

# **LINUX SERVER CONFIGURATION AND MIKROTIK MANAGEMENT**

**BY**

**MD. AHSANUZZAMAN SETU**

**ID: 152-15-6126**

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

Supervised By

**MR. SERAJ AL MAHMUD MOSTAFA**

Senior Lecturer

Department of CSE

Daffodil International University

Co-Supervised By

**Md. Azizul Hakim**

Lecturer

Department of CSE

Daffodil International University



**DAFFODIL INTERNATIONAL UNIVERSITY**

**DHAKA, BANGLADESH**

**APRIL 2018**

## **APPROVAL**

This Internship titled “**Linux Server Configuration and MikroTik Management**” submitted by Md. Ahsanuzzaman Setu, ID No: 152-15-6126 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 April 2018.

## **BOARD OF EXAMINERS**

---

**Dr. Syed Akhter Hossain**  
**Professor and Head**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Chairman**

---

**Dr. Sheak Rashed Haider Noori**  
**Associate Professor and Associate Head**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Internal Examiner**

---

**Md. Zahid Hasan**  
**Assistant Professor**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Internal Examiner**

---

**Dr. Mohammad Shorif Uddin**  
**Professor and Chairman**

Department of Computer Science and Engineering  
Jahangirnagar University

**External Examiner**

## DECLARATION

I hereby declare that, this internship report is completed by me, Md. Ahsanuzzaman Setu, ID No: 152-15-6126 to the department of Computer Science and Engineering, Daffodil International University has been done by me and under the supervision of **Mr. Seraj Al Mahmud Mostafa, Senior 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.

### **Supervised by:**

---

**Mr. Seraj Al Mahmud Mostafa**  
Senior Lecturer  
Department of Computer Science and Engineering  
Daffodil International University

### **Co-Supervised by:**

---

**Md. Azizul Hakim**  
Lecturer  
Department of Computer Science and Engineering  
Daffodil International University

### **Submitted by:**

---

**Md. Ahsanuzzaman Setu**  
ID: - 152-15-6126  
Department of Computer Science and Engineering  
Daffodil International University

## ACKNOWLEDGEMENT

First I express my heartiest thanks and gratefulness to “**Almighty Allah**” for his divine blessing to let me makes possible to complete the final year internship successfully.

I fell really grateful and wish my profound my indebtedness to **Supervisor Mr. Seraj Al Mahmud Mostafa, Senior Lecturer**, Department of Computer Science and Engineering, Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of “Linux System and MikroTik”, 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**

The Linux Server Administration is a popular way of managing network communications related to its functionality, reliability and security. MikroTik is a very low cost and easy access router which can be used for small and large Network management this internship refers to the complete setup process of an ISP Server Administration and provides various services to the Linux operating system. The main goal of internship is to set up a Linux server and usually configure various services provided by ISP. The first part of the Internship report gives a brief overview of the Linux operating system and server details. Fundamental commands, network configurations, and discussions about Centos package managers. Later, the process of configuring different services like Samba, DNS, and Web servers has been discussed in this section. In the second part, we have researched various MikroTik router features - routing (both). IPv4 and IPv6, firewalls, IP and bandwidth management, bridges, gateways, NATs, DHCP and more. We did some basic configuration solve. For example - interface, route, DNS, DHCP, Bridge and Queue. The router's upgrade process may be needed to take a new version in the future. Finally, to manage and to provide security to our network, we were able to discuss some special features.

## TABLE OF CONTENTS

<b>CONTENTS</b>	<b>PAGE</b>
Board of Examiners	i
Declaration	ii
Acknowledgements	iii
Abstract	iv
<b>CHAPTER</b>	
<b>CHAPTER 1</b>	<b>1-4</b>
1.1 Introduction	1
1.2 Motivation	2
1.3 Internship Objectives	2
1.4 Introduction to the company	3
1.5 Report Layout	4
<b>CHAPTER 2</b>	<b>5-10</b>
2.1 Introduction	5
2.2 Product and Market Situation	5
2.3 Target Group	6
2.4 SWOT Analysis	6
2.5 Organization Structure	8
<b>CHAPTER 3</b>	<b>11-15</b>
3.1 Daily Task and Activities	11
3.2 Events and Activities	11
3.3 LINUX	12
3.4 Linux Kernel, Shell & Shell Script	13
3.5 Mikrotik	13
3.6 Linux Basic Commands	14

3.7 Challenges	14
<b>CHAPTER 4</b>	<b>16-26</b>
4.1 Installation of Linux Centos 6.4	16
4.2 Linux Centos 6.4 Installation Process	16
4.3 Linux Run-Level Used by Centos	19
4.4 User Create and Password Management	20
4.5 Compress and Decompress a Directory	20
4.6 To Copy or Move a File	20
4.7 File Permission and Directory Accessing	20
4.8 Group Management	21
4.9 Linux Basic Configuration	21
4.10 Selinux Configuration	21
4.11 Network Configuration	22
4.12 DNS Configuration	22
4.13 Host Configuration	23
4.14 yum Server Configuration	23
4.15 Samba Server Configuration	23
4.16 Web Server Configuration:	24
<b>CHAPTER 5</b>	<b>27-30</b>
5.1 About IP Address	27
5.2 IP Address Classes	28
5.3 Private IP address classes and Range	28
5.4 Class A Subnets	29
5.5 Class B Subnets	30
5.6 Class C Subnets	30

<b>CHAPTER 6</b>	<b>31-39</b>
6.1 MikroTik Router	31
6.2 Feature	31
6.3 Initial Step Configuration MikroTik	31
6.4 Winbox Interface Menu	31
6.5 Insatallation in IP LAN and WAN	34
6.6 Gateway Configuration	31
6.7 DNS Configuration	31
6.8 NAT Configuration	31
6.9 Bridge Configuration	31
6.10 DHCP Configuration with Bridge Mod	31
6.11 Block Website	31
6.12 Queue Management	31
6.13 Monitoring Network	31
<b>CHAPTER 7</b>	<b>40-41</b>
7.1 Competencies Earned	40
7.2 Smart Plan and Reflections	40
<b>CHAPTER 8</b>	<b>42-43</b>
8.1 Discussion and Conclusion	42
8.2 Scope for Future Career	43
References	<b>43</b>



## LIST OF FIGURES

<b>FIGURES</b>	<b>PAGE</b>
	<b>NO</b>
Figure 4.2.1: Linux Centos Install Process	16
Figure 4.2.2: Centos Language Selection	16
Figure 4.2.3: Centos Time Zone Selection	17
Figure 4.2.4: Root Password Process	17
Figure 4.2.5: Create Custom Layout	17
Figure 4.2.6: Create and Make Drives	18
Figure 4.2.7: Screen Selection Mode	18
Figure 4.2.8: Centos Package Install	18
Figure 4.2.9: Sing in Centos Account	19
Figure 4.2.10: Centos 6.4 Desktop Screen	19
Figure 4.5: Compress and Decompress a Directory	20
Figure 4.7.1: File Directory Access	20
Figure 4.7.2: File Permission	21
Figure 4.10: Selinux Configuration	22
Figure 4.11: Network Configuration	22
Figure 4.12: DNS Configuration	22
Figure 4.13: Host Configuration	23
Figure 4.14: yum Server Configuration	23
Figure 4.15.1: Install Samba Package	23
Figure 4.15.2: Samba-Configure File	24
Figure 4.15.3: Sing in Samba Server	24
Figure 4.16.1: Install http	25
Figure 4.16.2: index.html Code	25
Figure 4.16.3: httpd. Configuration File	26
Figure 6.1: MikroTik Router	31
Figure 6.2: Router Network Diagram	32
Figure 6.3: Reset MikroTik Router	33
Figure 6.4: Interface Menu	33
Figure 6.5: Installation in IP WAN	34

Figure 6.6: Set Gateway	34
Figure 6.7: DNS Configuration	35
Figure 6.8: NAT Configuration	35
Figure 6.9.1: Type Bridge Name	36
Figure 6.9.2: Add to Interface	36
Figure 6.10.1: DHCP with Select Bridge	37
Figure 6.10.2: DHCP Configuration	37
Figure 6.10.3: DHCP Setup Successfully	38
Figure 6.11: Block Website	38
Figure 6.12.1: New Simple queue	38
Figure 6.12.2: New Queue Types	39
Figure 6.12.3: Queue Management	39

## LIST OF TABLE

<b>TABLE</b>	<b>PAGE</b>
	<b>NO</b>
Table 3.6: Table of Linux Basic Commands	14
Table 5.2: Table of IP Address Classes	28
Table 5.3: Table Private IP Classes and Range	28
Table 5.4: Table of Class A Subnets	29
Table 5.5: Table of Class B Subnets	30
Table 5.6: Table of Class C Subnets	30

# CHAPTER 1

## Introduction

### 1.1 Introduction

This is the universe of Information Technology. Graphical interface and command line, the main Linux distribution family cover both of them create a better working knowledge of Linux. Linux is a UNIX-BASE operating system. Its original creator was a student of Finland named Linus Torvalds, although it was 'open source', it has changed a major deal from its original concept. The main advantage of Linux is its cost: core OS is free, many software applications also come with the GNU General Public License. It can be used by a large number of users without slower or decreasing and it is very fast. Networking your network and even if hard disk space is needed, then works well. The power of Linux is 94% of the world's supercomputer. On most servers of the Internet server, most of the world's and billions of Android devices are used. The courses used by Linux and Linux administrators in this course and the end users provide education to achieve their daily activities in Linux environment. It is designed for computer users who may not be able to use the limitation or the previous version of Linux. As Daffodil International University's affiliated Computer science and engineering (CSE) I really considered much system administration, network security, programming framework etc. To get a handle on the PC organization, a shortcut has been taken to create a programming framework to provide adequate security for electronic gear innovation, so the workstation organization encourages a sound data with Linux. , Server configuration, server maintenance, server security. I learned from Daffodil Online Limited. [1]

This is "Linux server configuration and Mikrotik Management" Daffodil Online Limited. This report is about complete PC Networking, Linux, Server Setup, Configuration, Server Security, and System Recognition. Micro-Tick Router Board Hardware Micro-Tick Router OS Based on Linux Kernel-based Dual Routers MikroTik routing, firewall, bandwidth management, backhauls link, wireless access point, hotspot gateway, VPN and more. We can manage the network using the simple MikroTik command line or Winbox.

## **1.2 Motivation**

The most important thing in the era of information technology is the Internet. Daffodil Online Limited (DOL) is going through various services of the Internet. I found out that Daffodil Online Limited (DOL) has an excellent reputation for customer satisfaction and service. Daffodil Online Limited (DOL) is well known and top ISP service provider in Bangladesh. Here, many things, including networking, are teaching skillfully. I know that learning from the combination of my experience, computer science and engineering will give me an asset to Daffodil Online Limited. I have learned from various mediums that DOL will help me to become proficient in server and networking.

I hope to set me up for a few challenges and that teaches me to learn from DOL. I believe this internship will give me the ideal opportunity to expand my career. I play a significant role in my profession. As an intermediary, I contribute to Daffodil Online Limited workflow and I can learn as much as I can. Daffodil Online Limited (DOL) internship experience will give me an idea about my future life and will be a stricter step in my future education and in my profession. My desired hope will be fulfilled from Daffodil Online Limited (DOL). In all, I hope that I can use my education in real life.

## **1.3 Internship Objectives**

Linux working framework is an extremely nonexclusive term. Linux is a free working framework. Now Linux working framework gives graphical user interface so client effectively works this working framework. Linux working framework's principle objective is to help greater security on the system server. What's more, MikroTik is an ease and simple access Router that can be utilized for little and huge arrange administration. Particularly this systems administration gadget suits for little system from each perspective like customer and security. Do you understand our terms and condition:

1. Install Linux intelligently and with click begin.
2. Install MikroTik intelligently and with click begin.
3. Create and keep up Linux document framework.
4. Perform client and gathering organization.
5. Make the fundamental server in Linux.
6. Maintain the server framework.

7. MikroTik Configuration.
8. Network Management.
9. Coordinate a workstation with a current system.

#### **1.4 Introduction to the company**

Daffodil Online Limited (DOL), a major Internet service provider, has evolved into a full-range Internet and business solution provider. Daffodil Online Limited (DOL) looks forward to future with a great perspective and continuous innovation in the development of technology, products and services to meet customers' needs - to look forward to the future - "Always forward". Daffodil Online Limited (DOL) is the main goal that their clients ensure the success of developing, technology-based world. Provide them the right tools and the most skilled technical education. DOL is the leading technology, systems, partners, network operators, and workplace training that Daffodil Online Limited (DOL) is used to help customers.

Daffodil Online Limited (DOL) is one of the most popular and oldest ISPs / ASPs in Bangladesh. Daffodil Online Limited offers various services and solutions to ICT. It has its own fiber optic and radio link WAN Infrastructure Corporate, SMEs and separate client institutes work with a lot of national projects and high regards to all stakeholders concerned with international organizations. Bangladesh is proud of itself as the main IPS service provider. It is the most experienced and the oldest organization in the ICT field where its basic business policies keep long relationships with customers. Looking at the growth of the decade after it began; they are very proud of what they have achieved and are even more excited about their views for the promised future.

Daffodil Online Limited (DOL) started their operation in 2002. Over the past few years, they have increased their operations and service portfolio according to customer's recommendations and are considering time demands. They work with many national projects and international organizations and gain fame. No matter where they need to use the latest technology and upgrade services. Their Corporate Network Solutions Division is able to provide state-of-the-art systems and media transmission systems with very effective special assembly and think about time requests. Daffodil Online Limited (DOL) is constantly looking for technological innovation that will provide high performance solutions for our customers and will strive for the highest standards.

### **1.5 Report Layout**

The report arranges as follows is the first chapter focuses on internship content and encouragement to the topic. Any company can be selected for the subject and the company has been identified. The second chapter is analyzed in a deeper way about product and market conditions, target groups, SWOT analysis, and organization structure. In the third chapter, each day's work, events and events have been completed. Here every day work is highlighted. What is also to be faced with this chapter is what have been challenges. To work in Linux, you need to first install the Linux system. Fourth chapter has been installed and installed on various popular server configurations. Fifth chapter has extensive discussion about IP. The Mikrotik Router will tell you how to configure various topics including DNS, DHCP, Bridge, and Queue Sixth Chapter.

Capacity building, smart ideas and reflections are discussed in the seventh chapter. The report of my report about the future portion of Linux and Mikrotik was described in the eighth chapter.

## **CHAPTER 2**

### **Organization**

#### **2.1 Introduction**

I want to move me to a couple of new challenges and which will give me with a grandiose picking up from DOL. I believe this impermanent activity will give me the ideal opportunity to enlarge my calling. As I am an understudy, I was contributing Daffodil Online Limited work process and learn as much as I can. Daffodil Online Limited (DOL) section level position experience will give me an idea with respect to my future life and will be a how to walk for my future guideline and in my calling. Daffodil Online Ltd. (DOL) is glad to be one of the pioneers and most seasoned ISP/ASPs in Bangladesh and giving one stop coordinated ICT administrations and arrangement since July 2002. It has its own particular Fiber Optic and Radio Link WAN foundation to serve corporate, SME and individual customers. The foundation worked with numerous national undertakings and worldwide associations with high gratefulness from all concerned. [4]

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

MicroTisks are being step by step for a nation like us. MikroTik Router is an Intelligent Router. It gives greater security when it is too little. CISCO gadgets have a ton of significant worth such a significant number of our nations are not ready to arrange by purchasing CISCO instruments. So considering the security of a tad at a lower cost, MikroTik cannot be the option of the switch. In a little organization, you can utilize MikroTik Router to lessen expenses and increment security. MikroTik Router can be utilized on Windows, Linux, Mac working frameworks. These days, numerous ISP based regions have been created, which we have known in nearby dialects as ISP. A significant number of them are doing great business once more. Those client named ISPs need to maintain a strategic distance from information security, data transfer capacity condoling and constraints of the ISPs, these favored nearby ISPs are their first decision. Also, its business people, contingent upon data transfer capacity suppliers for email, DNS, Proxy administrations, would prefer not to depend on any other individual in an issue. Furthermore, this is data transfer capacity administration. Everybody has the ability to control the control of their own clients.



Be that as it may, it isn't accessible in any way. Their interest for a decent quality data transfer capacity administrator is to a great degree lacking and complex support.

- A. Web Server Administration.
- B. Linux Administration.
- C. Networking Administration.
- D. Linux System Administration.
- E. Kernel Developers.
- F. Support Engineer – (Windows/VMware/Network).
- G. Network Engineer - CISCO / Ethernet / Juniper / Networks.
- H. Senior Network Engineer.

### **2.3 Target Group**

Daffodil Online Limited gives distinctive It Services and Professional Training services. These are given Group:

- Corporate Internet Solution.
- Hi speed Wi-Fi Zone.
- Professional Courses & Training.
- Open Source application solution.
- Internet Service provider.
- Security Solution.
- Domain Registration & web Hosting.
- Web site Development.
- State of the art data Centers.
- Proxy & DNS Server solution, Mail Server Solution.

### **2.4 SWOT Analysis**

Daffodil Online Limited's internal analysis of the company should include its culture, skills, resources and unique qualities in the market. It is also a factor that needs to be considered for changes in the organization that can adjust the changing situation. Internal analysis is the first stage of a SWOT analysis. Your organization's recognition, beliefs, government images, and various aspects of the structure should be considered in the detailed 'culture' areas. The other attributes are those 'things' that are unique to your organization, such as special contracts, customers, patents and trade secret. These areas should consider your research and development capabilities.

Daffodil Online Ltd can use SWOT Analysis. Depending on the SWOT level, it can act as an explanatory filter to reduce the information on a manageable amount of related issues related to the organization or business objectives. At this stage, Daffodil Online Ltd does not need to know all the details; Daffodil Online Limited can only decide on this one power or weakness. [3]

#### Strengths:

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.

## **2.5 Organization Structure**

Daffodil Online Limited (DOL) acquainted a few advancements with meet the 21st century prerequisite. Progressively, new innovation is expanding. Over the most recent couple of years, Daffodil Online Limited (DOL) has presented new innovations in the IT business. This pattern proceeds.

- Corporate Internet Solution :  
Amid the dispatch, Daffodil Online Limited (DOL) began with web innovation with new innovation. Meanwhile, DOL has propelled numerous new advances to manage our first-century challenge. Over the most recent 9 years, Daffodil Online Limited (DOL) has propelled our new idea of new innovations and data innovation.
- Security Solution:

Daffodil Online Limited (DOL) gives the most recent security answer for its clients, which utilizes devices from demonstrated security innovation sellers. Continuously value the security of clients.

▪ Domain Registration:

Our World Name is our exceptional personality on the World Wide Web. No two groups can hold a similar area name in the meantime. So we require a totally one of a kind web character. On the off chance that we have a business site or individual site on the Internet then our area name is our own particular online brand and as it were we can utilize our space name as our online business card. Daffodil Online Limited is the most dependable space enrollment organization in Bangladesh gives area enlistment benefit. Purchase any Top Level Domain in Bangladesh in a split second from DOL site. Daffodil Online Ltd have shoddy space enrollment cost. You can enlist any Top Level Domain all day, every day from DOL site inside couple of minutes.

▪ Web hosting:

Server Specification: Super Micro Server, Junk Processor; RAM 16 GB, 3 TB HDD, Dual Power Unit, OS Linux.

Server farm Location: Dhaka, Bangladesh.

Control Panel: Fully Managed C-panel, Fully Managed ISP Configuration.

Highlights:

- Data exchange Rate/ Month to month transfer speed Unlimited.
- Create Sub Domain.
- Email Account.
- MySQL 5.x Database Minimum 20 No's / Unlimited.
- PHP5.x form 5+.
- Access to log documents.
- FTP Account.
- 99.9% Uptime Ensure.
- Unique IP Address.
- Unlimited data transmission bolster.

Security: Check Strong Firewalls, Bright Detection, Rootkit.

▪ Web Development:

Daffodil Limited (DOL) offers appealing website architecture, advancement, dynamic and static sites for all organizations around the world. The arrangement likewise gives web based business, CMS and other web improvement and plan.

- SEO (Search Engine Optimization):

Content Turbo gives financially savvy SEO administrations. Our natural SEO systems feature sites by positioning at the highest point of the famous web crawlers.

- SMS Service:

Daffodil Online Limited (DOL) gives SMS benefit. We can send our SMS anyplace, utilizing the SMS benefit over the globe.

- Professional Courses:

Daffodil Online Limited (DOL) offers the most difficult and requesting IT (Information Technology) preparing and proficient courses to go up against the day of globalization. Some expert courses that are offered by DOL .

- Training Course on Certified Ethical Hacking (CEH).
- Wamp, MYSQL and PHP Design to Development.
- ISP Setup and Administration utilizing Mikrotik.
- E-business and Open source Joomla Virtue Mart.
- ISP Setup and Administration utilizing Linux.
- Web website Design and Development with Joomla.

## CHAPTER 3

### Tasks, Projects and Activities

#### 3.1 Daily Task and Activities

- I kept something in my internship. Those responsibilities, I was done successfully. The following actions take place as follows:
- Work on a task to computerize or enhance frameworks.
- General framework upkeep and bolster.
- Workstation and virtual server critical thinking both equipment and Programming issues.
- Help to different activities staff.
- Discover answers for medium-level issues that have no address.
- Research gives week by week reports to our organization's site.
- Add to enhance the proficiency and adequacy of PC frameworks.
- New server organization.
- Create new Networking.

#### 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 Online Limited This internship I learned and performed the following:

- Learning & understanding About Network Components.
- Learning & understanding Basics of Linux.
- Linux Installation.
- Basic CentOS Commands.
- Learning & understanding Linux Run Level.
- Linux User and Password Management.
- File Permission and Directory Accessing.
- To Copy and Move File and Directories.
- Compressed and Decompressed File and Directories.

- Group Management.
- Linux Basic Configurations.
- Install, Update and Remove Package Using YUM.
- Learning, understanding and configuring Selinux Server.
- Linux Network configuring.
- Configure Bind as an Authoritative-Only DNS Server.
- Learning, understanding and configuring Host Server.
- Learning, understanding and configuring Samba Server.
- Learning, understanding and configuring WEB Server.
- Learning, understanding and configuring FTP Server.
- Concept of IP Addressing.
- Configuring IP Address in CentOS.
- Learning & understanding Basics of MikroTik.
- Initial Step Configuration MikroTik.
- Installation WAN.
- Installation LAN.
- Configuration Gateway.
- Configuration DNS.
- Configuration NAT.
- Configuration Bridge
- Configuration DHCP with Bridge Mod.
- Block Website.
- ARP Bonding.
- Automatic Clock Setting.
- Queue Management.
- Remove and reset configuration.
- Remote Login Service.
- Firewall.
- Backup and Monitoring.

### **3.3 LINUX**

Linux is a UNIX-Based operating system. Its original creator was a student of Finland named Linus Torvalds, although it was 'open source', it has changed a major deal

from its original concept. The main advantage of Linux is its cost: core OS is free, many software applications also come with the GNU General Public License. It can be used by a large number of users without slower or decreasing and it is very fast. Networking your network and even if hard disk space is needed, then works well. The power of Linux is 94% of the world's supercomputer. On most servers of the Internet server, most of the world's and billions of Android devices are used. Linux open source operating system or Linux operating system is 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. Famous Operating System disseminations incorporate Centos, Ubuntu, Fedora, Red Hat Etc.

### **3.4 Linux Kernel, Shell & Shell Script**

The kernel is used in UNIX system systems and is considered to be the center of the operating system. It's answerable for communication between hardware and software package elements. It's primarily used for managing system resources. The Linux shell may be an interface used to run commands. Shell is a program that uses user commands to run. UNIX is a user's shell in a very program.[2]

A shell script, written for shell, is a script which is recommended for name reasons. Here the meaning of the script used to management a programming language application. Multiple commands entered in shell scripts are run

### **3.5 Mikrotik**

The main product of MikroTik is an operating system supported the Linux kernel, called MikroTik Routers. put in on company-owned hardware (router board series), or commonplace x86-based computers, it turns into a pc router and options varied extra options like firewalling, virtual personal network (VPN) service and consumer, bandwidth rendering and repair quality, wireless access purpose Functions and different usually used properties whereas the interconnect network. The system is additionally capable of operating as a detainee-portal-based hotspot system.



### 3.6 Linux Basic Commands

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

Table 3.6: 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	History6126	Show the history
useradd	Useradd Setu	Create a user
passwd	Passwd Setu	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

### 3.7 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 block! However, remember that all of them will have some concerns with some helpers. One can face internal issues that are listed below:

- Adopt the work environment.
- To achieve some organized power.

- Adjusting with official decorations and rules.
- Establish interpersonal relations with the officials.
- To enable yourself to compete in the competitive work market.
- To achieve some rewards from the institution.
- Use language easily for communication with officials.
- Develop equal skills with different level customers.
- Be helpful and be patient during customer service.
- Ultimately one of the top challenges will be faced.

Finally, we can say that there is no success if there is no challenge. So, you have to take every challenge positively towards your success.

# CHAPTER 4

## Linux Install and Configuration

### 4.1 Installation of Linux Centos 6.4

On the off chance that I need to design the server, keep up the server, by giving server security, I have to introduce my server PC Linux centos OS. We boot the Centos 6.4 utilizing a bootable CD/DVD. Boot from the media and by large, acknowledge the default. I have the chance to give time zones, a host name, organize interface design, DNS IP and area look. At the follow when designed now, the establishment content consequently arranges the outcome utilizing these settings. It's a help, in any case, I will expect this setting is being set or should change.

### 4.2 Linux Centos 6.4 Installation Process

Install this Fig 4.2.1 show Centos6.4 and test this media & Install Centos 6.4 options and I can select the option I need. I chose the selection "Install or upgrade an existing system".



Figure 4.2.1: Linux Centos Install Process

Select what dialect you need to utilize, I select English as my dialect; Click Next

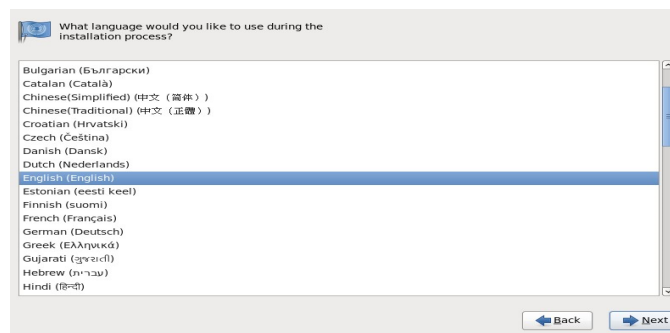


Figure 4.2.2: Centos Language Selection

Select the following keyboard (English US), I can correct date and time (Asia / Dhaka time zone) and click to start installation.

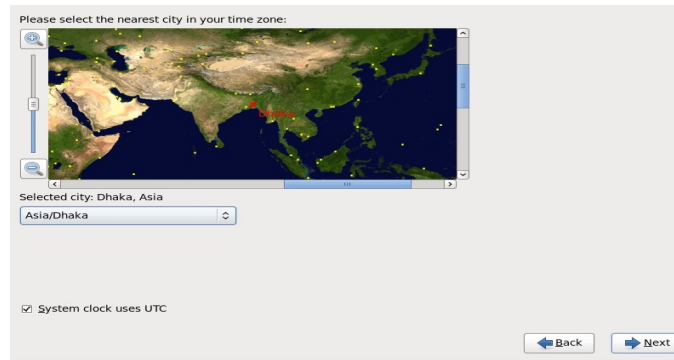


Figure 4.2.3: Centos Time Zone Selection

Under the Configuration Route section, user settings, click the root password, which is shown in the Figure.

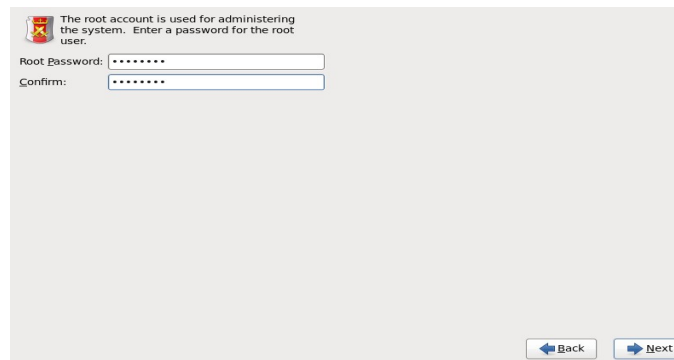


Figure 4.2.4: root Password Process

What sort of installation do you need? Select the progression "Make custom layout" step in the Figure.

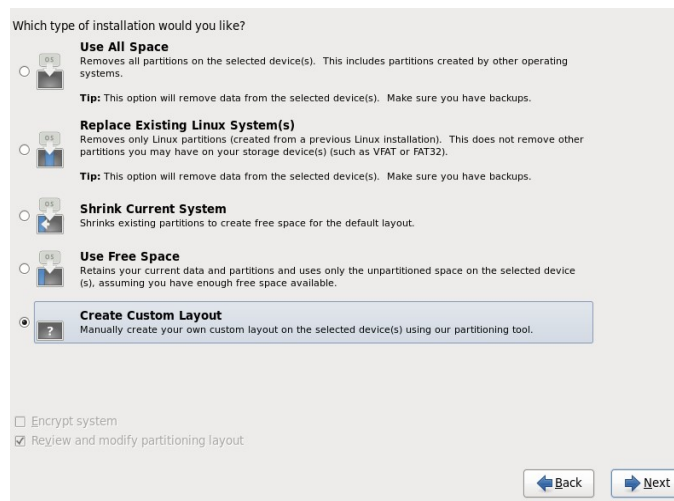


Figure 4.2.5: Create Custom Layout

Now, Click on create and make this drives which is shown in Figure

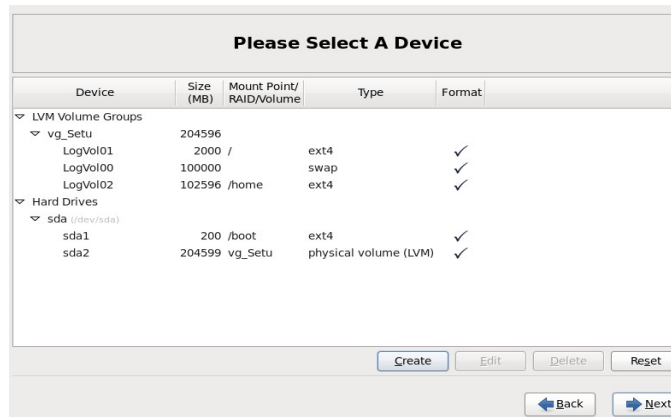


Figure 4.2.6: Create and Make Drives

Presently, select the mode on our screen, tap on "Pick Desktop Mode". Click on next the Figure is appeared.

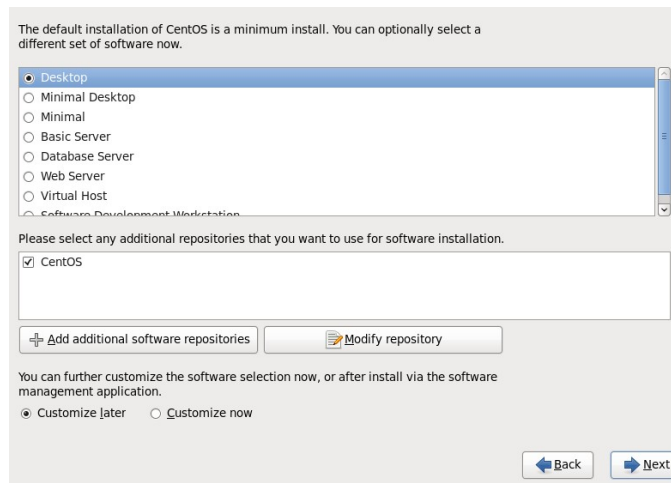


Figure 4.2.7: Screen Select Mode

Now Centos 6.4 start to install packages. Which shown in Figure



Figure 4.2.8: Centos Package Install

Now complete the package installation. Enter the user name and password, setu user account password, which is logged in, and open our desktop screen shown in the Figure.

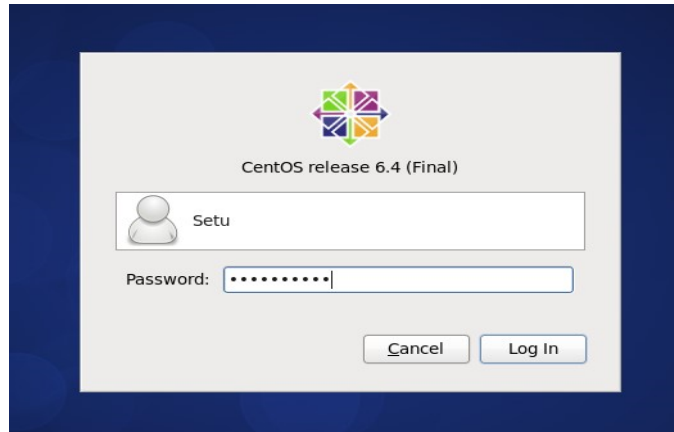


Figure 4.2.9: Sing in Centos Account

After Login, Now I can see Centos 6.4 Desktop Screen, Which is shown in Figure

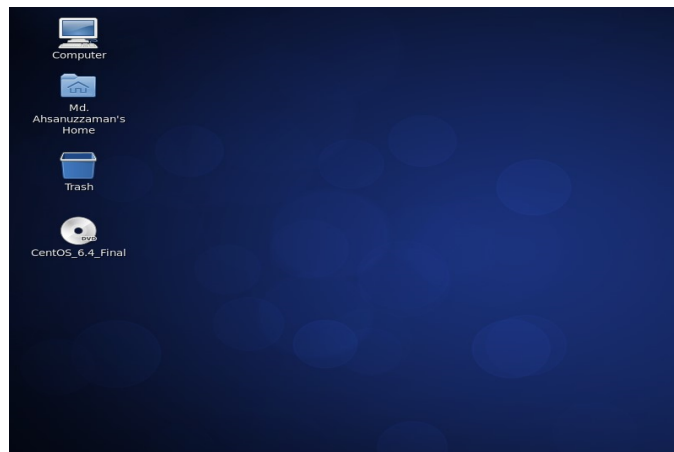


Figure 4.2.10: Centos 6.4 Desktop Screen

### 4.3 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 (UI Mode).

# init 6 = Reboot.

See Current run-level = who-r

#### 4.4 User Create and Password Management

Add a user = `adduser setu (username)`.

Set new user password = `passwd setu6126 (username)`.

Disable / remove password = `passwd-d setu6126 (username)`.

Verify user information = `finger setu (username)`.

Lock an account = `passwd -l setu (username)`.

Unlock an account = `passwd -u setu (username)`.

Delete a user = `userdel setu (username)`.

Delete a user with the home directory = `userdel -r setu (username)`.

#### 4.5 Compress and Decompress a Directory

Compressing a directory: `tar cvf archive_name.tar dir_name/`

Decompress a directory: `tar xvf backup.tar`

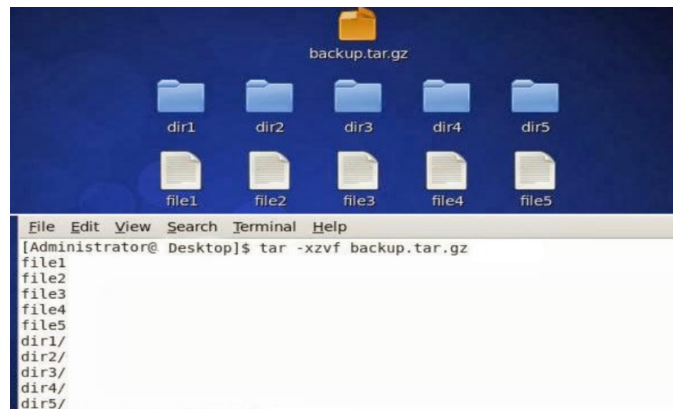


Figure 4.5: Compress and Decompress a Directory

#### 4.6 To Copy or Move a File

Copy = `st filename destination` example: `st file1 /home/setu/setu`

Move = `diu filename destination` example: `diu file1 /home/setu/tuli`

#### 4.7 File Permission and Directory Accessing

Open Terminal and type to code: `cd file\ Permission/`

The figure is shown

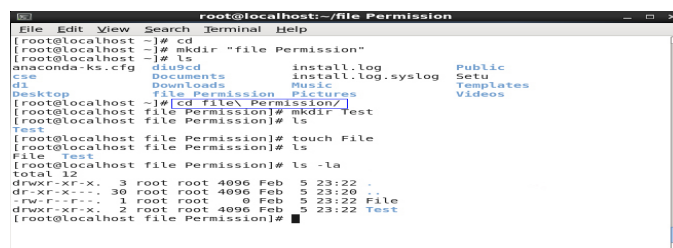
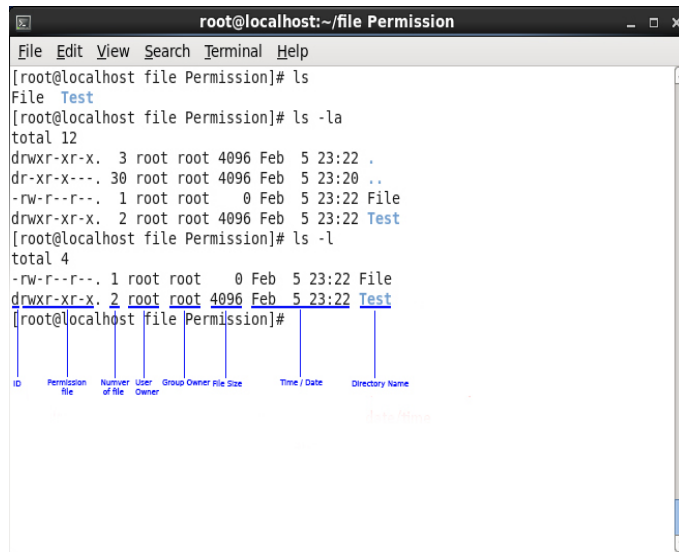


Figure 4.7.1: File Directory Access

Open Terminal and type: `chmod 777 Test`

Check the command and figure is shown



```
root@localhost:~/file Permission
File Edit View Search Terminal Help
[root@localhost file Permission]# ls
File Test
[root@localhost file Permission]# ls -la
total 12
drwxr-xr-x. 3 root root 4096 Feb  5 23:22 .
dr-xr-x---. 30 root root 4096 Feb  5 23:20 ..
-rw-r--r--. 1 root root   0 Feb  5 23:22 File
drwxr-xr-x. 2 root root 4096 Feb  5 23:22 Test
[root@localhost file Permission]# ls -l
total 4
-rw-r--r--. 1 root root   0 Feb  5 23:22 File
drwxr-xr-x. 2 root root 4096 Feb  5 23:22 Test
[root@localhost file Permission]#
```

The terminal window shows the execution of `ls -la` and `ls -l` commands. The output for `ls -la` shows a directory structure with permissions, owner, group, size, and date. The file 'Test' is highlighted in blue. The output for `ls -l` shows the same information in a more compact format, also highlighting 'Test' in blue. A legend at the bottom of the terminal window explains the columns: ID, Permission, Number of file, User, Group, Owner, File Size, Time / Date, and Directory Name.

Figure 4.7.2: File Permission

#### 4.8 Group Management

Open Terminal and Please Type Code:

Create Group: `groupadd Setu`

Delete Group: `groupdel Setu`

User Add to Group: `usermod -G Setu(group name) Tuli(user name)`

View at Last Five Group: `tail -5 /etc/group`

View all Group: `cat /etc/group`

#### 4.9 Linux Basic Configuration

Centos Linux Seven setups we require in arrangement. There are: Selinux, Host, Web, FTP, Samba, DNS, Yum arrangement Our design ought to be arranged in this setup when our OS was introduced, we have to introduce another server or introduce other framework designs, for what reason should we have this fundamental framework arrangement in Centos Operating System.

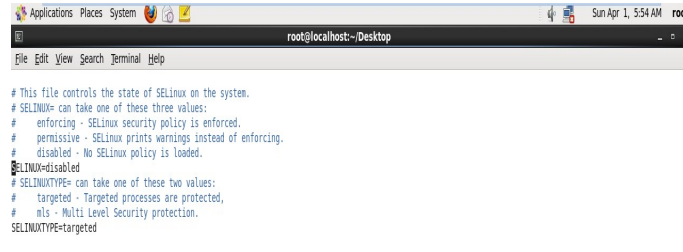
#### 4.10 Selinux Configuration

Please Open Terminal And Type Code: `vim /etc/sysconfig/selinux`

I-Letter Must is type by typing.

Edit : `SELINUX= disabled`





```
Applications Places System root
root@localhost:~/Desktop
File Edit View Search Terminal Help

# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
# enforcing - SELinux security policy is enforced.
# permissive - SELinux prints warnings instead of enforcing.
# disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of these two values:
# targeted - Targeted processes are protected,
# mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Figure 4.10: Selinux Configuration

## 4.11 Network Configuration

Open Terminal And Type: `vim /etc/sysconfig/network-scripts`

Edit:

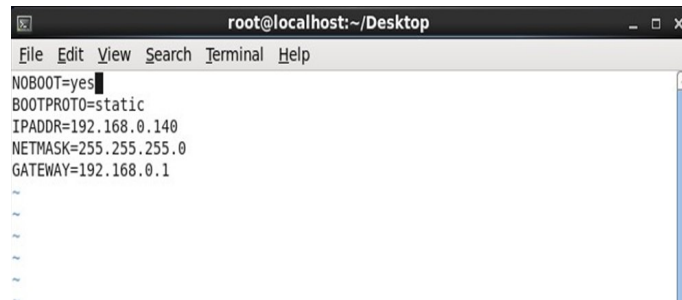
`ONBOOT=yes`

`BOOTPROTO=static`

`IPADDR=192.168.0.140`

`NETMASK=255.255.255.0`

`GATEWAY=192.168.0.1`



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
NOBOOT=yes
BOOTPROTO=static
IPADDR=192.168.0.140
NETMASK=255.255.255.0
GATEWAY=192.168.0.1
~
~
~
~
```

Figure 4.11: Network Configuration

## 4.12 DNS Configuration

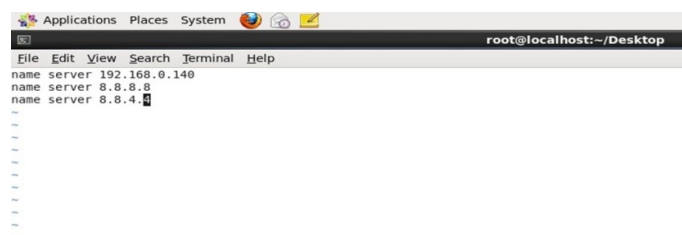
Open Terminal And Please Type: `vim /etc/resol.conf`

Edit:

`name server 192.168.0.140`

`name server 8.8.8.8`

`name server 8.8.4.4`



```
Applications Places System root
root@localhost:~/Desktop
File Edit View Search Terminal Help
name server 192.168.0.140
name server 8.8.8.8
name server 8.8.4.4
~
~
~
~
```

Figure 4.12: DNS Configuration

### 4.13 Host Configuration

Open Terminal And Type: vim /etc/host

Edit: 192.168.0.140 setu.com

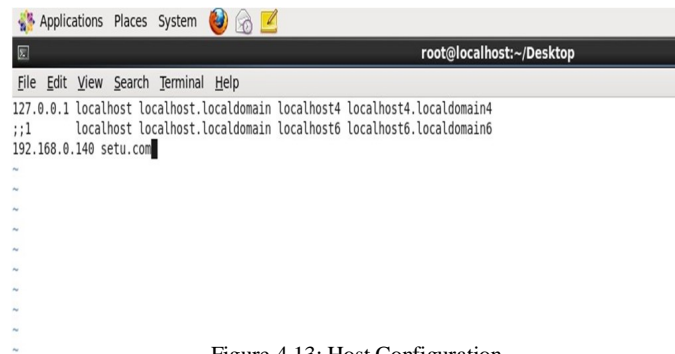


Figure 4.13: Host Configuration

### 4.14 yum Server Configuration

Package name: vsftpd

Another Package: Pytrhon-delta, Deltarap, Createrepo.



Figure 4.14: yum Server Installation

### 4.15 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

Which is shown in Figure 4.15.1

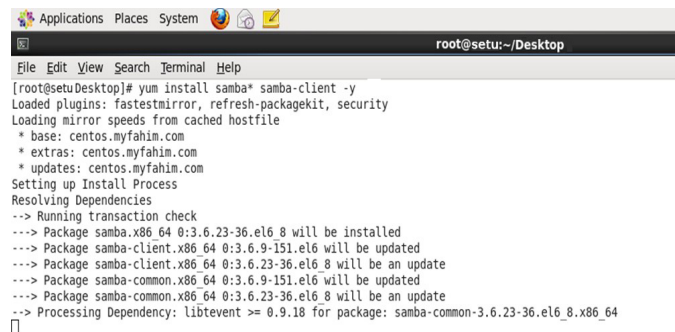


Figure 4.15.1: Install Samba Package

Configure Samba:

Open up the Configuration File: vim /etc/samba/smb.conf

Now need some change on the file that is given bellow?

Workgroup=WORKGROUP

Host allow=

(samba)

Path= /server

Valid users=setu

Read only=yes

Browseable=yes

```
root@setu:/etc/samba
File Edit View Search Terminal Help
# Make sure you COPY them and not MOVE them so that the right SELinux context
# is applied, to check all is ok use restorecon -R -v /var/lib/samba/scripts
#-----
#
#----- Global Settings -----
[global]
# ----- Network Related Options -----
#
# workgroup = NT-Domain-Name or Workgroup-Name, eg: MIDEARTH
# server string is the equivalent of the NT Description field
#
# netbios name can be used to specify a server name not tied to the hostname
#
# Interfaces lets you configure Samba to use multiple interfaces
# If you have multiple network interfaces then you can list the ones
# you want to listen on (never omit localhost)
#
# Hosts Allow/Hosts Deny lets you restrict who can connect, and you can
# specify it as a per share option as well
#
workgroup = WORKGROUP
server string = Samba Server Version %v
;
netbios name = MYSERVER
;
interfaces = lo eth0 192.168.12.2/24 192.168.13.2/24
hosts allow = 127. 192.168.0.0/24
#----- Logging Options -----
#
# Log File let you specify where to put logs and how to split them up.
#
# Max Log Size let you specify the max size log files should reach
-- INSERT --
```

Figure 4.15.2: Samba-Configure File

Finish up by Starting samba: Now check the base machine

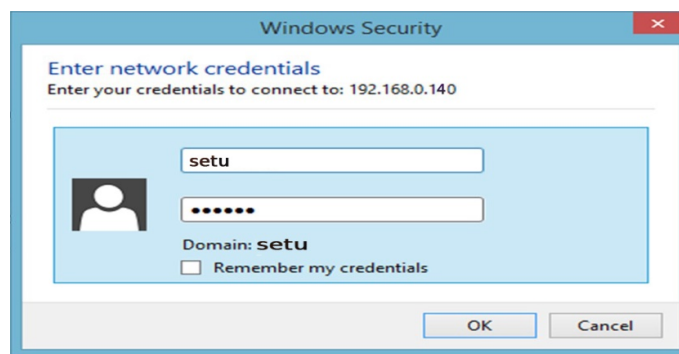


Figure 4.15.3: Sing in Samba Service

#### 4.16 Web Server Configuration:

Package Name: http (hypertext transfer protocol)

Install Comment: yum install httpd\* -y

Port: 80

```

root@setu:/etc/samba
File Edit View Search Terminal Help
[root@sadik samba]# yum install httpd -y
Loaded plugins: fastestmirror, refresh-packagekit, security
Loading mirror speeds from cached hostfile
 * base: mirror.dhaka.com
 * extras: mirror.dhaka.com
 * updates: mirror.dhaka.com
Setting up Install Process
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.2.15-26.el6.centos will be updated
--> Package httpd.x86_64 0:2.2.15-56.el6.centos.3 will be an update
--> Processing Dependency: httpd-tools = 2.2.15-56.el6.centos.3 for package: httpd-2.2.15-56.el6.centos.3.x86_64
--> Running transaction check
--> Package httpd-tools.x86_64 0:2.2.15-26.el6.centos will be updated
--> Package httpd-tools.x86_64 0:2.2.15-56.el6.centos.3 will be an update

```

Figure 4.16.1: Install http

Now Next, type the: `vim /var/www/html/index.html`

And Edit the html code in this file

```

root@setu:/var/www/html
File Edit View Search Terminal Help
html
<head>
  <link href="style.css" rel="stylesheet" type="text/css">
</head>
<body>
  <div class="main">
    <div class="header">
      
      <h2>CONSTRUCTION</h2>
      <p>wordpress construction thims</p>
      <ul>
        <li><a href="https://www.facebook.com">HOME</a></li>
        <li><a href="">SERVICES</a></li>
        <li><a href="">POTFOLIO</a></li>
        <li><a href="">ABOUT US</a></li>
        <li><a href="">TEAM MEMBER</a></li>
        <li><a href="">TESTIMONIAL</a></li>
        <li><a href="">CONSTRUCT US</a></li>
      </ul>
    </div>
    <div class="slider">
      <div class="slider_text">
        <h2>Welcome</h2>
        <p>TO THE NEXT CHAPTER IN CONSTRUCTOR</p>
        <a href=""></a>
        <a href=""></a>
      </div>
    </div>
    <div class="service">
      <div class="service_top">
        <h2>Service & Solution</h2>
        <p>We Are Making Useful Things Sing </p>
      </div>
      <div class="construction">
        <div class="construction_image">
          
        </div>
      </div>
    </div>
  </div>
</body>
index.html [noeol][dos] 72L, 2089C

```

Figure 4.16.2: index.html Code

Now Edit the Configuration File in the type Code: `vim /etc/httpd.conf`

And Please Type

`<Virtual *:80>`

ServerAdmin [webmaster@setu.example.com](mailto:webmaster@setu.example.com)

DocumentRoot /var/www/html

Servername setu.example.com

`</virtualHost>`

```
root@setu:/etc/http
File Edit View Search Terminal Help
### Section 3: Virtual Hosts
#
# VirtualHost: If you want to maintain multiple domains/hostnames on your
# machine you can setup VirtualHost containers for them. Most configurations
# use only name-based virtual hosts so the server doesn't need to worry about
# IP addresses. This is indicated by the asterisks in the directives below.
#
# Please see the documentation at
# <URL:http://httpd.apache.org/docs/2.2/vhosts/>
# for further details before you try to setup virtual hosts.
#
# You may use the command line option '-S' to verify your virtual host
# configuration.
#
# Use name-based virtual hosting.
#
#NameVirtualHost *:80
#
# NOTE: NameVirtualHost cannot be used without a port specifier
# (e.g. :80) if mod_ssl is being used, due to the nature of the
# SSL protocol.
#
# VirtualHost example:
# Almost any Apache directive may go into a VirtualHost container.
# The first VirtualHost section is used for requests without a known
# server name.
#
<VirtualHost *:80>
    ServerAdmin webmaster@setu.example.com
    DocumentRoot /var/www/html
    ServerName setu.example.com
    ErrorLog logs/dummy-host.example.com-error_log
    CustomLog logs/dummy-host.example.com-access_log common
</VirtualHost>
^
"httpd.conf" 1010L, 34394C
```

Figure 4.16.3: httpd. Configuration File

## CHAPTER 5

### About IP Address

#### 5.1 About IP Address

An IP address identifies a network device. 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. It is a customizable physical location address or business address that provides an identifiable address, on a network of IP addresses through each other is divided I an address two main functions: host or network interface detection and address. Windows IP address settings This IP address is an attractive product for modern computer technology designed to communicate with others through a computer (or other digital device). IP addresses literally allow billions of digital devices to be located, which can be connected to the Internet and differentiating from other devices. In the same sense anyone needs your mailing address to send your letter, a remote computer needs your IP address to communicate with your computer. Mac IP address settings "IP" stands for Internet Protocol, so an IP address is an Internet Protocol address. What is the meaning of this? An Internet Protocol is a rule that manages Internet activity and facilitates various tasks of the World Wide Web.

Internet Protocol version 4 (IPv4) defines an IP address as a 32-bit number. A new version of IP (IPv6) was created in 1995 by using 128 bits for IP address, due to the increase in the Internet and the decrease of available IPv4 addresses. IPv6 deployment is in progress since the mid-2000s. IP addresses are usually displayed in text and human-readable referrals, such as the IPV4 at 172.16.254.1. The Routing Symptom's address of the address has been specified in CIDR signature with the exact number of significant bits, for example, 192.168.1.140/24, which is equivalent to the historically used subnet mask 255.255.255.0.

The IP address space is operated globally by the Internet Assigned Numbers Authority (IANA), and five regional Internet registries (RIRs) for the region designated for their users and local internet registries, such as termination of internet service providers. The IPv4 addresses are distributed to IIRA RIRs in blocks of approximately 16.8 million blocks. Each ISP or private network administrator sets an IP address on each device connected to its network. For example, when we enter the

browser on the [www.daffodiliversity.com](http://www.daffodiliversity.com) website, and then request to load the DNS servers that help to find the associated IP address (203.190.10.90) of the host name (daffodiliversity.com).

## 5.2 IP Address Classes

Table 5.2: 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.

## 5.3 Private IP address classes and Range

Table 5.3: 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

## 5.4 Class A Subnets

Table 5.4: 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



## 5.5 Class B Subnets

Table 5.5: 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

## 5.6 Class C Subnets

Table 5.6: 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

## CHAPTER 6

### MikroTik Router Configuration

#### 6.1 MikroTik Router

MikroTik Limited is a Latvia company which is known as MikroTik. MikroTik Founded in 1995 but incorporated since 1996. The company's headquarters are Riga Capital Latvia. Typically, MikroTik manufacturer networking Equipment. For example: wireless products, router and firewalls.

MikroTik made router in 1997, but they created the routerboard in 2002. As of 2017, the company introduces more than 100 employees to their skills in the profession. MikroTik products are known to be down the main slogan of the company's expensive router option is "Routing TheWorld".

The main operating system of MikroTik router is marketed from small to medium size. Another interesting thing is that anyone who installs a router on an ideal x86-based computer has the potential to turn it into a MikroTik router. Many companies in Bangladesh are able to sell and pay MikroTik-products. For example, SASTech Limited, Provident Technologies, Global Brand Private. Available in the Bangladeshi market Arabic 750 Router, Arabic 2011 UIS-2HDD-In, CCR 1016-22 MikroTik Router and its Price range 4,500-1, 30,000. Now it has started using MikroTik on the Internet in large companies or organizations.



Figure 6.1: MikroTik Router

#### 6.2 Features

Router supports many applications used by internet service providers. For example It can be used as a router.

It provides OSPF, BGP, Multiprotocol label switching (VPLS / MPLS), Open Flow, etc.

- It can be used as a switch or bridge.
- PPPoE Provides Client-Server.
- Virtual Private Network provides.

- Firewalls provide rules.
- Provide server service.
- Provide Wi-Fi and Captive Portal Based Hotspot Systems.
- Bandwidth management is very easy.
- Easy GUI Interface.
- Easy administration.
- Both IPv4 and IPv6 support.

Through a forum and wiki by MikroTik, the product provides a mixed and themed example of the configurations. Routers supports Internet Protocol version 4 (IPv4) and Internet Protocol version 6 (IPv6). This software effectively supports all network interfaces that support the Linux kernel 2.6.16.

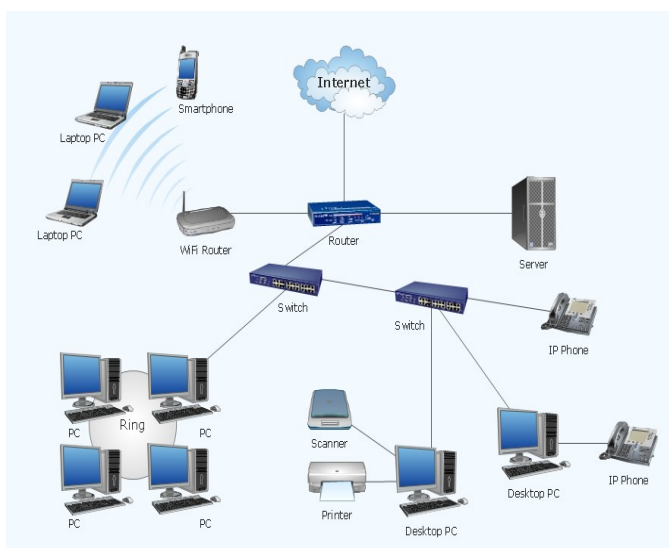


Figure 6.2: Router Network Diagram

### 6.3 Initial Step Configuration MikroTik

- Give Power 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.
- Reset the command to use your router first (system reset-configuration).

Show in figure 6.3 MikroTik reset command.

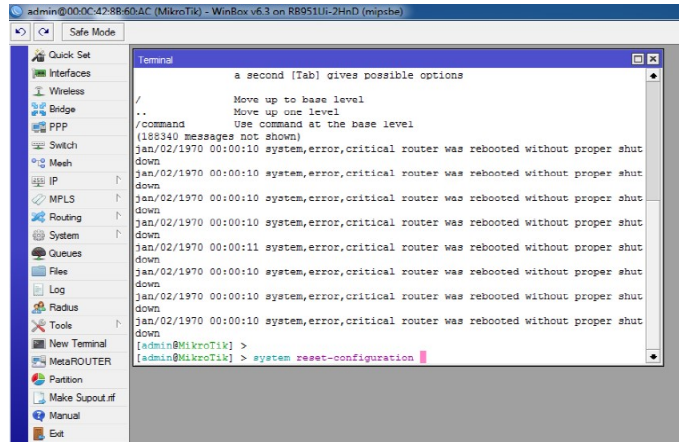


Figure 6.3: Reset MikroTik Router

## 6.4 Winbox Interface Menu

Basically the interface menu is used, to change the interface name or to comment so that the interface can be detected later on. Here in our project we named ether-1 as WAN-Setu, which would better understand that Ether 1 is used for one connection. The following figure shows the interface menu used for LAN connection Work. For this project, ether-2 is named LAN-Tuli

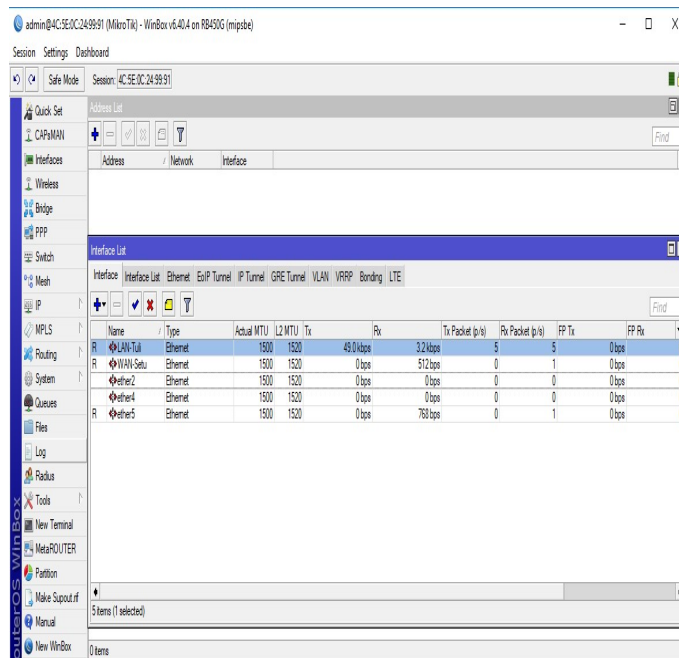


Figure 6.4: Interface Menu

## 6.5 Installation in IP LAN and WAN

Now click IP >Address >“+” > Set IP Address

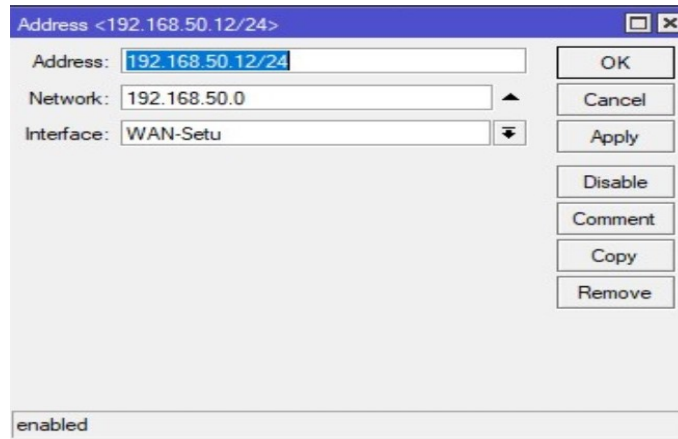


Figure 6.5: Installation in IP WAN

The same method will be placed in the LAN IP.

## 6.6 Gateway Configuration

Setting up Gateway

Process: Go to IP > “+” > Gateway

Note: Here one thing must be noticed that the address will be 0.0.0.0/0 (the default route). Then we can set our gateway.

Apply > Ok

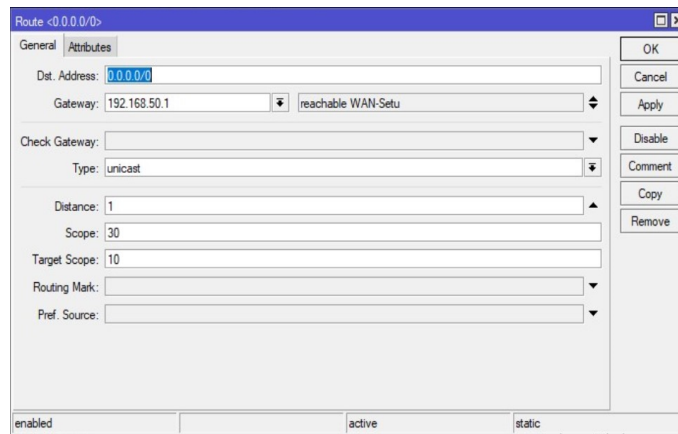


Figure 6.6: Set Gateway

## 6.7 DNS Configuration

Our next step is to set up DNS servers. MicroTik router not only solves DNS, but we can also provide the host's DNS resolution which uses router on our network using caching DNS.

To set up DNS server we need to go

IP > DNS > Click on 'Setting' as a result a DNS setting window will open. The following Figure 6.7 shows DNS Setup process.

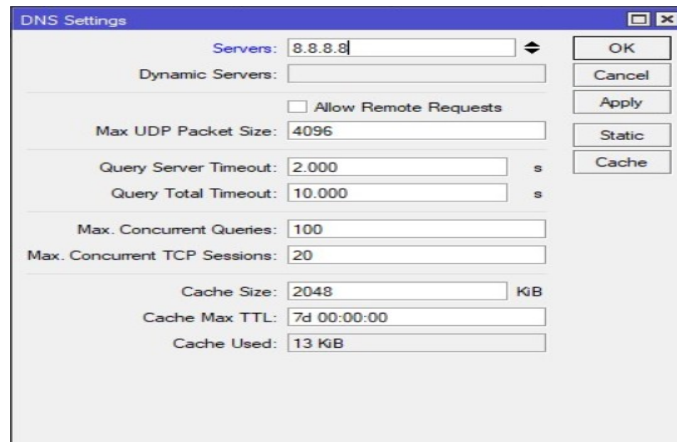


Figure 6.7: DNS Configuration

After opening DNS Setting window add server. Here, we add Google public DNS server 8.8.8.8

## 6.8 NAT Configuration

Process: Go to IP > NAT > “+” , General to click “srenat” , Action to click “masquerade”

Apply > Ok

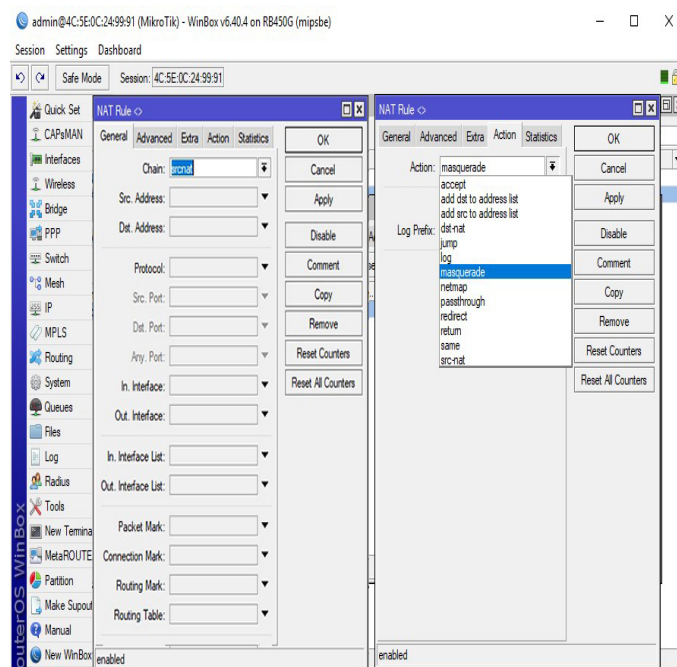
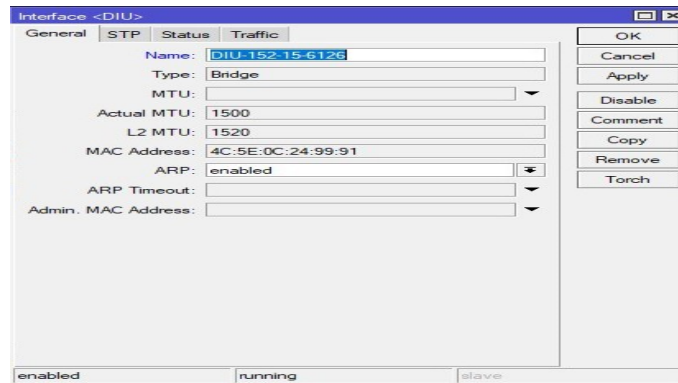


Figure 6.8: NAT Configuration

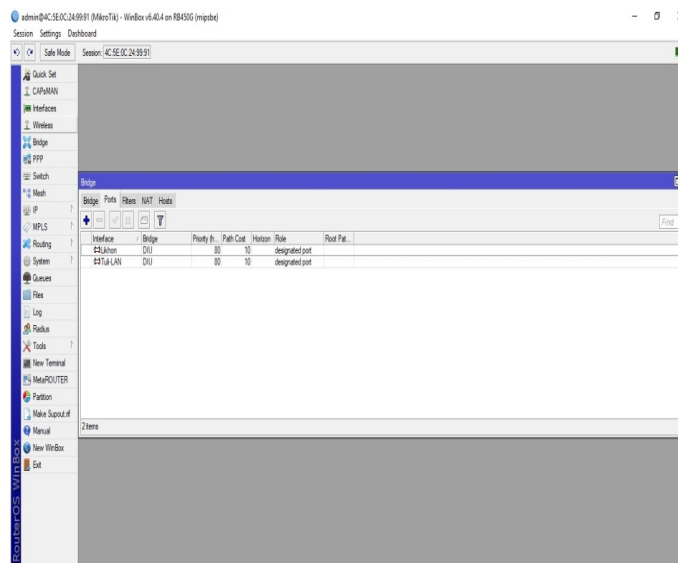
## 6.9 Bridge Configuration

Bridge allows logical interfaces to allow this bridge interface to integrate both Click "Bridge" to create bridge connection Following figure 6.9.1 will give a clear understanding.



6.9.1: Type Bridge Name

Then click "+" on the bridge tab, a new window will open. Enter a name for the new one. Now we need to add the interface under this bridge interface. For this, click on the "Port" tab



6.9.2: Add to Interface

Click the "+" icon. A new window will open where we can select the interface.

## 6.10 DHCP Configuration with Bridge Mod

Dynamic Host Configuration Protocol (DHCP) is also featured by MikroTik. It's Enables MikroTik router to easily deliver an IP address to a network. MicroTick Router DHCP IP Address / Request Client Mask, Available in Default The gateway,

domain name and DNS server include both the server and client part of the MikroTik DHCP implementation. To configure DHCP go to domain name and DNS server IP > DHCP Server. Then click on “DHCP Setup” (Showing in Figure 6.10.1) which will open a DHCP Setup windows.

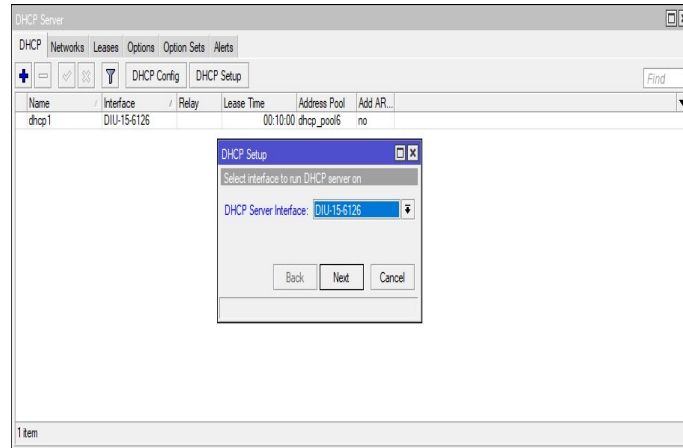


Figure 6.10.1: DHCP with Select Bridge

So for the interface DIU-15-6126 we select DIU-15-6126 - bridge then click 'Next' Now DHCP client needs to provide the expected network address with the mask. Then click 'Next' Enter the gateway IP address for the configured DHCP, click 'Next' Then select the IP address range provided by the DHCP server. Click 'Next' Configuration We Supplier Range 192.168.1.2-192.168.1.254. Figure -6.10.1=3: DHCP configuration

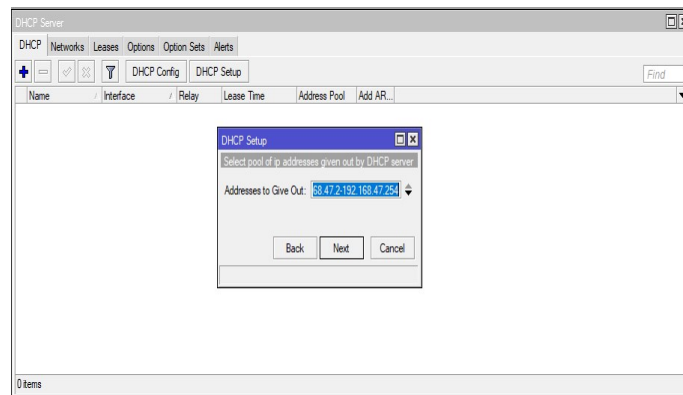


Figure 6.10.2: DHCP Configuration

If you need to change something then we can do this from here and click on 'Next'. Fix Range Time and click 'Next', which will show a new pop-up that DHCP Configuration complete



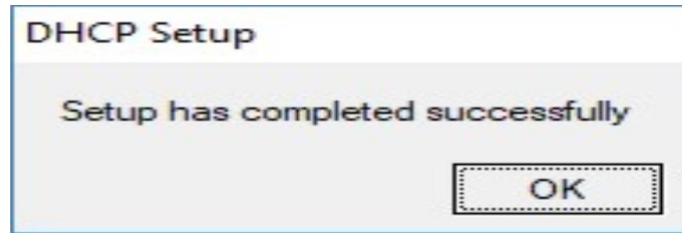


Figure 6.10.3: DHCP Setup Successfully

### 6.11 Block Website

If we need to block a website in our local area network, we can do it Using the Layer 7 protocol and filter rule in the filter menu. For this go IP > Firewall. Click "Layer7 Protocol" and click on '+' "Firewall L7 Protocol" window will open. Select the name "DENIED" Section 6.11 Please help us understand it better. This way we can protect our clients for a domain use, a network administrator wants to limit.

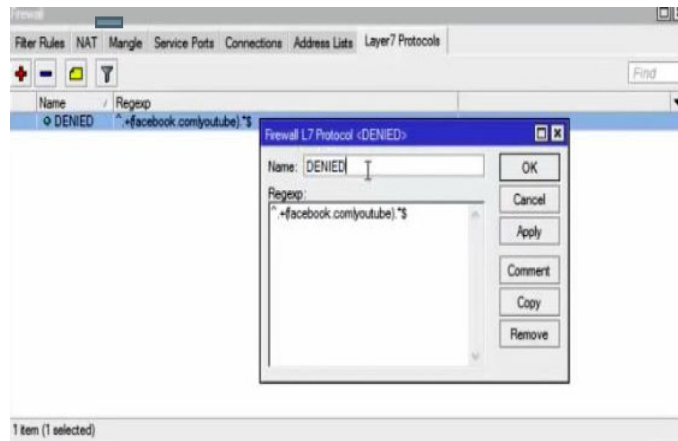


Figure 6.11: Block Website

### 6.12 Queue Management

Queue is considered to be the most powerful feature of Mikrotik router. It makes an enabling network administrator to manage their IP address separately by the size of their bandwidth and for other features.

Go to Queues > "+" setup new Queues for User.

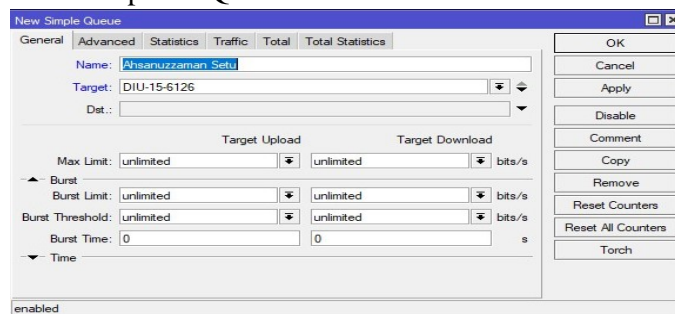


Figure 6.12.1: New Simple Queue

We can easily set Download and upload speed for user. Also you can set Different Profile in Types of Queues. Queues > Queue Types > “+”, Set new queue

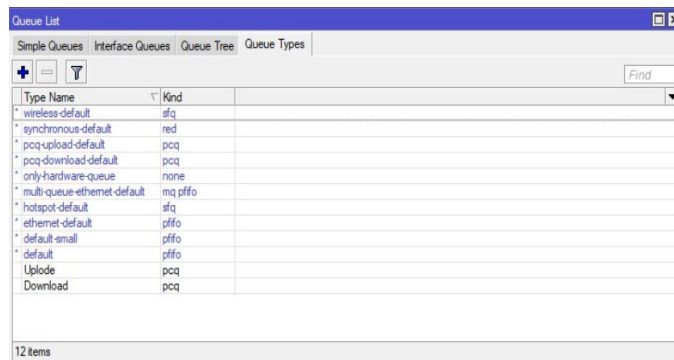


Figure 6.12.2: New Queue Types

Now we can monitor the use of client bandwidth in easy coup lists. If it displays green light next to row row, then the client does not just use the internet.

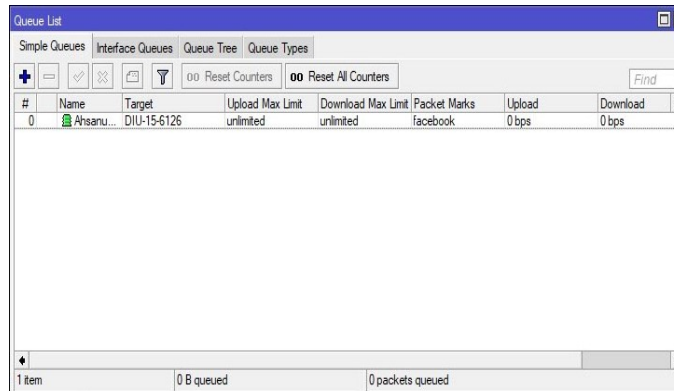


Figure 6.12.3: Queue Management

### 6.13 Monitoring Network

Problems can occur on networks. But a network administrator needs to be identified. The problem is that we can use the ping command with IP address. To send packets. That means the connection is OK. Otherwise there is a connection problem. For this we can use the traceroute command. It is very easy to use but it is also a very powerful tool for determining where network problems can occur.

## CHAPTER 7

### Competencies and Smart Plan

#### 7.1 Competencies Earned

He was studied with the expertise and gained from the evaluation of student organization by an IT organization consultant in the Philippines region, because in practice, students sometimes show lack of expertise to assess the organization of students. Efficiency places them under. The problem between all types of skills and skills needed to be evaluated was clear. These three areas of expertise are cognitive, psychologist and attitude Animation internet movement in DOL is not the responsibility of the assembly and its organization only. Private Service is an integral part, especially if the Internet Service Provider (ISP) is controlled and allowed to protest. Favorable circumstances, weaknesses, and encounters increased through this aggressive situation will be talked about from the experience of a business organizer in the Philippines.

- Internet Development.
- Commercial Environment.
- Service: What and Where?
- ISP connectivity and resources.
- Community Network.
- Cooperation and Competition.
- Philippine network growth.
- Network users.
- Walk-in Access.
- Media, commerce, and the web.
- It is appropriate.
- References.
- Related Content.

#### 7.2 Smart Plan and Reflections

Reflecting or thinking about our experience, the key to learning. Reflection will allow us to change or change our exams, change our error light, continue to be fruitful, and learn new lessons in the past. Reflections allow us to create associations in addition to

our course or work. By doing this, we begin to use different smart plans to increase our organization:

- Identify and employ a network of people sharing your concerns.
- Detective Task Force set up.
- Define a service area and find out your area.
- Prioritization needs to be discovered / unveiled.
- Identify the strengths and weaknesses of your organization.
- Create a governing framework.
- Outline those who will be responsible for what is in the organization.
- Determine the skill level and the people's ability to manage tasks.
- Create an assessment system to assess staff performance.
- Identify the best channels, through which you will reach the goals of people in you.
- Set the cost to carry your plan.

## CHAPTER 8

### Conclusion and Future Career

#### 8.1 Discussion and Conclusion

The purpose of this temporary job is to increase information and skills to create ISP setup and administration among Linux platforms. Configure entry-level positions data communication, Linux a nacelles, Linux system administrators, and network security and services. Mikrotik router focuses on various issues and configuring more. Linux is a full-fledged, hybrid UNIX operating structure, with the abundance of free programming related, equipped with support for the elite system administration. The nature of Linux programming makes it a minimal effort, a strong, strong processing layer suitable for corporate server conditions. This complete hand-course gives information and aptitudes that will introduce you to a Linux server for informative, informative and basic system administration of missions. You see the introduction and reorganization of key programming sections along with the most recent forms and improving server security. The Linux operating system and MikroTik provide a comprehensive introduction of reliable, steady and successful administration. We are not the light of its administration, but its decision is totally free. It has almost all the system administration, including web server pioneer, telnet, SSH, FTP, DNS, mail and a great deal. Linux offers a novel opportunity to learn the tools involved in the framework program because our source code is accessible and an overall system of guides and colleagues, we can investigate any matter we want. Different parts of Linux have been considered or created as a feature of classical work, for example, graduate proposals.[5]

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.

## 8.2 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 intern, my future will be the scope.

- ✓ Configurations and maintenance for our real-life FTP and DNS servers.
- ✓ Our real-life configuration and maintenance for Samba and NFS servers.
- ✓ In ISP platform to work on.
- ✓ Network administrator in the work environment.
- ✓ Work IT company.
- ✓ Computer network expert.
- ✓ network engineer.
- ✓ Become a server administrator.
- ✓ To become a Linux administrator.
- ✓ Be the safety Engineer.
- ✓ A must be an Information Technology (IT) Manager.
- ✓ Be able to technical support.
- ✓ Become an IT engineer.

## References

- [1] Learn about the Linux Available at: << [<< https://opensource.com/resources/what-is-linux/](https://opensource.com/resources/what-is-linux/)>>, Last Visit on 4<sup>th</sup> February'2018 at 2:00am.
- [2] Learn about Linux Kernel, Shell & Shell Script, File System and Partition Available at: <<<http://www.placementprofession.com/2011/09/linux-interview-question.html>>> Last visit on 11<sup>th</sup> February'2018 at 11:30pm.
- [3] Get the Linux Swot at: << [https://en.opensuse.org/openSUSE:SWOTanalysis\\_for\\_strategy](https://en.opensuse.org/openSUSE:SWOTanalysis_for_strategy) >> Last Visit on 20 February'2018 at 06:00pm.
- [4] Learn About the Company Available at : << <http://www.daffodilnet.com/> >> , Last accessed on 30 March 2018 at 10:30pm.
- [5] Learn about the book in Linux at Success: <<<https://www.takeyoursuccess.com> >>Last accessed on 20 March 2018 at 7:00pm.
- [6] Get knowledge Linux different kind of book at :<< <https://www.amazon.com/Linux-Operating-Systems-Books/b?ie=UTF8&node=3849> >>Last accessed on 3 March 2018 at 3:00pm.

# Plagiarism Screenshot

