

**ISP SERVER CONFIGURATION AND MAINTENANCE ON MIKROTIK AND  
LINUX PLATFORM**

SUBMITTED

BY

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**ID: 161-15-6776**

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

SUPERVISED

BY

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Senior Lecturer

Department of CSE

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**DAFFODIL INTERNATIONAL UNIVERSITY  
DHAKA, BANGLADESH**

## **APPROVAL**

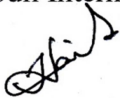
This Project/internship titled **ISP SERVER CONFIGURATION AND MAINTENANCE ON MIKROTIK AND LINUX PLATFORM**, submitted by Abdul Awal Chowdhury, ID No: 161-15-6776 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial 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 09-12-2018.

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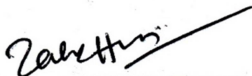
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## DECLARATION

I hereby declare that, this internship report has been done by **Abdul Awal Chowdhury, ID: 161-15-6776** to the department of Computer Science and Engineering, I overtake 4 months of Industrial Training Program at Daffodil Online Limited (DOL) and this report is written by me to the best of the practical knowledge I gained during the course of the training program, Under the supervision of **Ms. Most. Hasna Hena, Senior Lecturer, Department of CSE, Daffodil International University.**

I also declare that neither this internship report nor any part of this internship report has been submitted elsewhere for award of any Degree or Diploma. I also declare that, I collect information from Daffodil Online Limited (DOL), Data Center and Internet Service Provider (ISP) Based Company, Books and Internet.

### Supervised by:

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**Ms. Most. Hasna Hena**

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## ACKNOWLEDGEMENT

I would like to express my appreciation extremely and respect for the following members for their help and support, without them this training could not have been continued.

To my academic supervisor **Ms. Most. Hasna Hena** who was a great help for me, by giving me instructions and guidance to make this training possible and i also again wish my deep compulsion to **Ms. Most. Hasna Hena, Senior Lecturer, Department of CSE, Daffodil International University, Dhaka.**

I would like to express our heartiest gratitude to **Dr. Syed Akther Hossain, Professor and Head, Department of CSE**, for his kind help to finish my internship and also to other faculty member and the staff of CSE department of Daffodil International University.

I am grateful to **Mr. Sabbir Ahamed, General Manager of Daffodil Online Limited**. I am also grateful to **Mr. Mohammad Abul Basher, System Admin (Network& Training) of Daffodil Online Limited**. Without their continuous support I can't continue my internship in the company. Other members of the company helped me tremendously for doing my internship.

We would 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 our parents.

## ABSTRACT

This internship involves “ISP Server Installation and Maintenance on MikroTik and Linux Platform”. MikroTik is a network operating system which is widely used by Internet Service Providers for the purpose of a firewall or network router. MikroTik is one of the very popular platforms in Bangladesh. I can do almost everything using MikroTik including router static connection, DHCP connection, site block, Bandwidth Management, Routing, Hotspot, PPPoE, DNS server, DHCP server and many other features. During my internship period configured above mention connection. Among all, each of this has a particular uses. Such as, we have to put ip manually in pc, router or other network devices on static connection, wherelse in dynamic connection do not need to put ip manually because it takes ip automatically. I also did bridge connection in office to get same network in every network device. I can make a secure connection by using PPPoE connection. It is dial up connection and to access this connection we need user name and password. Got clear concept on website blocking. It uses in training center, office or any organizer for unauthorized access or restriction site. Also know how to configure network in networking device using Linux. Linux is always considered as very secure operating system. I think it would get the opportunity to work in ISP company. Every ISP company and other organizer gives priority more on MikroTik and Linux knowing people. i am eligible to work taking both of these. In this report mostly the detailed steps for configuring the MikroTik and Linux has been described.

# TABLE OF CONTENTS

<b>CONTENTS</b>	<b>PAGE</b>
Approval	I
Declaration	II
Acknowledgement	III
Abstract	IV
Table of contents	V, VI
List of Figure	VII, viii
<b>CHAPTER</b>	
<b>CHAPTER 1: INTRODUCTION</b>	<b>1-2</b>
1.1 Introduction	1
1.2 Motivations	1
1.3 Internship Objectives	1
1.4 Introduction to the Company	2
1.5 Report Layout	2
<b>CHAPTER 2: INTERNSHIP ENTERPRISE</b>	<b>3-6</b>
2.1 About the Company	3
2.2 Product and Market Situation	3
2.3 Target Group	4
2.4 SWOT Analysis	4,5
2.5 Organizational Structure	6
<b>CHAPTER 3: INTERNSHIP ROLES AND RESPONSIBILITIES</b>	<b>7-31</b>
3.1 Daily Task and Activities	7
3.2 Events and Activities	8
3.2.1 Basic Concept on IP Addressing	8,9
3.2.2 MikroTik Router	10
3.2.3 Router OS	10

3.2.4 Features of Router OS	10
3.2.5 Propose Network Diagram (MikroTik Config)	11
3.2.6 Initial Step to Run	11
3.2.7 Static Configuration	11-14
3.2.8 Dynamic Configuration	15
3.2.9 PPPoE Configuration	16,17
3.2.10 Bridge mode configure	18,19
3.2.11 Bandwidth uses consumption	20-21
3.2.12 Bandwidth Control in different ways	22
3.2.13 Wireless	22-23
3.2.14 Website Block	24-25
3.2.15 Centos Install Process	26
3.2.16 Linux Run-Level Used by Centos	26
3.2.17 The Basic Command of Linux Centos	27-29
3.3 Project Task and Activities	30
3.4 Challenges	31
<b>CHAPTER 4: Competencies and Smart Plan</b>	<b>32</b>
4.1 Competencies Earned	32
4.2 Smart Plan	32
4.3 Reflections	32
<b>CHAPTER 5: Conclusion and Future Career</b>	<b>33</b>
5.1 Discussion and Conclusion	33
5.2 Scope for Further Career	33
<b>REFERENCES</b>	<b>34</b>
<b>APPENDICES</b>	<b>35</b>

## LIST OF FIGURES

<b>FIGURES</b>	<b>PAGE NO</b>
Figure 2.5.1: Shows Organ gram of Daffodil Online Limited	6
Figure 3.2.1.1: network addressing classification	8
Figure 3.2.1.2: shows the table of Network & Host bit	9
Figure 3.2.5.1: Shows Network Diagram	11
Figure 3.2.7.1: Shows Setting up IP Address of Static Configuration	12
Figure 3.2.7.2: Shows Setting Up Firewall Of Static Configuration	13
Figure 3.2.7.3: Shows Implement Static Connection to PC	14
Figure 3.2.7.3: Implement Static Connection to PC	14
Figure 3.2.8.1: Shows Setting up DHCP setup for Dynamic Configuration	15
Figure 3.2.9.1: shows Creating IP Pool, Gateway	16
Figure 3.2.9.2: Creating profile for Limit	16
Figure 3.2.9.3: Making Profile & Limit	17
Figure 3.2.9.4: shows make user & password	17
Figure 3.2.10.1: Shows selecting Bridge name & Ether port	18
Figure 3.2.10.2: Shows DNS setting	19
Figure 3.2.10.3: shows DHCP Client Interfacing	19
Figure 3.2.11.1: shows Queue name for Upload & Download	20
Figure 3.2.11.2: shows general Name & Target	21
Figure 3.2.11.3: shows Limitation & Queue Type	22
Figure 3.2.13.1: shows IP, Network & Interface	22
Figure 3.2.13.2: shows wireless Mode, Band	23
Figure 3.2.13.3: shows Security profile	23
Figure 3.2.14.1: shows Firewall Rule Protocol	24
Figure 3.2.14.2: shows Firewall Rule for Layer7 protocol	24
Figure 3.2.14.3 shows Firewall Action for DROP	25
Figure 3.2.14.4: shows Unable to reach Faceboo.com	25
Figure 3.2.17.1: shows current location & changing directory	27
Figure 3.2.17.2: shows how to check ether port number	28
Figure 3.2.17.3: temporary & permanently off network	28
Figure 3.2.17.4: service network restart	29
Figure 3.2.17.5: ping to google.com	29
Figure 3.3.1: shows campus network design	30



# CHAPTER 1

## Introduction

### 1.1 Introduction

We can not detection anything without the server during this information technology. Therefore, the DNS server for the web server is required. Today every business and business programming is specifically marked with web based innovation. Such as Web Banking is one of these, SMS alert banking also, as well EFT (electronic Fund Transfer) there are so many imaginary except server. DNS as exceptionally useful server and we can work sorting by putting this framework. In the present world without server there is no anyone telecommunication, Mobile innovation. Today every telecommunication and banking sites are depending online. Every online transaction particularly has a different server. To secure more, using Linux is the best secure media. It makes the online media very easy. Nothing unsecure in Linux. It has been formed in a work structure for business, instruction, and personal profits.

### 1.2 Motivation

I am a student of Daffodil International University and studying in Computer Science and Engineering. I know the important of gaining practical experience which would be complement with the text book acquirement as well help student to gain immense aspect to the subject. After taking 3 months internship a found that i am completely skilled in MikroTik router and Linux (Centos). I got my exact purpose very well as an Internet Service Provider as well communicating with clients. Providing service what exactly their needs and better service to the customers. I have great ability to read my skills and understand the situation and work quickly.

### 1.3 Internship Objectives

Extreme objective of my internship is to making myself to an eligible place in the competitive job market. This is the way to increase my skill level. I am curious to gather anything like extraordinary quality to present myself as a expert one. This internship on Networking is design to provide work while students are eligible to understand about computer science and engineering with the help of academic training and they have to able to understand to make themselves eligible to present in a job market.

## **1.4 Introduction to the Company**

As I am a student and i took my internship from Daffodil Online Limited which take a pride in as an leading statewide Internet Service Provider (ISP) in Bangladesh. They are most experienced in the ICT field as well it is an oldest company in Bangladesh. They have ethics to make relationship longer with customers by giving well services. From their inception, they got lots of national and international prizes from the domestic and outer platform. Because they worked with many national and international project and organization to achieve reputation. They started their operation in 2002. In this time they have various services to provides customer. in the past years of their inception they extended the operation and service portfolio according to customers demand. They usage the modern and latest technologies for upgrading the required service. They have a group of employee who are very co-operative and capable to provide technical and communication solutions [1].

## **1.5 Report Layout**

**In the chapter (1)** I discussed details on objective of internship, Motivation of internship and Introduction to the company.

**In the chapter (2)** I discussed details on the IT service offered in DOL and what are the roles of in jobs market of MikroTik and Linux.

**In the chapter (3)** I discussed details on daily task and activities, Events and Activities and Challenges.

**In the chapter (4)** I discussed details on the Competencies Earned, Smart Plan and Reflections.

**In the chapter (5)** I discussed details on the Conclusion and Future Scope.

## **CHAPTER 2**

### **Internship Enterprise**

#### **2.1 About the Company**

I have taken my industrial training from Daffodil Online Limited. Daffodil online Limited is glorious to become one of the promoter ISP and ASP in Bangladesh. This ISP company provides compact Internet service with solution since 2002. They have own Fiber Optic and Radio link and WAN to serve corporate level customer, individual clients and SME. This organization worked with National and International organization with their high perception of all aspect. They have modern and latest device, using these they serve their customer to get ultimate goal to connect them. Their high skilled experts are always ready to solve corporate network problem and they are capable to design state of art network as well telecommunication. Daffodil Online limited has some strong's expert engineer and professional management team who are certified and associated with Linux, Cisco, Microsoft and Oracle including world leading association IEEE, BCS. Their corporate responsibility secure the sense of community, Market Place and Workstation. Daffodil Online Limited provides three major platform such as environment of working and learning, education as well nation building. So that they can promote their service [2].

#### **2.2 Product and Market Situation**

Bangladesh is an adequating populated creating nation and by 20021 it targets are set to be digital. So each segment and every organization in our country should be digitized. So in the next few years IT masters and IT specialists need a lot. So Daffodil Online limited estimates an essential part of showcasing activity by providing various administrations like:

##### **➤ IT Services**

- Internet Solution in Corporate Level
- Security problem solution.
- Open source application problem solution.
- Internet Service Providing
- State of the Art in Data Centers.
- Hi speed Wi-Fi Zone at any area.
- Data Connectivity, Data center & Co-Location.
- Proxy & DNS Server solution, Mail Server Solution.
- And All computer accessories and peripheral selling
- Professional course and trainings environment.

➤ **Professional Training Services**

- Providing ISP Setup and administration using Linux.
- Providing Training Course on Certified Ethical Hacking (CEH).
- Providing ISP Setup and Administration using MikroTik.
- Providing Red Hat Certified Security Specialist (RHCSS).
- Providing Red Hat Certified Engineering (RHCE).

## 2.3 Target Group

The company subscriber foundation dominated all small and average sized businesses, including all customers and started-ups. The company is planning to focus on all clients, because it holds the best growth target for our new high-speed proposals and the maximum growth potential for the company. Web Solutions believes that these market divisions have special needs and services and create more dedicated, reliable customers.

## 2.4 SWOT Analysis

SWOT Analysis is an effective strategy to understand your strengths and weaknesses and to keep both opportunities open to you and your threat.

➤ **Strengths:**

- ✓ Communication between people separated by distance (at home and within the workplace)
- ✓ Work at home with ease
- ✓ Set up online business
- ✓ Data collection (business valuable resources)

➤ **Weaknesses:**

- ✓ The devaluation level of the skill required to survive in the new entrepreneur market
- ✓ Large amount of money needed to set up business
- ✓ Competition for small rebuilding
- ✓ Many price rates and service options

➤ **Opportunities:**

- ✓ Changing in the structure of age of population
- ✓ Number of families growing in the UK
- ✓ Easy Custom Launch
- ✓ Correction of regulatory framework

➤ **Threats:**

- ✓ Financial crisis is unlikely to increase their broadband subscription, lack of confidence in the digital market of the stock market.
- ✓ It is still visible how far the customer can go to embrace Internet access.

## 2.5 Organizational Structure

Organ gram construct of Daffodil Online Ltd. shows in fig 2.5:



Figure 2.5.1: Shows Organogram of Daffodil Online Limited

## CHAPTER 3

### Tasks, Projects and Activities

#### 3.1 Daily Task and Activities

- Month - 1: At the 1<sup>st</sup> month of internship in daffodil online limited I learnt and performed the following tasks:
  - Router Basic
  - MikroTik Basic, Installation of PC based MikroTik using VMware
  - First Login to the Router OS
  - Interface
  
- Month - 2: At the 2<sup>nd</sup> month of internship in daffodil online limited I learnt and performed the following tasks:
  - How to configure ISP link: Static, Dynamic, PPPoE user password
  - Bandwidth uses/consumption Interface wise, per client, per group, with restriction/security.
  - How to configure LAN network
  - Giving IP/Internet to the client in the way of Static, DHCP, PPPoE, Bridge
  - Firewall: web site filter(per user/group wise/all user): Web site including https per user or group wise or for all user, filter bypass blocking process.
  
- Month – 3: At the 3<sup>rd</sup> month of internship in daffodil online limited I learnt and performed the following tasks:
  - Getting Started with Linux Installation
  - Managing User Accounts and passwords
  - File and Directory details
  - File and Directory Permissions

## 3.2 Events and Activities

- Trouble-shooting servers and routers.
- Trouble-shooting LAN (local area network) and switches.
- Fixing network with faults.
- Technical support detecting for people using the network.
- Day to day admin and monitoring of network use.
- Checking Fiber Optical Media Convertor & Fiber Optic Transmission devices.

### 3.2.1 Basic Concept on IP Addressing

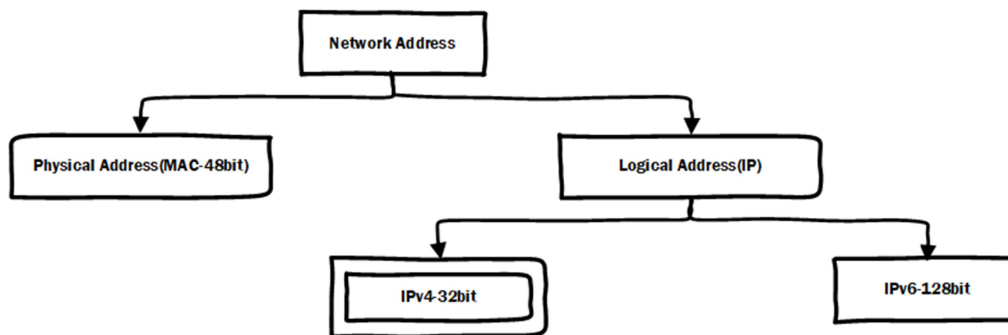


Figure 3.2.1.1: network addressing classification

IPv4:

1. Total bit=32
2. Total portion/octet=4
3. Each portion divided by a single dot (.)
4. Each portion contains 8 bits
5. There are 2 main parts of all IP address
  - (a). Network(N)
  - (b). Host(H)

     N |      H  
172.16.10.0



## Network and Host classification:

Class-A: N.H.H.H

Class-B: N.N.H.H

Class-C: N.N.N.H

Figure 3.2.1.2: shows the table of Network & Host bit

	8bit	8bit	8bit	8bit
Class A	Network	Host	Host	Host
	8bit	8bit	8bit	8bit
Class B	Network	Network	Host	Host
	8bit	8bit	8bit	8bit
Class C	Network	Network	Network	Host

## IP class and Range:

Class-A: 0 - 127	}	Public IP
Class-B: 128 - 191		
Class-C: 192 - 223		
Class-D: 224 - 239	}	Use for Multicast
Class-E: 240 - 255		

## Private IP Range:

Class-A: 10.0.0.0-10.255.255.255

Class-B: 172.31.255.255-172.31.255.255

Class-C: 192.168.0.0-192.168.255.255

### **3.2.2 MikroTik Router**

MikroTik device is well known devices to use in networking. It is a Latvian manufacturer networking equipment for computer. They sells various networking wireless product such as router. Established in 1995 with the aim of selling wireless technology market. They increased number of employee 100 more than previous year during 2014. They have low prices product alternative to expensive router as well Ethernet radio lines [3].

### **3.2.3 Router OS**

The main product of MikroTik is an operating system based on the Linux kernel, which is known as the MikroTik Router Operating System. Installed on company-owned hardware (router board series) or standard x86-based computers, it turns a computer into router and uses several additional features such as firewalling, Virtual Private Network (VPN) services and clients, bandwidth size and service quality, wireless access point function and other commonly used features when interacting with the network. The system is capable of serving as a portable-based hotspot system [4].

### **3.2.4 Features of Router OS**

Router OS supporting lots of applications used by ISP (Internet service providers), For example

- It can be used like a router
- It provided OSPF, BGP, Multiprotocol Label Switching (VPLS/MPLS), Open Flow etc.
- It can be used as a switch or bridge
- Provides PPPoE Client-Server
- Provides VPN-Virtual Private Network.
- Provides Firewall rules with NAT
- Provide DHCP Server services
- Bandwidth management is easy
- Easy administration also

The product is supported by MikroTik through a forum and a wiki, providing assorted and thematic examples of configurations. Router OS supports Internet Protocol Version 4 (IPv4) as well as Internet Protocol Version 6 (IPv6).

The software provides support for virtually all network interfaces that the Linux kernel 2.6.16 supports, except wireless, where the Others and Prism chipsets are the only supported hardware, as of 3.x version [4].

### 3.2.5 Propose Network Diagram (MikroTik Configuration)

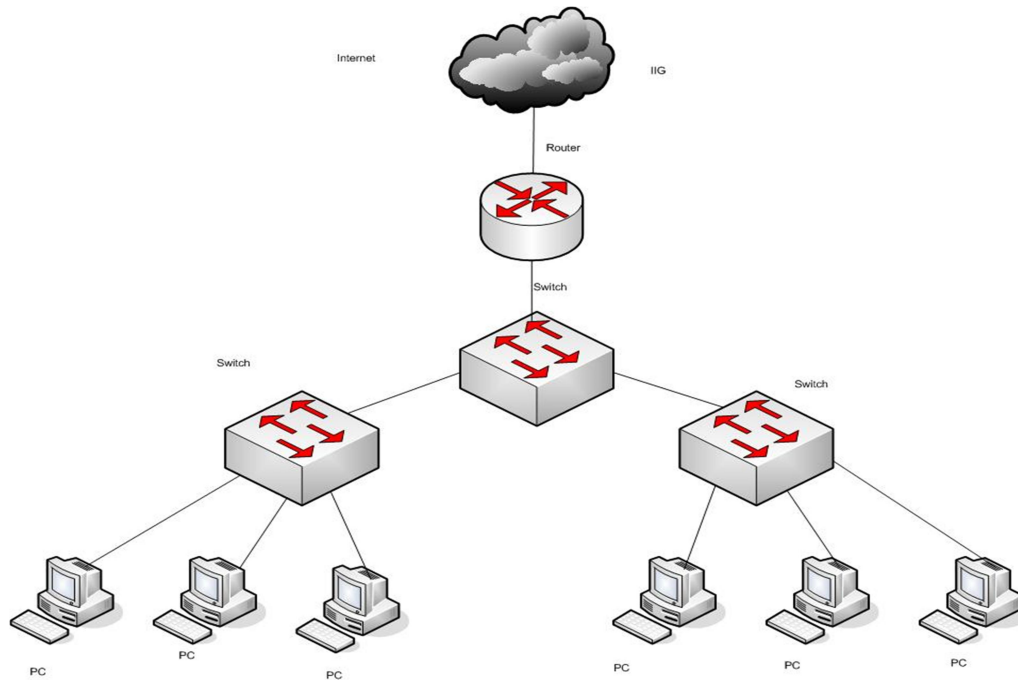


Figure 3.2.5.1: Shows Network Diagram

Winbox is the graphical configuration utility for MikroTik router OS. At first we should download winbox. After download the winbox it can be run straight away as no installation is required 3.20 network diagram.

#### 3.2.6 Initial Step to Run

- Keeps Power to the MikroTik Router
- Plug in a UTP cable in MikroTik LAN port and the other port to the PC.
- Browse with Winbox.
- Click to icon and here show a IP address and MAC address. Click to Mac address then write 'admin' in login box and don't need to give Password.

### 3.2.7 Static Configuration

Static: We configure static for setup ip manually. That depends on what ISP gives the connection! Is that Static or something else? If gives static line then we have to configure static in Router as well PC.

2<sup>nd</sup> step for Static: Defining Interface

Process:

Interface>">Ethernet1-WAN

Interface>">Ethernet1-LAN

Apply>Ok

[N.B: Here choose the Ethernet port for make sure the WAN and LAN. Then we can set our IP Address]

3<sup>rd</sup> step: Setting up IP Address

Process:

IP>Address>"> Address>192.168.50.51/24>Network>192.168.50.0>Interface>Ether-WAN

IP>Address>"> Address>172.16.1.1/24>Network>172.16.1.0>Interface>Ether-LAN

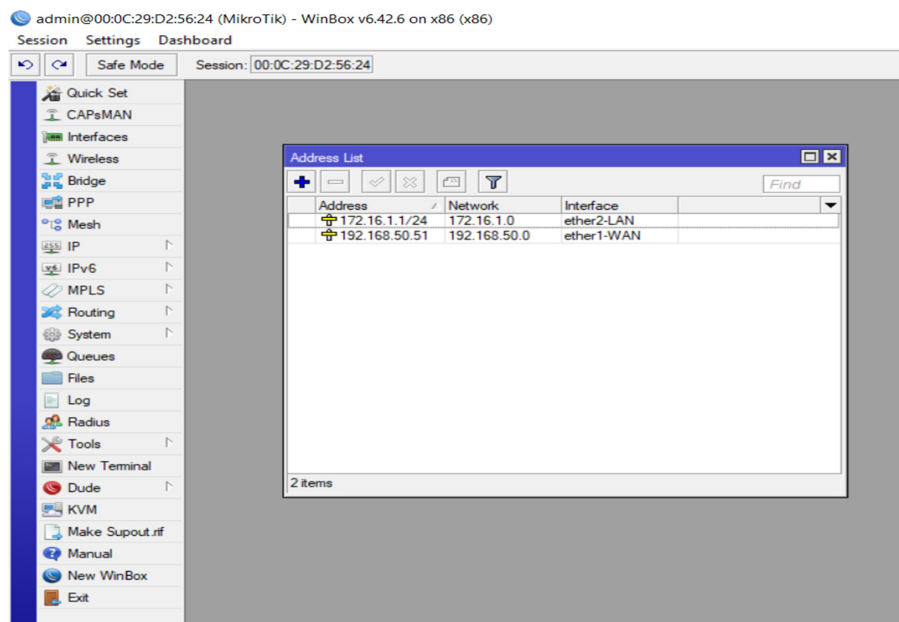


Figure 3.2.7.1: Shows Setting up IP Address of Static Configuration

4<sup>th</sup> step: Setting up DNS

Process:

IP>DNS>Server>8.8.8.8

IP>DNS>Server>8.8.4.4>Apply>Ok

N.B: we use here Google's DNS

5<sup>th</sup> Step: Setting up Firewall

Process:

IP>Firewall>NAT>”+”>Action>Masquerade>Apply>Ok

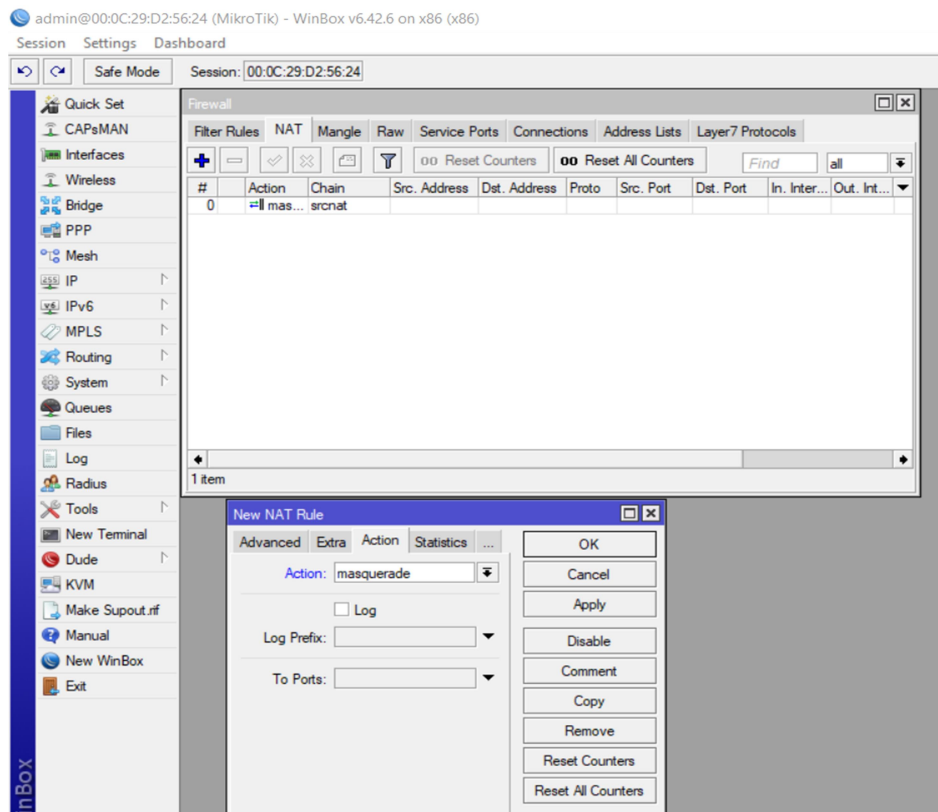


Figure 3.2.7.2: Shows Settin Up Firewall Of Static Configuration

## 6<sup>th</sup> Step: Setting up Routes

Process:

IP>Routes>'+>Gateway>DstAddress>0.0.0.0/0

IP>Routes>'+>Gateway>Gateway>192.168.50.1

## 7<sup>th</sup> Step: Implement Static Connection to PC

Process:

Network & Internet setting>Change Adapter

Option>Ethernet>Properties>IPV4(TCP/IPV4)

>double click> following IP address then use following DNS Server Address>OK

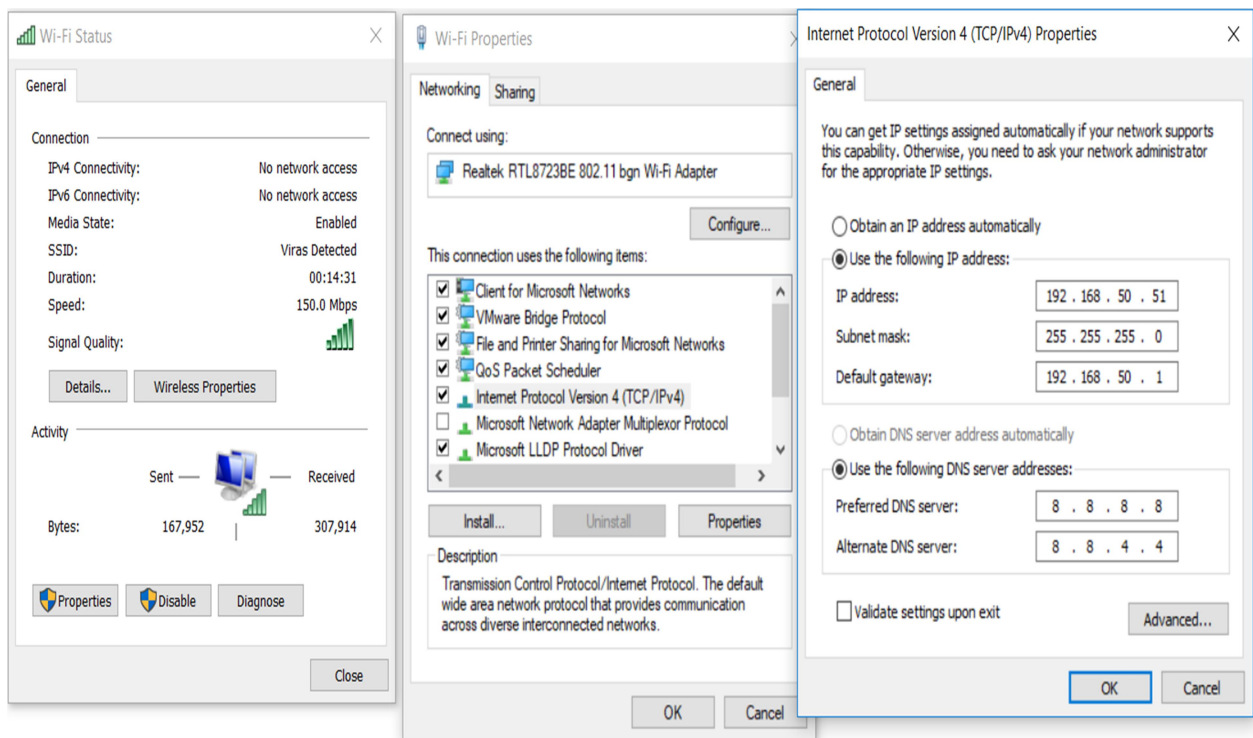


Figure 3.2.7.3: Implement Static Connection to PC

### 3.2.8 Dynamic Configuration

To get dynamically IP in PC we configure DHCP/Dynamic configure. DHCP Server provide IP and DNS automatically.

Process:

To configure Dynamic, I have to configure Static before. I have already configure Static, so now I will show Dynamic configure bellow-

```
# IP>DHCP Server>DHCP Setup>DHCP Server Interface>Ether_LAN2>DHCP Address Space>Next>Gateway for DHCP Network>Next>Address to give out>DNS Server>Lease Time-24.00.00>Next>Ok
```

```
# To implement the Network to PC we setting up Network & Internet>Change Adapter>Ethernet>Propertise>IPV4(TCP/IPV4)>Obtaining an IP Address Automatically and also select Obtaining DNS Server Address Automatically>OK>OK
```

```
# We also keep it Make Static due to Fixed the IP always
```

#### DHCP Server setup:

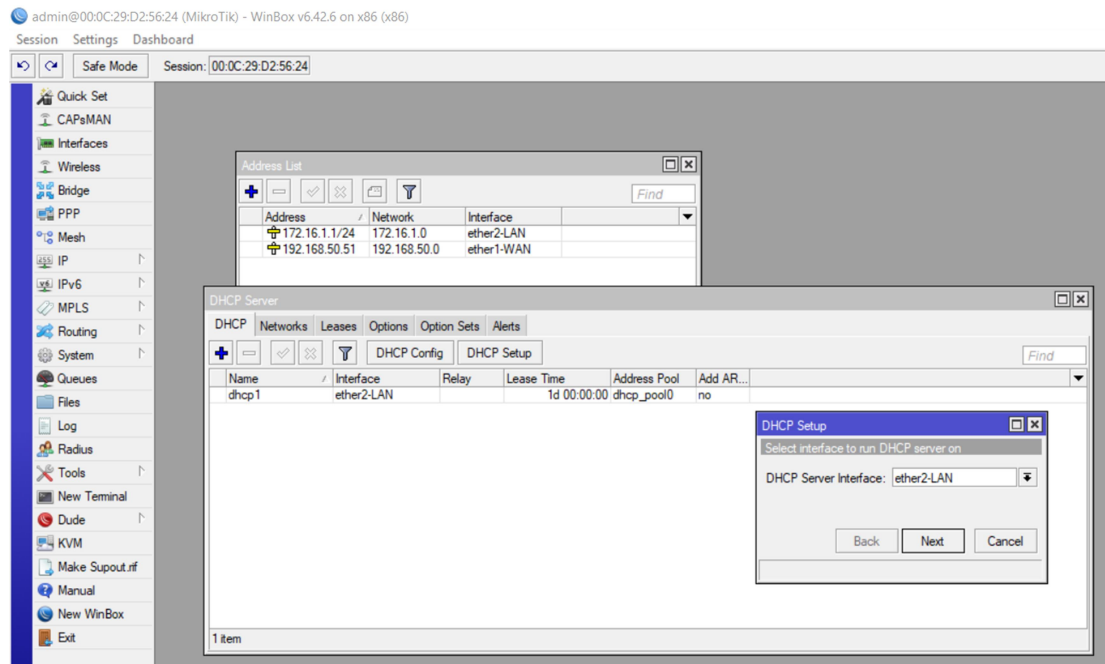


Figure 3.2.8.1: Shows Setting up DHCP setup for Dynamic Configuration

### 3.2.9 PPPoE Configuration

It's a Dial Up Connection. It gives an User, User Name and Password. It's a secure connection. No one can access internet without user name and password

Process:

IP>Pool>'+>Name>PPPoE6mbps

Address>172.16.10.0/24

Pool>Apply>OK (copy)

Name>PPPoE-10mbps>Add-172.116.20.0/24>Next

Pool>Apply>OK

Name>PPPoE-2mbps>Add-172.16.30.0/24>Apply>Ok

IP>Pool>'+>Name>PPPoE Gateway>Add-10.10.10..0/24>Apply>OK

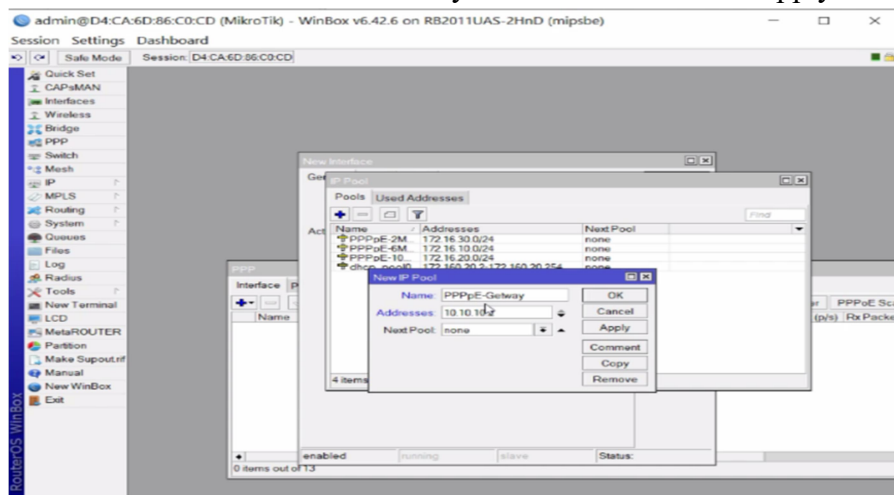


Figure 3.2.9.1: shows Creating IP Pool, Gateway

PPP>'+>PPPoE Server Binding>Name>PPPoE-in1

Type>PPPoE Server Binding>Apply>Ok

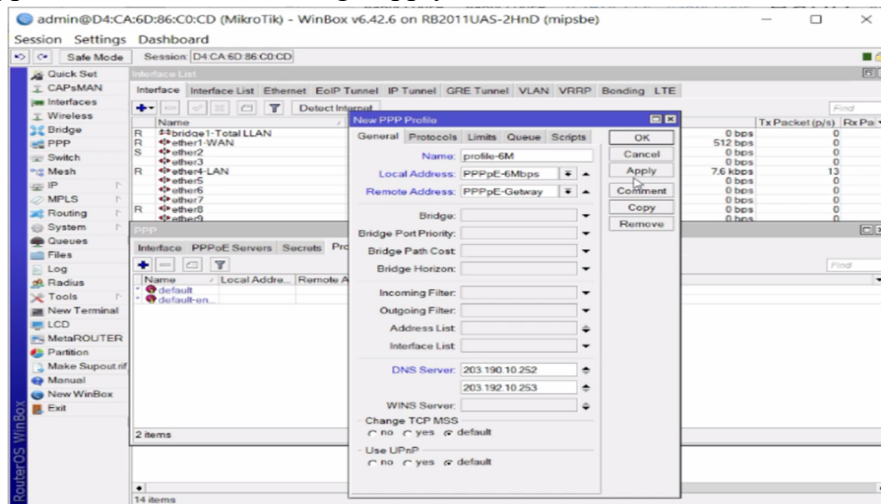


Figure 3.2.9.2: Creating profile for Limit



PPP>PPPoE Server>+ Service Name>Interface ether4-LAN>Apply>Ok  
Select (one session per host)>Ok

PPP>Profiles>”+”>Name>Profile-6M

Local Add.>PPPoE-6mbp

Remote Add.>PPPoE Gateway

DNS Server-203.190.10.252

Limits>Rate Limit>6M/6M>Ok

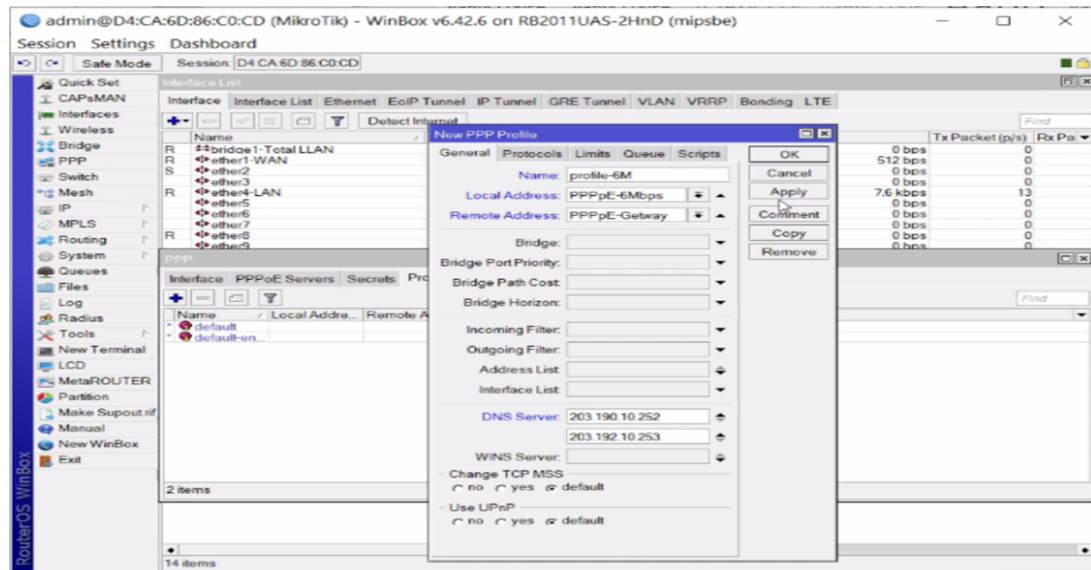


Figure 3.2.9.3: Making Profile & Limit

PPP>”+”>Name and Pass:

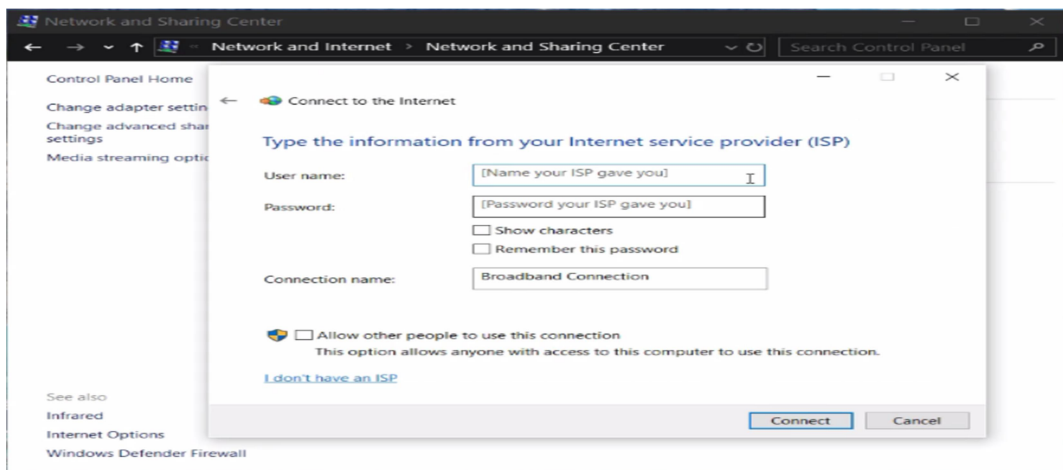


Figure: 3.2.9.4: shows make user & password

### 3.2.10 Bridge mode configure

To get more than 1 Interface in same network we configure Bridge connection.

Process:

Interface>Name>Ether-WAN>Apply>Ok

Bridge>”+”>Name>Printer\_Name>Apply>Ok

Bridge>Port>”+”interface>Ether\_2>Apply>Ok

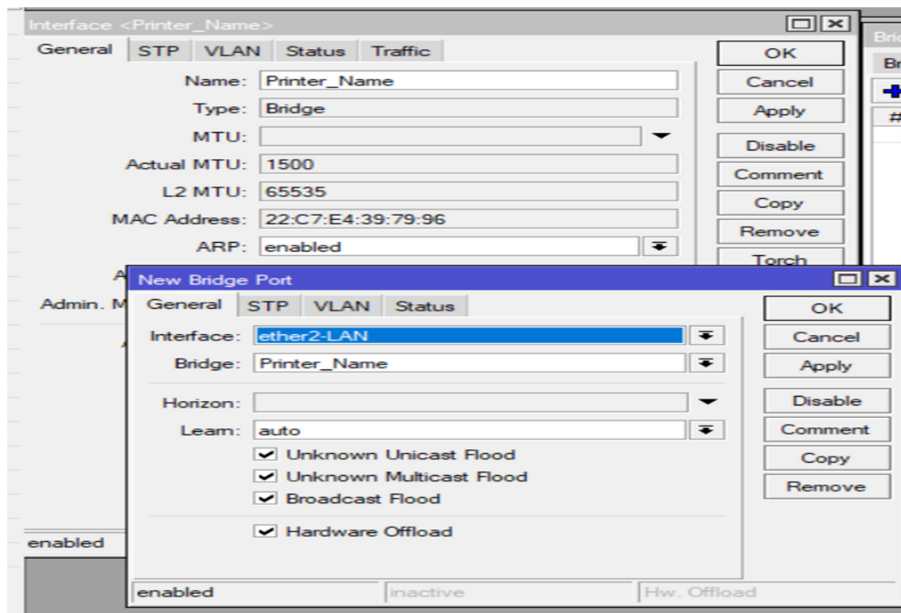


Figure 3.2.10.1: Shows selecting Bridge name & Ether port

IP>Address>”+”>Add.>192.168.100.1/24

Interface>Printer\_Name>Aply>Ok

IP>DNS>Server>103.3.20.20 again Server>8.8.8.8>Apply>Ok

IP>Firewall>NAT>Advanced>Src. Add.>192.160.100.0/24>Apply>Ok

NAT>Action>masqured>Apply>Ok

IP>DHCP CLIENT>”+”>Interface>Ether\_WAN>Apply>Ok

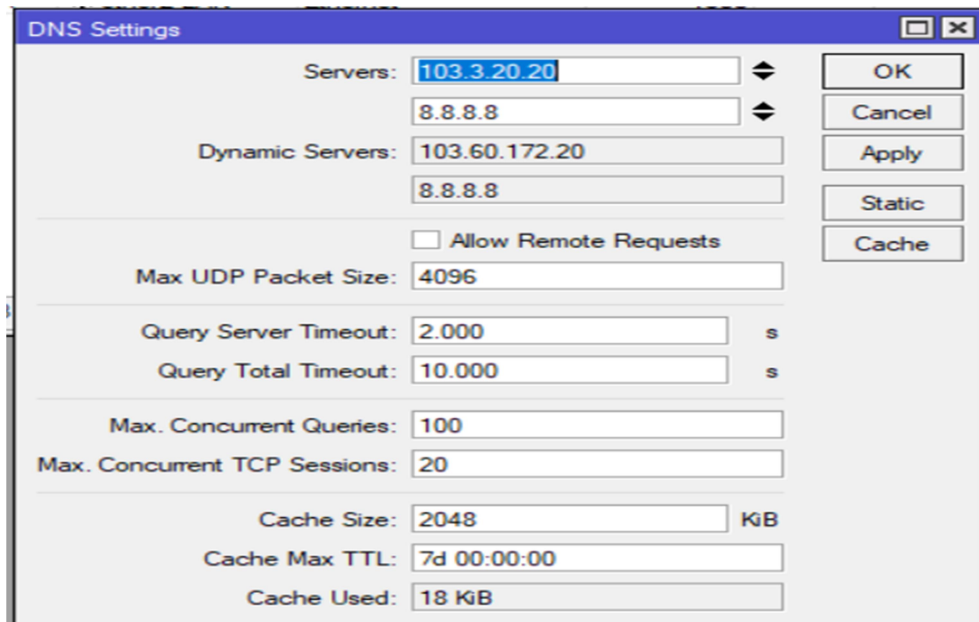


Figure 3.2.10.2: Shows DNS setting

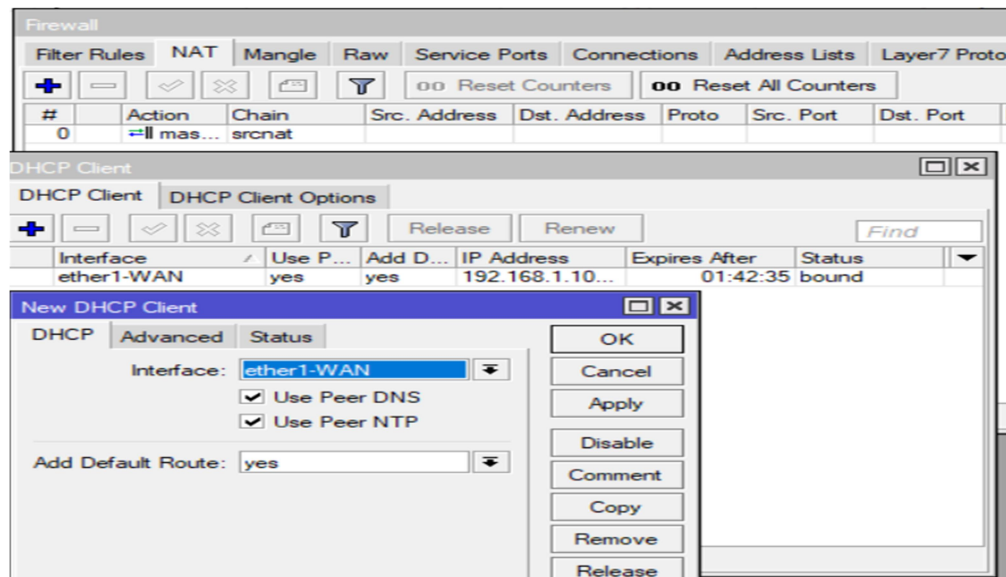


Figure 3.2.10.3: shows DHCP Client Interfacing

### 3.2.11 Bandwidth uses consumption

I setup 1Mbps for 50 user (192.168.4.1/24)  
2Mbps for 40user (192.168.6.1/24)

Process:

IP>Add.>”+”>Add.>192.168.4.1/240

Interface>Ether\_2>Apply>Ok

N.B: during 2Mbps ip would be 6 instead of 4 in octet and Rate 2M

IP>Firewall>NAT>+>Action>masqured>Aply>Ok

IP>DNS>103.3.20.20 & 8.8.8.8>Dynamic Server>103.60.172.20 & 8.8.8.8

Queue>Queue Type>”+”>T\_Name>1Mbps\_Download

Kind>pcq

Rate>1M>Apply>Ok [mark on Dst. Address]

Queue>Queue Type>”+”>T\_Name>1Mbps\_Upload

Kind>pcq

Rate>1M>Apply>Ok [mark on Src. Address]

[N.B: I show here only 1Mbps\_Download, during upload it would be 1Mbps\_Upload instead of 1Mbps\_Download as well during sane thing as 2Mbps]

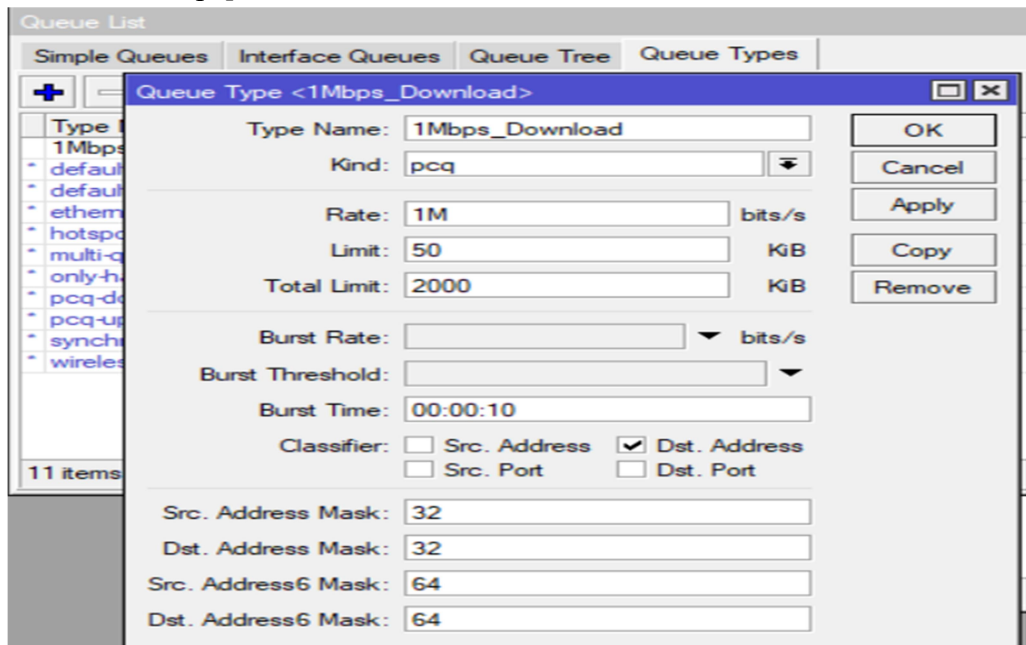


Figure 3.2.11.1: shows Queue name for Upload & Download

Queue>Simple Queue>”>Name>1mbps  
Target>192.168.4.0/24

#

Queue>Advanced>Q\_Type>1Mbps\_Upload.....>1Mbps\_Download>Apply>Ok

[N.B: shows for 1Mbps\_Upload\_Download. Same thing would be for 2Mbps]

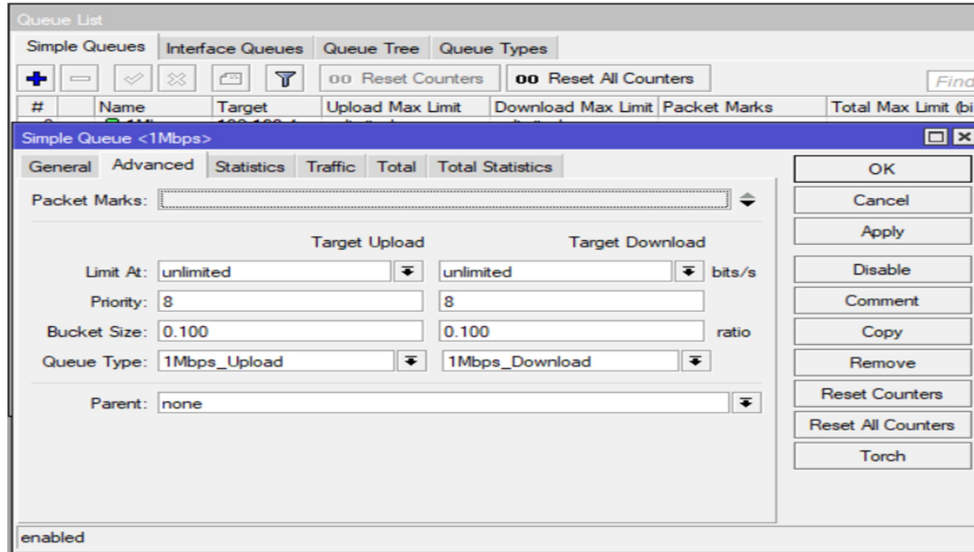


Figure 3.2.11.2: shows general Name & Target

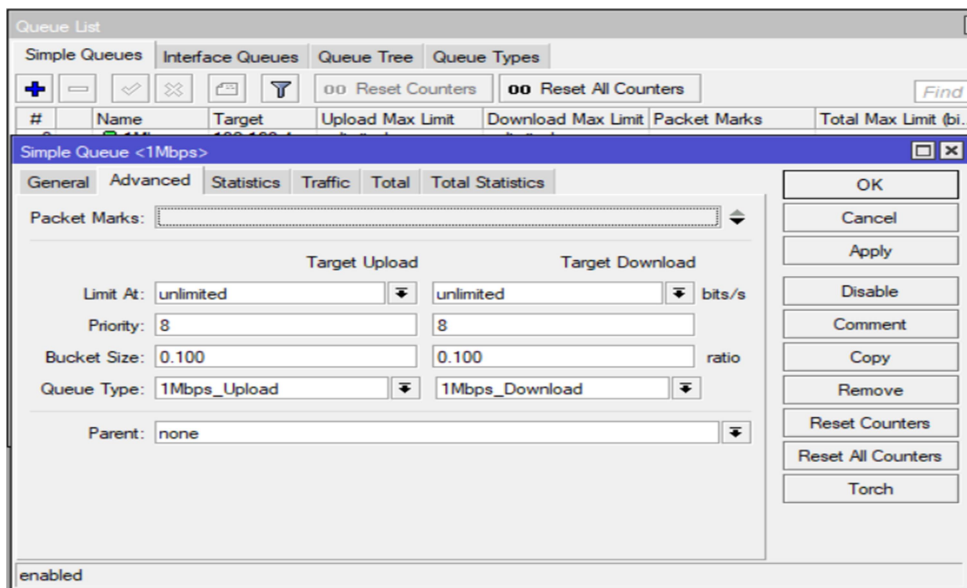


Figure 3.2.11.2: shows Limitation & Queue Type

### 3.2.12 Bandwidth Control in different ways

1. Normal control per IP?DHCP-user/PPPoE-user
2. Pick-Off different speed(like day=256k, night=1mb)
3. Brust limit (speed will up-down, like from 128k to 512k for shared users)
4. Equal share in live users (your total bandwidth will equally divided in live)
5. Dedicated/Shared

### 3.2.13 Wireless

It use in limited area without wire connection

Access and accessibility improved

Backwards compatible as standards improve

Process:

IP>Add.>">Add.>192.168.100.1/24

Network>192.168.100.0

Interface>WLAN1\_Wifi>Apply>Ok

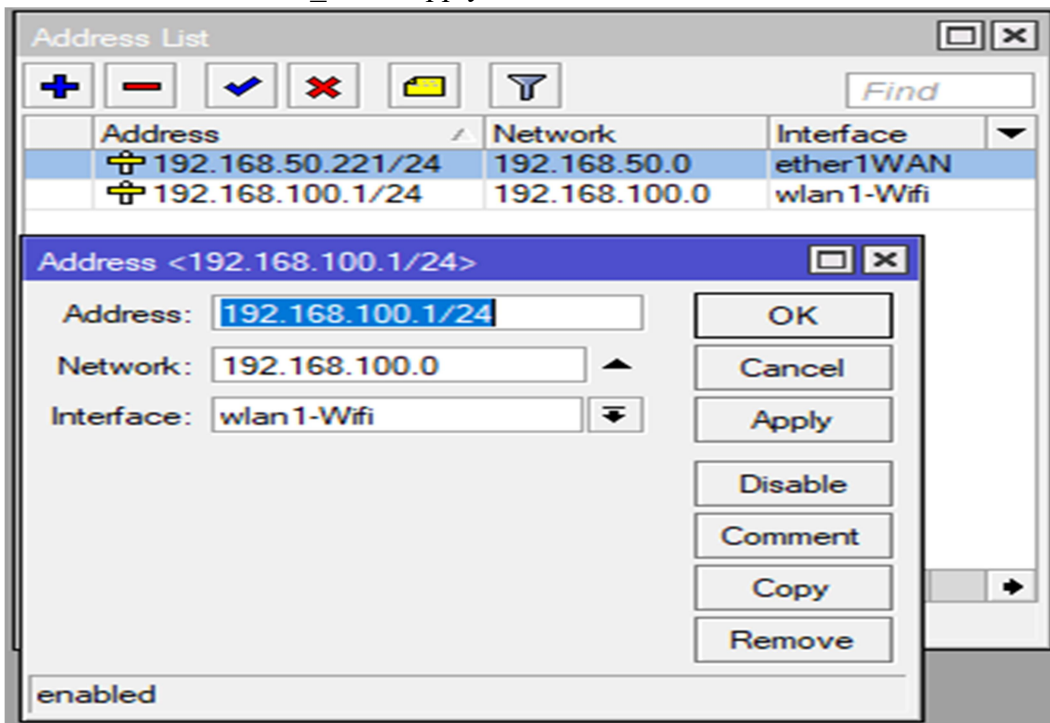


Figure 3.2.13.1: shows IP, Network & Interface

IP>DHCP Server>DHCP Setup>Interface>WLAN\_Wifi  
Next>Sequentially Continued Untill Done

Wireless>Security Profile>Mode>Ap Bridge  
Band>2GHz-B/G/N  
SSID>DOL>Apply>Ok

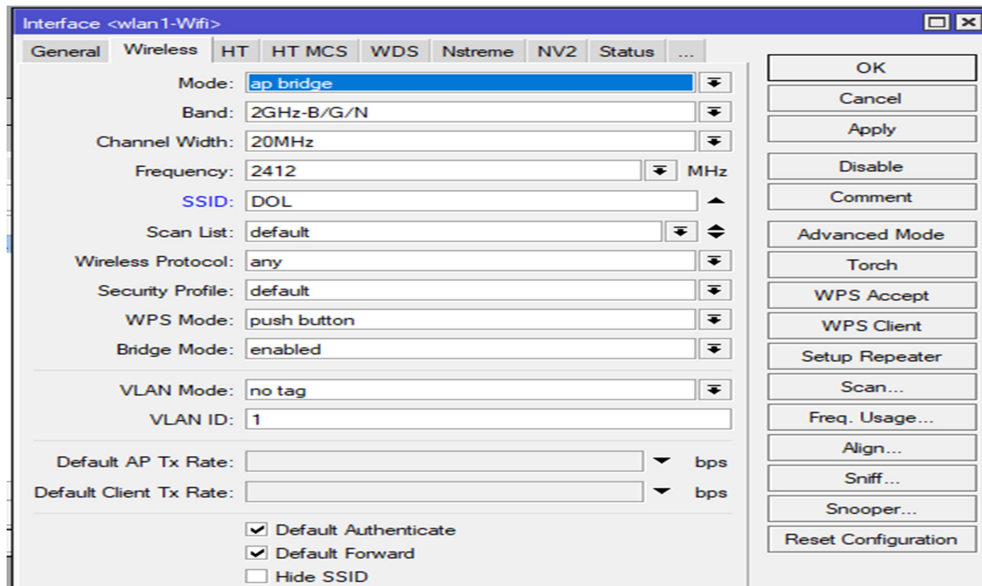


Figure 3.2.13.2: shows wireless Mode,Band

Wireless>Security profile>Mark on>authentication Type>WPA PSK+WPA2SK  
Mark on>Unicast Ciphers(aesccm)>Group Ciphers(aesccm)  
WPA Pre-Shared key & WPA2 Pre-Shared Key>Apply>Ok

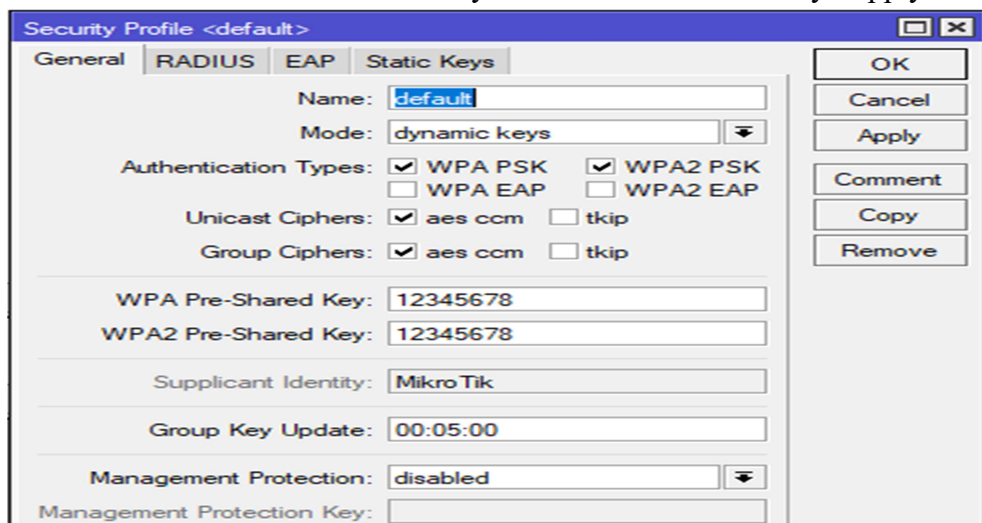


Figure 3.2.13.3: shows Security profile

### 3.2.14 Website Block

It use for unnecessary access. Specially use in Office, Company and Organization because they avoid restriction site due to security.

Process:

```
IP>Firewall>Layer7 Protocols>"+">Name>Facebook_Block  
Regexp>+(facebook.com).*$>Apply>Ok  
IP>Firewall>General>Chain>Forward>Protocol>6(tcp)
```

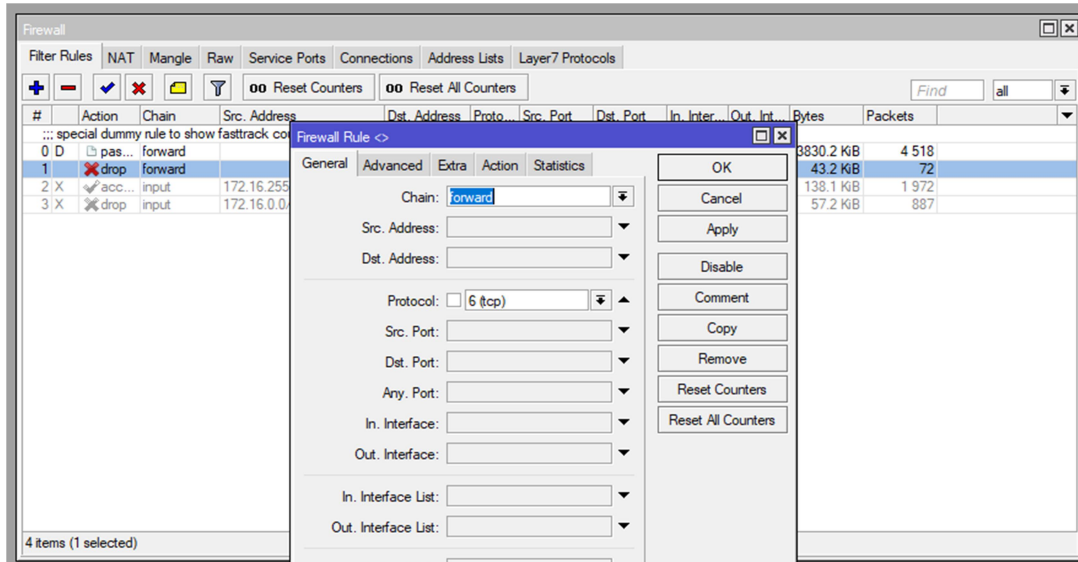


Figure 3.2.14.1: shows Firewall Rule Protocol

```
IP>Firewall>Advanced>Layer7 Protocol>Facebook_Block
```

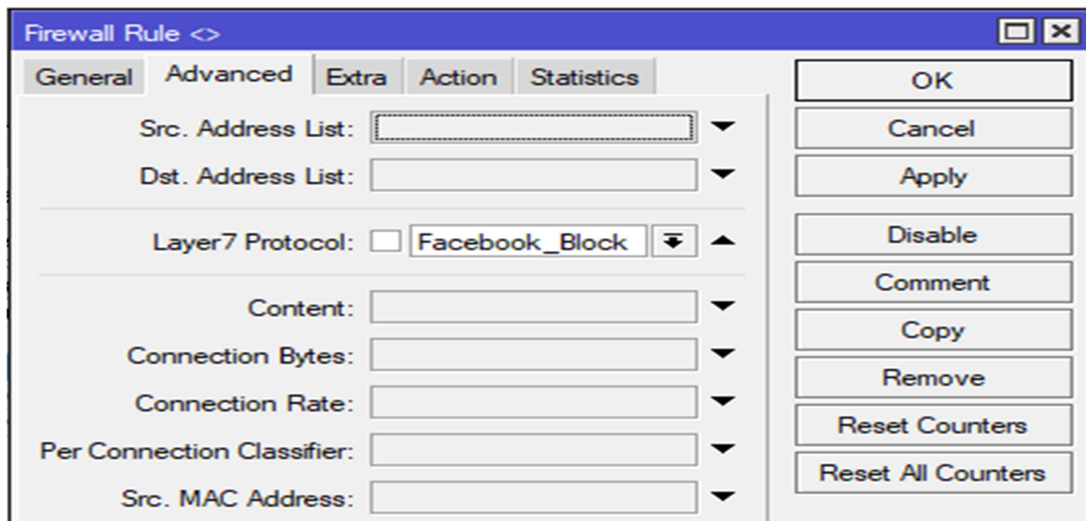


Figure 3.2.14..2: shows Firewall Rule for Layer7 protocol

```
IP>Firewall>Action>drop>Apply>Ok
```



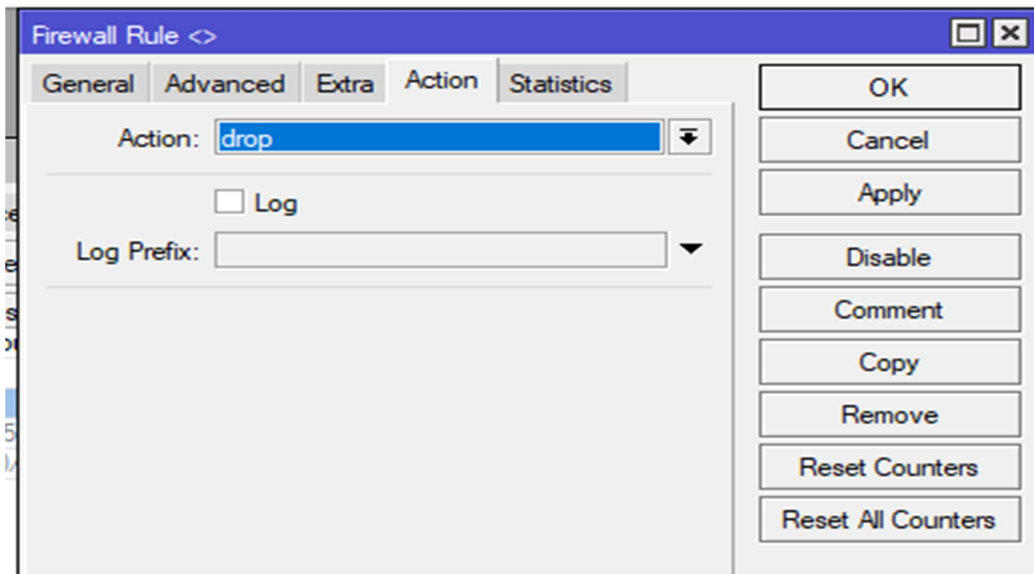


Figure 3.2.14.3: shows Firewall Action for DROP

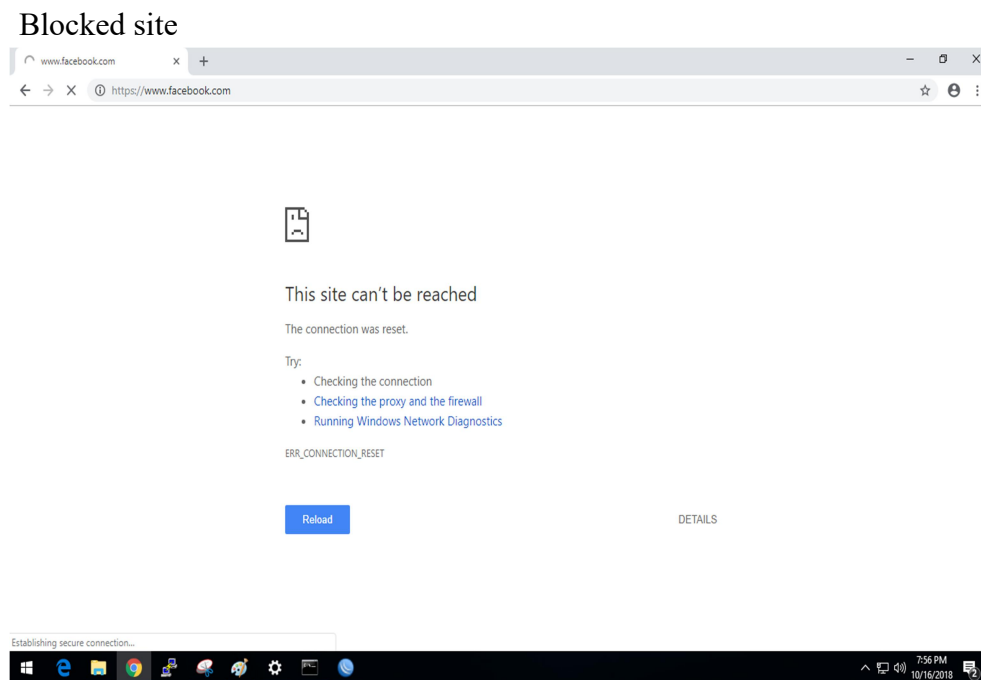


Figure 3.2.14.4: shows Unable to reach Faceboo.com

# LINUX

## 3.2.15 Centos Install Process

### Creating Linux Partition

We have to make at least 3 partitions like root(/), boot, as well swap for installing of Linux.

- **Root Partition: /**

There is a root partition where "/" is the main directory that contains all files (except boots) in the root partition. space is required Minimum 5 GB HDD.

- **Boot Partition: /boot**

Partition Boot (200 MB): A partition mounted on / boot / with files used during the bootstrap process contains operating system kernel (which allows you to boot Linux on your system). Due to constraints, you must create a local ext3 partition to hold these files. For most users, a 200 MB boot partition is sufficient.

- **SWAP Partition: swap**

Partition swap is used to support virtual memory. In other words, data stored on your system is not enough RAM to store data stored on a swap partition. Partition Swap 2 GB virtual RAM for 2 GB of physical RAM, and then there should be an additional 1x physical RAM for any amount above 2 GB, but it cannot be less than 32 MB [5]

## 3.2.16 Linux Run-Level Used by Centos

# init 0 = Shut Down.

# init 1 = Single User Mode.

# init 2 = Multi User Mode.

# init 3 = Full Multi User Mode.

# init 4 = Unused.

# init 5 = X-Window (GUI Mode)

# init 6 = Reboot.

### 3.2.17 The Basic Command of Linux Centos

Shutdown = poweroff, init 0, shutdown -h now .

Reboot = reboot or init6 .

Shows calendar = Cal ,cal 2014, cal 10 1989

Shows or change date and time = date .

pwd: displays the present working directory.

ls: lists the directory content

cd: changes the directory.

clear: clears the screen

man: displays the manual pages for a command.

Create a blank file = touch awal(File name)

Create a directory = mkdir awal(directory name)

List information about file = ls

Copy = cp filename destination example: cp file1 /home/dir1/dir2

Move = mv filename destination example: mv file1 /home/dir1/dir2

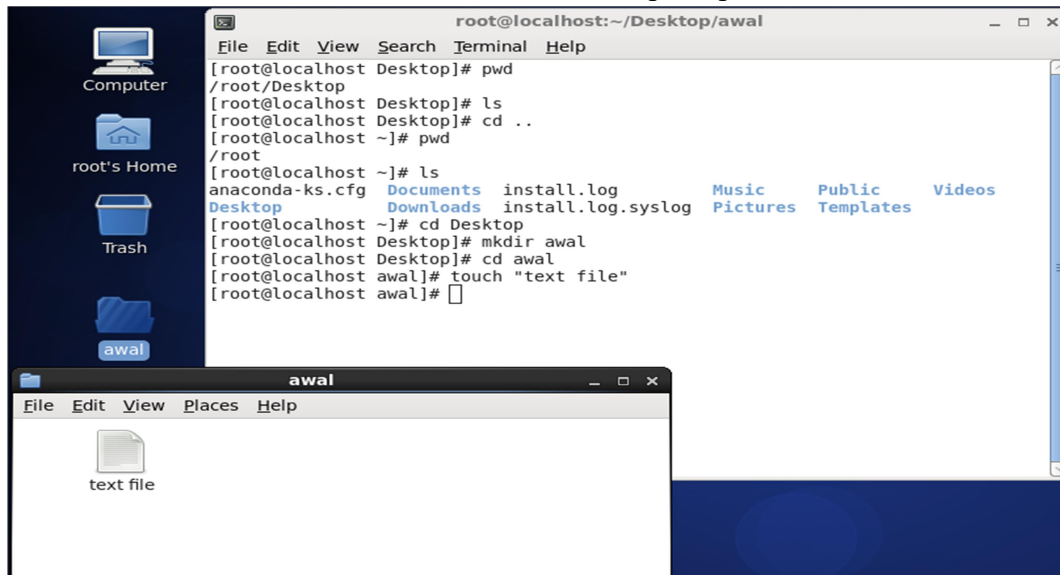
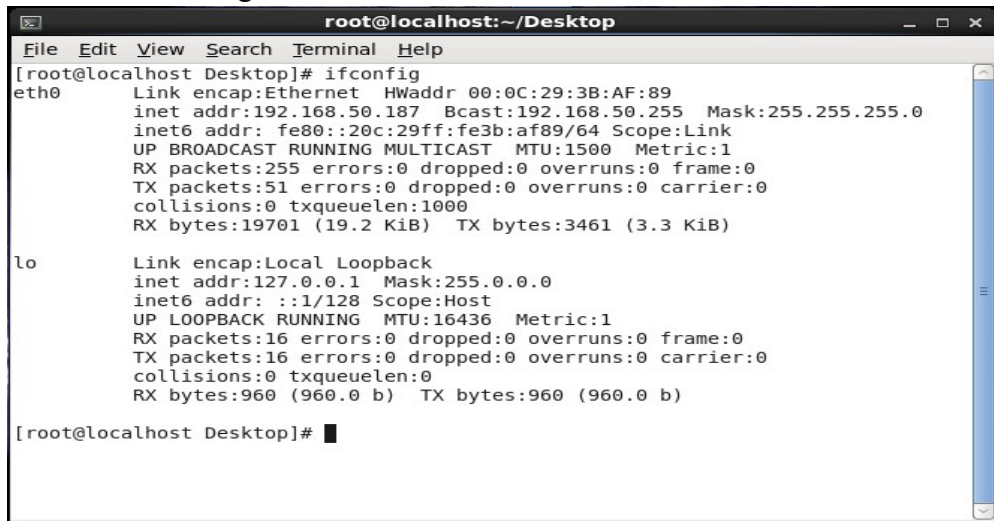


Figure 3.2.17.1: shows current location & changing directory

```
#ifconfig
#cd /etc/sysconfig/network-scripts
#vim ifcfg-eth0
```



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
[root@localhost Desktop]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:3B:AF:89
          inet addr:192.168.50.187  Bcast:192.168.50.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe3b:af89/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:255 errors:0 dropped:0 overruns:0 frame:0
          TX packets:51 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:19701 (19.2 KiB)  TX bytes:3461 (3.3 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:16 errors:0 dropped:0 overruns:0 frame:0
          TX packets:16 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:960 (960.0 b)  TX bytes:960 (960.0 b)

[root@localhost Desktop]#
```

Figure 3.2.17.2: shows how to check ether port number

```
#vim /etc/sysconfig/network-script/fg-etho
#service Networkmanager stop
#chkconfigNetworkManager off
```



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
DEVICE=eth0
HWADDR=00:0C:29:3B:AF:89
TYPE=Ethernet
UUID=c6d2d42f-21a9-4374-b58d-1a212975de81
ONBOOT=yes
NM_CONTROLLED=yes
BOOTPROTO=static
IPADDR=192.168.50.187
NETMASK=255.255.255.0
GATEWAY=192.168.50.1
~
~
~
~
```

Figure 3.2.17.3: temporary& permanently off network





### 3.4 Challenges

No work no challenges, but I can know about my internship experience and sharing my happy hour with my batch mates. I discovered some common challenges during internship period. However, Remember that all. An intern may face these different challenges Given below:

- a. Get in with workplace.
- b. Some systems have the ability to gather.
- c. Compatibility with the official decency and quality.
- d. Established relationship with authorities.
- e. Expert with self show offensive activity.
- f. Get some rewards from the association
- g. Develop the relevant range with different level clients. Be useful and keep the calm of the convenience of the client
- h. Ultimately all of a understudy requires to face several different problems including above.
- i. Finally we can say that there is no success if there is no test. Alongside these lines in the way of your prosperity we will take each test very seriously.

## CHAPTER 4

### 4.1 Competencies Earned

An apprentice learns the consequences of a learning process to acquire skills or learn results, a statement of what is able to understand or do. Install and both decommission Network and server machine two data centers. Lead role in the implementation of advanced Linux software, for example LDAP HA, Program Learning Result, Field and Internship Assessment. The Student Association's Office pays intern study results for many students. **Outcomes:** Collecting and organizing information on an internship project. **Description:** Attend a new look on the Linux Lab website. **Learning Outcomes:** Install and configure software and upgrades; Network Employer Services Install, Configure and Test. In addition, consistent with learning outcomes, internship on-site supervisors will provide an orientation to organizational policies and procedures.

### 4.2 Smart Plan

Each company must have a smart plan to gain success. Originally some common things in combination make a smart plan.

### 4.3 Reflections

In 2002, Daffodil Online Ltd inception their operation. In the past years, they extend operation and service portfolio according to customer's required demand. From their inception, they got lots of national and international prizes from the domestic and outer Platform. Because they worked with many national and international project and organization to achieve reputation. They started their operation in 2002. In this time they have various services to provide customer. in the past years of their inception they extended the operation and service portfolio according to customers demand. They usage the modern and latest technologies for upgrading the required service.



## **CHAPTER 5**

### **Conclusion and Future Career**

#### **5.1 Discussion and Conclusion**

This internship review has a wonderful and rewarded knowledge and experience. I have seen in the future and I will be able to help with network opportunities that many people have been able to make sure.. I discussed above about the MikroTik router and Linux. I configured several connections in MikroTik such Static, Dynamic, PPPoE, Bridge, Wireless and Bandwidth Management etc. As i learn above mention configuration i think if any one use static, there are several advantages these are simple to configure and maintain, secure operation and it updates manually of routes after changes. Dynamic routing would be best when more topology uses in multiple router. Now i am going to talk about the main advantages of PPPoE routing which builds a point to point tunnel between 2 network devices and makes username as well password authentication. Another one is Bridge which can extend a network by acting as repeater, it also reduces collisions but it has a big disadvantages that is more expensive than repeaters. With this way of learning method i think i will get opportunities to get a job any ISP company or any organization. As we know, every company has a network design which configured above mention connection. So there is a opportunity to appoint in job by knowing these routes configure. It would be more priority able who knows well in secure connection.

#### **5.2 Scope for Further Career**

Career opportunities are available in various fields under MikroTik and Linux. Linux is career opportunities do not just refer to the Linux platform, it also includes many kinds of applications for kernel and device driver development needs, desktop application development, open source software developers and network engineers. Today many companies have moved to Linux and open source software. Companies such as Google, Yahoo, Being, Wiki.org, many companies have moved to cost effective open source solutions. There are huge demands for skilled professionals such as MikroTik and Linux.

## References

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<[https://www.google.com/search?q=daffodil+online+limited+png+logo&num=100&client=opera&hs=itu&source=lnms&tbm=isch&sa=X&ved=0ahUKewjS17Gk8LfeAhUFN48KHRe1BA0Q\\_AUIDigB&biw=1456&bih=724#imgdii=d-xs9nP-gVTosM:&imgsrc=Xt\\_gMheYqYcB8M:](https://www.google.com/search?q=daffodil+online+limited+png+logo&num=100&client=opera&hs=itu&source=lnms&tbm=isch&sa=X&ved=0ahUKewjS17Gk8LfeAhUFN48KHRe1BA0Q_AUIDigB&biw=1456&bih=724#imgdii=d-xs9nP-gVTosM:&imgsrc=Xt_gMheYqYcB8M:)>  
Last accessed 02-11-2018, 3.18 pm

## Appendices

### Appendix A: Internship Reflection

The basic knowledge of my internship is to apply my professional knowledge and serve the world. Building a suitable job, qualification and professional environment makes it easy for a job. Applying knowledge from internship and deal with professionals Field How to connect with new members, build new relationships with colleagues, Supervisors and new organizations rely on learning ability. Competition Best the way to prepare for the global market. Knowledge-making work is the key to success Global Market Expert workmanship is a specialist in the field of MikroTik and an expert Linux sector. My internship supervisor and internship provide an Opportunity to take a professional opinion with an evaluation running through personal meeting at the end of the experience. Experience internship ready for life in global society, leadership and service, my gift is able to be able to use it.

### Appendix B: Company Detail



Figure 5.3: Daffodil Online logo[6]

#### Head Office

Name	Daffodil Online Limited (DOL)
Address	102, Shukrabad (3rd floor), Mirpur Road, Dhanmondi, Dhaka - 1207, Bangladesh
Telephone	02-9143258-60
Fax	880-2-8116103
E-mail	info@daffodilnet.com
Website	www.daffodilnet.com
Type of Organization	Nationwide Internet Service Provider (ISP)

