#### SERVER CONFIGURATION USING LINUX AND MIKROTIK

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 Project/internship titled **"SERVER CONFIGURATION USING LINUX AND MIKROTIK**", submitted by ANISUR RAHMAN SHANTO, ID No: 143-15-4602 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 12 December, 2018.

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## DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Fahmida Afrin**. **Lecturer, Department of CSE, Daffodil** International University. I also declare that neither this Internship nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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

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

#### ABSTRACT

This internship occurs on Daffodil online limited. An Internet specialist organization (ISP) is an association that gives administrations to getting to, utilizing, or taking part in the Internet. It assumes an essential job in current day correspondence. It has made the data correspondence less demanding and reasonable for the average folks. ISP includes diverse sorts of servers to help distinctive kinds of need of the customers. In this Internship, a wide range of servers utilized in ISP have been arranged utilizing Linux working framework. After usage everything being equal, the framework is tried in various stages and it works effectively as a model. It helped me gain the hand on skill to design these servers. By the way, this task report can be utilized as the manual for new ISP engineers.

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#### **CHAPTER 1**

#### **INTRODUCTION**

The entry level position offers functional work involvement and a prologue to supporting PC Install, refresh, keep up and give client support to equipment, programming applications, some system issue. This entry level position will include testing openings, genuine specialized framework bolster tasks, and cooperation with staff. This is an extraordinary chance to pick up hands-on involvement in the PC IT field. This entry level position furnishes a chance to pick up involvement with the framework support of a Daffodil Online Limited.

#### **1.1 OBJECTIVES**

Have to understand the importance of the network and server management. Also understood the information of networking architecture. Internship will update my sense and responsibility also make it higher and good work habits. I can improve my technical and interpersonal skills for gaining the target and developing the best performance. I would like to apply my creative ideas, creativity and performance for attaining the internship for develop my career in IT sector.

#### **1.2 MOTIVATION**

Currently I'm completing my Bachelors in Computer Science Engineering at Daffodil International University, I am able to understand that the value of gaining practical knowledge which will complement the textbook knowledge and it helps a student to gain a wider perspective of the subjects. By this time in internship I have already found that I am perfectly skilled in the details of Linux network and server management. As an internet service provider, I've getting my point across very well, communicating with people, understanding their needs and providing them better service.

## **1.3 GOALS**

After complete my internship I have to do something.

- Learn insights about the systems administration parts,
- Setup Linux Ubuntu,
- Network the board,
- Server arrangement,
- How to speak with customers.
- How to give better administration to customers.

## **1.4 Introduction to the Company**

Daffodil Online Ltd. prides itself as one of the leading ISP Service Provider in Bangladesh. They are the most experienced and oldest company in the ICT field where their basic business ethics is Long Tern Relationship with customer.

Why Daffodil Online is best: They give one of the best solutions for my and our business. They have everyday backups what we done. They also have 24 hour & 7 days' support. They also have High Quality equipment and also have cPanel hosting.

Which service they provide: They provide best and reliable service for my business organization. This company has Internet service (broadband internet), Domain & Hosting, Training, Pearson View test center, Colocation service & Networking solution.

Company Name	Daffodil Online Ltd
Type of Organization	(ISP) Internet Service Provider
Address	102, Shukrabad (3rd floor), Mirpur Road, Dhanmondi,
	Dhaka - 1207, Bangladesh
Cell Phone	9143258, 9143259
Internal IP Phone	+8801713493097
E-mail	info@daffodilnet.com
Website	https://www.daffodilnet.com/

## Table 1.1: Information of the company

# CHAPTER 2 ORGANIZATION

#### **2.1 Introduction**

In this part I will depict around an Organization where I finished my Internship. I'll additionally depict their working arrangement, showcase strategy, about the item. Programming strategy and how the handle their hierarchical structure and the procedure of work.

### 2.2 Product and Market Situation

Daffodil Online Ltd. Given Nationally ISP, IT Training and Professional Training. Some of are Given Bellow:

- Corporate Internet Solution.
- Security Solution.
- Area Registration and web Hosting.
- Site Development.
- Proficient Courses and Training
- Open Source application arrangement.
- Network access supplier.
- Best in class Data Centers.
- Speed Wi-Fi Zone.
- Information availability, Data focus, Co-Location.
- Proficient course and trainings:

- ISP Setup and Administration Using Linux.
- Training Course on Certified Ethical Hacking
- ISP Setup and Administration Using Mikrotik.
- Web Site Development with Joomla.
- PHP and MYSQL for site Development.
- E-business and Open Source Joomla Virtue Mart

## 2.3 Target Group

The company's principle goal to focus on SOHO customers, with respect to their new uncommon contributions, for their better administrations they make more committed, dependable clients.

## 2.4 SWOT Analysis

SWOT Analysis is an arranging strategy for understanding a man and associations qualities, Shortcoming, opportunities and dangers they look at business or any venture arranging.

Strengths	Weakness
<ul> <li>Good communication skill</li> <li>Good poison on market</li> <li>It's a famous company</li> <li>Produce good service</li> </ul>	<ul> <li>Lack of experience</li> <li>Crisis of employ</li> <li>Low assets</li> <li>Lake of management</li> </ul>
Opportunities	Threats
<ul> <li>At the point when contenders are ease back to embrace new advancements.</li> <li>Extending the business division with different future chances.</li> <li>Empowering of nearby business</li> </ul>	• The Eco Crisis Householders less as increment their broadband memberships securities exchanges absence of trust in computerized correspondence showcase.

Table 2.1: SWOT analysis of the company

## 2.5 Organizational Structure

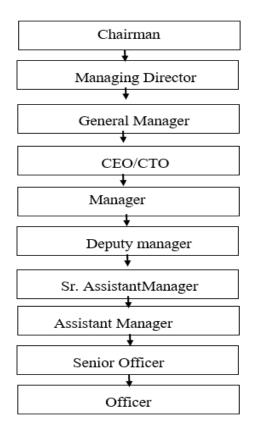


Figure 2.1: Organizational Structur

## **CHAPTER 3**

## **INTERNSHIP ROLES AND RESPONSIBILITIES**

#### 3.1 Daily Task and Activities

Entry level position Period is the incomplete satisfaction for finishing my Bachelor of Science in Computer Science and Engineering. It was the multi month Linux Administration course in Daffodil Online Limited. It diminishes a standout amongst the most IT proficient preparing and courses on the day when I visit. So, I partook in this undertaking for better preparing and consummation of my temporary job program advanced correspondence showcase.

#### Month 1

- In my internship period what am I learn in given below their:
- How to install and run virtual machine.
- How win box is work.
- Introduce with mikro-tik router
- How to configure a mikro-tik router in isp
- Access control and upgrading firmware

#### Month 2

- Creating multiple SSIDs
- Configuring an NTP Server
- Managing configuration backups
- Bandwidth Management Using Simple Queue
- Creating Bridges (LAN)
- Creating multiple DHCP Servers

#### Month 3:

- Full Bandwidth Management
- How to fix Simple Queue and Queue Tree issues
- Enhancing Mangle rules (Winbox, DNS, Google Paly Service) 4.Block Bit Torrent & P2P traffic
- How to Configure VPN and Dynamic DDNS

#### Month 4:

• Try to create a simple project on isp server.

## 3.2 Event and Activities

In the Education Sector Skilled and Educated Manpower is vital issues for best quality training. Daffodil Online Limited lean toward the Best quality Teacher for expert preparing and Courses. Daffodil Online Limited keep up an efficient methodology for enlistment. To begin with, the applicants need to sit for a composed test, and afterward a meeting is taken. Finally, the hopeful needs to give 2/3-show class from which we take the criticism from the understudies. Lastly, the competitor is chosen or rejected. Daffodil Online Ltd (DOL) is an exceptionally time bound activity of Daffodil Education Network which has been working since 2002 to create proficient Human Resources in various fields of instruction and preparing. DOL has totally changed the customary idea of polytechnic, specialized and proficient aptitude improvement preparing establishments in Bangladesh. Today DOL is exceptionally notable establishment for science, designing, expressions ponder and furthermore for expert and initiative advancement preparing programs. Daffodil Online Limited is likewise extremely prevalent name in Corporate Training Industry which has earned worldwide affirmation in a brief span. Then again Daffodil Online Limited given best quality expert preparing. Daffodil Online Limited Provided the Training for Diploma Engineers, Corporate line proficient and Human Resource.

### 3.3 Project Virtualized by Oracle VM virtual Box

Virtual machine basically what the software that it allows an entire opera rating system which is refer to as the host there several reasons why I want to run a virtual machine on my computer. Some of those might include my need access to software that is not available on my host operating system. By this software I can run other OS on this same time when my main system is running.

#### 3.4 VM Virtual Box setup

Virtual box is an open source software. It is a free software. At fires download the virtual box from Filippo. Download the latest version. After download install it. It's a simple user interface. Go to file, give a Name and select the version of the windows. Select the memory size. Recommend memory size is 2048MB. Create a Virtual Marching Hard drive. Hard drive type is VDI. And it's a dynamic allocated. And give the file location size. Now it's ready. Go to the setting, make general-Advance make shared Clipboard and Drag 'Drop Bidirectional. Now it's ready to install OS.

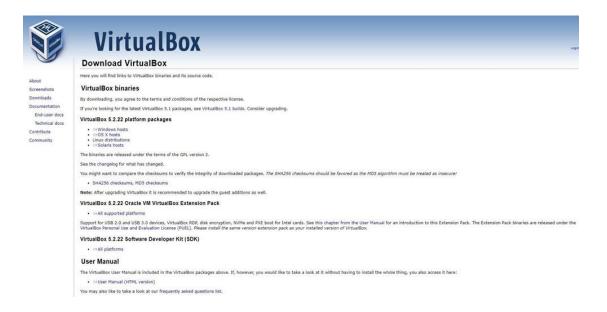


Figure 3.1: Downloading virtual Box

9					Oracle VM VirtualBox Manager	- 🗆 🗙
File	Machine	Help			? ×	
New New	Settings	Start	Disc	b ard	Create Virtual Machine	😳 Details 💿 Snapshots
	betangs	otare	^	Welc	Name and operating system	
				The lef create In orde located You ca inform	Please choose a descriptive name for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine. Name: Ubuntu 15.04 - 64 bit Type: Linux  Version: Ubuntu (64 bit)	st is empty now because you haven't ar atest
					Hide Description Next Cancel	
			÷			[TecAdmin.rtst.]

Figure 3.2: OS Version type

Ŷ	Oracle VM VirtualBox Mana	ager 🗕 🗆 🗙
File Machine Help		
<ul> <li>New Settings Start Dis</li> </ul>	scard	Details Snapshots
Ubuntu	🗏 General	Preview
Constraint Off 🔍 🖉	Name: Ubuntu Operating System: Ubuntu (64 bit)	
	🗵 System	Ubuntu
	Base Memory: 512 MB Boot Order: Floppy, CD/DVD, Hard Disk Acceleration: VT-x/AMD-V, Nested Paging	
	🙂 Display	
	Video Memory: 12 MB Remote Desktop Server: Disabled Video Capture: Disabled	
	Storage	
	Controller: IDE IDE Secondary Master: [CD/DVD] u	ubuntu-14.04.1-desktop-
		a 🔊

Figure 3.3: Virtual Box environment

## **3.5Basic Command of Linux**

Here is some basic command of Linux.

- Pwd- its show my directory.
- Ls- ls command is show my file location.
- Cd-cd command is use for go to the directory
- Mkdir &rmdir- mkdir is use to make or create a folder. And rmdir is use for delete a folder.
- Rm- rm command is use for delete files and directories. And rm-r is only use to delete the directory.
- Touch- the touch command is to use for create a file. For example, touch file. Text
- Man & --help-for know about more command use man.and for use help. For example, man- cd or cd-help.
- Cp- cp is use for copy a file by command line.
- Mv- mv command is use for move a file.
- Locate-locate is use for locate a file in a linux system.

### **CHAPTER 4**

## TASKS AND ACTIVITIES

#### 4.1 Events and Activities

#### **Started Basic Configuration**

First take a MikroTik router. And there we can see some port. Now we are taking port 2. And I have to also download from MikroTik website a Winbox application. And install it. After opening this application refresh Neighbors. Which is showing a MAC address. Hear I have a connect my pc with router via Ethernet cable. Here on the logging page I will give username admin. And no password. AND click connect. First, I have to remove configuration from default configuration. Now I am clicking quick Set menu. And quick set is YES. Change CAP to Homepage And YES. Address Acquisition is Automatic. And give a local network ip address like 192.168.5.1 or any. Select a Net mask. Click DHCP server. Give ip address on dhcp server range. Select NAT. And Apply and Ok.

Click Wireless Tables. Select a wireless network like wan. And Interface it. Go to wireless tab. Make frequency auto. And go to Security Profile Mode is dynamic keys. Authentication Types WPA2 PSK. And reboot.

MikroTik		lome Purch	ase About	Jobs Hardware	e Software Sup	oport Trainin	ng Acc
Software			Downloa	ts Changelogs	Download archive	RouterOS	The Du
Switches							
version 1.17 for RB26	OGS, RB260GSP						
version 1.17 for RB25	OGS						
Changelog						[=]	
Useful tools a	and utilities						
Useful tools a	Configuration tool for RouterOS						
Winbox version 3.10	Configuration tool for RouterOS						
Winbox version 3.10 Netinstall v3.30 mipsle	Configuration tool for RouterOS RouterOS Installation tool						
Winbox version 3.10 Netinstall v3.30 mipsle	Configuration tool for RouterOS RouterOS Installation tool All packages for version 3.30 mipsle	ons					
Winbox version 3.10 Netinstall v3.30 mipsle Wireless link calculator	Configuration tool for RouterOS RouterOS Installation tool All packages for version 3.30 mipsle Wireless link probability calculator	ons					

Figure 4.1: MikroTik Software

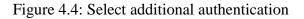
	Session:	
Guick Set	RouterOS Default Configuration	Software Support Training Account
I CAPsMAN		
Interfaces	The following default configuration has been installed on your router:	
1 Wireless	RouterMode:	Download archive RouterOS The Dude
😹 Bridge	* WAN port is protected by firewall and enabled DHCP client * Wireless interfaces are part of LAN bridge	
PPP	* IP address 192.168.88.1/24 is set on LAN port wian 1 Configuration:	
🛫 Switch	mode: ap-bridge;	B
°t8 Mesh	band: 2ghzb/g/n; ht-chains: 0,1;	 [2]
🕸 IP 🗈 ト	ht-extension: 20/40mhz-Ce; LAN Configuration:	ia i
MPLS N	switch group: ether2 (master), ether3, ether4, ether5 DHCP Server: enabled;	Ten Ten
OpenFlow	DNS: enabled;	
Routing	WAN (gateway) Configuration: gateway: ether1;	
💮 System 🗈	firewall: enabled; NAT: enabled;	
Queues	V	
Files	Remove Configuration Show Script OK	
E Log		
🕵 Radius		
🗙 Tools 🗈		
Mew Terminal		
MI NOUTED		

Figure 4.2: Remove old configuration

C* Safe Mode	Session:							•
CAPsMAN Im Interfaces I Wireless		Interface <wian1> General Wireless H</wian1>	T HT MCS WDS Nstreme Status Traffic		ОК	1		
🖁 🖁 Bridge		Mode:	ap bridge	Ŧ				
et PPP		Band:	2GHz-B/G/N	Ŧ	Cancel			
2 Switch	Wreless Tables	Channel Width:	20MHz	Ŧ	Apply			
Nesh Mesh	Interfaces Nstreme Dual Access List Registrat	Frequency:	auto	MHz	Disable			
₩ IP ト	+ × × 🗂 🍸 CAP	SSID	MikroTik I		Comment	s Snooper	Fin	
MPLS M	Name / Type S Wan1 Wireless (Atheros AR9	Scan List:		Ŧ \$		FP Rx 0 bps	FP Tx Pack	cet (p
OpenFlow	5 We wian I Wireless (Atheros AR3				Advanced Mode	Ubps	Ubps	
Routing		Wireless Protocol:		Ŧ	Torch			
🕃 System 🗈		Security Profile:	default	Ŧ	WPS Accept			
Queues		WPS Mode:	push button	Ŧ	WPS Client			
Files		Bridge Mode:	enabled	Ŧ	Setup Repeater			
& Radius		VLAN Mode:	no tag	Ŧ	Scan			
Tools		VLAN ID:			Freq. Usage			
New Terminal				_	Align			
MetaROUTER	•	Default AP Tx Rate:	· · · · · · · · · · · · · · · · · · ·	bps	Sniff	-		
Partition	tem out of 7 (1 selected)	Default Client Tx Rate:		bps		-		-
Ante Supout.nf			Default Authenticate		Snooper	-		_
🚱 Manual			Default Forward		Reset Configuration			
S New WinBox			Hide SSID					
📕 Exit								

Figure 4.3: Configuring wlan

C* Safe Mode	Session:			
Quick Set				
I CAPSMAN				
Interfaces				
I Wireless				
📲 Bridge		Security Profile <default></default>		
eg PPP		General RADIUS EAP Static Keys		
🛫 Switch	Wireless Tables		ОК	
°te Mesh	Interfaces Nstreme Dual Access List Registration Connect	Name: default	Cancel	
IP N	+ - 7	Mode: dynamic keys		Find
Ø MPLS 🗈	Name / Mode Authenticatio Unicast Ciphe		WPA2 PSK Com	
OpenFlow	* default none			
😹 Routing 🗈 🗈		Unicast Ciphers: 🗹 aes com		
💮 System 🗅		Group Ciphers: 🗹 aes com	tkip	
Queues		WPA Pre-Shared Key:		
Files		WPA2 Pre-Shared Key:		
Log		The shared hey.		
🕵 Radius		Supplicant Identity: MikroTik		
🗙 Tools 🗈 🗈		C		
New Terminal		Group Key Update: 00:05:00		
MetaROUTER		Management Protection: disabled	<b>Ŧ</b>	
Partition	1 item (1 selected)	Management Protection Key:		
Aake Supout.nf				
😧 Manual				
New WinBox		default		



#### **Using Winbox**

First open the Winbox. Given an ip address on the Connect To like 192.168.5.1. Its showing on managed tab. On the neighbor tab select the Mac Address and Connect. On the Session is showing ip address. Now go to the Session and save as. Close WinBox and open again. Open Interface List. Create a comment for bridge for separate.

	192.168.5.1 admin			V Keep	Passwo In New	
	Add/Set		Connect To RoMON Conne	ict		
Managed Neig	hbors					
				Fin	d 1	all Ŧ
	t Master Password			1.111		
	t Master Password	User		Lenn		-
- 🝸 Se	t Master Password	User		Leni		

Figure 4.5: IP configuration

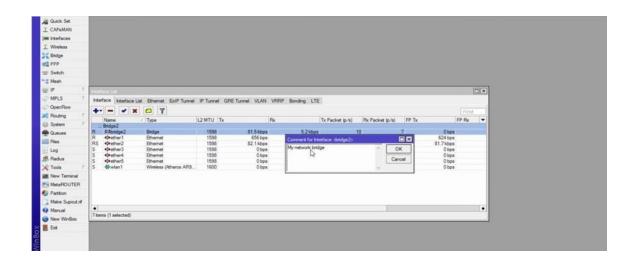


Figure 4.6: Bridge setup in MikroTik

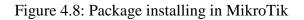
#### **Installing Packages**

For install packages go to MikroTik web site. Go to software download Any Packages what am I want. And save it is on my computer. Open Winbox go to System =>Packages. Open Package List move download package.

Mikro <b>Tik</b>		Home Buy	About Jobs Hardware	Software Support	Training Account	
Software			Downloads Changelogs	Download archive Ro	outerOS The Dude	
RouterOS					0	
	6.37.4 (Bugfix only)	6.38.1 (Current)	5.26 (Legacy)	6.39rc25 (R	elease candidate)	
MIPSBE	CRS, DISC, LDF, LHG, NetBox, 1 OmniTik, Groove, Metal, Sextant,	VetMetal, PowerBox, ORT, RBRxx RB7xx	. SAP, SAP as, SAP as lite, INANTBOX, INA	P, RBAix, GAP, NEX, wAP, Basedo	x, DynaDish, RB2011, SXT.	
Main package	8	Download		8		
Extra packages	[135]	3	8			
SMIPS	hAP ite	0				
Main package		8	12	80		
Extra packages	(E)	10		12		
TILE	CCR					
Main package		19				
Extra packages	B			8		

Figure 4.7: MikroTik package setup

Quick Set						$\leftarrow \rightarrow - \uparrow$	📄 > all	_packages-mipsbe-6.38.1
Bridge	Package Unt					J Download	5	Name
		1.0 10	1.6	16		10 00 0		
PPP	hard be and the second second	File List				×		advanced-tools-6.38.1-mipsbe.npk
E Switch	Name	- 7 B 6 Ba	ckup Restore Upload.		Find	Pictures	- 7	calea-6.38.1-mipsbe.npk
12 Mesh	advanced     dhcp	Fie Name		Size	Creation Time	MikroTik	2	dhcp-6.38.1-mipsbe.npk
A PI	Chotspot	File Name	/ Type bd file	Size 5.3 KiB		h Music		gps-6.38.1-mipsbe.npk
MPLS 1	@ mpls	⊡ logs.bd	bd file	128.7 KiB	Mar/13/2016 16:22:23	and a second sec		hotspot-6.38.1-mipsbe.npk
Routing	@ multicast	myRouterConfig.mc	script	877 B		Videos		ipv6-6.38.1-mipsbe.npk
and the second	@ppp @routing	Capub Cakina	directory directory		Jan/01/1970 19:05:03	ConeDrive		C lcd-6.38.1-mipsbe.npk
System 1	@ security	Bum before migration tar	tarfie	17.0 KB	Dec/31/2001 20:00:13			tte-6.38.1-mipsbe.npk
Queues	@ system	Cusb1	directory		Mar/20/2016 13:29:40	This PC		
Files		Busb1/log.0.txt	.txt file	151.7 KB	Mar/24/2016 22:44:12	Desktop		mpls-6.38.1-mipsbe.npk
E Log		Busb1/log.1.txt Busb1/log.2.txt	.bt file .bt file	216.6 K/B 219.8 K/B	Mar/26/2016 14:56:44 Mar/26/2016 14:52:06	Documen		multicast-6.38.1-mipsbe.npk
Radius		musb 1/log 3.td	bt file	219.1 KB		and a second		ntp-6.38.1-mipsbe.npk
Tools		CT. and an and a second second	disa ad a se	1	Dec/31/2001 20:00:07	- Download	s	openflow-6.38.1-mipsbe.npk
and the second se		Buser-manager/LT CO	PY Ne Ne	6.0 KB	Dec/31/2001 20:00:11	Music		ppp-6.38.1-mipsbe.npk
New Terminal		user-manager/sqldb wireless-6.38.1-mipsbe.npl		80.0 KB 1212.1 KB	Mar/18/2016 20:55:52 Feb/05/2017 19:58:50	- Pictures		routing-6.38.1-mipsbe.npk
MetaROUTER			17.3 MB of 128.0 MB used		% free	Videos		security-6.38.1-mipsbe.npk
Partition		-to see to			1100			system-6.38.1-mipsbe.npk
Make Supout rf						🖳 OS (C:)		tr069-client-6.38.1-mipsbe.npk
Manual						500G-Ext	H:)	hand the second s
New WinBox								ups-6.38.1-mipsbe.npk
Ext	9 items						:)	user-manager-6.38.1-mipsbe.npk
D						Network		wireless-6.38.1-mipsbe.npk
						all_package	s-mip:	



Connect To:	192.168.5.1	Keep Password
Login:	admin	
Password:	*******	
	Cancel	
ter 192.168.5.	1 has been disconnected 00:00:41 ago	

Figure 4.9: Reconnecting after installing package

#### Using WebFig

Web fig is a version which is use in a web browser. For using Web Fig Go to the browser. Type the IP Address (192.168.5.1) which is uses on router. After that just give Logging User name and password. Now I can see everything is similar with like Winbox.

I.

$\leftarrow \rightarrow \circ$	192.168.5.1/webfig						□ ☆ =	- 1	Q ··
Quick Set							WebFig v6.	38.1 (s	(aldste
I CAPSMAN								and the second	
1 Wireless							Home	AP V Q	uick Set
Interfaces									
C PPP				Wire	less			I	internet
💦 Bridge			P.C.					-	
🛫 Switch	Network Name		Home			Address Acquisition	OStatic   Automatic	PPPOE	
°18 Mesh	Frequency		auto	MHz		IP Address	192.168.0.3	Renew	Release
🐏 IP 🕨 🕨									
MPLS ►	Band		2GHz-B/G/N ~			Netmask	255.255.255.0 (/24)		
Routing F	Country		no_country_set	~		Gateway	192.168.0.1		
🕞 System 🕨						Gateway	192.100.0.1		
😤 Queues	MAC Address		E4:8D:8C:93:1D:4F			MAC Address	E4:8D:8C:93:1D:4A		
Files	Use Access List (ACL)					Firewall Router			
Log			-			Firewall Router			
🥵 Radius	WiFi Password	•	password	Hide				Local	Network
🗙 Tools 🔹 🕨				[	-		[		
New Terminal				WPS Ad	cept	IP Address	192.168.5.1		
MetaROUTER			(	Suest Wireless Netv	ork	Netmask	255.255.255.0 (/24)		
Partition					IOIR				
Aake Supout.rif	Guest Network	*	Guestusers			Bridge All LAN Ports			
🖛 Undo	Guest WiFi Password		password	Hide		DHCP Server			
Aredo 🛹			Gamman						
Hide Menu	Limit Download Speed	•				DHCP Server Range	<ul> <li>192.168.5.10-192.168.5</li> </ul>		
···· Hide Passwords				Wireless Cli		NAT			
T Safe Mode				wireless Cli	ents	141	<u> </u>		

Figure 4.10: Webinar Interface of Mikrotik

#### **Creating Multiple SSIDs**

For creating Multiple ssid go to Wireless Tables. Go to + Virtual. New Interface select Wireless=> SSID =>guest. And in a another wlan which is wlan2. Select wlan2=>Wireless make SSID name kids and apply and ok.

Now I am assigning security profile to each of these access point so clicks on the security profile tab and I am going to click the plus sign and I am going to creating a security profile which name is guest. And the authentication type mark WPA PSK, WPA2 PSK. Now give a WPA Pre-Shared Key: and also WPA2 Pre-Shared Key now apply and ok . Now create another one and I am give this name is mykids . And I set a password for it. Now select wlan2 and change the security profile default to change. After that select wlan3. Change the security profile default to mykids. In the wlan2 go to the general tab change the name to guest and ok. And the another wlan3 change the name.

Now go to the bridge. Add new bridge port and change the Interface name to guestAP. Add another new bridge port and change the Interface name is kidsAP. Now we can see there is a the network one is kids and another is guest. Now the configuration of the mikrotik router is done.

General	Wireless	WDS	Status	Traffic				ок
		Mode:	ap bridg	je			₹	Cancel
		SSID:	guest				-	Apply
Master Interface:			wlan 1				₹	Disable
Security Profile:			default			₹	Comment	
WPS Mode:			disabled	1			-	Сору
VLAN Mode:			no tag		<b>A</b>		-	Remove
	VL	AN ID:	1		- 0			Advanced Mode
De	fault AP T	x Rate:	[			-	bps	Torch
Defa	ult Client T:	x Rate:				-	bps	
			Defai     Defai     Hide					
abled		inning		slave				

Figure 4.11: SSID profile creation

	RADIUS E	AP 3	Static Keys			ОК
		Name:	guest			Cancel
		Mode:	dynamic k	teys	-	Apply
A	uthentication	Types:				Comment
	Unicast C	iphers:	aes co		AZ EAF	Сору
	Group C	iphers:	✓ aes cc	m 🗌 tkip		Remove
N	PA Pre-Share	d Key:				
WF	A2 Pre-Share	d Key:				
	Supplicant lo	dentity:				
	Group Key U	pdate:	00:05:00			
Man	agement Prot	ection	allowed		-	
Tridit.		n Key:				



#### Managing configuration backups

I have to first go to the Winbox and open it. Go to the Files. Click Backup, give a name and password. I use name 1st\_backup. And I am not using any password for it. Now click backup and them create a backup. After that go to the terminal, write.

- export file=1<sup>st</sup>\_export
- ip pool> add name=drop ranges=192.168.5.2-192.168.5.254

Now it's done.

Terminal							
MPM MPM				TTTTTTTTT	200.0	KKK	•
MMM MMMM MMM	I III KKK KKF	RRRRRR	000000	TTT	III	KKK KKK	
MMM MM MMM	III KKKKK	RRR RRR	000 000	TTT	III	KKKKK	
MMM MMM	III KKK KKK	RRRRRR	000 000	TTT	III	KKK KKK	
MMM MMM	I III KKK KKF	RRR RRR	000000	TTT	III	KKK KKK	
MikroTik Rou	terOS 6.38.1 (c	) 1999-2017	htt	p://www.m	ikrotik	.com/	
[?]	Gives the lis	t of availa	ble comman	nds			
command [?]	Gives help on	the comman	d and list	of argume	ents		
[Tab]	Completes the a second [Tak				ambigu	ious,	
1	Move up to ba	se level					
	Move up one 1	evel					
/command	Use command a	t the base	level				
[admin@MikroTi	k] > /ip pool						
[admin@MikroTi	k] /ip pool> ad	d name=dhcp	ranges=19	2.168.5.2	-192.16	8.5.3	
failure: pool	with such name	exists					
[admin@MikroTi	k] /ip pool> ad	d name=dhcp	2 ranges=1	92.168.5.2	2-192.1	.68.5.3	
[admin@MikroTi	k] /ip pool>						+

Figure 4.13: Configuration Backup settings

Backup			
Name:	1st_backup	-	Backup
Password:			Cancel

Figure 4.14: Backup file Identification

Restore	23.0 NB F60/05/201	////36/4/ 🔺	
Backup File:	1st_backup.backup	₹	Restore
Password:		<b></b>	Cancel
,			₽ ₽
na file	3925 B Jan/01/1970	0 19-53-2	24

Figure 4.15: Backup file restoring

#### **Static Configuration**

In the time of making the static configuration, first I have to go in the Interface list. There is 10 interface. I am choosing ether1, go to the ether1 and make it ether1Wan. And after that make ether2 to ether2Lan. Then go to Address List add new address 192.168.50.201/24 And select the interface to ether1Wan and network 192.168.50.0. And add another address 10.10.101/24 network 10.10.10.0 and ether2Lan than ok. Then go to ip => Route List add new router gateway is 192.168.50.1. Now I have to go ip => DNS. Given an ip address on Servers 203.190.10.252 and 8.8. 8.8 apply ok. Then go to firewall add new Nat rule select action masquerade. Now go to the terminal ping 8.8.8.8 now it's work. After doing this given a ip address on network and internet setting. Given ip address 10.10.10.2 subnet mask is 255.255.255.0 and default gateway is 10.10.10.1 and ok. Now internet connection is ok. For the connecting testing go to cmd and check ping 8.8.8.8.

		TOLCOL	Overall Sta	ts Rx Stats		OK
	Name:	ether2	LAN			Cancel
	Type:	Ethem	net			Apply
	MTU:	1500	911 T			-63
Act	tual MTU:	1500				Disable
	1598				Comment	
Max	L2 MTU:	4074		Torch Cable Test		
MAC	Address:	E4:8D	:8C:16:0F:8			
	enable	ed		Ŧ	Blink	
ARP Timeout:					-	Reset MAC Address
					-	Reset Counters

Figure 4.16: Given the name of the ether

DNS Settings			
Servers:	203.190.10.252	\$	ок
	8.8.8.8	\$	Cancel
Dynamic Servers:			Apply
	Allow Remote Requ	uests	Static
Max UDP Packet Size:	4096		Cache
Query Server Timeout:	2.000	s	
Query Total Timeout:	10.000	s	
Max. Concurrent Queries:	100		
Max. Concurrent TCP Sessions:	20		
Cache Size:	2048	KiB	
Cache Max TTL:	7d 00:00:00		
Cache Used:	17 KiB		

Figure 4.17: Servers ip address assign

Internet Protocol Version 4 (TCP	P/IPv4) Properties >
General	
	d automatically if your network supports need to ask your network administrator
Obtain an IP address autor	matically
Use the following IP address	ss:
IP address:	10 . 10 . 10 . 2
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	10 . 10 . 10 . 1
Obtain DNS server address	s automatically
Use the following DNS serv	/er addresses:
Preferred DNS server:	8.8.8.8
Alternate DNS server:	8.8.]4.4
Validate settings upon exi	Advanced
	OK Cancel

Figure 4.18: Connecting the internet by assign ip address

#### **DHCP Wan Client**

Now go to ip DHCP client, new DHCP client and select interface ether1Wan. Now go to address list. Add new DHCP client make new interface, have to go in terminal. Ping 8.8.8.8. Now internet connection is ok.

DHCP	Advanced	Status	OK
	Interface:	ether1Wan	Cancel
			Apply
		Peer NTP	Disable
Add De	fault Route:	yes Ŧ	Comment
			Сору
			Remove
			Release
			Renew

Figure 4.19: DHCP client and select interface ether1Wan

## **DHCP Server Setup**

Open Address list. Open DHCP server, go to DHCP setup. Select DHCP Server Interface in ether2LAN. DHCP address space is default. Gateway for DHCP network is 10.10.10.1, Addresses to Give Out default, DNS servers is 203.190.10.252 and 203.190.10.253 select any lease time, I am select 24:10:0 And the DHCP Setup has completed successfully. Now check the ping 8.8.8.8 and connection is ok.

DHCP Setup			C	×	
Select DNS se	rvers				
DNS Servers:	203.190.10.252				
	203.190.1	0.253		\$	
[	Back	Next	Cance	ł	

Figure 4.20: DHCP Setup by select DNS server

## **PPP Client**

For ppp client connect Mikro-Tik router. Open ppp add new interface PPPoE Client. Make interface ether1Wan, given a username in Dial out marked Use Peer DNS then apply ok.

New Interface					
General Dial Out	Stat	us Traffic			ок
Se	rvice:			-	Cancel
AC N	lame:				Apply
	User:	dol			Disable
Pass	word:	12345		<b></b>	Comment
P	rofile:	default		Ŧ	Сору
Keepalive Tim	eout:	10	-	Remove	
		Dial On D	emand		Torch
		Use Peer	DNS		PPPoE Scan
		Add Defai	ult Route		
Default Route Dist	ance:	1			
	Allow:	✓ mschap2 ✓ chap	✓ mschap1 ✓ pap		
enabled	Runni	ing	slave	Status	:

Figure 4.21: Enter user and password for ppp client

## **Point-to-Point Protocol over Ethernet**

For PPPoE connection open Interface List, make ether5 to ether5pppoe. Add new pool name pppoe & address 20.20.20.1-20.20.20.254. And add another new pool name Pppoe Gateway & Addresses 30.30.30.1-30.30.30.254. In PPP delate old configure and make new PPPoE Server Binding. On PPPoE Server make new PPPoE service, Service Name is service1 & Interface is ether5pppoe mark One Session Per Host. Make New PPP Profile, Name is profile1M local address is pppoe and remote address is Pppoe Gateway DNS Server is 203.190.10.252 & 8.8.8.8. And Rate Limit is 1M/M and copy this. Change the Limit 5M/5M and profile name is profile5M. Give the secret name and password Service pppoe and Profile is profile 1M. Now make another New PPP Secret now I can see that internet connection is gone. Now make a new Dial-up, make a new connection give first username and password now internet connection is ok. Now copy the Caller ID

from PPP Active User go to the Secrets Manu and past the caller id into the first one. Here on the Queue List is showing the internet speed. I can also edit VPN connection and check the 2<sup>nd</sup> username and password. Now pppoe connection is ok.

New IP Pool		
Name:	рррое	ОК
Addresses:	0.1-20.20.20.254 🗢	Cancel
Next Pool:	none 🔻 🔺	Apply
		Comment
		Сору
		Remove

Figure 4.22: Adding new pool

General	Protocols	Limits	Queue	Scr	ipts	OK
	Name:	profile 11	M			Cancel
Loca	al Address:	pppoe		1	F 🔺	Apply
Remote	e Address:	Pppoe (	Gateway	1	F 🔺	Comment
	Bridge:				-	Сору
Bridge P	ort Priority:				□ -	Remove
Bridge	Path Cost:				<b>→</b>	
Bridg	e Horizon:				□ -	
Incor	ming Filter:					
Outg	oing Filter:				<b>→</b>	
Ad	Idress List:				<b></b>	
Inte	erface List:				□ -	
DI	NS Server:	203.190	0.10.252		•	
		8.8.8.8			•	
WIN	Server:				<b>+</b>	
Change	TCP MSS					
C no	C yes	defaul	t			
Use UF	PnP					
Cno	C yes (	defaul	t			

Figure 4.23: Selecting new ppp profile

General		OK
Name:	Mahfuz	Remove
Service:	рррое	Ping
Caller ID:	00:E0:4C:98:6E:4C	
Encoding:		
Address:	30.30.30.254	]
Uptime:	00:00:40	]
Session ID:	81200000 hex	]
Limit Bytes In:		]
Limit Bytes Out:		

Figure 4.24: Create ppp new active user

Que	ue Li	st											
Sim	ple C	Queu	es	Interf	ace Qu	leues	Queue Tree	Queue	Types				
÷	-		1	83	1	7	00 Reset C	ounters	00 Reset Al	Counters	]		
#		Nan	ne			_	Target	1	Jpload Max Lim	t Down	oad Max Limit	Packet Marks	Download
0	D	1	(PPPC	be-Sa	<ibr></ibr> di>		<pppoe-sadi></pppoe-sadi>	5	5M	5M			5.0 Mbps

Figure 4.25: In queue list showing connection speed

### **CHAPTER 5**

### **Conclusion and Future Career**

#### **5.1 Conclusion**

We accumulate a considerable measure of involvement and this is an incredible open door for us to finish this temporary job on Linux. Amid this temporary position we considered to actualize and test the working framework by prophet virtual machine. Presently we can make or keep up various kinds of servers which is extremely useful for our future. It allows us to meet the genuine systems administration framework which is extremely viable for us in future.

#### **5.2 Problems**

- There are distinctive kinds of issues must be faces amid the Installation and kept up the virtual machine. Generally, normally
- The server PC has diverse kinds of issues amid the server establishment.
- The organize does not work legitimately amid the bundle establishment.
- The power has gone a few times amid the establishment and dealing with the server.
- In virtual machine diverse sorts of code does not work legitimately.
- We must be so watchful amid work, on the grounds that the directions are exceptionally case delicate.

### **5.3 Future Scope**

Any individual can design DNS and DHCP server effortlessly and can-do server checking with server reinforcement which are clarified in this book.

- Configuration and upkeep all the Linux server for our reality.
- To work in ISP stage
- Network executive into the activity condition.

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