

Queues of Parent Concept:



Figure 3.22: Topology of Parent Concept

Click Queues from Simple Queues from General from Name & OK

In the same way, we create the next blog and create a user of management blog.

Next Click on "Queues>Simple Queues>General>Name:(example: User1)>Target:(example:10.20.20.2)> Advanced >Parent: select management blog

>Apply>OK"

Simple Queues Iterface Queues Queue Tree Queue Types Image: Content Biog O Reset Contents Find Image: Content Biog 102 02 02 02/4 SM SM Image: Content Biog 102 02 02 02/4 SM SM Image: Content Biog 102 02 02 02/24 SM SM Image: Content Biog 102 02 02 02 02 02 02 02 02 02 02 02 02 0	Queue List												×	
Image of the second	Simple Queues	Interf	ace Queue	s Queue	e Tree	Queue 1	Types							
# Name Target Upload Max Limit Download Max Limit Packet Marks Upload Queued B Downloat 4	+	*		00 F	Reset Co	ounters	00 Reset Al	Counters	1			Find		
4 Maragement Blog 10 20 20 20/24 5M 5M 0 B User1 10 20 20 2 2M 2M 3 B User2 10 20 20 3 1M 1M 5 B Worker Blog 10 30 30 0/24 4M 4M 1 B User2 10 20 30 30 0/24 4M 4M 2 B User3 10 30 30 2 4M 5M 2 B User4 10 30 30 3 3M 3M 2 B User4 10 30 30 3 3M 3M Single Queue Maragement Blog 10 30 30.0 Packet Marks: Target Upload Target Download Limit At: unlimited unlimited bits/s Piority: 8 0 0.100 Cancel Parent: Management Blog Imagement Blog Panove Reset All Counters Reset All Counters Torch Imagement Blog Imagement Blog Imagement Blog Parent: Management Blog Imagement Blog Imagement Blog Imagement Blog Imagement Blog Imagement Blog	# Name	•		Target			Upload Max	Limit D	wnload	Max Limi	Packet Marks	 Upload Queued B Downloa	-	
0 ■ User1 10 20 20 2 2M 2M 3 ■ User2 10 20 20 3 1M 1M 3 ■ User2 10 30 30.0/24 4M 4M 1 ■ User3 10 30 30.2 4M 5M 2 ■ User4 10 30 30.3 3M 3M Simple Queue (User1) Image: Control of the statistics General Advanced Statistics Traffic Total Total Statistics OK Image: Control of the statistics	4 🔍 M	anagem	ent Blog	10.20.20	0.0/24		5M	5	N			 	-	
3 B User2 10 20 20 3 1M 1M 5 B Worker Blog 10 30 30 0/24 4M 4M 1 B User3 10 30 30 2 4M 5M 2 B User4 10 30 30 3 3M 3M Simple Queue <user1> OK OK Packet Marks: OK Target Upload Target Download Limit At: unlimited bts/s Priority: 8 Comment Bucket Size: 0.100 ratio Queue Type: default-small Imit default-small Parent: Management Blog Imagement Blog Parent: Management Blog Imagement Blog Imagement Blog Imagement Blog Imag</user1>	0 🖇	User1		10.20.20).2		2M	21	N					
5 Worker Blog 10.30.30.0/24 4M 4M 1 User4 10.30.30.2 4M 5Mple Queue User4 10.30.30.3 3M Modress List Cancel Cancel Target Upload Target Upload Target Download Limit At: unlimited unlimited<th>3 1</th><th>User2</th><th></th><th>10.20.20</th><th>).3</th><th></th><th>1M</th><th>11</th><th>N</th><th></th><th></th><th></th><th></th><th></th>	3 1	User2		10.20.20).3		1M	11	N					
1 Buera 10.30.30.2 4M 5M 3M 3M 3M	5 🚊 W	orker Bl	og	10.30.30	0.0/24		4M	41	N					
2 ⓐ User4 10.30.30.3 3M 3M 3M	1 💈	User3		10.30.30).2		4M	51	N					
Simple Queue <user1> Address List General Advanced Statistics Traffic Total Total Statistics OK Packet Marks:</user1>	2 💈	User4		10.30.30).3		3M	31	N					
General Advanced Statistics Traffic Total Statistics OK Packet Marks:	Simple Queue	<user1></user1>	,									Address List		
Packet Marks: Cancel Target Upload Target Download Linit At: unlimited Phorty: 8 Bucket Size: 0.100 Queue Type: default small Parent: Management Blog Farget Upload Target Upload unlimited unlimited Bucket Size: 0.100 Queue Type: default small Torch Reset Counters Reset All Counters Torch	General Adv	ranced	Statistics	Traffic	Total	Total Sta	atistics				ОК	+ - 🖉 🗶 🖪 🎙	7	Find
Target Upload Target Download Apply Image: Target Upload Law Limit At: unlimited Image: Upload Image:	Packet Marks	:							\$		Cancel	Address /	Network	Interface FTP Serber
Linit At: unlimited I unlimited I bits/s Priority: 8 8 8 Bucket Size: 0.100 0.100 ratio Queue Type: default-small I default				Target	Upload		Targe	t Download	ł		Apply	+ 10.20.20.1/24 + 10.20.20.1/24	10.20.20.0	LAN
Priority: 8 8 Comment Bucket Size: 0.100 0.100 ratio Queue Type: default-small	Limit A	t: unlim	ited		•	unlimite	- d	₹	bits/s		Disable	+ 10.30.30.1/24 + 172.16.10.1/24 + 102.100.1.2/24	172.16.10.0	LAN
Bucket Size: 0.100 0.100 ratio Queue Type: default-small Image: Copy Parent: Management Blog Image: Reset All Counters Torch Image: Torch Image: Torch enabled Image: Torch Image: Torch	Priority	r: 8				8]		Comment	T 132.100.1.2/24	132.100.1.0	TON .
Queue Type: default-small Image: Conternation of the state of the	Bucket Size	0.10	0			0.100			ratio		Сору			
Parent: Management Blog	Queue Type	: defau	ult-small		₹	default	-small	Ŧ	:		Remove			
enabled Reset Al Counters	Paren	: Mana	agement Blo	g					∓	Re	eset Counters			
enabled										Res	et All Counters			
enabled											Torch	•		•
enabled												5 items		
	enabled													

Figure 3.23: Simple Queues of Parent

3.3.2 Bind MAC Address:

Step 1: Click on, "Interfaces>Select ether2(LAN) and (Double click>General>ARP:reply-only>Apply>Ok".

Interface List	Interface <ether2></ether2>				
Interface Interface List Ethemet EoIF	General Ethemet Loop Pro	otect Status Traffic	ОК		1
	Name: e	ether2	Cancel		Find
Name / Type	Type: E	Ethemet	Apply	(s) Rx Packe	t(p/s) FP] ▼
R <s>ether1 Ethemet ::: LAN</s>	MTU: 1	1500	Disable	0	9
R <>ether2 Ethemet	Actual MTU: 1	1500	Comment	13	9
R +i>ether3 Ethemet	L2 MTU: 0)	Torch	0	9
	MAC Address: U	20:00:29:14:11:00	Cable Test		
	ARP Timeout:	disabled	Blink		
	lo	ocal-proxy-arp	Reset MAC Address		
	re	eply-only			
A and (1 as least and)					•
joitems (1 selected)					

Figure 3.24: Interface to General Setting

Step 2:

PC Setting>Network>Local Area Connection>view under settings & OK".

Local Area Connection Properties	xork Connections >	✓ 4 Search	:h Net 🗴
Networking	onnection Rename this co	nnection »	
Connect using:	and Connection 2	Local Area Connection Network 5	
Realtek PCIe GbE Family Controller	iniport (PPPOE)	Realtek PCIe GbE Family Controller	
Configure	Internet Protocol Version 4 (T	CP/IPv4) Properties 🛛 😵 🔀	
This connection uses the following items:	General		
Client for Microsoft Networks	You can get IP settings assig	ned automatically if your network supports	
QoS Packet Scheduler	this capability. Otherwise, yo for the appropriate IP setting	ou need to ask your network administrator gs.	
 ✓ Internet Protocol Version 6 (TCP/IPv6) 	Obtain an IP address au	utomatically	
Internet Protocol Version 4 (ICP/IPv4) Internet Protocol Version 4 (ICP/IPv4) Link-Layer Topology Discovery Mapper I/O Driver	Use the following IP add	dress:	
Link-Layer Topology Discovery Responder	IP address:	192.168.16.50	
Install Uninstall Properties	Subnet mask:	255.255.255.0	
Description Transmission Control Protocol/Internet Protocol. The default	Default gateway:	192.168.16.1	
wide area network protocol that provides communication across diverse interconnected networks.	Obtain DNS server addr	ress automatically	
	Ouse the following DNS s	server addresses:	
OK Cance	Preferred DNS server:	8.8.8.8	
	Alternate DNS server:	· · · ·	
	Validate settings upon	exit Advanced	

Figure 3.25: T.C.P/I.Pv4 Configuration with IP

Step 3:

Click on, "Tools>IP Scan> Interface: Select LAN Example: ether2>Address Range:192.168.16.50>Start".

😹 Routing 💦 🕅	DT + C	[
🎲 System 🗅	Blest Server	IP Scan	
Queues	Bandwidth Test	Interfaces attack	T A C -1
Files	Email	intenace. [ether2	
Log	Flood Ping	Address Range: 192.168.16.50	▲ Stop
A RADIUS	Graphing		Close
💥 Tools 🗈	IP Scan		New Window
New Terminal	MAC Server		
loBa	Netwatch	Address / MAC Address Tim	ne (ms) DNS SNMP Netbios
eta Dot1X	Packet Sniffer	132.166.16.30 EC.A6.66.70.0A.3D	0
South Contract of the south of	Ping		
KVM	Ping Speed		
Make Supout rif	Profile		
Manual	RoMON		
New WinBox	SMS		
Exit	Telnet		
	Torch		
e	Traceroute		
Inc	Traffic Generator		
Ē	Traffic Monitor	1 item	

Figure 3.26: IP Scan

Step 4:

Click on, "IP>ARP>Add>IP Address:192.168.16.50> MAC Address: EC-A8-6B-70-0A-5D>Interface: LAN Example: ether2>Apply>Ok".



Figure 3.27: Add Media Access Control (MAC) Address

DHCP

Now Restart WinBox and reconnect Ethernet port IPv4 into automatic from pc then click from WinBox "IP>ARP= where show ARP list".

				A	ARP List	
Control Panel >	Network and Internet Network C	onnections 🕨	 ✓ ✓ 		4 - 🖉 🗶 🖪 🍸	Find
Organize 💌 Disable this netwo	Local Area Connection Status		8) × * • • • • • • • • • • • • • • • • • •		IP Address / MAC Address	Interface 🔻
Bluetooth Network Conn	General		1/h Ausen Alstwark Adapter 1/h Apati		172.16.15.183 F4:F2:6D:2B:E4:E7	LAN 🔶
Bluetooth Device (Person		Network Connection Deta			□ 1/2.16.15.185 E8:DE:2/:50:0/:18	LAN
VMware Network Adapte	Connection	Network Connection Details	c		□ 1/2.16.15.186 18:A6:F7:63:EA:85	LAN
Unidentified network	IPv4 Connectivity:	Property	Value		□ 1/2.16.15.18/ 0C:80:63:9B:B2:1D	LAN
VMware Virtual Ethernet	Media State:	Connection-specific DN			□ 1/2.16.15.188 UC:80:63:UA:46:AF	LAN
	Duration:	Description	Realtek PCIe GBE Family Controller		□ 172.16.15.189 50:C7:BF:36:18:27	LAN
	Speed:	Physical Address	2C-60-0C-64-A4-16		172.16.15.191 70:4F:57:55:CA:17	LAN
Detais		IPv4 Address IPv4 Subnet Mask	192 168 10 253		172.16.15.192 F8:1A:67:36:A9:85	LAN
	Detais		255.255.255.0		172.16.15.193 EC:08:6B:F6:88:91	LAN
		Lease Obtained	Saturday, February 22, 2020 5:17:25 I =		172.16.15.194 10:62:EB:1A:00:8E	LAN
	Activity	Lease Expires	Saturday, February 22, 2020 5:27:24 I		172.16.15.195 D4:6E:0E:E6:CD:19	LAN
	Activity	IPv4 Default Gateway	192.168.10.1		172.16.15.197 F4:F2:6D:D0:0C:5D	LAN
	Sent —	IPv4 DNS Servers	8.8.8		172.16.15.198 18:D6:C7:ED:88:CD	LAN
			124.6.224.4		172.16.15.199 D8:0D:17:23:02:28	LAN
	Bytes: 41,844	IPv4 WINS Server			172.16.15.201 0C:80:63:76:16:3B	LAN
		NetBIOS over Topip En	Yes		172.16.15.202 C4:3D:C7:70:A0:8F	LAN
	🤫 Properties 🛛 🔫 Disable	IPv6 Default Gateway	1e303003.011.bed3.153%21		172.16.15.206 F4:F2:6D:58:BF:17	LAN
					172 16 15 207 B0:C5:54:83:8A:69	LAN
					172.16.15.209 C8:3A:35:2A:C2:88	LAN
			Close		□ 172 16 15 211 18 D6 C7 D7 4F CD	LAN
				D	D 172.16.15.215 18:D6:C7:54:EA:1F	LAN

Figure 3.28: A.R.P Dynamic Configure

3.3.3 Hotspot Configuration:

IP from Pool trom Name from Hotspot Pool & OK

Pools Used Addresses		
+ 7		Find
Name 🛆 Addresses	Next Pool	
+ HotsPot_Pool 192.168.15.2-192.168.15.254	none	
IP Pool <hotspot_pool></hotspot_pool>		
Name: HotsPot_Pool	ОК	
Addresses: 192.168.15.2-192.	Cancel	
Next Pool: none 🗢 🔺	Apply	
	Comment	
	Сору	
	Remove	
1 item (1 selected)		

Figure 3.29: I.P Pool Config.

Hotspot						
Servers	Server Profile	es Users	User Profiles	Active	Hosts	IP Binding
+ -	X	TR	eset HTML	Hotspot	Setup	
Name	э	∠ Interf	асе	Address	Pool	Profile
Hotspo	t Setup					
Select	interface to n	un HotSpot	on			
HotSp	ot Interface:	HotsPot				₹
			Back	Next		Cancel

Figure 3.30: Hot Spot Setting

Hotspot Setup	
Set HotSpot address for inter	face
Local Address of Network:	192.168.15.1/24
[✓ Masquerade Network
	Back Next Cancel

Figure 3.31: Hot Spot Setting Masquerade Network

Hotspot Setup		
Set pool for HotSpot addre	esses	
Address Pool of Network:	192.168.15.2-192.168.15.254	\$
	Back Next	Cancel

Figure 3.32: Hot Spot Setting Add. Pool

Hotspot Setup	
Select hotspot SSL certificate	
Select Certificate: none	₹
	Back Next Cancel

Figure 3.33: Hot Spot Setting SSL certificate

Hotspot Setup			
Select SMTP server			
IP Address of SMTP Server:	0.0.0.0		
	Back	Next	Cancel

Figure 3.34: Hot Spot Setting SMTP

Hotspot Setup	
Setup DNS configurat	n
DNS Servers: 8.8.8.	\$
	Back Next Cancel

Figure 3.35: Hot Spot Setting D.N.S

Hotspot			
Users User Profiles	Active Hosts IP Bindi	ngs Service Ports Walled Garden	
+ - T			Find
Name /	Session Time Idle Time	out Shared U Rate Limit (rx/tx)	
HotsPot_5MB		none 1	
* 🚱 default		none 1	
	Hotspot User Profile <hot< th=""><th>sPot_5MB></th><th></th></hot<>	sPot_5MB>	
	General Queue Adve	ertise Scripts	ок
	Name:	HotsPot_5MB	Cancel
	Address Pool:	HotsPot_Pool	Apply
	Session Timeout:		Сору
2 items (1 selected)	Idle Timeout:	none 두 🔺	Remove
	Keepalive Timeout:	00:02:00	
	Status Autorefresh:	00:01:00	
	Shared Users:	1	
	Rate Limit (rx/tx):		
		Add MAC Cookie	

Figure 3.36: Hotspot Profile

User log-In System "Open browser and type www.mdbabu.com >Enter

Please log on to use the internet hotspot service		
login		
password		
OK		
Hotspot gateway		
powered by MikroTik		
HOTSPOT GATEWAY		

Powered by MikroTik RouterOS

Figure 3.37: Login Page

IP address:	192.168.15.90	
bytes up/down:	125.4 KiB / 5.3 MiB	
connected:	19s	
status refresh:	1m	
log off		

Figure 3.38: Log in confirmation

3.4 Challenges

Network Address Translation (NAT) is a broadly use explanation for IP address shortages. NAT Introduction the idea that a "private" IP address is valid only in the local area network (LAN) and the "public" IP address being used on the Internet must be translated. With NAT, we share multiple private IP addresses into a single public IP address, thus delaying the need to establish long-term solutions to IP address shortages. Port Address Translation (PAT) is a slightly different concept related to NAT. PAT Incoming Sessions, that are initialize from an external host can map a exact internal host and port.



Figure 3.39: Network Address Translation.(NAT)

Wireless Router:

Wireless routers provide a suitable way to access the Internet as well as file sharing and printing and a small number of wired devices to connect any number of wireless devices to each other. In some small offices, but typically large companies, these 3 modules have dedicated part of access points, Ethernet switches, wired routers and routers.

Because the router is the only way to join to the Internet, the firewall works for all CPUs in the network, and the individual firewall of each machine may be turned off. Wireless LAN, Wi-Fi, Hotspot, Cellular Hotspot, Wi-Fi Extender, Router and WPAN.



Figure 3.40: Wireless Router

CHAPTER 4

Conclusion and Future Career & Scope

4.1 Competencies Earned

How it works Configure the computer programming routers, router configuration, network configuration, and networking operating system under expertise about everything. Internship skills are acquired in the networking sector. IP configuration can learn all the gains through new networking.

4.2 Smart Plan

Networking internships are a must have for any Affiliate promoting any program. If all the organizations work well with the planning in a smart way, then the country has a bright future Will move forward. Smart planning is all experience and can be used efficiently further.

4.3 Reflections

They always work for good organization and national organization and for good reputation. They provide high technology for computer telecommunications and network solutions. They manage the entire networking system through the network

CHAPTER 5 CONCLUSION & FUTURE CAREER

5.1 Discussion and Conclusion

When I started working, I worked nine hours a day. The tasks are better on how to configure computer programming routers, how to gain more skills under router configuration, network configuration and networking operating system. Internship skills are acquired in the networking sector.

5.2 Scope for Further Career

Future prospects are acceptable in different zones under Networking. The beginnings of this Network profession are non-just at the Network level, the system protection parts of dissimilar regions desktop application growth.

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APPENDICES

Appendix: Company Information



Head Office

Name	Fareast Islami Life Insurance
	Company Emined
Address	Fareast Tower, 35 Topkhana Road,
	Dhaka - 1000
Telephone	09613000123, +88-02-9573077
E-mail	info@fareastislamilife.com
Website	https://www.fareastislamilife.com
Employees	304

Plagiarism Report

Turnitin Originality Report	ocument Viewer		
Processed on: 07-Oct-2020 20:00 +06 ID: 1408001780 Word Count: 2658 Submitted: 1 MIKROTIK ROUTER CONFIGURATION IN ISP By Abu Jafar	Similarity Index 19%	Similarity by Source Internet Sources: Publications: Student Papers:	13% 2% 13%
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2% match (student papers from 30-Jun-2020) Submitted to Daffodil International University on 2020-	 06-30		
2% match (Internet from 10-Jun-2017) https://en.wikibooks.org/wiki/Communication Network	s/NAT and PAT Prot	ocols	
2% match (Internet from 25-Jun-2017) http://www.pcmag.com			
1% match (publications) "The CPU as a Turing Machine", Computing in the Web /	<u>Age A Web-Interactiv</u>	e Introduction, 2002	
1% match (Internet from 17-Sep-2020) https://en.wikipedia.org/wiki/Internet_Security_Associa	ation and Kev Mana	aement Protocol	