# INTERNSHIP ON LINUX SERVER SYSTEM AND MIKROTIK AT DAFFODIL ONLINE LIMITED

## 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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## DAFFODIL INTERNATIONAL UNIVERSITY

## DHAKA, BANGLADESH

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## APPROVAL

This Internship titled **"Internship on Linux Server System And MikroTik at Daffodil Online Limited"** submitted by Md. Likhon. Hossain ID: 152-15-6275 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 $7^{th}$ May,2018.
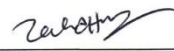
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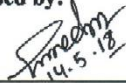
# DECLARATION

I hereby declare that, this internship report is completed by me under the supervision of **Ahmed Al Marouf, Lecturer, Department of Computer Science and Engineering** 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), ISP Based Corporation, Books & Internet.

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I fell really grateful and wish my profound my indebtedness to **Supervisor Md. Ahmed Al Marouf Lecturer**, Department of Computer Science and Engineering, Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of *"Networking and Human computed Interaction",* to carry out this internship. His endless patience, scholarly guidance continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stage have made it possible to complete this internship.

I would like to express my heartiest gratitude to **Dr. Sayed Akther Hossain**, **Professor and Head,** Department of Computer Science and Engineering, for his kind help to finish my internship and also to other faculty member and the staff of Computer Science and Engineering department of Daffodil International University.
I would like to thank my entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

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

# ABSTRACT

Linux Server Administration is a well-known method for dealing with the system correspondence as far as its execution, dependability and security. This Internship shows the entire setup procedure of an ISP server Administration alongside the different administrations offered in Linux working framework. There is different kind of work in the system that is the reason additionally unique sorts of server and how to design different administration. For Example-DSN Server, Web Server, Mail Server, Proxy Server, FTP Server, Firewall. In the event that two and more PCs are interconnected and ready to trade information or data then we call organize. We have to create a quantity of PC and trade information quantities and if more than one PC is needed then they should be launched in the server name. MikroTik is a minimal effort and easy access Router that can be used for managing small and large systems. Particularly this systems administration gadget suits for little system from each viewpoint like customer administration and security. MikroTik RouterOS is the working arrangement of MikroTik Router Board which may likewise introduce in a standard PC also; the PC will transforms into a MikroTik Router.

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# CHAPTER 1

# Introduction

## 1.1 Introduction

This is the information technology area. Presently a substantial number of individuals take an interest in parasols and parts of the world utilizing Internet advancements and servers everywhere throughout the world. A large portion of the first space warriors or Linux presumably get free programming. We can't do anything identified with web correspondence without the server. Temporary job is known for comprehension from different associations, which will assemble a connection amongst hypothetical and genuine information. It adds important experience to the understudy's future vocation. As an understudy of Computer Science and Engineering (CSE) of Daffodil International University, I have considered a ton of systems administration, Configuration, Operating System. Yet, this is inadequate to know the PC organizing, arrange security, working framework since it's a tremendous zone of the modem innovation, subsequently to get a sound information about PC organizing, Linux, Server Configuration, Server Maintaining, Configuration Using MikroTik. I was interested to do this internship in Daffodil Online Limited.

This Internship Report is **"Internship on Linux Server System And MikroTik at Daffodil Online Limited''** At Daffodil Online limited. This report covers the whole project which I have done more about the Computer Networking, Linux, Server Setup, Configuration, Server Security & network monitoring system.

## 1.2 Motivation

I have found that Daffodil Online Limited (DOL) has an excellent reputation for customer satisfaction and service. Daffodil Online Limited (DOL) is outstanding and top ISP specialist co-op in Bangladesh. I know that learning from the combination of my experience, computer science and engineering will give me an asset to Daffodil Online Limited. I expect me to have some new challenges and that teaches me to learn from DOL. I believe this internship will give me the ideal opportunity to expand my career.As a mediator, I add to the work process of Daffodil Online Limited and I can learn however much as could be expected. Daffodil Online Limited (DOL) entry level position experience will give me a thought regarding my future life and will be an extreme advance for my future instruction and my profession.

## 1.3 Internship Objectives

The Linux operating system is a very common word. Linux is a free operating system. Now the Linux operating system provides a graphical user interface so that the user can easily manage this operating system. The main goal of the Linux operating system is to provide more security to the network server. More objects are given bellow:

1. Install Linux with interactive and leak initialization.

2. Manage common system hardware, manage Linux printing subsystem.

3. Create and maintain the Linux file system.

4. Perform the user and group administration.

5. Maintain server system.

6. Create a Basic Server in Linux

## 1.4 Introduction to the company

The internship enterprise where I have taken my Training is Daffodil Online Limited. Daffodil Online Ltd prides itself as one of the leading ISP Service Provider in Bangladesh. It is the most experienced and the most established association in the ICT field where its basic business policies have long-established relationships with clients. Taking a gander at the development of the decade after it started, they are exceptionally glad for what they have accomplished and are considerably more amped up for their perspectives for the guaranteed future.

It can reveal to you that they began their activities in 2002. In the course of recent years, they have expanded their tasks and administration portfolio as indicated by client's suggestions and are thinking about time requests. They work with numerous national undertakings and universal associations and pick up acclaim. Regardless of where they have to utilize the most recent innovation and redesign administrations. Their Corporate Network Solutions Division can give cutting edge system and media communications arrangements with an exceptionally gifted specialized mastery gathering.

**1.5 Report Layout**

The report is as follows –

Chapter -1 Interpretation of the catchword of place and therefore the purpose of place the role of the corporate.

Chapter-2 target cluster, SWOT analysis, organization of the organization.

Chapter-3 Daily Tasks, Events and Activities, Project Tasks, Challenges. About IP Address, IP Address Classes, MikroTik Router Configuration, Features, Step Configuration WAN, Configuration Bridge.

Chapter-4Competencies and Smart Plan, Smart plan and Reflections.

Chapter-5 Discussion and Conclusion, Scope for Future Career.

# CHAPTER 2
# Organization

## 2.1 Introduction

I would like to motivate me into a few new issues and which will give me a higher benefits from DOL. I would give the ideal chance to expand my calling confidence in this transitory profession. Since I am a direct, I can add to crafted by Daffodil Online Limited and I can learn however much as could reasonably be expected. Daffodil Online Ltd (DOL) section level experience will give me a considered my future life and will direct my future and will be a fierce walk for my calling

## 2.2 Product Market Situation

Daffodil Online Ltd offers various services and professional training services.

This group is given:

      A. Corporate Internet Solutions.

      B. Security Solutions.

      C. Domain Registration and Web Hosting.

      D. Web Site improvement.

      E. Professional courses and training.

      F. Open Source Application Solutions.

      G. Internet Service Provider

## 2.3 SWOT Analysis



Figure 2.3: Swot Analysis [1]

The accompanying rundown is a SWOT (power, vulnerability, scope and threat) consequence investigation by Linux's open SUSE board and some group individuals.

Welding is inherently and vague. It was made in a gathering raising new proposal and not simply arranged along these lines, in this way, there are areas that think about the possibility of creating new thoughts for distinctive individuals in the gathering and not influenced by the general population of the session.

Strength:

Daffodil Online Limited is a safe, the organization offers many benefits. Which offers a variety of distribution based on your requirements.

> Easy to manage the work in a team.
> There are people who "speak a language" and develop technical expertise, attraction and expertise.
> Job loads can be balanced on demand.
> Good relationship with users.
> Knowledge of existing Network.
> Quick response to customer request.
> Offer people the opportunity to work with different skills and expertise.

Weaknesses:

The quality or state of being weak, also an instance or period of being weak backed down in a moment of weakness.

> Coordination and communication between categories can be slow.
> Separate division managers limited decisions.
> Customers who want more than one product / service must work with multiple departments.
> More double costs of efforts and infrastructure.
> The higher the cost of the result is more similar to the effort.
> Internal systems can evolve in different ways to serve different customer segments.
> The organization's main transformation includes (difficult, timely and costly changes; virtually everything needs a new system).
> If the company is not enough in each process, it may be necessary to maintain functioning skills.

Opportunities:

The nature of action changes so rapidly that the hard work structure now interrupts the work, and this can change significantly in the next year, month or even week. Opportunities for major challenges and organizational behavior.

- ➢ Increase the efficiency of the people.
- ➢ Improve quality and productivity.
- ➢ Globalization Response.
- ➢ People Empowerment and Innovative inventions and changes.
- ➢ Improve moral behavior and Customer Service Improvements.
- ➢ Easy arrangement on cloud stages.

Threats:

You're willing to use violence and threats to get what you want. You ignore their threats and continue to do what you feel.

- ➢ Distribution turns into an item and all circulations turn out to be pretty much equivalent.
- ➢ Contender opening systems administration close-by.
- ➢ Intellectual property theft and corporate espionage.
- ➢ Some entirely dynamic and all around subsidized undertakings out there.
- ➢ This confines us to the server, where it's difficult to manufacture a group.

## 2.4 Organization Structure

Daffodil Online Limited (DOL) introduced several technologies to meet the 21st century requirement. In the last few years, Daffodil Online Limited (DOL) has introduced more new technology in IT industry.[2]

- ➢ Corporate Internet Solution :

    During the launch, Daffodil Online Ltd (DOL) has started with the new technology to provide Internet services. Meanwhile, DOL has propelled numerous new innovations to manage our first-century challenge. Over the most recent 8 years, Daffodil Online Limited (DOL) has propelled our new idea of new innovations and data innovation.

➢ Security Solution:

Daffodil Online Limited (DOL) provides the latest security solution to its customers, which uses tools from proven security technology vendors.

➢ Domain Registration:

Our World Name is our unique identity on the World Wide Web. No two teams can hold the same domain name at the same time. So we need a completely unique internet identity. If we have a business website or personal website on the Internet then our domain name is our own online brand and in a sense we can use our domain name as our online business card.

➢ Web hosting:

Server Specification: Super Micro Server, Junk Processor; RAM 16 GB, 3Tb HDD, Dual Power Unit, OSX Linux.
Data Center Location: Dhaka, Bangladesh.

Control panel: Fully handled C-panel, fully adjustable ISPConfig.
Features:
➢ MySQL 5.x Database Minimum 20 / Unlimited
➢ PHP5.x version 5+
➢ FTP account
➢ 99.9% uptime guarantee
➢ Unique IP address
➢ Unlimited bandwidth support
➢ Data transfer rate / monthly bandwidth Unlimited.
➢ Email account
➢ Log Files Access

➢ Web Development

Daffodil Online Ltd (DOL) offers attractive web design, development, dynamic and static websites for almost all businesses worldwide. The deal also provides our e-commerce, CMS and other web development and design.
➢ SEO (Search Engine Optimization) :

Script Turbo provides cost-effective SEO services. Our organic SEO strategies place the websites in the top of the popular search engines.

➢ SMS Service:

Daffodil Online Limited (DOL) provides SMS service. We can send our SMS anywhere, using the SMS service across the globe.

➢ Professional Courses:

Daffodil Online Limited (DOL) offers the most challenging and demanding IT (Information Technology) training and professional courses to take on the day of globalization. Some professional courses that are offered by DOL.

➢ Web site Development with Jomla
➢ Certified Ethical Hacking Training Course (CEH).
➢ Php and MySQL website development.
➢ E-commerce and Open Source Joomla Article Mart.
➢ ISP Setup and Administration using Linux.
➢ ISP Setup and Administration using MikroTik.

# CHAPTER 3

## Tasks, Projects and Activities

### 3.1 Daily Task and Activities

During my internship I have entrusted some responsibility. Those duties, I have successfully given those responsibilities:

- ➢ Work on a project to automate or improve systems.
- ➢ On Workstation and Virtual Server Problems to Solve Both Hardware and Software Issues.
- ➢ Perform general system maintenance and support.
- ➢ As necessary assistance to other operation staff.
- ➢ To find solutions to the mid-level problems that does not have the address.
- ➢ Research provides weekly reports of our company's website.
- ➢ Contribute to Improve the Effectiveness and Effectiveness of Computer Systems.
- ➢ Deployment of new server.

### 3.2 Events and Activities

Training for internship is very important, in the first place when there is an internal problem during internship, it is mandatory to train to solve the problem. The problem has been detected and the training can be resolved. Training skills, concepts, internship can be described in the performance of the environment. Those who were part of the training I participated in DOL were given bellow.

Daffodil on-line limited this internship I learned and performed the following:

- ➢ Learning and understanding about Network Components.
- ➢ Learning and understanding Basics of Linux.
- ➢ Learn and perceive the extent of Linux running.
- ➢ Linux Installation.
- ➢ Basic CentOS Commands.
- ➢ Linux users and Password Management.
- ➢ Access to files and directories.

- ➢ To Copy and Move File and Directories.
- ➢ Compressed and degraded files and directories.
- ➢ File and directory permissions.

- ➢ Installing, change and removing packages victimization YUM.
- ➢ The idea of IP addressing.
- ➢ Configuring IP Address in CentOS.
- ➢ Learning, understanding and configuring NFS Server.
- ➢ Learning, understanding and configuring WEB Server.
- ➢ Learning, understanding and configuring FTP Server.
- ➢ Learning, understanding and configuring DNS Server.
- ➢ Learning, understanding and configuring MAIL Server.
- ➢ Learning, understanding and configuring Samba Server.
- ➢ Remote login service.
- ➢ Firewall.
- ➢ Backup and observance.

## 3.3. Projects Tasks and Activities

Based on the Linux Open Source operating system or Linux operating system, a free distributed, cross-platform operating system that can be installed on PCs, laptops, netbooks, mobile and tablet devices, video game consoles, servers, super computers and more.

The Linux operating system is often packaged for Linux distribution for desktop and server use, and includes the Linux kernel (the operating system's main) as well as supporting tools and libraries. Popular Linux operating systems include CentOS, Ubuntu, Fedora, Red Hat, and OpenCuse.[3]

### Linux Kernel, Shell & Shell Script

The kernel is used in Linux systems and is considered to be the heart of the operating system. It is responsible for communication between hardware and software components. It is mainly used for managing system resources. The Linux shell is a user interface used to run commands. Shell is a program that uses user commands to run. Linux can be a user's shell in a program. A shell script, suggested as the name, a script written for the shell. Here the meaning of the script used to control a programming language application. Running commands in Shell Script Shell will run.

**Linux Basic Commands**

Here are the basic commands of Linux shown. Linux CentOS is used for servers and Linux operating systems.

Table 3.3: Table of Linux Basic commands

| Command | Example | Descriptions |
|---------|---------|--------------|
| pwd | Pwd | Present working directory |
| cat | Cat file name | Read file. |
| ls | Ls file name | List all files |
| cd | Cd/root/Desktop | Change current directory |
| mkdir | Mkdir directory name | Create new directory |
| touch | Touch file name | Create new file |
| vim | Vim file name | Edit for file |
| rm –rf | Rm –rf file or folder name | Remove file or folder |
| cp | Cp source destination | Copy file or folder |
| mv | Mv source destination | Cut file or folder |
| history | History6275 | Show the history |
| useradd | Useradd Likhon | Create a user |
| passwd | Passwd Likhon | Given the passwd of user |
| ifconfig | Ifconfig | Show network information |
| cal | Cal 2018 | Show the calendar |
| reboot | Reboot | Restart the OS |
| yum install | Yum install package name | Install software on Linux |

**Installation of Linux Centos 6.4**

If I want to configure the server, maintain the server, by providing server security, I need to install my server PC linux centos OS. We boot the Centos6.4 using a bootable CD / DVD. Boot from the media and generally, accept the default. I have the opportunity to provide time zones, a host name, network interface configuration, DNS IP and domain search. When configured at this point, the installation script automatically configures the result using these settings. It's a time-saver, however, I'm going to assume this setting is being set or will need to change.

**Linux Centos 6.4 Installation Process**

Install this Fig 3.7.1show Centos6.4 and check this media & Install Centos6.4 options and that i will select the option i want. I choose the selection "Install or upgrade an existing system.



Figure 3.3.1: Linux Centos install process

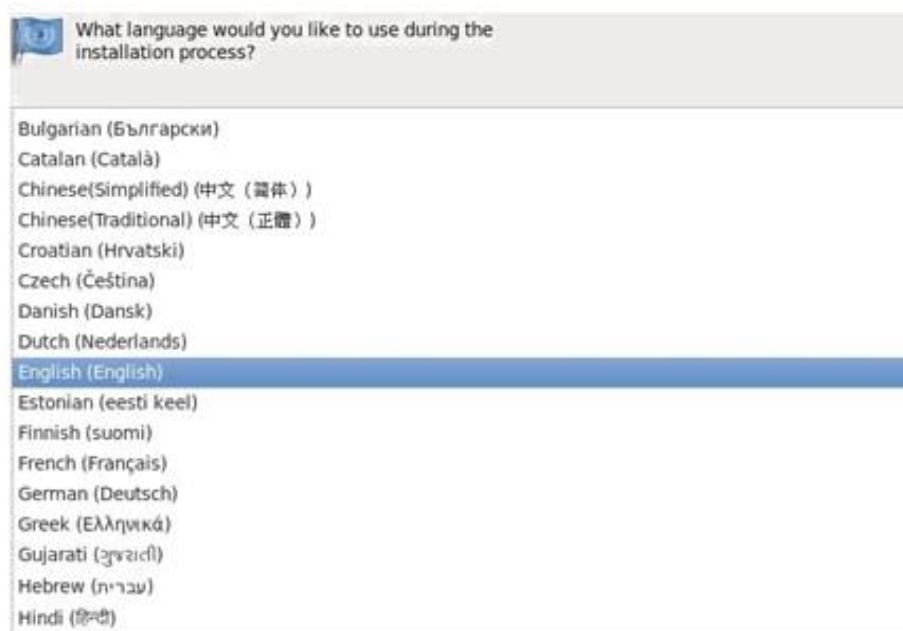Select what language you would like to use, I select English as my language; Click next



Figure 3.3.2: Centos language selection

Select the next keyboard (English US), I will correct date and time (Asia / dhaka time zone), and click on to start the installation .

Figure 3.3.3: Centos time Zone Selection

Under the Configuration Route section, user settings, click the root password, that is shown within the Figure.
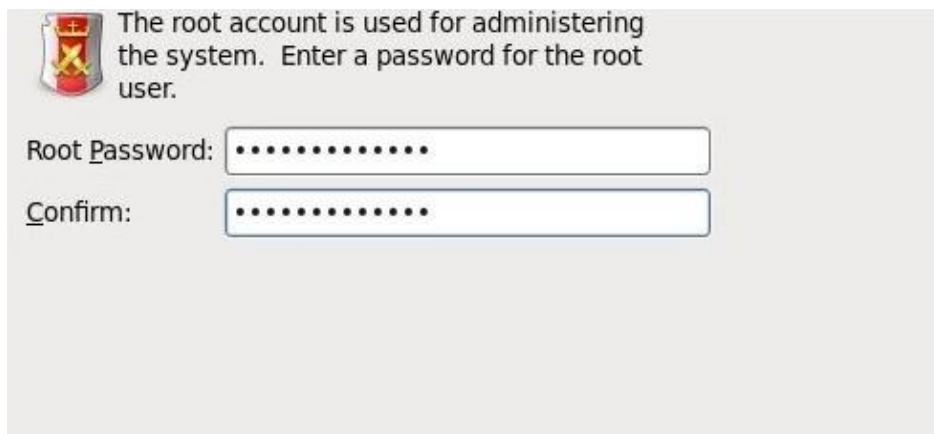


Figure 3.3.4: root password process

What reasonably installation does one want? select the step "Create custom layout" shown within the Figure.
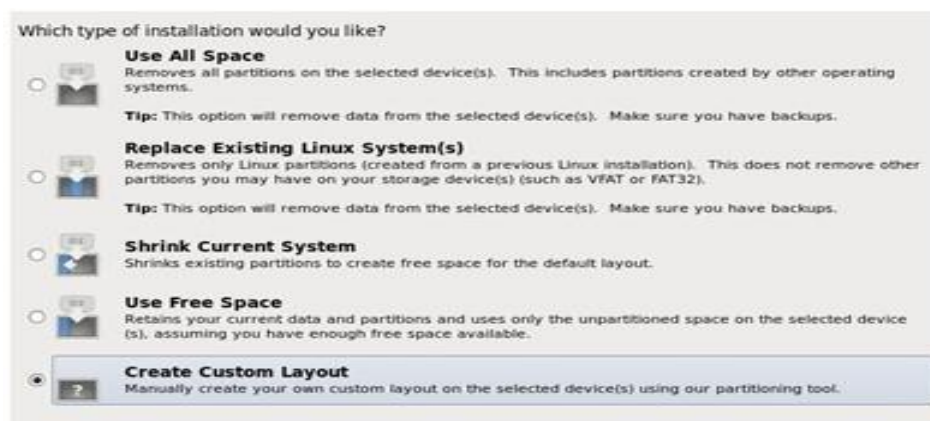


Figure 3.3.5: Create custom layout

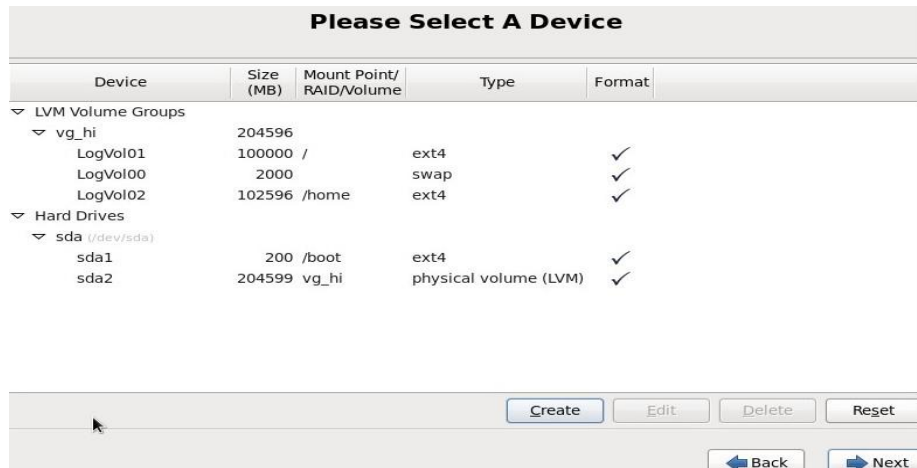Now, click to create and these drives ar shown within the Figure

Figure 3.3.6: Create and make drives

Now, select the mode on our screen, click on "Choose Desktop Mode". The figure is show.
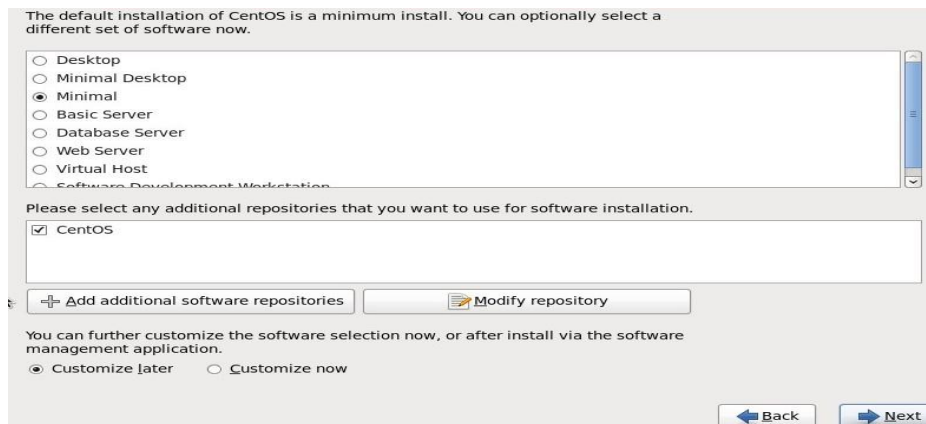


Figure 3.3.7 : Screen select mode

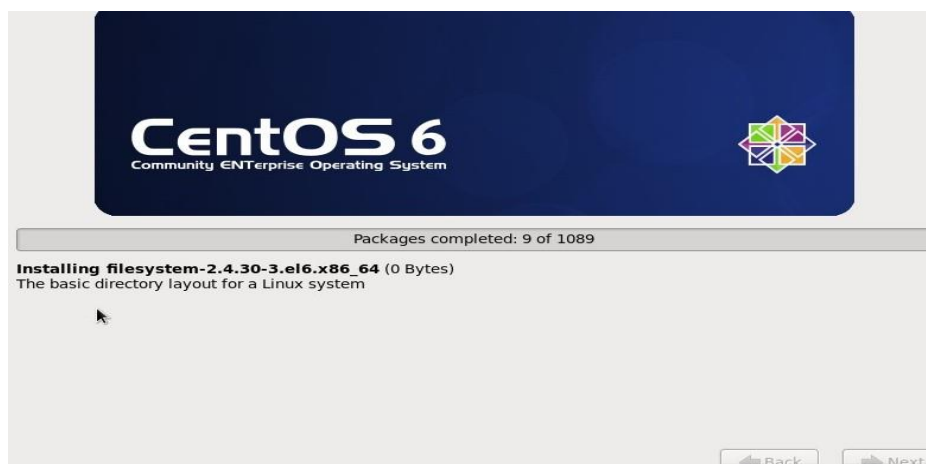Now begin installing the Centos 6.4 package. The figure is shown



Figure 3.3.8: Centos package install

Now complete the package installation. Enter the user name and password, password of Md Writing Hossain user account, that is logged in and open on our desktop screen shown within the figure.
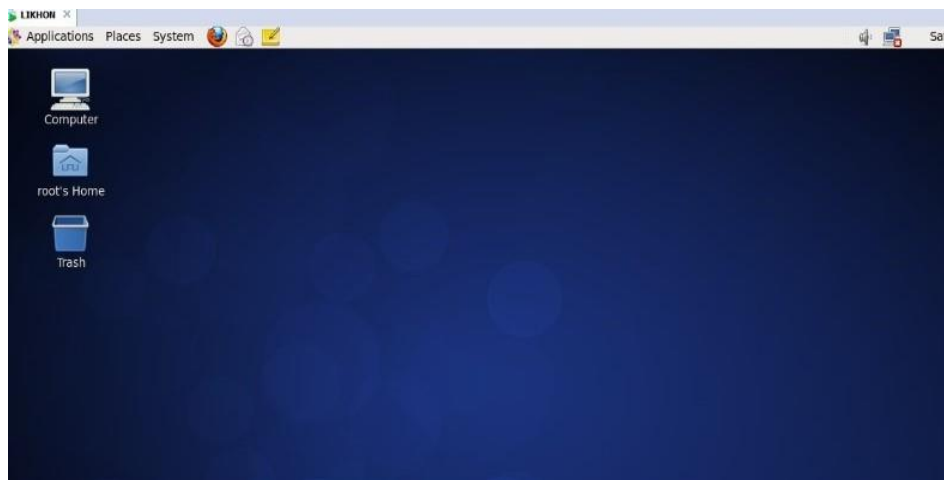


Figure 3.3.9: Centos 6.4 Desktop Screen

**Linux Network Configuration**

Open terminal and type :  vim /etc/sysconfig/network-scripts.

Edit:

ONBOOT= yes

BOOTPROTO= static

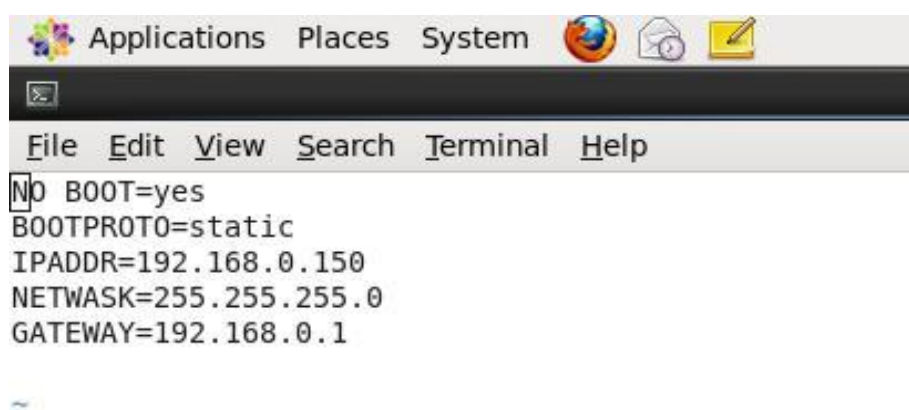IPADDR= 192.168.0.150

NETMASK= 255.255.255.0

GATEWAY= 192.168.0.1



Figure 3.3.10: Network Configuration

**DNS configuration**

Open terminal and type:  vim /etc/resol.conf

Edit:

name server 192.168.0.150
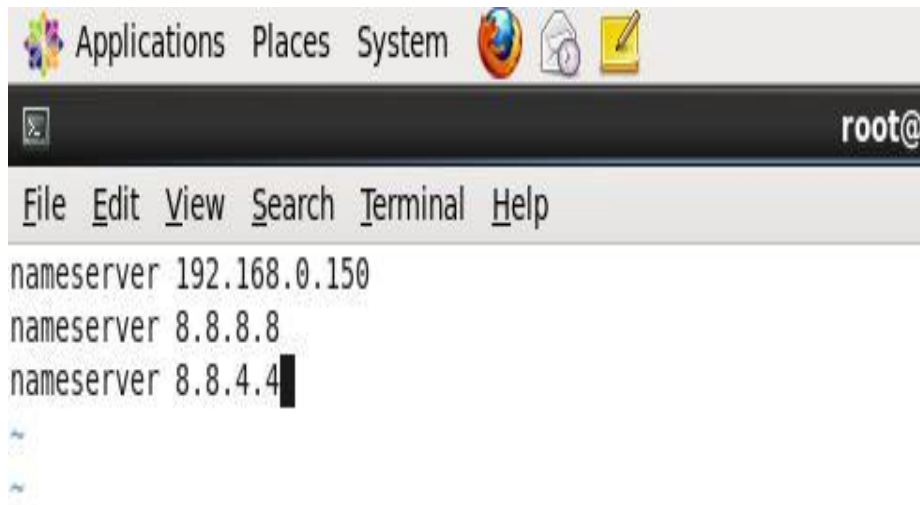name server 8.8.8.8

name server 8.8.4.4



Figure 3.3.11: DNS Configuration

## Host configuration

Open terminal and type :   vim /etc/host
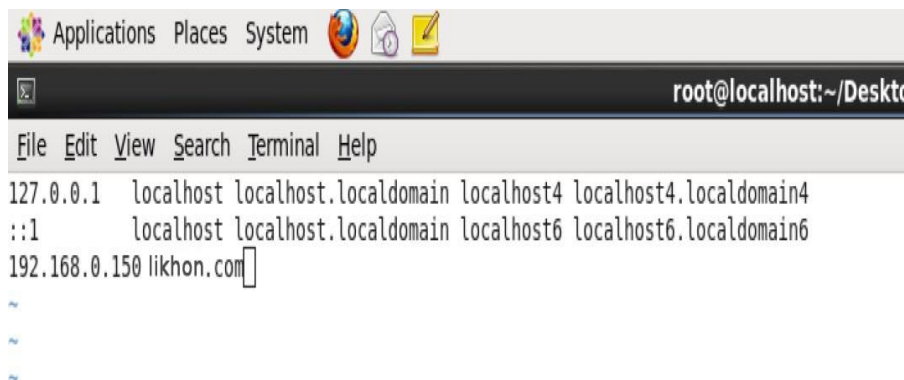
Edit :  192.168.0.150          likhon.com



Figure 3.3.12: host Configuration

## Samba Server Configuration

Samba Default Port : 137,138,139 and 445
Package name : samba samba-client
Install samba command: yum install samba* samba-client -y

Figure 3.3.13: Samba server Configuration

Configure samba:
Open up the configuration file: vim /etc/samba/smb.conf
Now need some change on the file, that's given bellow:
workgroup= WORKGROUP
host allow = 172. 192.168.0.0/24
[samba]
Path= /server
Valid users= likhon
Read only= yes
Browseable= yes

**yum server Configuration**

Package names : vsftpd

Another package : deltarap, python-delta, createrepo



Figure 3.3.14: yum server Configuration

**About IP Address**

An Internet Protocol Address (IP address) is a numerical name assigned to each gadget associated with a database set that uses the Internet Protocol for communication. An IP address performs two main capacities: Host or System Interface ID and location in the area. Web Protocol form 4 (IPv4) marks an IP address as a 32-bit number. Since it is in the light of Internet development and the intensity of IPv4 addresses accessible, another IPv6 adaptation, using 128 bits for IP addresses, was created in 1995 and it was institutionally launched between RFC 2460. IPv6 organizations continue to run continuously since the mid-1998s. IP addresses are usually displayed and shown in intelligent documents, for example, 172.16.254.1 and 2001 on IPv4: 220: 02: 0: 567: 8: 1 in IPv6. The measurement of the steering symptoms of an address is mentioned in the CIDR documentation, it is synthesized with the bit, 192.168.1.15/24, which is comparable to the sub-surface cover of 255.255.255.0 used in the truth.[4]

**IP Address Classes**

Table 3.3.15: Table of IP address classes

| Class | First Octet Decimal Range | Network/Host ID ( N=Network, H=Host ) | Default Subnet Mask | Number Of Network | Host Per Network (Usable Address) |
|---|---|---|---|---|---|
| A | 1-126 | N.H.H.H | 255.0.0.0 | 126 ( $2^7 - 2$ ) | 16,777,214 ( $2^{24}$ - 2 ) |
| B | 128 - 191 | N.H.H.H | 255.255.0.0 | 16,382 ( $2^{14}$ - 2 ) | 65,534 ( $2^{16}$ -2 ) |
| C | 192 - 223 | N.H.H.H | 255.255.255.0 | 2,097,150 ( $2^{21}$ - 2 ) | 254 ( $2^8$ - 2 ) |
| D | 224 - 239 | Reserved for Multicasting | | | |
| E | 240 - 254 | Experimental; used for research | | | |

**Note:** Class an address 127.0.0.0 to 127.255.255.255 cannot be used and is reserved for loopback and diagnostic functions.

## Private IP address classes and Range

Table 3.3.16: Table private IP classes and range

| Class | Private Networks | Subnet Mask | Address Range |
|---|---|---|---|
| A | 10.0.0.0 | 255.0.0.0 | 10.0.0.0 - 10.255.255.255 |
| B | 172.16.0.0 - 172.31.0.0 | 255.240.0.0 | 172.16.0.0 - 172.31.255.255 |
| C | 192.168.0.0 | 255.255.0.0 | 192.168.0.0 - 192.168.255.255 |

## Class A Subnets

Table 3.3.17: Table of class A subnets

| Networks Bits | Subnet Mask | Bits Borrowed | Subnets | Host/Subnet |
|---|---|---|---|---|
| 8 | 255.0.0.0 | 0 | 1 | 16777214 |
| 9 | 255.128.0.0 | 1 | 2 | 8388606 |
| 10 | 255.192.0.0 | 2 | 4 | 4194302 |
| 11 | 255.224.0.0 | 3 | 8 | 2097150 |
| 12 | 255.240.0.0 | 4 | 16 | 1048574 |
| 13 | 255.248.0.0 | 5 | 32 | 524286 |
| 14 | 255.252.0.0 | 6 | 64 | 262142 |
| 15 | 255.254.0.0 | 7 | 128 | 131070 |
| 16 | 255.255.0.0 | 8 | 256 | 65534 |
| 17 | 255.255.128.0 | 9 | 512 | 32766 |
| 18 | 255.255.192.0 | 10 | 1024 | 16382 |
| 19 | 255.255.224.0 | 11 | 2048 | 8190 |
| 20 | 255.255.240.0 | 12 | 4096 | 4094 |
| 21 | 255.255.248.0 | 13 | 8192 | 2046 |
| 22 | 255.255.252.0 | 14 | 16384 | 1022 |
| 23 | 255.255.254.0 | 15 | 32768 | 510 |
| 24 | 255.255.255.0 | 16 | 65536 | 254 |
| 25 | 255.255.255.128 | 17 | 131072 | 126 |
| 26 | 255.255.255.192 | 18 | 262144 | 62 |

| 27 | 255.255.255.224 | 19 | 524288 | 30 |
| 28 | 255.255.255.240 | 20 | 1048576 | 14 |
| 29 | 255.255.255.248 | 21 | 2097152 | 6 |
| 30 | 255.255.255.252 | 22 | 4194304 | 2 |

**Class B Subnets**

Table 3.3.18: Table of class B subnets

| Networks Bits | Subnet Mask | Bits Borrowed | Subnets | Host/Subnet |
| --- | --- | --- | --- | --- |
| 16 | 255.255.0.0 | 0 | 1 | 65534 |
| 17 | 255.255.128.0 | 1 | 2 | 32766 |
| 18 | 255.255.192.0 | 2 | 4 | 16382 |
| 19 | 255.255.224.0 | 3 | 8 | 8190 |
| 20 | 255.255.240.0 | 4 | 16 | 4094 |
| 21 | 255.255.248.0 | 5 | 32 | 2046 |
| 22 | 255.255.252.0 | 6 | 64 | 1022 |
| 23 | 255.255.254.0 | 7 | 128 | 510 |
| 24 | 255.255.255.0 | 8 | 256 | 254 |
| 25 | 255.255.255.128 | 9 | 512 | 126 |
| 26 | 255.255.255.192 | 10 | 1024 | 62 |
| 27 | 255.255.255.224 | 11 | 2048 | 30 |
| 28 | 255.255.255.240 | 12 | 4096 | 14 |
| 29 | 255.255.255.248 | 13 | 8192 | 6 |
| 30 | 255.255.255.252 | 14 | 16384 | 2 |

**Class C Subnets**

Table 3.3.19: Table of class C subnets

| Networks Bits | Subnet Mask | Bits Borrowed | Subnets | Host/Subnet |
| --- | --- | --- | --- | --- |
| 24 | 255.255.255.0 | 0 | 1 | 254 |
| 25 | 255.255.255.128 | 1 | 2 | 126 |
| 26 | 255.255.255.192 | 2 | 4 | 62 |

| 27 | 255.255.255.224 | 3 | 8 | 30 |
|----|-----------------|---|----|----|
| 28 | 255.255.255.240 | 4 | 16 | 14 |
| 29 | 255.255.255.248 | 5 | 32 | 6 |
| 30 | 255.255.255.252 | 6 | 64 | 2 |

**MikroTik Router**

MikroTikls Limited. Internationally known mequatic is the Latin computer computer networking machine. It sells wireless products and router. The company was founded in 1995, with the introduction of roaming ro wireless technology in the market. As of 2014, the company has more than 100 employees. The company's products are known for low cost alternative expensive router and Ethernet radio relay line.[5]
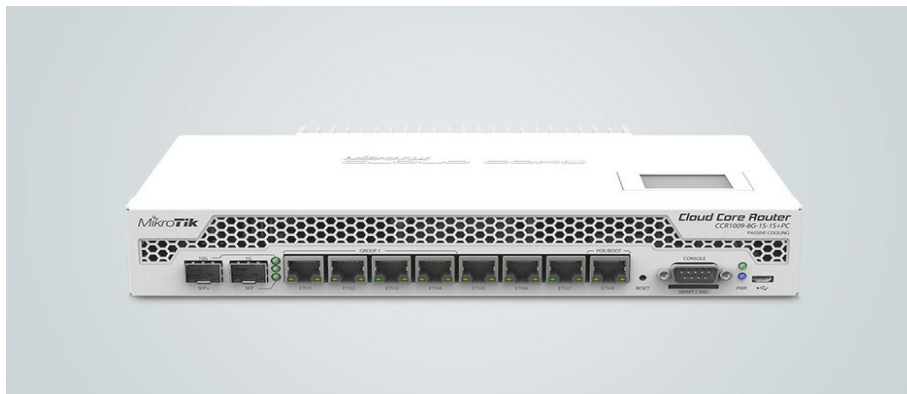


Figure 3.3.20: MikroTik Router

**Features**

MikroTik Router Many applications used by internet service providers (ISP).

- ➢ It can be used as a switch or bridge
- ➢ Provides PPPoE Client-Server
- ➢ Provides VPN-Virtual Private Network.
- ➢ Provides Firewall rules
- ➢ Provide DHCP Server service
- ➢ Provide Wi-Fi and captive portal based Hotspot System
- ➢ Bandwidth management is very easy
- ➢ Easy GUI interface
- ➢ Easy administration
- ➢ Supports both IPv4 and IPv6  [5]

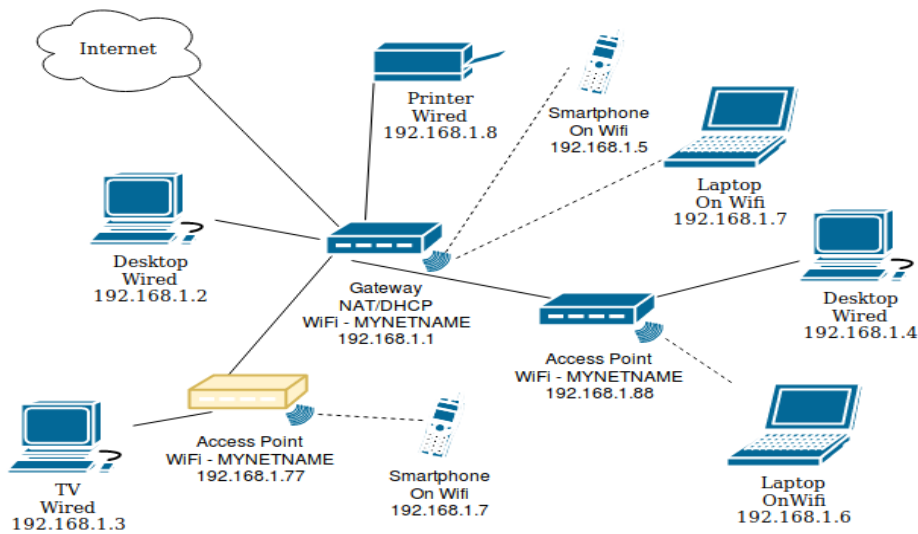It provides OSPF, BGP, Multiprotocol Label Switching (VPLS/MPLS), Open Flow etc.



Figure 3.3.21: Router Network Diagram

## Initial Step Configuration MikroTik

➢ Insure 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 hare show a IP address and MAC address. Click to Mac address then write 'admin' in login box and don't need to give Password.

➢ First reset your Router use command (system reset-configuration).

## Step Configuration WAN

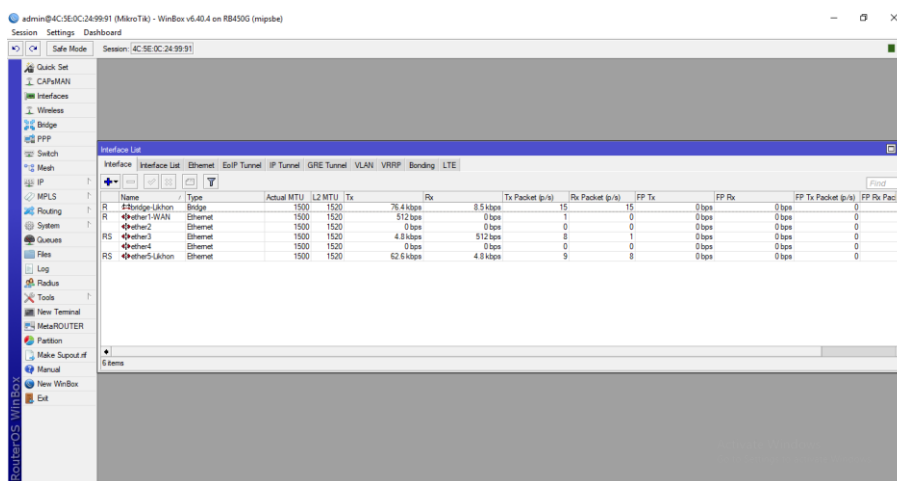Go to interfaces for check and view all **port and router interfaces.**



Figure 3.3.22: Interfaces in MikroTik Route

Now click IP>Address>"+">Set IP Address
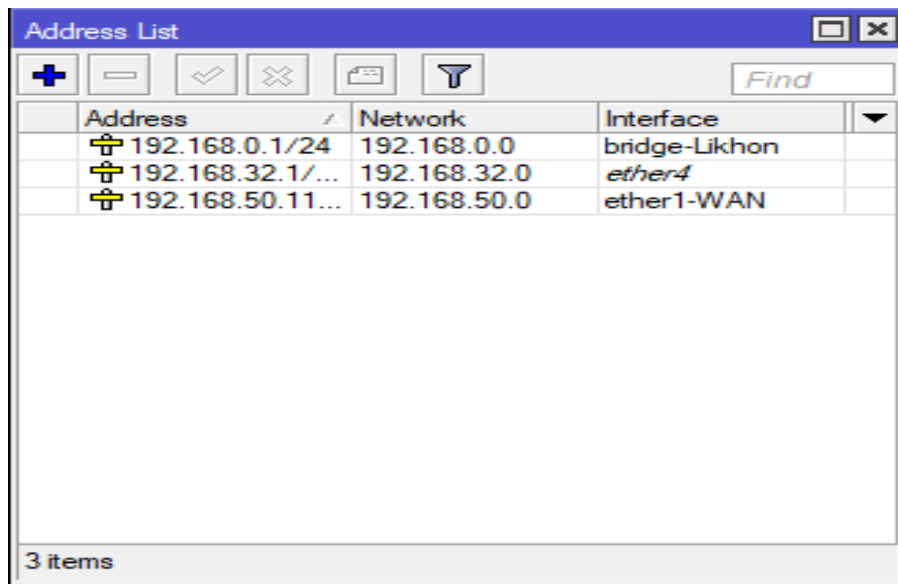


Figure 3.3.23: Set IP to WAN in Router

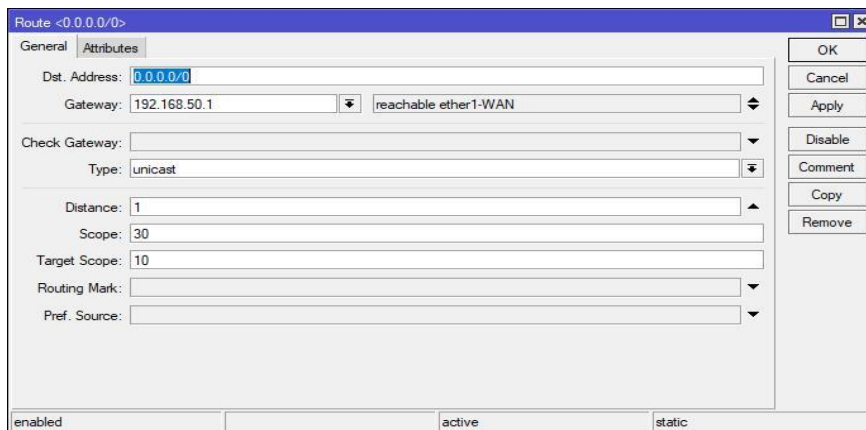IP > Route > "+" > Gateway, Set Gateway.



Figure 3.3.24: Set Gateway.
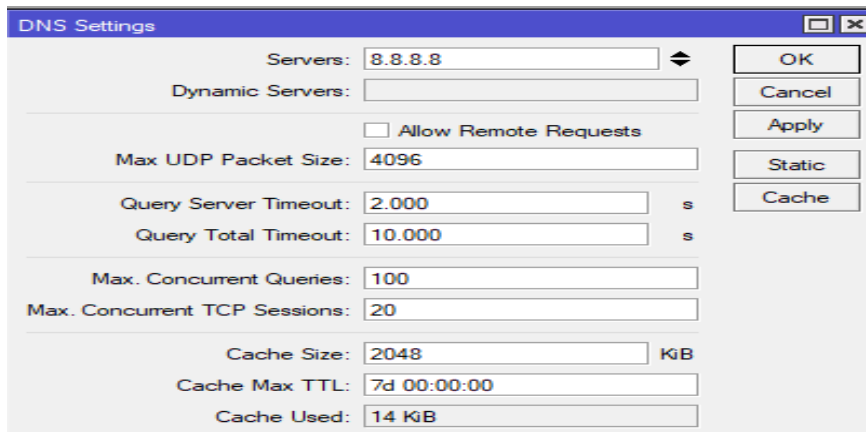
IP > DNS > Set DNS Servers.



Figure 3.3.25: Set in DNS

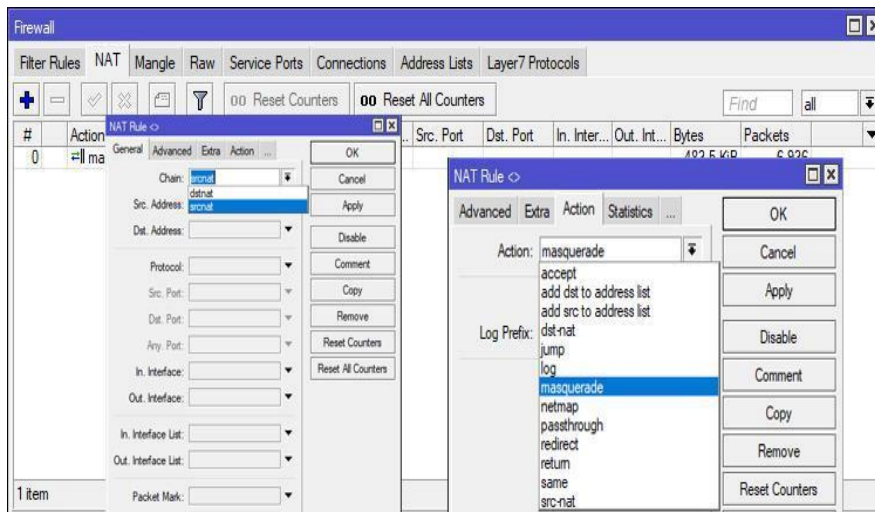IP > Firewall > NAT > "+", general to click "srenat", Action to click "Masquerade"



Figure 3.3.26: Shows NAT Rule

## Configuration Bridge

Go to Bridge > "+" > Set only Bridge name.
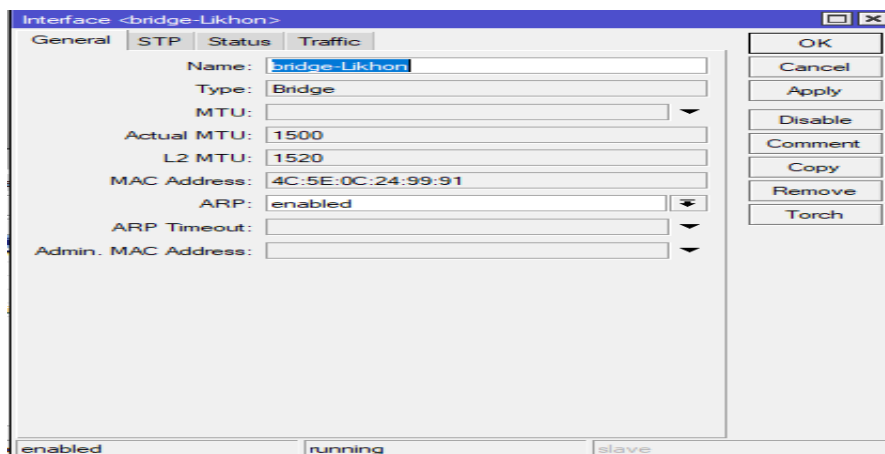


Figure 3.3.27Shows create bridge

## Configuration DHCP with Bridge Mod

IP > DHCP Server > Interface: bridge-likhon>Next>Next>Finish



Figure 3.3.28: DHCP Server Setup

**Configuration DHCP with Bridge Mod**

Go Queues > "+" >setup new Queues for user.

We can easy set Download and upload speed for user.



Figure 3.3.29: New Simple Queue

Also you can set Deferent Profile in Types of Queues.

Queues > Queues Types > "+", Set new queue



Figure 3.3.30: New Queue types

**3.4 Challenges**

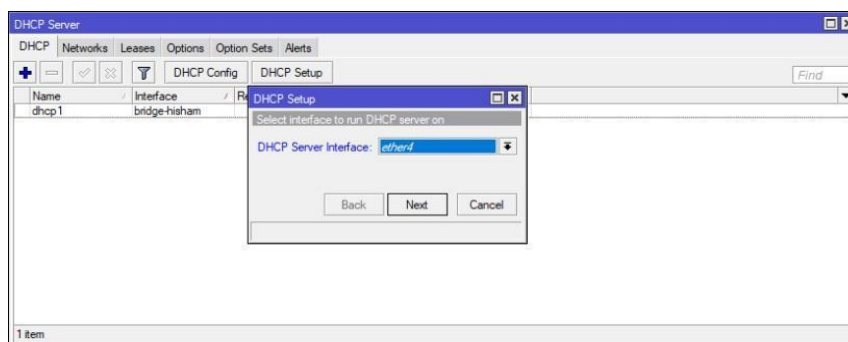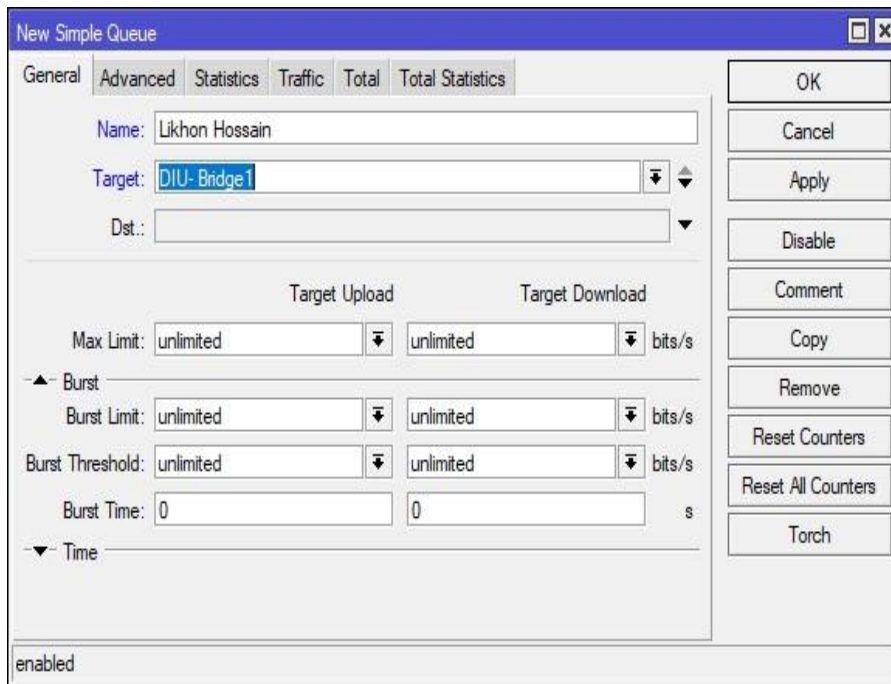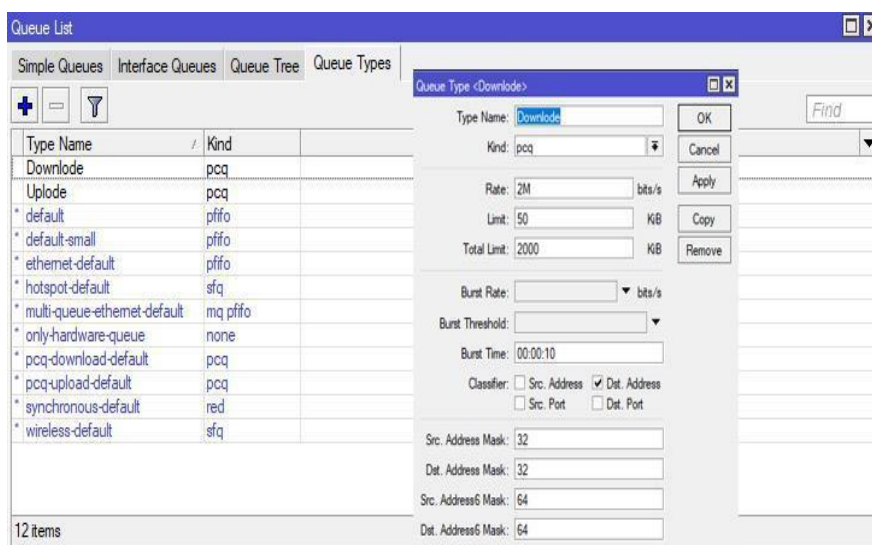Your temporary situation may be as compensation, there is a problem to know when joining an advertising agency as an assistant. Temporary jobs are likely to increase significant involvement in the working environment, in some cases they can still examine and you will need to find out how to explore the process. Temporary positions are not without their own special hindrances! However, remember that all of them will have some concerns with some helpers. An interior can be facing the distinctive difficulties given below:

➢ Adopt the work environment.
➢ To attain some organized power.
➢ Adjusting with official decorations and rules.
➢ Establish social relations with the officers.
➢ To enable yourself to vie in the competitive work market.
➢ To achieve some rewards from the institution.
➢ Use language easily for communication with officers.
➢ Develop equal skills with completely different level customers.
➢ Be useful and wait and see throughout customer service.
➢ Ultimately one in all the highest challenges are going to be faced.

# CHAPTER 4

## Competencies and Smart Plan

### 4.1 Introduction

Animation in the Dialog Internet movement is not the only assembly and its organization is not the responsibility. The personal effort is based on the measurement of part-time partnering Associate of Nursing, especially if the Web Service Providers (ISPs) are regulated and are allowed to dispute through this aggressive situation, in favor of favorable circumstances, weaknesses and the management of a business organization is in sync with the Philippines.

- ➢ Internet Development.
- ➢ Industrial Environment.
- ➢ Service: What and where
- ➢ ISP connection and resources.
- ➢ Community network.
- ➢ Cooperation and Competition.
- ➢ The Philippine Network Growth.
- ➢ Network users.
- ➢ Walk-in access.
- ➢ Media, trade and web.
- ➢ Is it appropriate?
- ➢ References.

- ➢ Related content.

### 4.2 Smart plan and Reflections

For reflection or consideration of our skills, what to understand, reflection of our identity, light change in our mistakes, can still be fruitful, and new information can be changed instead of newer versions. Reflection enables us to cooperate greatly for our courses or work. By doing this, we started using various good plans to increase our organization:

- ➢ Identify and set a network of individuals expressing your concern.
- ➢ Up Detective Task Force set up.

- Define a (space/topographic point/place/spot) and understand your area.
- Uncover prioritizing needs / incentives.
- Please identify the strengths and weaknesses of your organization.
- A created a governance framework.
- Outlines are responsible for what is within the organization.
- Define the skills and qualifications of these who manage the work.
- Make associate degree assessment system to assess the performance of workers.
- Identify the best channels through which you will reach individuals in you targeted audience.
- Out to determine the cost to carry your set up.

# CHAPTER5

## Conclusion and Future Career

### 5.1 Discussion and Conclusion

This temporary job aims to increase information and skills to create ISP setup and administration on the Linux platform. Configure entry-level location focus data, Linux unexpected, Linux system administrator, and network security and services, and more Linux is a full-fledged collector, hybrid UNIX operating structures, including free programming related abundance, elite support for system administration. The nature of the Linux programming makes it a minimal effort, a powerful, powerful processing layer is suitable for corporate server conditions. This complete hand course provides information and aptitudes which will introduce you to a Linux server for informative, informative and basic system administration. Along with improving the most recent forms and server security, you see the role and reconstruction of the programming department. The Linux operating system and MikroTik provide a comprehensive introduction of reliable, steady and successful administration. The Linux operating system provides a comprehensive introduction of reliable, stable and successful administration. We are not the light of its administration, but its decision is completely free of charge. It includes almost all system administrators, Web server pioneer, Telnet, SS, FTP, DNS, mail and a great deal. Various parts of Linux are considered or made as a feature of classical works, for example, graduate proposals.

Today most organizations are highly dependent on their work on the Internet It is not possible to manage service but without proper network design. Networks fully manage their networks and achieve the goals of the companies. As a result, a network Designers should have knowledge about network design. MikroTik is a very low-cost router that can be useful for small networks. Through Access through Winbox As a result, micro-tick routers can be easily managed. Provide considerable security for the network. MikroTik can provide powerful wireless access. Point and web proxy server management. We need to know about the basic network design and primarily learn the project.[5]

**5.2 Scope for Future Career**

Finding jobs can be a real challenge, especially if I have no experience. A successful internship can help me turn a career opportunity into an experience. So, as a successful internship, my future will be the scope.

- Configuration and maintenance FTP and DNS server for our real life.
- Configuration and maintenance Samba and NFS server for our real life.
- To work in ISP platform.
- To be a network administrator into the job environment.
- To be work IT company.
- To be a computer network expert.
- To be a network engineer.
- To be a server administrator.
- To be a Linux administrator.
- To be a security engineer.
- To be an information technology (IT) manager.
- To be able technical support.

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**Appendix A: Internship Reflection**

The purpose of this appendix is about project reflection. From fall 2017 semester I started my journey to make this Internship .The main feature of my Internship is. Server Configuration and Management Using Linux and MikroTik. Also using my Internship people can easily communicate with user that will help them to find out their daily Linux and MikroTik problems. Firstly I build a model for my project then it implement our Internship step by step. After many hard work and spending a lot of time finally my were able to reach our goal.

The Internship "Server Configuration and Management Using Linux and MikroTik" will be very helpful for all kinds of user who registered. User will get help easily from home. So I believe that my Internship will be a positive and effective for users.

**Appendix B: Company Detail**

The internship enterprise where I have taken my Training is Daffodil Online Limited. Daffodil Online Ltd prides itself as one of the leading ISP Service Provider in Bangladesh. It is the most experienced and the most established association in the ICT field where its basic business policies have long-established relationships with clients. Taking a gander at the development of the decade after it started, they are exceptionally glad for what they have accomplished and are considerably more amped up for their perspectives for the guaranteed future.

It can reveal to you that they began their activities in 2002. In the course of recent years, they have expanded their tasks and administration portfolio as indicated by client's suggestions and are thinking about time requests. They work with numerous national undertakings and universal associations and pick up acclaim. Regardless of where they have to utilize the most recent innovation and redesign administrations. Their Corporate Network Solutions Division can give cutting edge system and media communications arrangements with an exceptionally gifted specialized mastery gathering.