

**ISP SETUP CONFIGURATION AND ADMINISTRATION USING  
MIKROTIK AND BASIC LINUX SYSTEM**

SUBMITTED

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

SUPERVISED

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**DAFFODIL INTERNATIONAL UNIVERSITY**

**DHAKA, BANGLADESH**

**DECEMBER 2019**

## **APPROVAL**

This Project/ internship titled “**ISP Setup Configuration and Administration Using MikroTik and Basic Linux System**”, submitted by **Hosain Md Saharwardi**, ID No: **161-15-7152** 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 07 December 2019.

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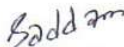
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## DECLARATION

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

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 08.12.19

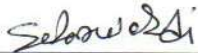
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## **ABSTRACT**

This internship file is based on “ISP Setup configuration and administration using MikroTik and basic Linux system”. The use of MikroTik router is essential in ISP company companies in the current world. This is the MikroTik router board hardware operating system. Anyone can install and install all kind of useful features such as bandwidth maintenance, routing, wireless, firewall, hotspot, VPN server and more then. There is different kind of work in the system that is the reason likewise unique sorts of server have. For Example- FTP Server, Firewall, Interfaces, Routes, DNS, DHCP, VLAN, NAT, ARP, and Bridge. Each of them works contrastingly and without them it is difficult to keep up a system. In the event that system is associated with the Internet and we need to secure your data they should setup server utilizing Linux Operating System. That is the reason I pick this subject of my report is "Server Installation and Configuration on ISP (Linux Platform)". The report talked about the reason for the particular server utilizing on ISP, equipment prerequisite for the server, picking programming and establishment procedure of the product, well ordered server arrangement process and straightforward investigating of the server.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

We cannot identify anything without the server during this data type. Therefore, the DNS server is required for the web server. Now a day's each businesses programming is characterized by particularly web-based innovations. Web banking system, SMS alert system banking as well as an EFT (electronic Fund Transfer) server, so many fictional imageries. It is an information nature area is currently a comprehensive number of days people around the world are using web discovery and servers an important part is Linux is the most important free-for-programming program to achieve, the first spacecraft or the delay is more.

This report done a lot about computer networking in such a way that the Linux server has setup configuration and network monitoring system.

### 1.2 Motivation

I am a student of computer science and engineering in Daffodil International University. I have realized that there is a great reputation of Daffodil Online Limited (DOL) to achieve customer gratification. Daffodil Online Limited has many renowned and one of the leading ISP services provides in Bangladesh. After completing months of internship, I was able to complete the work of MikroTik Router and Linux. I was able to communication better with the clients as well as the supplier on the Internet.

### 1.3 Internship Objectives

Linux operating system provides a graphical user interface, so that all the users can work very easy. Main goal and purpose is to provide security to network servers. More objects are given bellow:

- Install Linux interactively and with kick start.
- Hardware system.
- File system Create and maintain in Linux.
- Carry through user and group administration.
- Maintain the server system.
- Create a Linux server and workstation with an existing network.

## **1.4 Introduction to the company**

As a student and I took my internship from Daffodil Online Limited which take a pride in as a leading statewide Internet Service Provider (ISP) in Bangladesh. They are most experienced in the ICT field as well it is an ancient 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 accomplish 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. They have a group of employees 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 services provide in DOL, swot analysis and organizational stricter.

**In the chapter (3):** I discussed details on daily task and operation, Events 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 perfecting and Future Scope.

## **CHAPTER 2**

### **ORGANIZATION**

#### **2.1 Introduction**

Daffodil Online Limited itself as an unparalleled collection of Bangladesh largest ISP service provider. This is the well reputed and the ancient organization in this ICT Sector, where there is a lot of relationships with customers and good relationships. They started their journey since 2002, which has contributed a lot to the present. In the previous years, they were able to expand their work and administration profile, according to customer advice and requests. Their Corporate Network Solution Division has been working with the collection of highly specialized expertise to achieve the expertise of state technical business and media conservation business. [2].

#### **2.2 IT Services Provide**

##### **IT Services**

- **Dedicated Internet Bandwidth**
  - Corporate Dedicated Internet
  - Indoor & Outdoor Wi-Fi Solution
  - Network Infrastructure
  - Corporate Office Networking
- **Domain & Hosting**
  - Domain Registration
  - Web Hosting (c-Panel), Dedicated Hosting
  - Shared Hosting Packages
- **Colocation**
  - Dedicated Server
  - Shared VM server
  - Server Packages
  - Amazon Cloud Servers
  - Network & multiple IP
  - Custom Configuration
- **G Suite**
  - Google Business account Overview

- Benefits of Your Organization
- Existing Local Clients, FAQ
- **Professional Training Services**
  - Providing Linux System and Network Administration
  - Providing ISP Setup and Administration using MikroTik.
  - ISP Setup and administration using Linux.
  - Providing Certified Ethical Hacking (CEH).
  - Providing Red Hat Certified Security Specialist (RHCSS).

## 2.3 SWOT Analysis

SWOT Analysis is a strategic planning technique to Strengths, Weaknesses, Opportunities and Threats analysis both opportunities open to you and your threat.

- **Strengths:**
  - ✓ We are always ready to provide our highest quality service
  - ✓ Very easy to operate every place
  - ✓ Business in online platform
  - ✓ We promise about the work efficiency
- **Weaknesses:**
  - ✓ It is a bit difficult to give time to all types of service customers
  - ✓ To set up a business, more money is required
  - ✓ Competition for small quantities
  - ✓ There is a different between different types of prices and services
- **Opportunities:**
  - ✓ The local government will have to strengthen the surrounding organizations
  - ✓ Currently, business areas are expanding a lot
  - ✓ Easy Custom Launch
  - ✓ Regulatory framework correction
- **Threats:**
  - ✓ Some of them have reached very high and especially financing
  - ✓ Financial crisis their forestry subscription is low probably to rise the confidence of the stock market and digital market [3]

## 2.4 Organizational Structure

Below Shows the Organogram of Daffodil Online Limited in Figure 2.1



Figure 2.1: Organogram of Daffodil Online Limited

## CHAPTER 3

### TASKS, PROJECTS AND ACTIVITIES

#### 3.1 Daily Task and Activities

- **Month - 1:** The 1<sup>st</sup> one month I learned about what I have learned is described below:
  - IP versions
  - About MikroTik Router
  - Installation VMware
  - Uses win box
  - Basic command
- **Month - 2:** The 2<sup>nd</sup> month I learned about what I have learned is described below:
  - How to configure ISP link: Static Router Configuration,
  - Dynamic Router Configuration,
  - PPPoE Configuration user password
  - Bridge Mode Configuration
  - Bandwidth uses/consumption Interface wise, per client, per group, with restriction/security.
  - How to configure Local Area Network (LAN)
  - Giving IP/Internet to the client in the way of Static, DHCP, PPPoE.
  - Website block using firewall
- **Month – 3:** The Third month I learned about what I have learned is described below:
  - Linux Installation process in VMware
  - Managing User Accounts and passwords
  - Basic Command
  - Driver partition
  - Network Configuration
  - File and Directory details and permit



## 3.2 Events and Activities

Preparation is a critical issue for temporary positions, when a shortage in the level of entry level facing some problems, at that time it is obligatory to give prepare to deal with the problem.

- Learning and understanding about what the network is about
- Understanding of basic Linux system
- MikroTik and Linux installation
- Technical support and maintenance of the clients.
- Basic Command of MikroTik and Linux system
- Day to day monitoring of network use.
- Permissions File and Directory Fixing network with error

### 3.2.1 Basic Concept on IP Addressing

An IP address, or simply an "IP," is a unique address that identifies a device on the Internet or a local network. It allows a system to be recognized by other systems connected via the Internet protocol. Below Shows the Network addressing classification in Figure 3.1.

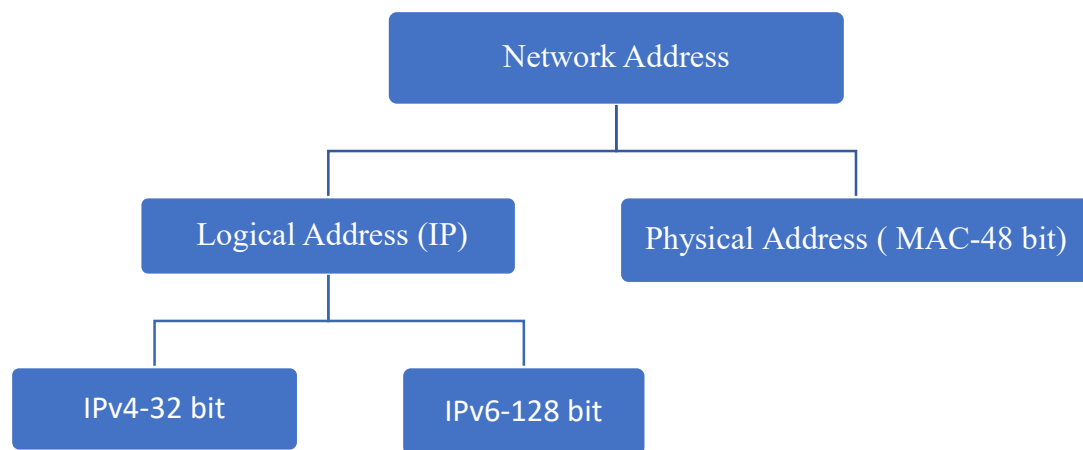


Figure 3.1: Network addressing classification

## IPv4:

1. Total bits=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)

### 3.2.2 Classes of IP Address

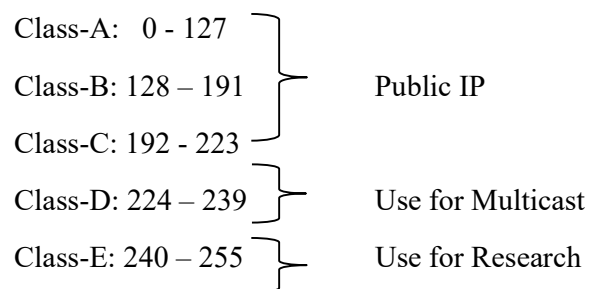
- a) Class-A: N.H.H.H
- b) Class-B: N.N.H.H
- c) Class-C: N.N.N.H

Below Shows the IP Address Class in Table 3.1

Table 3.1: IP Address Class

Class	1 <sup>st</sup> Octet Decimal Range	Network/Host ID (N=Network, H=Host)	Default Subnet Mask	Number of Networks	Hosts per Network (Usable Addresses)
<b>A</b>	1-126	N.H.H.H	255.0.0.0	126 ( $2^7-2$ )	16,777,214 ( $2^{24}-2$ )
<b>B</b>	128-191	N.N.H.H	255. 255.0.0	16,382 ( $2^{14}-2$ )	65,534( $2^{16}-2$ )
<b>C</b>	192-223	N.N.N.H	255. 255. 255.0	2,097,150 ( $2^{21}-2$ )	254( $2^8-2$ )
<b>D</b>	224-239	Reserved for Multicasting			
<b>E</b>	240-254	Experimental; used for research			

IP class and Range:



Private IP Range:

- Class-A: 10.0.0.0-10.255.255.255
- Class-B: 172.16.0.0-172.31.255.255
- Class-C: 192.168.0.0-192.168.255.255 [4]

### 3.2.3 MikroTik Router Concepts

A MikroTik router was established for the development of a router and ISP system of 1996. These routers are now available for network connections by providing hardware and software to different countries of the world. These routers provide all operating systems and easy installation and maintenance features based on the Linux B 2.6 kernel.

Now I say to something about that hEX Router. This router has five ports Gigabit Ethernet, Dual Core 880MHz CPU, 256MB RAM, USB, microSD, routrOSL4. There is no need of wireless connection here. It is easy to see and available at a very low price in the market. [5].Below shows the MikroTik router hEX in Figure 3.2

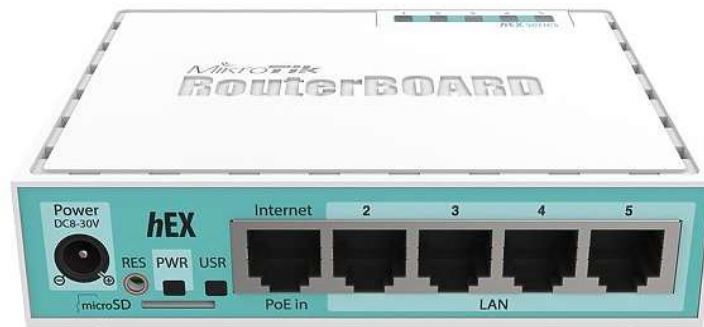


Figure 3.2: MikroTik router hEX

### 3.2.4 Install MikroTik On VMware

#### Step to step install:

1. Download ISO image MikroTik-
  - Select x86, CD image
  - MikroTik- 6.22.iso
2. Create new VM on VMware.
3. Setting VM MikroTik.
4. Booting up-
  - Now booting up your VM
5. Install-
  - For select, press [space]
  - For unselect, press [space] too
  - Now, install, press [i]
  - Install finished
  - System reboot....

- Wait, until login page....
- Now, login
- Default login
- Username: admin
- Password: [none], press Enter... (no password show)
- Done

Below shows How to Add ISO file in Figure 3.3

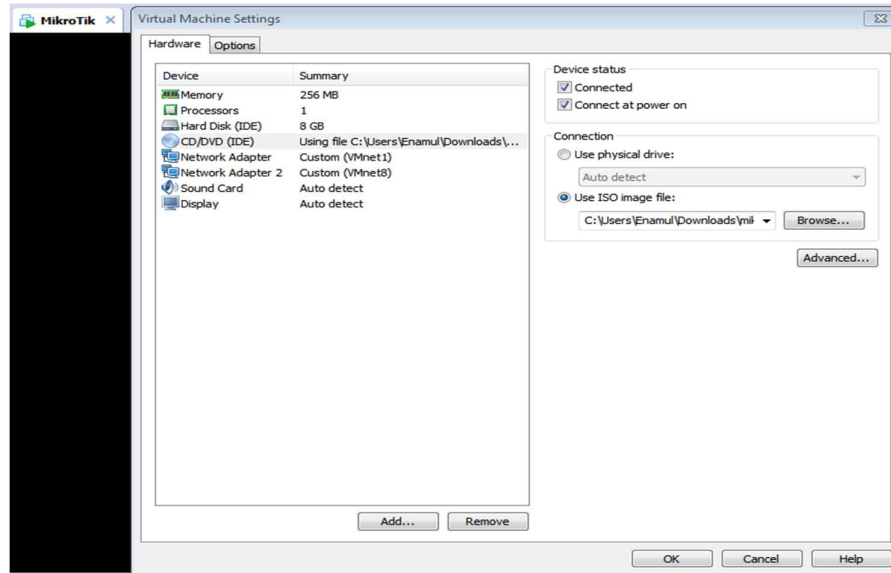


Figure 3.3: Add ISO file

Below shows How to Login in VMware Figure 3.4

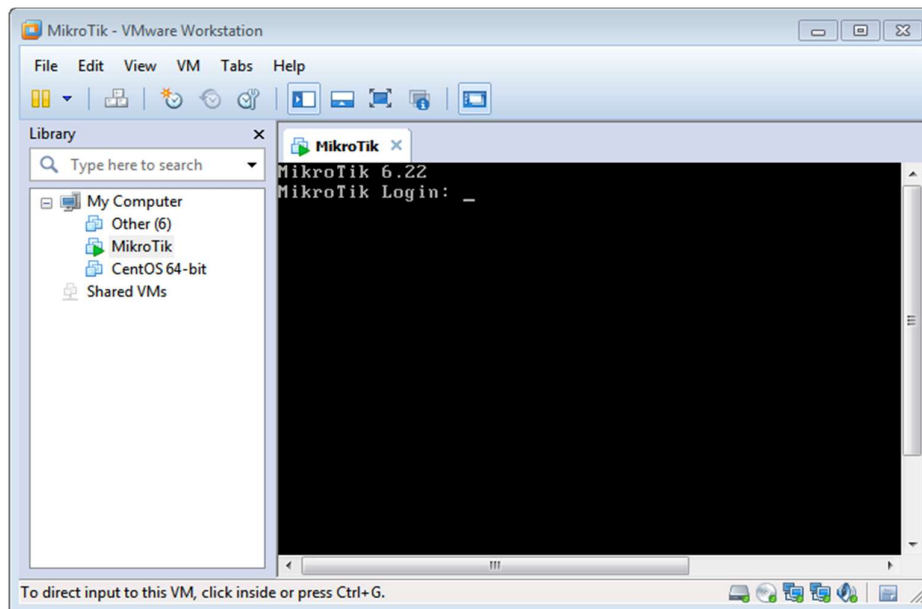


Figure 3.4: Login in VMware

### 3.2.5 Router Configuration Steps Using Winbox

Before configuring a MikroTik router, you need to know the following

- Must have basic concepts about ip address.
- A MikroTik Router Board or MikroTik Router OS will be setup in a PC.
- Winbox software.
- Windows operating system installed and RJ45 cables with PC.
- Click on power button in MikroTik router.
- Combine wan cable with router and connect LAN cable to router and PC.
- Open the Winbox in the PC.
- After opening the Winbox, the IP address and the MAC address will come in then the MAC address will be added.

Shows the Connect VMware using MAC address in Figure 3.5

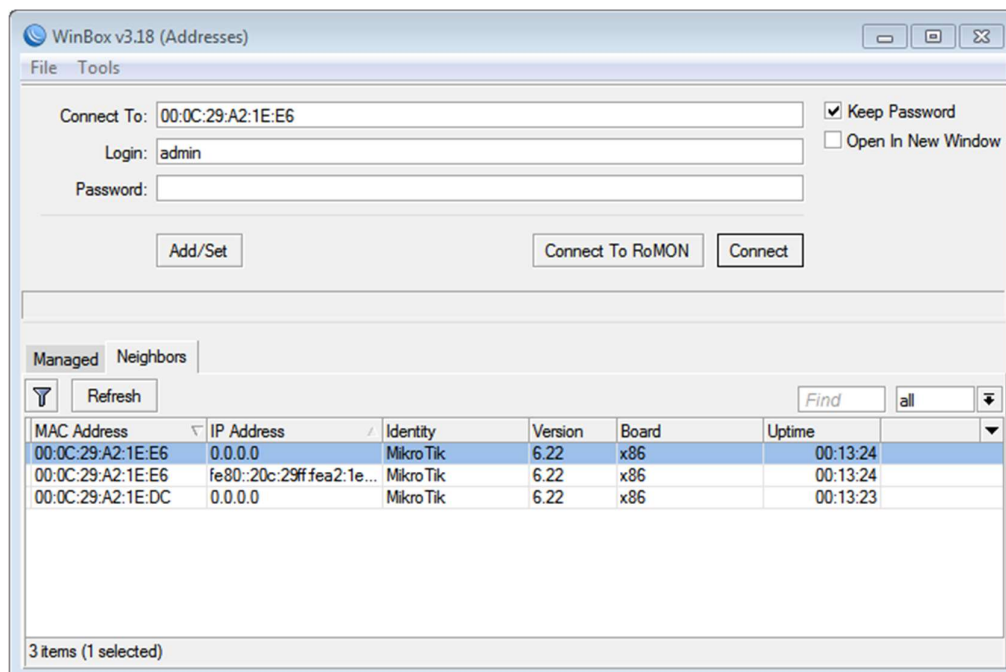


Figure 3.5: Connect VMware using MAC address

### 3.2.6 Static Routing Configuration

Static: For static configure complete need five step. Now we following these steps:

#### Step-1: Setting Interface

```
Interface>" +>>Ethernet1-WAN
```

```
Interface>" +>>Ethernet1-LAN>Apply>ok
```

Below shows the Setting Interface in Figure 3.6

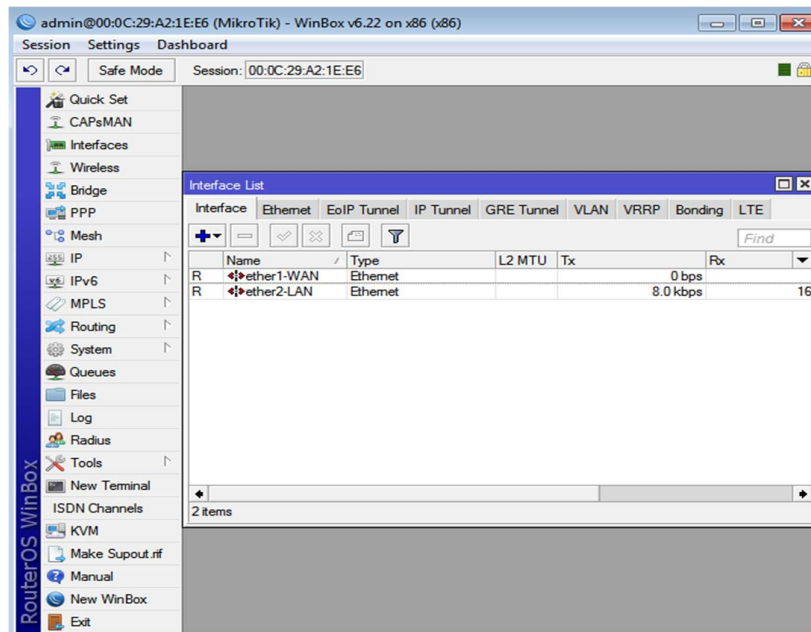


Figure 3.6: Setting Interface

### Step\_2: Setting IP Address

```
IP>Address>”+” Address>192.168.110.10/24>Network>192.168.110.0>
Interface>Ether-WAN
IP>Address>”+”Address>172.16.10.1/24>Network>172.16.10.0>
Interface >Ether-LAN
```

Shows how to Add Static IP Address in Figure 3.7

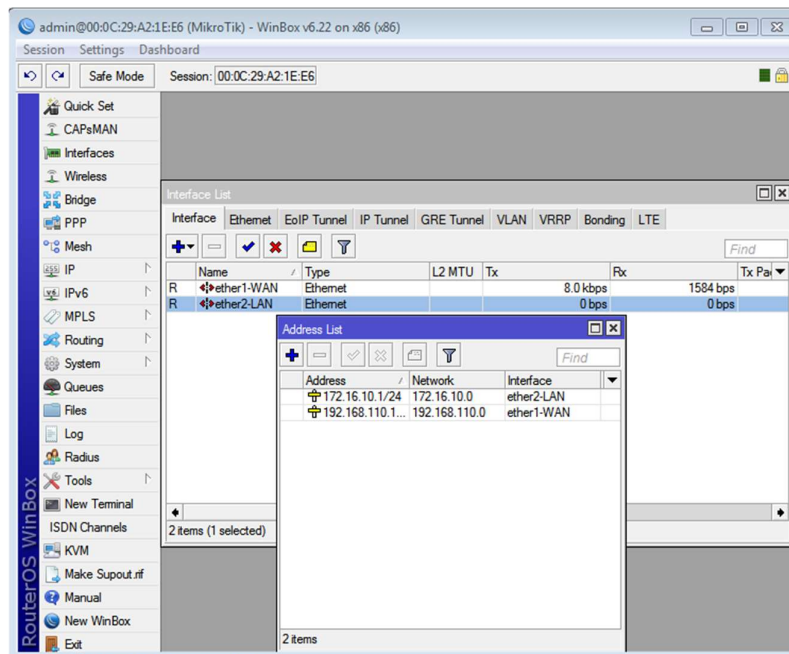


Figure 3.7: Add Static IP Address

### Step-3: Setting DNS

IP>DNS>Servers-8.8.8.8

IP>DNS>Servers-8.8.4.4 >Apply> Ok

[Note: Here we use google public DNS ip, you can use your server DNS ip]

Below shows how to Add DNS Server IP in Figure 3.8

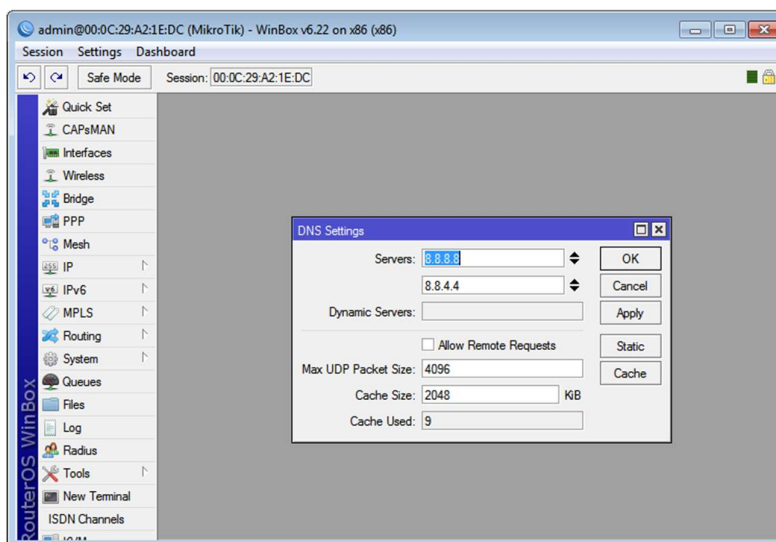


Figure 3.8: Add DNS Server IP

### Step-4: Setting Firewall

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

Below shows how to Setting Up Firewall of Static Configuration in Figure 3.9

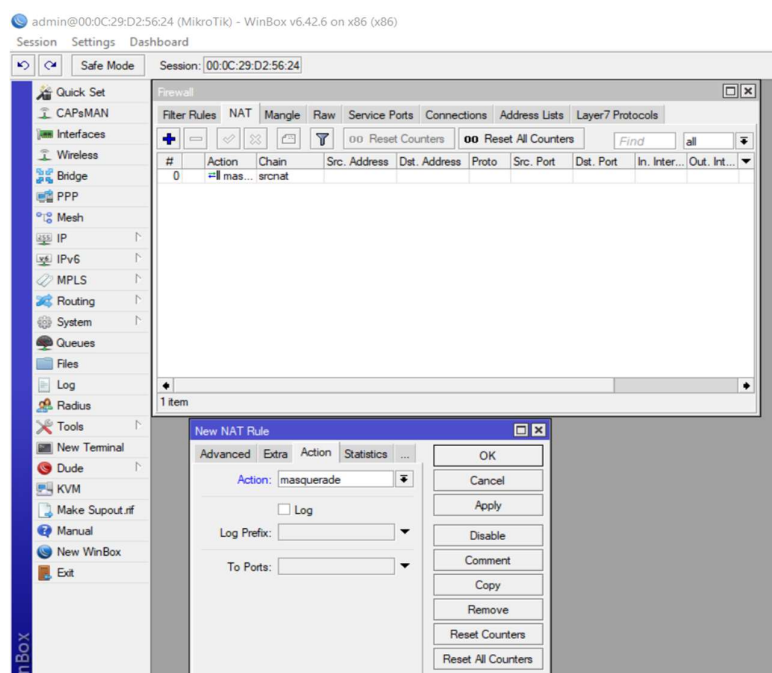


Figure 3.9: Setting Up Firewall of Static Configuration

### Step-5: Setting Routes

IP>Routes>” +”>Gateway>Dst. Address>0.0.0.0/0

IP>Routes>” +”>Gateway>Gateway>192.168.110.1

### Step-6: Implement Static Connection to PC

Go to Open Network and Sharing Center

Option>Ethernet>Properties>IPV4 (TCP/IPV4)>double click> following

IP address then use following DNS Server Address>OK

Below Shows the Implement Static Connection to PC in Figure 3.10

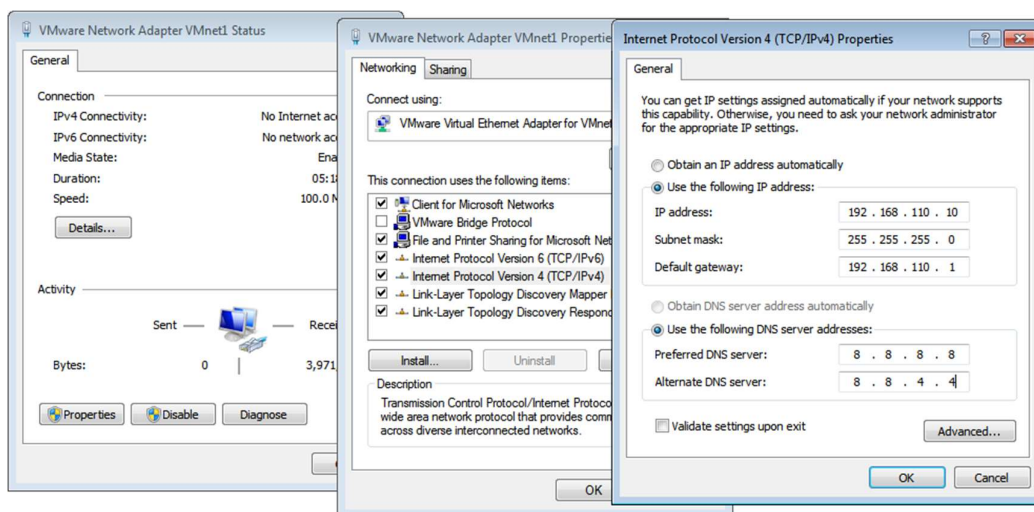


Figure 3.10: Implement Static Connection to PC

### 3.2.7 Dynamic Routing Configuration

Dynamic Host Configuration Protocol (DHCP). After static configure you can complete dynamic routing. I have already configure static 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>Properties>IPV4(TCP/IPV4)>Obtaining an IP Address Automatically and select Obtaining DNS Server Address Automatically> OK



## DHCP Server setup:

Shows the Setting up DHCP setup for Dynamic Configuration in Figure 3.11

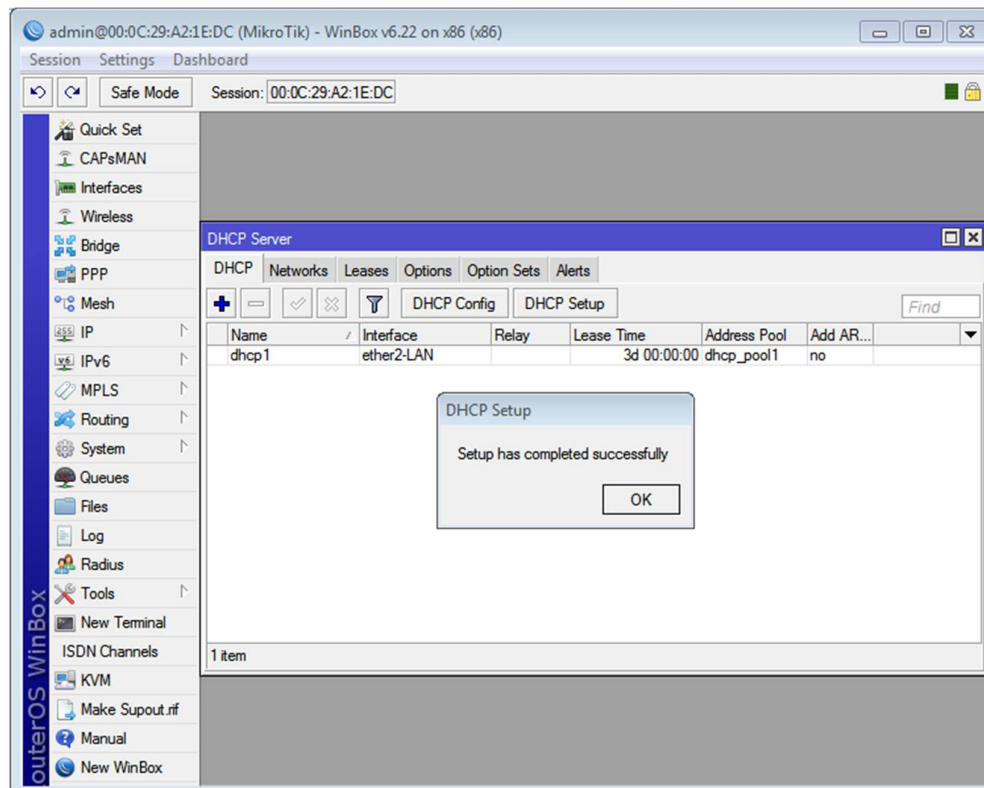


Figure 3.11: Setting up DHCP setup for Dynamic Configuration

### 3.2.8 PPPoE Routing Configuration

This is 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

We at first create a pool, need your any mbps, kbps or anything.

```
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
```

Below Shows how to Creating IP Pool, Gateway in Figure 3.12

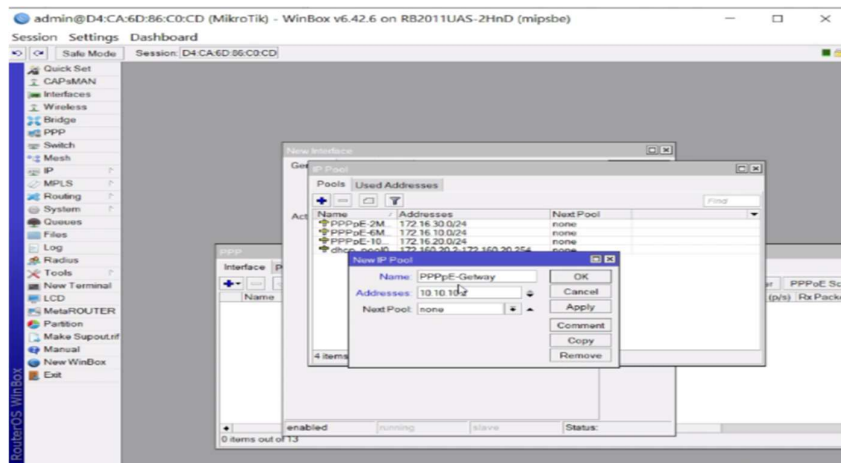


Figure 3.12: Creating IP Pool, Gateway

PPP>” +>PPPoE Server Binding>Name>PPPoE-in1  
 Type>PPPoE Server Binding>Apply>Ok  
 Now shows Creating profile for Limit in Figure 3.13

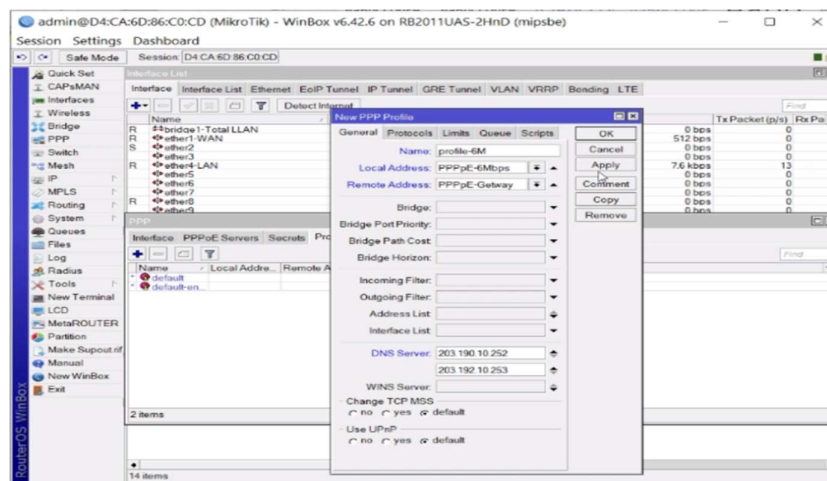


Figure 3.13: Creating profile for Limit

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

Below Show Making Profile & Limit in Figure 3.14:

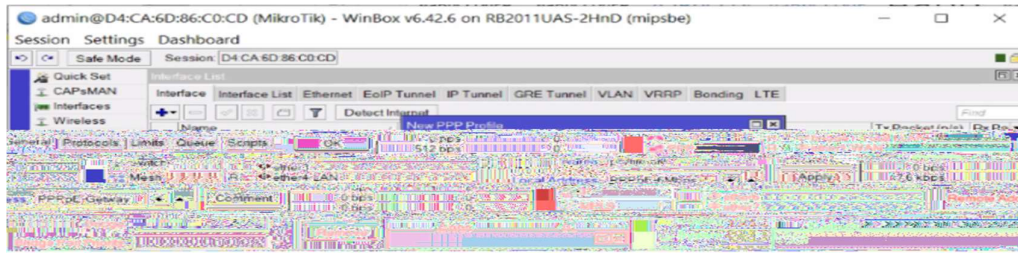


Figure 3.14: Making Profile & Limit

PPP>” +>>Name and Pass:

Below shows how to make user & password in Figure: 3.15

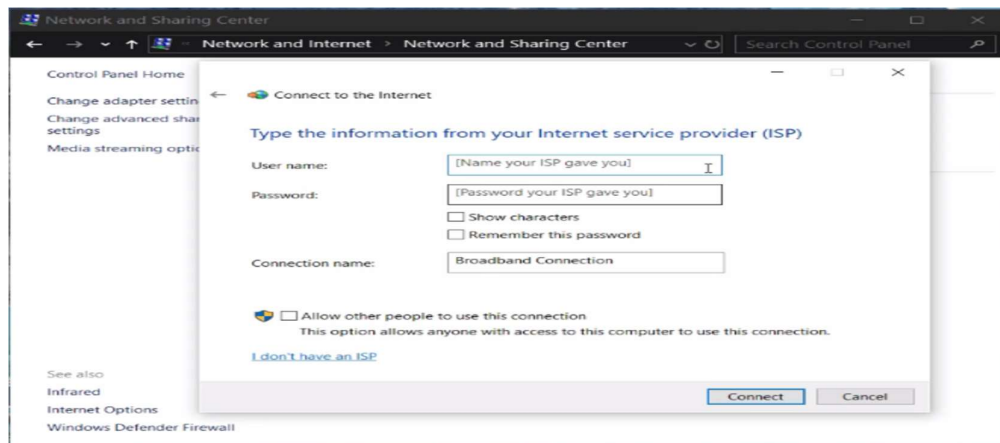


Figure: 3.15: Make user & password

### 3.2.9 Bridge Mode configuration

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

Now we are configuring after static and dynamic routing configuration.

**Step-1:** Go to bridge>click add (+)>write your bridge name>apply>ok

Below shows how to Create Bridge Name in Figure 3.16

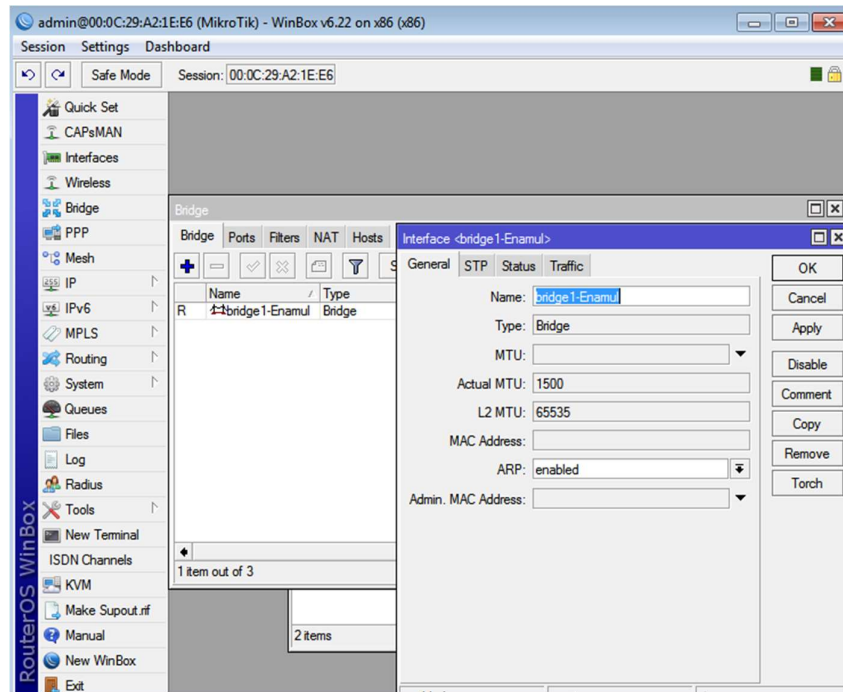


Figure 3.16: Create Bridge Name

**Step-2:** Then go to IP>Addresses> open LAN address> select your bridge name in interface> Apply>ok. Now shows how to Add interface in bridge in Figure 3.17

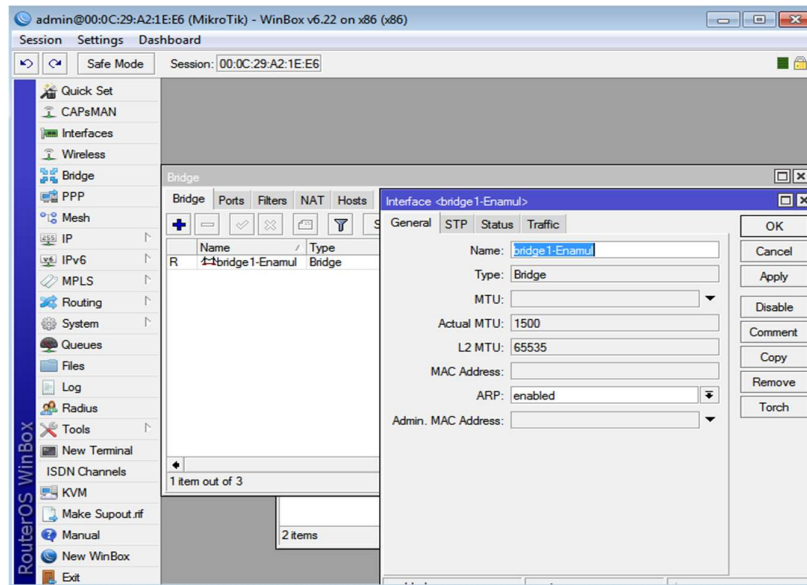


Figure 3.17: Add interface in bridge

**Final step-3:** Bridge> ports> click add (+)> select bridge name in port bridge> apply> ok

Below shows how to Add port in bridge Figure 3.18

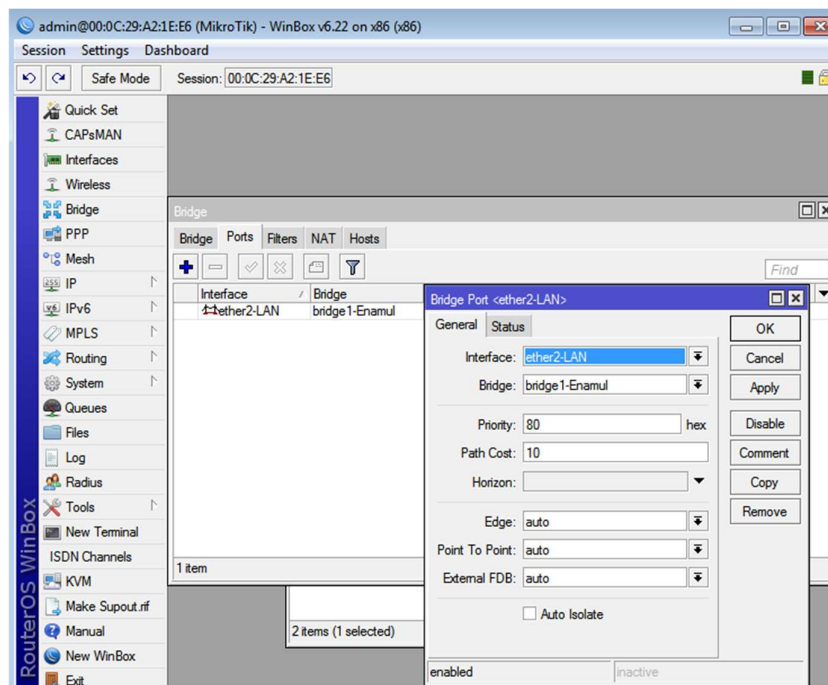


Figure 3.18: Add port in bridge

### 3.2.10 Website Block

It uses 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

Regex>.+ (facebook.com). \*\$>Apply>Ok

IP>Firewall>General>Chain>Forward>Protocol>6(tcp)

Below shows Firewall Rule Protocol Figure 3.19

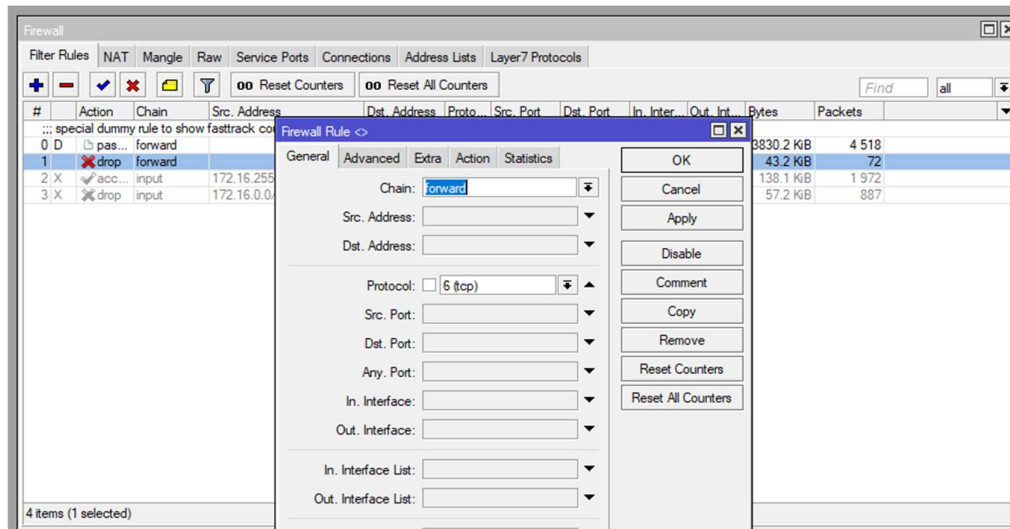


Figure 3.19: Firewall Rule Protocol

IP>Firewall>Advanced>Layer7 Protocol>Facebook\_Block

Below shows Firewall Rule for Layer 7 protocol in Figure 3.20

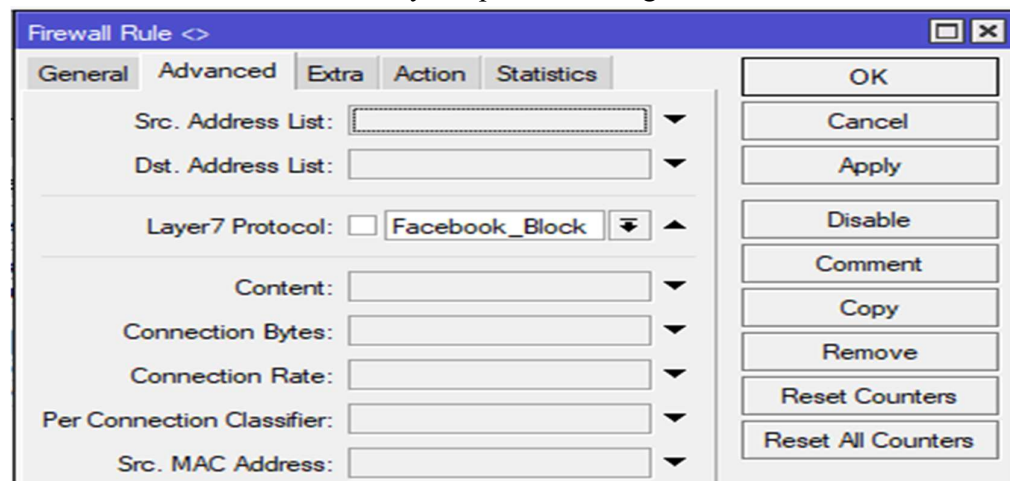


Figure 3.20: Firewall Rule for Layer 7 protocol

**IP>Firewall>Action>drop>Apply>Ok**

Below shows Firewall Action for DROP in Figure 3.21

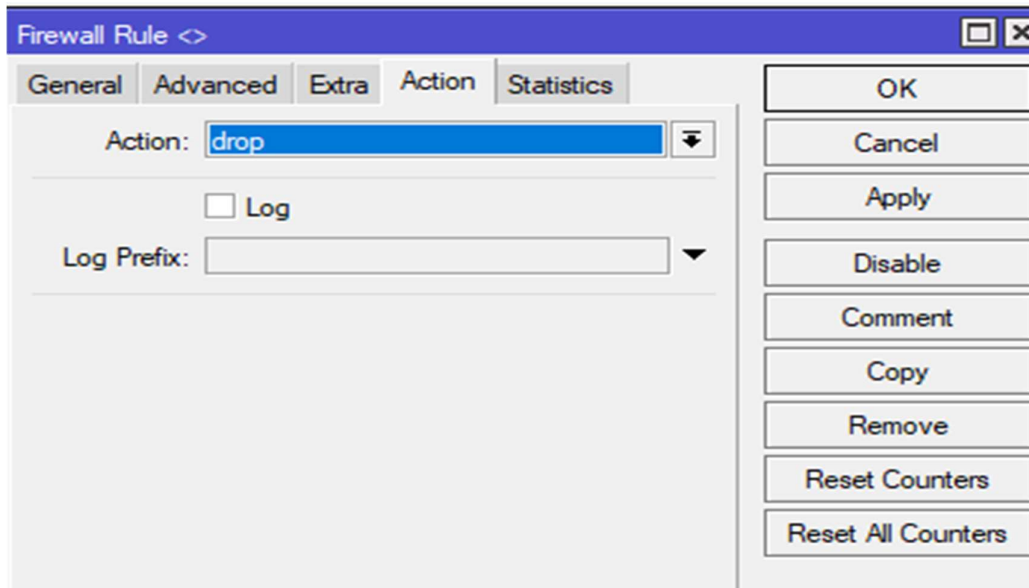


Figure 3.21: Firewall Action for DROP

### Blocked site

Now Shows Unable to reach Faceboo.com in Figure 3.22

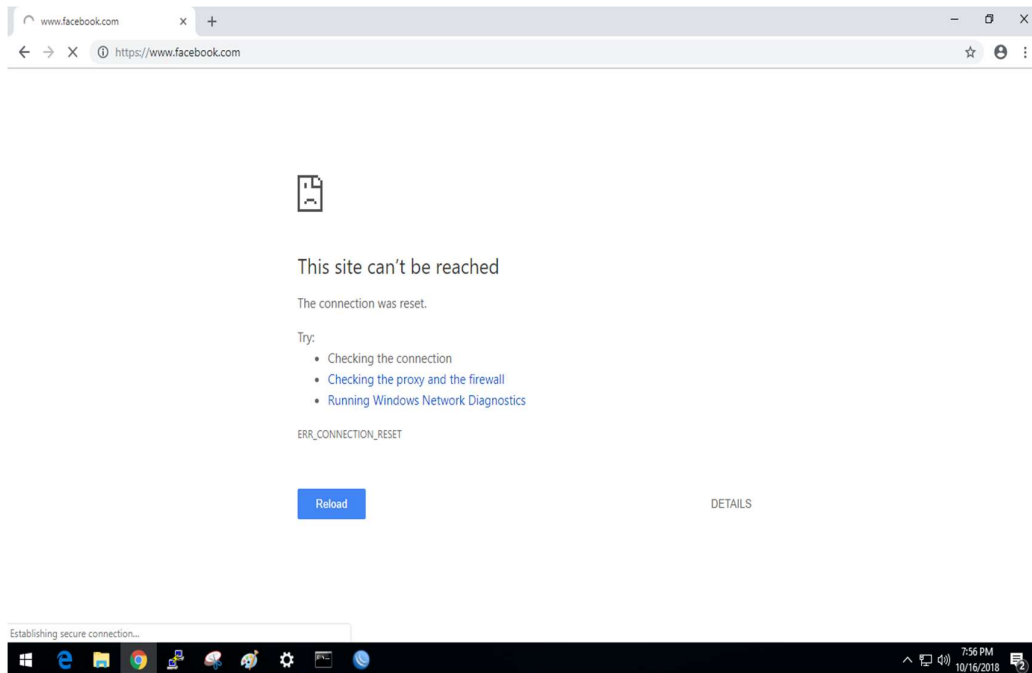


Figure 3.22: Unable to reach Faceboo.com

### 3.2.11 Centos Install Process

Install Centos 6.4 and select this option “Install or upgrade an existing system”. Then Press [tab] to edit options (Enter). Now shows how to Linux Centos Install in Figure 3.23



Figure 3.23: Linux Centos Install

Then select your country language and I select my choose language English (English). Enter. Now Below Shows how to Select Language in Figure 3.24

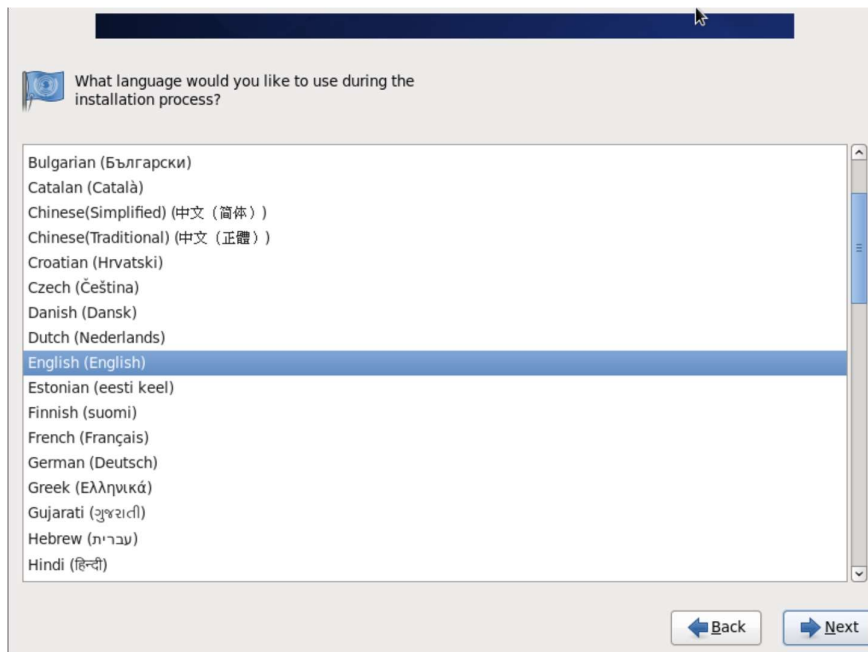


Figure 3.24: Select Language



Now select your country location (Asia/Dhaka) and Time & Date. Then click “Next”. Now shows the Set Time Zone Figure 3.25



Figure 3.25: Set Time Zone

Now set your Root Password of any character of combination and again confirm same password. Below shows How to Set root password Figure 3.26



Figure 3.26: Set root password

Now select you which type of installation would you like. I would to like create custom layout.

Below shows how to Set Create Custom Layout in Figure 3.27

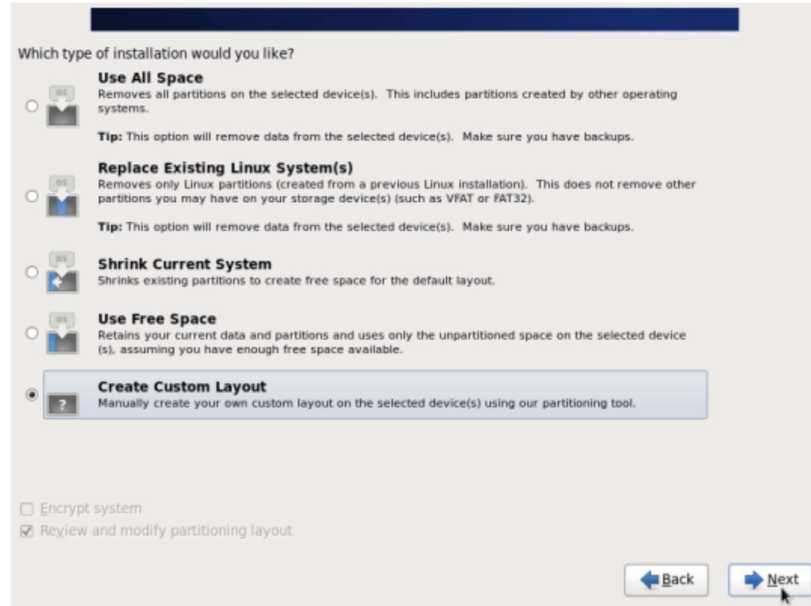


Figure 3.27: Set Create Custom Layout

Select mode need your screen. I choose minimal mode in my desktop. Now Shows Select desktop mode in Figure 3.28:

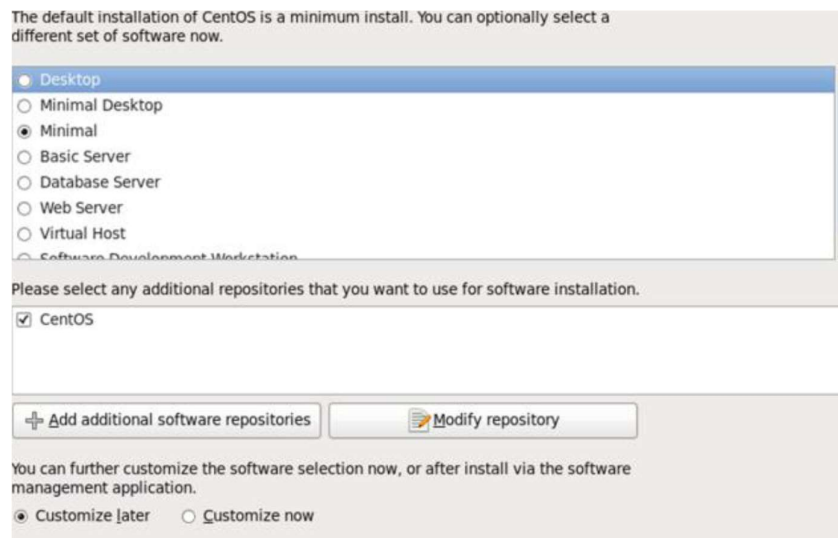


Figure 3.28: Select desktop mode

Now CentOS 6.4 operating system start to install packages in Figure 3.29



Figure 3.29: CentOS 6.4 installing

Now completed install CentOS 6.4. Give user name and root password then you can use this operating system. [6]

### 3.2.12 Creating Linux Partition

Linux partitions are divided into 3 parts root (/), boot, as well swap.

- **Root Partition: /**

There are a root / partition where all directories contain the original files. Minimum space needs 5 GB HDD.
- **Boot Partition: /boot**

This boot partition size 200 MB.
- **SWAP Partition: swap**

Parcel swap is utilized to back virtual memory. In other words, information put away on your framework isn't sufficient 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 extra 1x physical RAM for any amount above 2 GB, but it cannot be less than 32 MB [10]

Below shows how to create driver partition in Figure 3.30

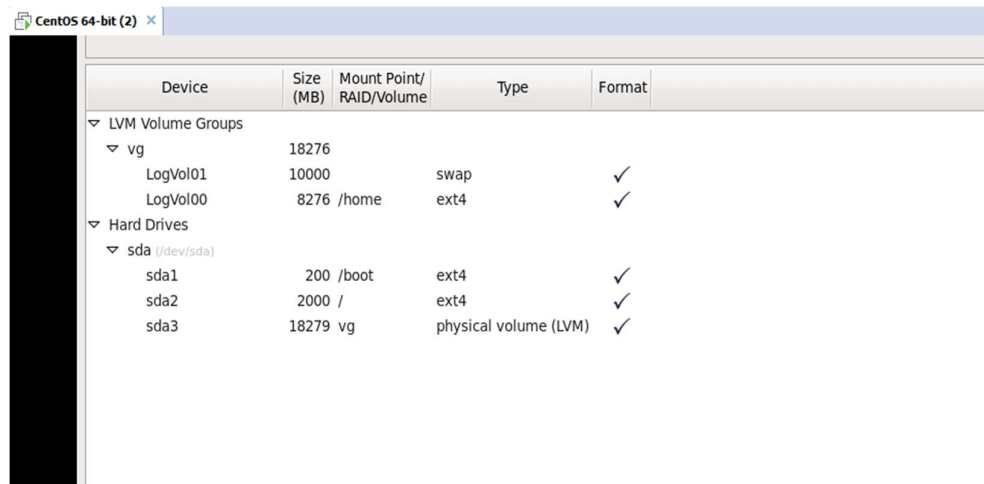


Figure 3.30: Create driver partition

### 3.2.13 The Basic Command of Linux Centos

Some commands are needed to use the Linux system. Command is required for all types of configurations, without command, these takes are not possible. Below are some more commands: [8] in Table 3.2

Table 3.2: Basic commands

Command	Example	Description
<b>pwd</b>	Pwd	Current working directory
<b>cat</b>	Cat file name	Read file
<b>is-l</b>	Ls file name	List all Files
<b>cd</b>	Cd/root/Desktop	Change current directory
<b>mkdir</b>	Mkdir directory name	Create new directory
<b>touch</b>	Touch file name	Create new file
<b>vim</b>	Vim file name	Edit for file
<b>rm-rf</b>	rm-rf of folder name	Remove file or folder
<b>cp</b>	Cp source destination	Copy file or folder
<b>mv</b>	Mv source destination	Cut file or folder
<b>history</b>	History1000	Show the history

## Command mode of Linux

Below are shows current location & changing directory in Figure 3.31

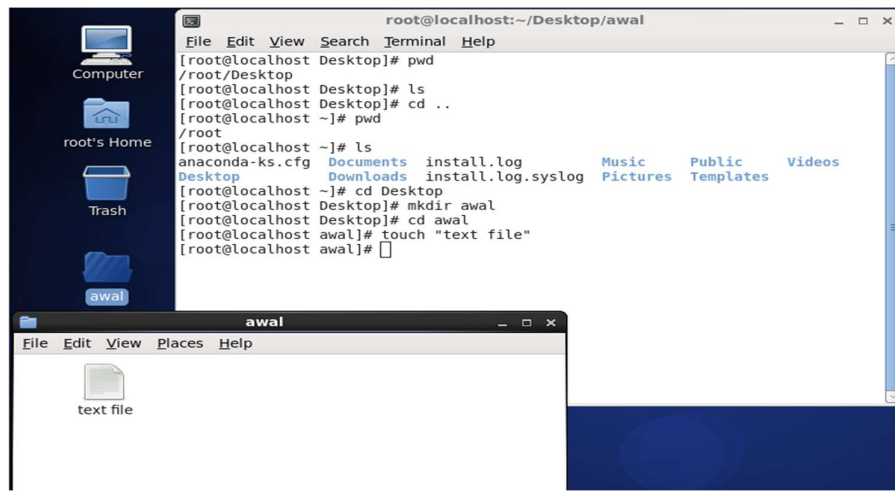


Figure 3.31: current location & changing directory

### 3.2.14 Network Configuration

Open terminal types these commands:

```
#vim /etc/sysconfig/network-script/fcfg-etho
```

```
#service Networkmanager stop
```

```
#chkconfigNetworkManager off
```

```
Edit: -
```

```
ONBOOT=YES
```

```
BOOTPROTO=STATIC
```

```
IPADDR=192.168.50.187
```

```
NETMASK=255.255.255.0
```

```
GATEWAY=192.168.50.1 [9]
```

Below shows how to Set IP Address in Figure 3.32



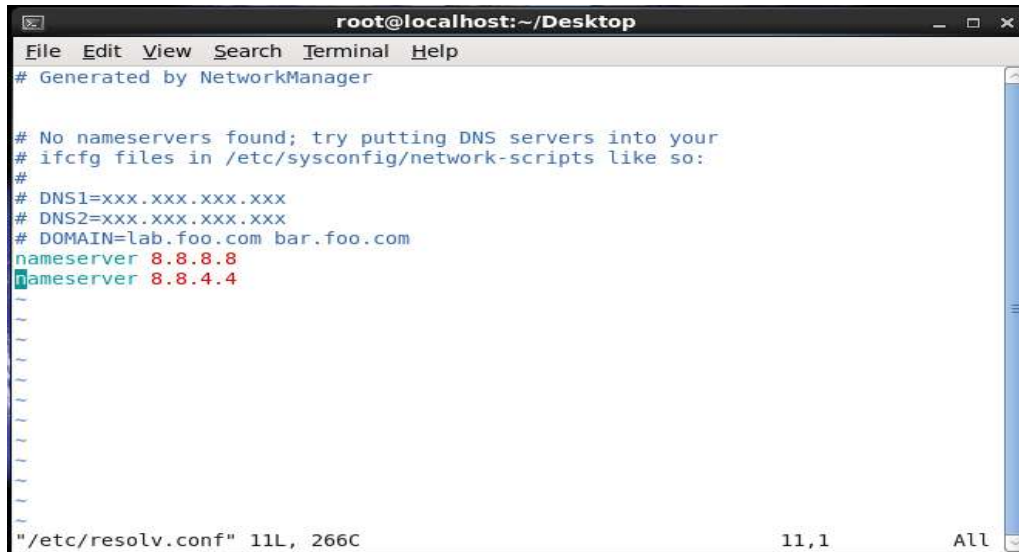
```
File Edit View Search Terminal Help
DEVICE=eth0
HWADDR=00:0C:29:3B:AF:89
TYPE=Ethernet
UUID=c6d2d42f-21a9-4374-b58d-1a212975de81
ONBOOT=yes
NM_CONTROLLED=yes
BOOTPROTO=static
IPADDR=192.168.50.187
NETMASK=255.255.255.0
GATEWAY=192.168.50.1
```

Figure 3.32: Set IP Address

### 3.2.15 DNS Configuration

```
#vim /etc/resolv.conf
#service network restart
```

Below Shows service network restart in Figure 3.33



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
# Generated by NetworkManager

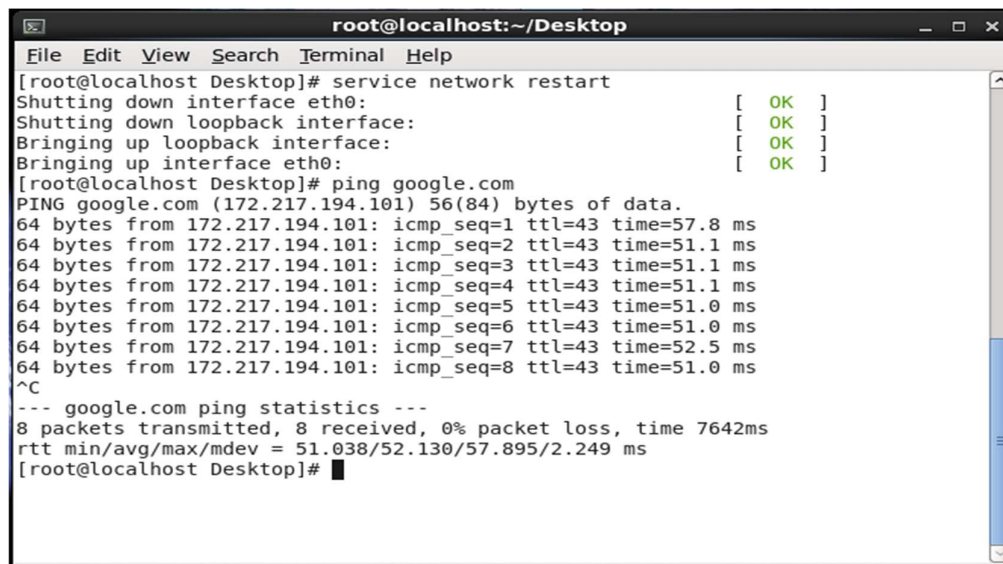
# No nameservers found; try putting DNS servers into your
# ifcfg files in /etc/sysconfig/network-scripts like so:
#
# DNS1=xxx.xxx.xxx.xxx
# DNS2=xxx.xxx.xxx.xxx
# DOMAIN=lab.foo.com bar.foo.com
nameserver 8.8.8.8
nameserver 8.8.4.4

"/etc/resolv.conf" 11L, 266C 11,1 All
```

Figure 3.33: Service network restart

ping google.com

Now ping google.com this server is ok. Below Shows ping to google.com in Figure 3.34

A terminal window titled 'root@localhost:~/Desktop' showing the execution of network service restart and a ping command. The terminal output includes the following text:

```
[root@localhost Desktop]# service network restart
Shutting down interface eth0: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface eth0: [ OK ]
[root@localhost Desktop]# ping google.com
PING google.com (172.217.194.101) 56(84) bytes of data.
64 bytes from 172.217.194.101: icmp_seq=1 ttl=43 time=57.8 ms
64 bytes from 172.217.194.101: icmp_seq=2 ttl=43 time=51.1 ms
64 bytes from 172.217.194.101: icmp_seq=3 ttl=43 time=51.1 ms
64 bytes from 172.217.194.101: icmp_seq=4 ttl=43 time=51.1 ms
64 bytes from 172.217.194.101: icmp_seq=5 ttl=43 time=51.0 ms
64 bytes from 172.217.194.101: icmp_seq=6 ttl=43 time=51.0 ms
64 bytes from 172.217.194.101: icmp_seq=7 ttl=43 time=52.5 ms
64 bytes from 172.217.194.101: icmp_seq=8 ttl=43 time=51.0 ms
^C
--- google.com ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7642ms
rtt min/avg/max/mdev = 51.038/52.130/57.895/2.249 ms
[root@localhost Desktop]#
```

Figure 3.34: ping to google.com

### 3.3 Project Task and Activities

Here I have created a campus networking design using networking hardware and some components of the software. I use 4 routers to make the design. Multiplayer switch is used in one number router and the last two sub switch serials of multiplayer. The VLAN-3 used for the server and a PC using a switch. Using a switch on a PC, and the Plan that created the wireless router for the lab. Four routers connected with two Cloud-PT and a cloud-pt works as an ISP switches 1 router 1 switch as well 3 servers. The head office network from switch provides ip 192.168.2.0 and main building network provide vlan-4 with the ip 192.168.4.0. Account office is connected a switch which provide ip 192.168.3.0 and vlan-1 connected this switch and 3 pc also connected in multiplayer switch, router and connected another 3 servers. This how i design above campus network.

Below Shows campus network design in Figure 3.35

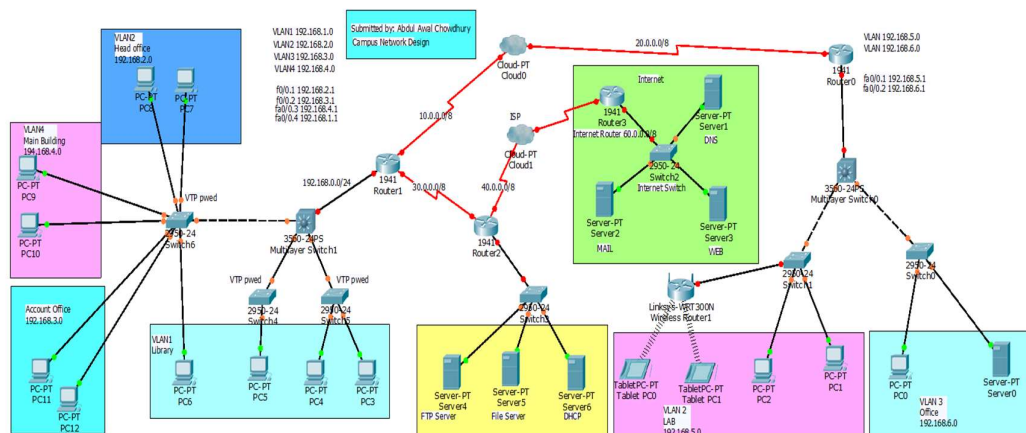


Figure 3.35: Campus network design

### 3.4 Challenges

I can learn around internship knowledge and share my happiness moments with my batch partner. I uncovered a few common challenges amid the internship time. However, I am revealed about some challenges during the internship. Below are the following:

- Earn some of the necessary takes
- Prepare yourself with the current time
- Get some awards from various associations
- Establish friendly relations with the authorities
- Government discipline and quality compatibility



## **CHAPTER 4**

### **COMPETENCIES AND SMART PLAN**

#### **4.1 Competencies Earned**

A learner can learn a learning outcome for achieving a statement capable of acquiring skills or learning to succeed. Intern study results for many students in the student association's office Outcome: collecting and organizing internship project information. Description: attend the new look at the Linux lab websites learning outcome: install and configure software and upgrades internship supervisor on the site will provide an orientation to corporate policy an accession.

#### **4.2 Smart Plan**

Each company have a inventive arrange to pick up success. Really a few common things in combination make a innovative plan.

#### **4.3 Reflections**

In 2002, Daffodil Online Ltd inception their activities. In the past years, they amplify operation and benefit portfolio concurring to customer's required request. From their inception, they got lots of national and international prizes from the domestic and outer Platform. Since they worked with numerous national and worldwide project and organization to achieve reputation. They started their operation in 2002. In this time, they have various 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 outstanding and rewarded knowledge and real life Wisdom. I am realized my professional career and I will be able to assist with career 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 disadvantage 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 an 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**

As a Network engineer my professional Career are obtainable in various fields in 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 program engineers and network engineers. Today many companies have moved to Linux and open source software. Companies such as Google, Yahoo, Being, Wiki.org, and numerous other companies have moved to taken toll viable open source arrangements. There are huge demands for skilled IT person such as MikroTik and Linux.

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- [7] Get Daffodil logo<<[https://www.google.com/search?tbs=sbi:AMhZZivXukg8oVwgXW1E0ysSi31cnP5CybRdpysLICFHqHyO199Aa8WskHAzC1Gpwk5UBtqZuahv5kzQLk7WekGyojaFRHQhvVdqy18ymJazkd3VvErVBTa1iCjTFxoGjaWTTDkKtCWy2EVgIsLN9J4ftIdKrDPpN76DRBtoLG6ZG0\\_152xKf2VdOnInNkFoDyMlm9GRiQKQD\\_1xXf64iyI2YF5RpwsBMA7VVQr1tIXR2MxJ\\_1eWylRjmNwi\\_1a7jwtEvZq-VdfCFM7f7BfcWDK68V\\_11gniDNBCr7-SZIdQkyX31eBIi-pvrUY\\_1zhHGOz3QdYash9PPrb-FNwONKb47zFIgi7qHgWw8PA](https://www.google.com/search?tbs=sbi:AMhZZivXukg8oVwgXW1E0ysSi31cnP5CybRdpysLICFHqHyO199Aa8WskHAzC1Gpwk5UBtqZuahv5kzQLk7WekGyojaFRHQhvVdqy18ymJazkd3VvErVBTa1iCjTFxoGjaWTTDkKtCWy2EVgIsLN9J4ftIdKrDPpN76DRBtoLG6ZG0_152xKf2VdOnInNkFoDyMlm9GRiQKQD_1xXf64iyI2YF5RpwsBMA7VVQr1tIXR2MxJ_1eWylRjmNwi_1a7jwtEvZq-VdfCFM7f7BfcWDK68V_11gniDNBCr7-SZIdQkyX31eBIi-pvrUY_1zhHGOz3QdYash9PPrb-FNwONKb47zFIgi7qHgWw8PA)>> Last accessed 03-08-2019, 12.20 pm
- [8] Learn about some basic commands of Linux:<<<http://www.linuxandubuntu.com/home/some-basic-linux-commands-for-beginners>>> Last accessed 15-07-2019, 10.15 am
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## 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 5.1: Daffodil Online logo [7]

#### 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	<a href="mailto:info@daffodilnet.com">info@daffodilnet.com</a>
Website	<a href="http://www.daffodilnet.com">www.daffodilnet.com</a>
Type of Organization	Nationwide Internet Service Provider (ISP)

## ISP setup and configuration

### ORIGINALITY REPORT

<b>28%</b>	<b>12%</b>	<b>0%</b>	<b>26%</b>
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### PRIMARY SOURCES

<b>1</b>	<b>Submitted to Daffodil International University</b> Student Paper	<b>18%</b>
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