

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

SUBMITTED

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

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APPROVAL

This Internship titled “**Internship On Linux System And Network Administration At Daffodil Online Ltd.**”, submitted by **Tanmoy Kumar Ghosh** ID: 153-15-6467 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 (BSc) and approved as to its style and contents.

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DECLARATION

I hereby declare that, this internship report is prepared by me, **Tanmoy Kumar Ghosh** to the department of Computer Science and Engineering, Daffodil International University. Under the supervision of **Abdus Sattar, Senior Lecturer, Department of CSE**, Daffodil International University. I also declare that neither this internship report nor any part of this internship report has been submitted elsewhere for award of any Degree or Diploma. I also declare that, I collect information from Daffodil Online Limited (DOL), Data Center and Internet Service Provider (ISP) Based Company, Books and Internet.

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ABSTRACT

Linux is a UNIX based operating system. It was first introduced by Linux Torvalds. It is an open source operating system that was designed to provide free and a low cost operating system for the computer users. The medium or large size organizations need a server system to maintain their complex IT infrastructure. Peer-to-peer networks make problematic in the way of security and resource sharing for medium or large size organization. As the server is little expensive, here I try to design a cost effective server system of this type of organization. This system provides almost all the service need by an organization to maintain their infrastructure. This system increases reliability and network security for their network. This design is implemented using VMware Workstation10.0 and Centos6.5. After implementation of all service, this system is tested in different stages and it works successfully as a prototype. In the future I need to improve centralize login system to get better performance for windows users.

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CHAPTER 1

Introduction

1.1 Introduction

This is the time of information technology. Today is the day that a large number of people use Internet technology worldwide and part of the server's server. Linux is probably the most important performance of original Space War free software, or recently. We cannot do anything about Internet service without server. Therefore, there is a very server on the DNS server for Internet technology. The internship is an old practice to realize realization, environment and subject issues. The importance of the pedigree for the title of each department in medical science, engineer and recipient. Today, all companies and businesses are involved in the communication of software and Internet technology. This is e-commerce Internet Banking, SMS Alert barking, Mobile Banking, EFT (Electronic Funding), etc. They cannot be done without a server. DNS is a very useful server (Domain Name System), and we can use various types of services with this system. Internet technology, e-mail, e-business, telecommunications, mobile technology, etc. They are not free from a server, and one of them is DNS. Today, the banking industry and other business organizations are totally dependent on various types of software and online technology and have a very fast internet server. There is ATM technology (software change), bank-software, debit card, credit card, online transactions, etc. Consult a variety of software and types of servers and one of them is Linux. It has developed into a operating system for business, education and personal productivity.

1.2 Motivation

Currently working on my Bachelor's degree in Computer Science at the Daffodil International University of, I understand the importance of practicing practical information that provides learning book information and helps the student to find a wider perspective on subjects.

In practice, I discovered that I was enabled in the data on managing Linux and Microsystems and servers. As Internet service providers I look very good, communicate with people, understand their needs and provide them with better services. My skills are my ability to read and understand the situation and quickly and easily.

1.3 Internship Objectives

The ultimate goal of my study program is to make you as a person in a competitive labor market. So, it is very effective in developing skills. I want extraordinary quality to qualify.

Information exercises have been developed to provide work experience and students are still at school, coordinate coordination with academic education and help the student work out of class.

1.4 Introduction to the Company

Daffodil Online Ltd is one of the leading national ISPs in Bangladesh. These are the most experienced and oldest IT company, where business is fundamental, long-term relationships with clients. Look at the beginning of ten years from the beginning, they are very proud of their results, and are more committed to seeing at the same time the same meanings.

You can know that they are starting to pay in 2002. In recent years, they have increased their work and portfolio of services in line with customer recommendations and take time with recreation. They have worked with many national projects and international organizations and have made a reputation. They use the latest technology and communications services where it is needed. They are Corporate Solutions that can provide sufficient networking and telecommunication solutions with a group of highly effective technical professionals.

1.5 Report Layout

In chapter (1) I have the purpose of the coaching staff, the participation of the coaching staff and described

Introduction to society

In chapter (2) I have described the method of my internship. And this chapter provides information about the place where the practice was offered to make this program. It also includes how jobs, businesses, IT services are offered by DOL, and which tasks are in the Linux workplace.

In chapter 3, I have described the daily role and activities, events, activities, and challenges.

In Chapter 4, I have described the receipts, the smart plan, the conditions.

In chapter 5, I have described the future and the extent in the future. I will look at Future Scopes of Linux and I will write a conclusion.

CHAPTER 2

ORGANIZATION

2.1 Introduction

Daffodil Online Ltd (DOL) is proud of one of the ISP / ASP providers in Bangladesh and from July 2002 to provide DC services and solutions in the field of ICT. It has its own Fiber Optic & Radio Link WAN, MSP and Only Clients. The institute has worked with many national projects and international organizations with high prizes of all interested parties. It uses the latest technology and provides all-switching services everywhere.

Corporate Solution Solutions can provide telephony solutions and a modern network with a team of technical professionals very effectively. DOL has certified a very strong professional and management team and is associated with SUN, Cisco, Microsoft, Linux, and Oracle and is active in leading computers, such as IEEE, ACM, ACS, BCS, and PMI. Corporate social responsibility strengthens the understanding of the community, workstation, placement, and market. As a group, DOL offers its programs and services by promoting key platforms such as education, government, and the environment ^[1].

2.2 Product and Market Situation

Daffodil Online Ltd is one of the leading national ISPs in Bangladesh. The most experienced and oldest businesses in the field of ICT that are the basis for business, have long-term relationships with customers. Look at the growth in the decades since their inception, they are strongly proud of what we have achieved and even deal with our perspectives for the future of the same meanings. Daffodil Online Ltd also offers various services and training sites. These are given below.

➤ IT Services

- Corporate Internet Solution
- Security solution.
- Domain registration and web hosting.
- Website development.
- Open source application solution.
- Internet Service Provider
- State of the Art Data Centers.
- Hi speed Wi-Fi Zone.
- Data Connectivity, Data center& Co-Location.
- Bulk SMS Service.
- Proxy & DNS Server solution, Mail Server Solution.

➤ Professional Training Services

- ISP Setup and administration using Linux.
- Training Course on Certified Ethical Hacking (CEH).
- ISP Setup and Administration using MikroTik.
- Web site Development with Joomla.
- PHP and MYSQL for Website Development.
- E-commerce & Open source Joomla Virtue Mart.
- Red Hat Certified Security Specialist (RHCSS).
- Red Hat Certified Engineer (RHCE).

2.3 Target Group

The company's customer base includes all consumers and all small- to medium-sized businesses, including start-ups. The company plans to concentrate on SOHO clients, as these are perfect targets for our new high-speed offerings, and hold the greatest growth potential for the company. Web locations believe these merchandise features have a special price and service needs and more intensive and flexible customers.

2.4 SWOT Analysis

The SWOT analysis is a procedure used to distinguish your qualities and shortcomings and to recognize the open doors you have and the dangers you are doing.

➤ Strengths:

- ✓ Communication between people separated by distance (at home and within the workplace)
- ✓ Working at home easy
- ✓ Make online shop
- ✓ Gathering information (valuable asset in business)

➤ Weaknesses:

- ✓ New citizens should consider the level of expertise to survive the market
- ✓ A lot of money is needed to set up businesses
- ✓ Small retailers competition
- ✓ Multipler tariffs and service options

➤ Opportunities:

- ✓ Demographic structure of age change
- ✓ The quantity of British families is developing
- ✓ Introduction of simpler tariffs

Threats

- ✓ The economic crisis - families are unlikely to expand broadband subscriptions
Inventory of lack of confidence in the digital communications market
- ✓ It can be seen how consumers can make sure that they have access to the Internet.

2.5 Organizational Structure

Organizational Structure of Daffodil Online Ltd. shows in fig 2.5:



Figure 2.5: Shows Organizational of Daffodil Online Limited.

CHAPTER 3

Tasks, Projects and Activities

3.1 Daily Task and Activities

- Month - 1: In the first month, I narcissi restricted online farms and I did the following tasks:
 - Learning & understanding About Network Components.
 - Learning & understanding Basics of Linux.
 - Understanding Linux HDD Partitions.
 - Learning & understanding Linux Run Level.
 - Linux Installation.

- Month - 2: In the second month, I learned a narcissus online and I learned the following tasks:
 - Basic CentOS Commands.
 - Linux User and Password Management.
 - Know About logged in users.
 - File and Directory Accessing.
 - To Copy and Move File and Directories.
 - Compressed and Decompressed File and Directories.
 - Crontab.
 - Mount Unmount Drive.

- Month – 3: In the third month of my narcissus online training, I learned and do the following tasks:
 - File and Directory Permissions.
 - Install, Update and Remove Package Using YUM.
 - Concept of IP Addressing.
 - Configuring IP Address in CentOS.

- Month – 4: I learned the last month of Online Arrangements online and I did the following tasks:
 - 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 PROXY Server.

- Remote Login Service.
- Firewall.
- Backup and Monitoring.
- MikroTik.

3.2 Events and Activities

- Monitoring and maintaining information systems and networks.
- Setting up user accounts, permissions and passwords.
- Troubleshooting servers and routers.
- Troubleshooting local area networks and switches.
- Fixing network faults.
- Technical support for people using the network.
- Day to day admin and monitoring of network use.
- Suggesting IT solutions to business problems.
- Client Support over the phone or Physical move to client Ends.
- Checking Fiber Optical Media Convertor & Fiber Optic Transmission devices.

3.3 Project Task and Activities

Centos Install

➤ 3.4. Creating Linux Partition

For Installation of Linux we have to create at least 3 partitions root (/), boot, and swap.

- **Root Partition: /**

A Root Partition there is where “/” The root directory is located all files (except in /boot) are on the root partition. Minimum 5 GB HDD Space Required.

- **Boot Partition: /boot**

The partition boot (200 MB): the partition mounted on /boot/ contains the operating system kernel (which allows your system to boot Linux), along with files used during the bootstrap process. Due to limitations, creating a native ext3 partition to hold these files is required. For most users, a 200 MB boot partition is sufficient.

- **SWAP Partition: swap**

The partitions swap is used to support virtual memory. In other words, data is written to a swap partition when there is not enough RAM to store the data your system is processing. Partition Swap should equal 2x physical RAM for up to 2 GB of physical RAM, and then an additional 1x physical RAM for any amount above 2 GB, but it cannot less than 32 MB ^[4].

➤ 3.5 Linux Run-Level Used by Centos

init0 = Shut Down.
init1 = Single User Mode.
init2 = Multi User Mode.
init3 = Full Multi User Mode.
init4 = Unused.
init5 = X-Window (GUI Mode)
init6 = Reboot.
See current run-level = who -r

➤ 3.6 The Basic Command of Linux Centos

Shutdown = poweroff ,init 0, shutdown -h now .
Reboot = reboot or init6.
Logout = log the current user off the system.
Display a calendar = Cal,cal 2014, cal 10 1989
Display or change date or time = date.
Present Working Directory = pwd.
Create a blank file = touch tanmoy (File name).
Create a directory = mktanmoy (directory name).
List information about file = ls.
Chang Working Directory = cd /root/Desktop (directorypath).

➤ 3.7 User Create and Password Management

Adding a user = adduserhelal (username).
Set a Password to New User = passwdtanmoy (username).
Password Disable/Remove = passwd -dtanmoy (username).
Verify user information = finger tanmoy (username).
Locking an account = passwd -l tanmoy (username).
Unlock an account = passwd -u l tanmoy (username).
Delete a user = userdetanmoy (username).
Delete a user with home directory = userdel -r tanmoy (username).

➤ 3.8 To Know About the Logged In User

W
Who
Who am i

➤ 3.9 To Copy or Move a File

Copy = cp filename destination example: cp file1 /home/tanmoy/ghosh.

Move = mv filename destination example: mv file1 /home/tanmoy/ghosh.

➤ 3.10 Vi Editor

To Edit A File = vi filename (file name).

To insert Text = press a or i.

To delete the character = press x or dd.

To copy line = press esc key and type 5yy to copy 5 line.

To paste = press p for paste.

To set line number =: set nu.

To delete line number = set nonu.

Search something = /abc for search abc.

For Go top of the lines =:0.

For Go bottom of the lines =:\$

For Go Specific Line =:50 to go 50 no line.

To save the document =: wq {save the current changes and exits vi editor}

=: w {save the curre

nt changes but does not exist vi editor}

=: q {exits vi editor without saving any changes}.

➤ 3.11 Install/Update/Remove Packages in Centos

- Install a package using yum install

Yum install (package name)

e.g yum install mysql

- Uninstall a package using Yum

Yum remove (package name).

e.g yum remove mysql

- Update a package using Yum

Yum update (package name).

e.g Yum update firefox

- Search a package using Yum

Yum search (package name).

e.g yum search firefox

- Display Additional Information about a Package

Yum info (package name).

e.g Yum info fire-fox

- View Already Installed Package

Yum list installed

- List of all available software group

Yum group list

- Install a specific soft group

Yumgroupinstalldnsnameserver

➤ 3.1 Compress and Decompress A Directory Using Tar andUntar

Compressing a directory:

`tar cvf archive_name.tar dir_name/`

e.g:3.1 `tar cvf backup.tar cls`

Or, `tar cvzf mytarfile.tar.gz /home`

Extract A Compressed Directory:

`Tar xvfbackup.tar`

Or, `tar xvzf mytarfile.tar.gz`

Shows in tar and untar by figure 3.1:

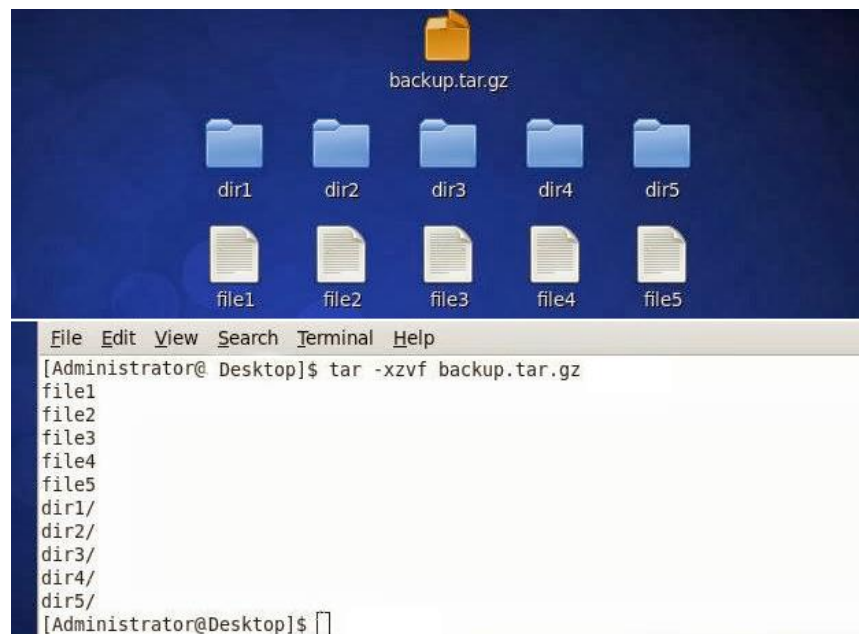
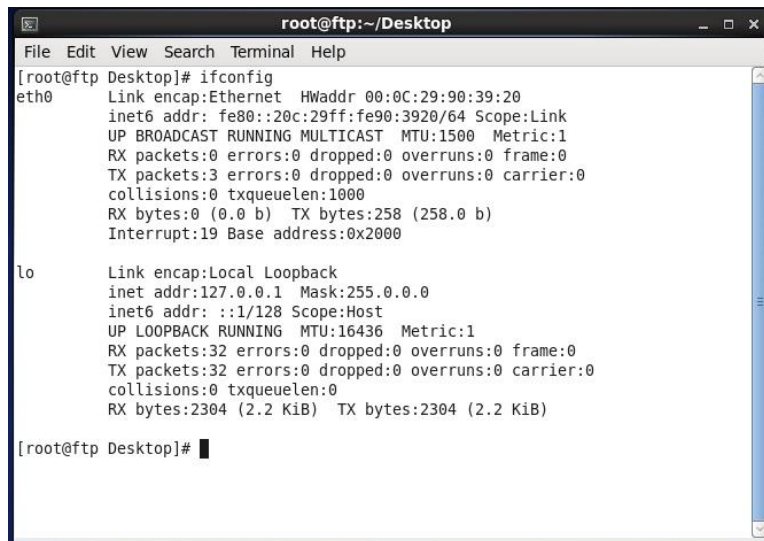


Figure 3.1: Shows in tar and untar.

➤ 3.2 How to Add Change Delete and Display IP Address In Centos

To see ipaddress :ifconfig or ifconfig eth0 3.2 show in interface ip address



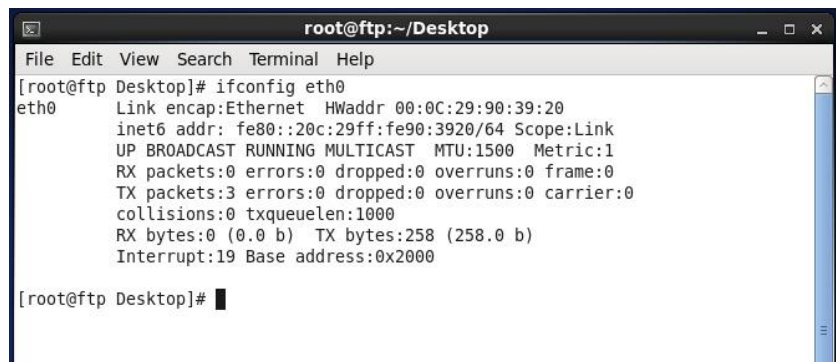
```
root@ftp:~/Desktop
File Edit View Search Terminal Help
[root@ftp Desktop]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:90:39:20
          inet6 addr: fe80::20c:29ff:fe90:3920/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:258 (258.0 b)
          Interrupt:19 Base address:0x2000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:32 errors:0 dropped:0 overruns:0 frame:0
          TX packets:32 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:2304 (2.2 KiB)  TX bytes:2304 (2.2 KiB)

[root@ftp Desktop]#
```

Figure 3.2: Shows ip address in CentOS

IP address and Mac address in command ifconfig eth0 by Shows Figure 3.3

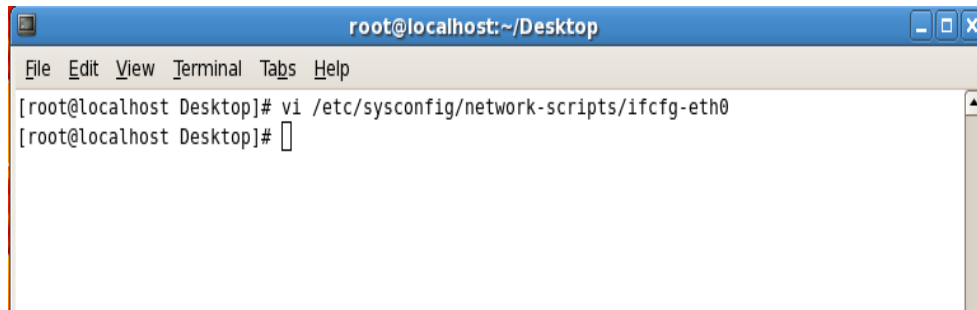


```
root@ftp:~/Desktop
File Edit View Search Terminal Help
[root@ftp Desktop]# ifconfig eth0
eth0      Link encap:Ethernet  HWaddr 00:0C:29:90:39:20
          inet6 addr: fe80::20c:29ff:fe90:3920/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:258 (258.0 b)
          Interrupt:19 Base address:0x2000

[root@ftp Desktop]#
```

Figure 3.3: Shows address in eth port

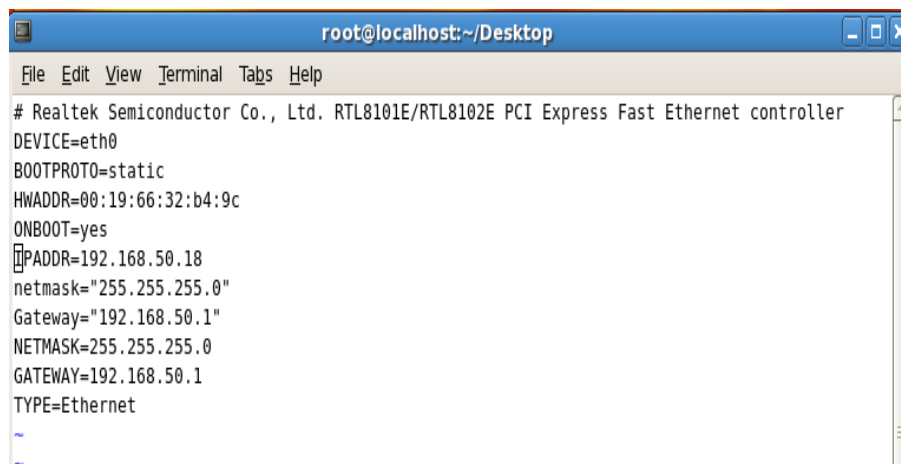
Setup IP Address Permanently Show by figure 3.4



```
root@localhost:~/Desktop
File Edit View Terminal Tabs Help
[root@localhost Desktop]# vi /etc/sysconfig/network-scripts/ifcfg-eth0
[root@localhost Desktop]#
```

Figure 3.4: Shows set ip address in eth port permanently

Edit ip address: vi /etc/sysconfig/network-scripts/ifcfg-eth0 Show figure 3.5



```
root@localhost:~/Desktop
File Edit View Terminal Tabs Help
# Realtek Semiconductor Co., Ltd. RTL8101E/RTL8102E PCI Express Fast Ethernet controller
DEVICE=eth0
BOOTPROTO=static
HWADDR=00:19:66:32:b4:9c
ONBOOT=yes
IPADDR=192.168.50.18
netmask="255.255.255.0"
Gateway="192.168.50.1"
NETMASK=255.255.255.0
GATEWAY=192.168.50.1
TYPE=Ethernet
~
~
```

Figure 3.5: Shows set ip address in sysconfig file eth port permanently

3.13 Server Configuration

In ISP server setup is a critical objective. A server alternative is vital for all server administrations. Numerous servers have a Linux working framework. Inside these servers, you can arrange the DNS server, DHCP server, FTP server, NFS server, PROXY server, MAIL server, WEB server, SAMBA server.

➤ Web Server

Web servers are PCs that give site pages. Each web server has an IP address and maybe an area name. For instance, on the off chance that you compose `http://facebook.com` in your program, apply to a site with facebook.com area name. At that point the server passes the name index.html page and sends it to your program ^[7].

➤ **Centos 6.3 Web Server Configuration Requirements**

The outline of your own site is a PC, working framework, web server, space name, and IP address of the server's name.

A PC running Linux can be utilized on any framework. Working framework dialect is clearly the utilization of Centos 6.3. The working arrangement of Centos, as effortlessly as could be expected under the circumstances, can be effectively introduced with the help of the Apache web server. The area name can be enrolled with space names administrations.

Your ISP sets a static IP to deliver and you have to add spaces to static IP addresses. This is accomplished by the name of the server. A large portion of the area enlistment organizations furnishes you with this administration.

On the off chance that you make your space name and server, the following stage is to introduce and arrange your web server.

➤ **Domain Name System (DNS)**

Host specified by the IP address of the computer that is convenient for them, but it's not always easy for people working with the name. Therefore, the IP address of the host name does not need to convert to a translation table. Every day millions of new machines popping up on the Internet, it would be impossible to keep everyone on the table this sort of up-to-date. This is where it comes in will DNS.DNS- of the Domain Name System.DNS- IP address of the machine on the net for all machines that have changed the name. This translates [or jargon as the "map"] to address the name and address, and some other factors.

As a mapping ftp.linux.org, in this case, is an association between two things is simply the name of a machine, and the machine's IP number [or address] 199.249.150.4. The machine name, IP number DNS- mapping contains the other way; this is a "reverse mapping" is called. [3]

DNS- the uninitiated, the more opaque areas of network administration, either. This is part of project, we have a caching-only server and a primary DNS server for a domain that is going to set up, starting with a simple DNS- describes how to set up the name of the server tries to clean up [8].A net-wide database of DNS. Take care of what we have done. We are garbage, then we,others, it will get out of the garbage. Tidy and consistent in DNS- place and we will get good service from it. Debug it, learn it, and we have admin keeping the net from falling to its knees by mismanagement will be another good admin.

Serving as a program called the Unix.This is coordinated by the Internet Software Consortium, the "binding" on the package, a part of. Most Linux distributions are included in the names and usually is installed, / usr / sbin /, usually from a package called the binding, the top or bottom of the package depends on the whim of the case. Most DNS implementations, including that of Red

Hat Linux use BIND, BIND is an acronym for the "Berkeley Internet Name Domain" project which maintains the DNS related software suite that runs under Linux. The most well-known program in BIND is "named", the daemon that responds to DNS queries from remote machines. Currently BIND 8/9 is being used for DNS purposes. To access the database, one needs a DNS server for his/her site. A DNS server is also known as a name server [NS]. These servers come in three varieties; [3]

- Master [also called primary]
- Slave [also called secondary]
- Caching

DNS SERVER CONFIGURATION

WORKS OF DNS:

It converts name to IP address.

And IP Address to Name.

ZONE FILES:

Forward Zone File: name to IP address.

Reverse Zone File: IP Address to Name

PACKAGE NAME: bind

DEFAULT PORT: 53

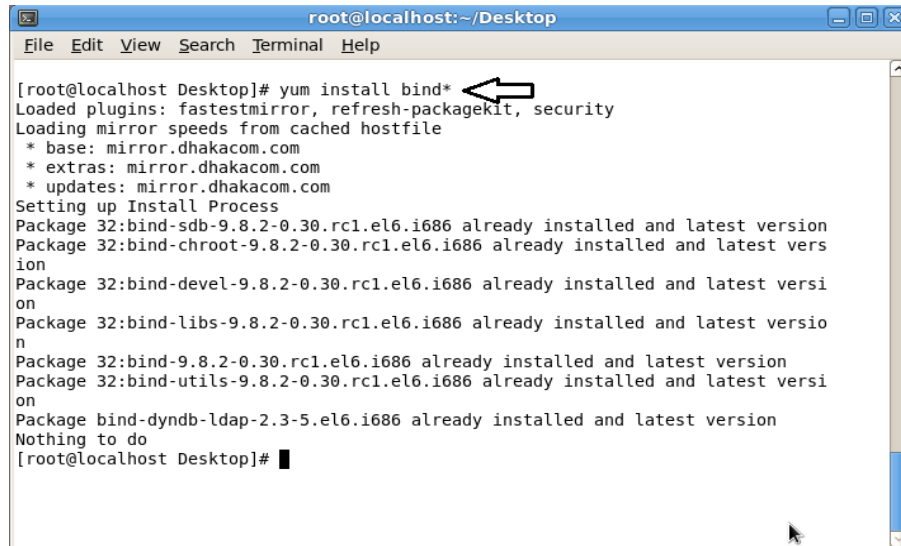
CONFIGURATIONS FILE NAME: named.config

➤ STEP: 1

At first we have to install package of dns name bind: yum install bind*

There Show Already install because of its already installed in my pc.

Show 3.6 in install DNS in command yum install bind*



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

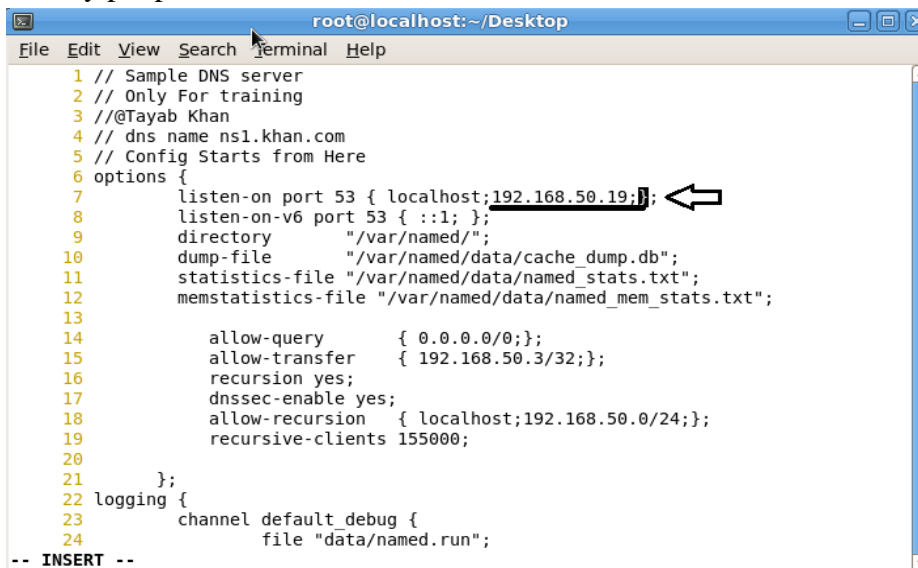
[root@localhost Desktop]# yum install bind*
Loaded plugins: fastestmirror, refresh-packagekit, security
Loading mirror speeds from cached hostfile
 * base: mirror.dhaka.com
 * extras: mirror.dhaka.com
 * updates: mirror.dhaka.com
Setting up Install Process
Package 32:bind-sdb-9.8.2-0.30.rc1.el6.i686 already installed and latest version
Package 32:bind-chroot-9.8.2-0.30.rc1.el6.i686 already installed and latest version
Package 32:bind-devel-9.8.2-0.30.rc1.el6.i686 already installed and latest version
Package 32:bind-libs-9.8.2-0.30.rc1.el6.i686 already installed and latest version
Package 32:bind-9.8.2-0.30.rc1.el6.i686 already installed and latest version
Package 32:bind-utils-9.8.2-0.30.rc1.el6.i686 already installed and latest version
Package bind-dyndb-ldap-2.3-5.el6.i686 already installed and latest version
Nothing to do
[root@localhost Desktop]#
```

Figure 3.6: Shows Screen Print yum install bind.

➤ **STEP: 2**

Edit the configuration file using vi editor: vi /var/named/chroot/etc/named.conf
And go to line no 7 enter local host IP address.

Show figure 3.7 My pc ip address is 192.168.50.19



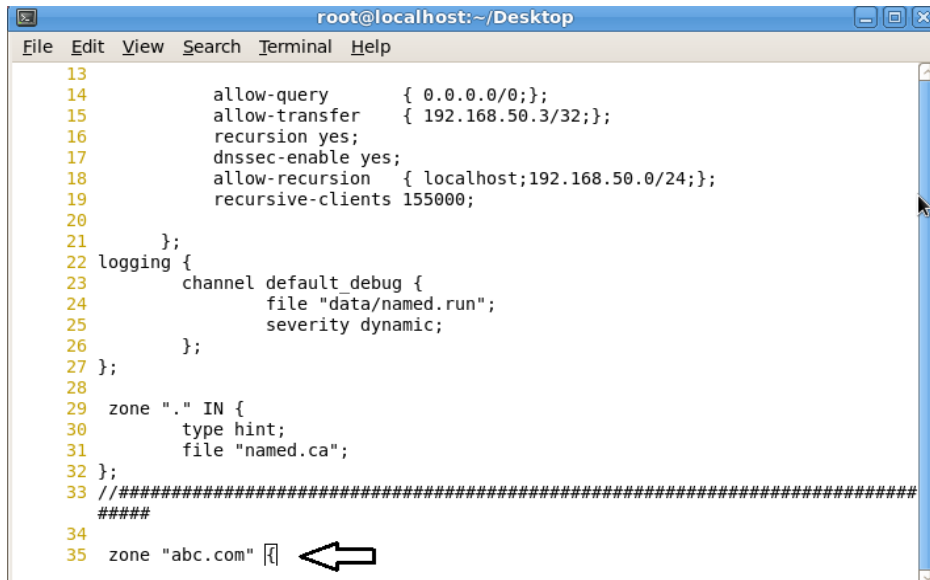
```
root@localhost:~/Desktop
File Edit View Search Terminal Help

1 // Sample DNS server
2 // Only For training
3 //@Tayab Khan
4 // dns name ns1.khan.com
5 // Config Starts from Here
6 options {
7     listen-on port 53 { localhost;192.168.50.19;};
8     listen-on-v6 port 53 { ::1; };
9     directory "/var/named/";
10    dump-file "/var/named/data/cache_dump.db";
11    statistics-file "/var/named/data/named_stats.txt";
12    memstatistics-file "/var/named/data/named_mem_stats.txt";
13
14    allow-query { 0.0.0.0/0;};
15    allow-transfer { 192.168.50.3/32;};
16    recursion yes;
17    dnssec-enable yes;
18    allow-recursion { localhost;192.168.50.0/24;};
19    recursive-clients 155000;
20
21 };
22 logging {
23     channel default_debug {
24         file "data/named.run";
-- INSERT --
```

Figure 3.7: Shows Screen Print Edit using vi edit or named, conf file.

➤ **STEP: 3**

Enter a web address of forward zone. I used abc.com for testing. Shows in figure 3.8



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
13
14     allow-query      { 0.0.0.0/0;};
15     allow-transfer   { 192.168.50.3/32;};
16     recursion yes;
17     dnssec-enable yes;
18     allow-recursion  { localhost;192.168.50.0/24;};
19     recursive-clients 155000;
20
21 };
22 logging {
23     channel default_debug {
24         file "data/named.run";
25         severity dynamic;
26     };
27 };
28
29 zone "." IN {
30     type hint;
31     file "named.ca";
32 };
33 //#####
34     #####
35 zone "abc.com" [r] ←
```

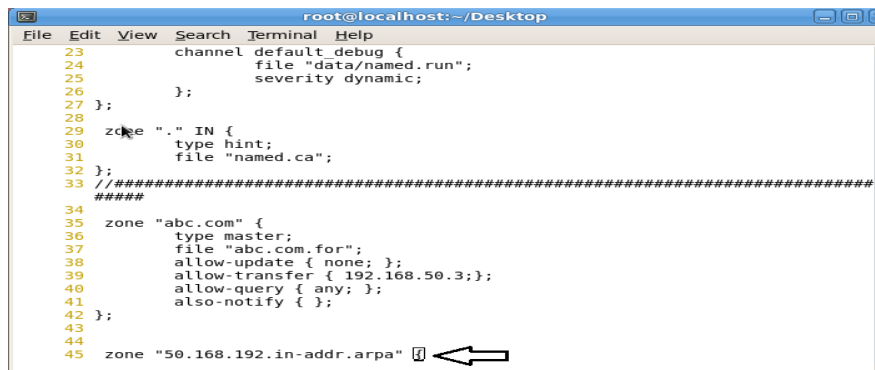
Figure 3.8: Shows Screen Print Edit Enter a web address of forward zone

➤ **STEP: 4**

Enter AN IP Address For Reverse Zone. Figure 3.9

We Have To Write IP Address In Backward Method:

192.168.50.19 as 50.168.192 without Network Portion



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
23     channel default_debug {
24         file "data/named.run";
25         severity dynamic;
26     };
27 };
28
29 zone "." IN {
30     type hint;
31     file "named.ca";
32 };
33 //#####
34     #####
35 zone "abc.com" {
36     type master;
37     file "abc.com.for";
38     allow-update { none; };
39     allow-transfer { 192.168.50.3;};
40     allow-query { any; };
41     also-notify { };
42 };
43
44
45 zone "50.168.192.in-addr.arpa" [r] ←
```

Figure 3.9: Shows Screen Print Enter an IP Address For Reverse Zone.

➤ **STEP: 5**

Show figure 3.10 forward zone file command in command

`vi /var/named/chroot/var/named/abc.com`

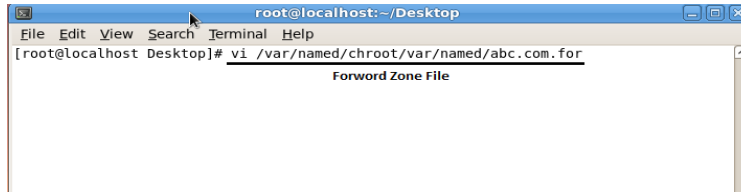


Figure 3.10: Shows Screen Print edit Forward Zone File for abc.com

Forward zone file create Shows in figure 3.11

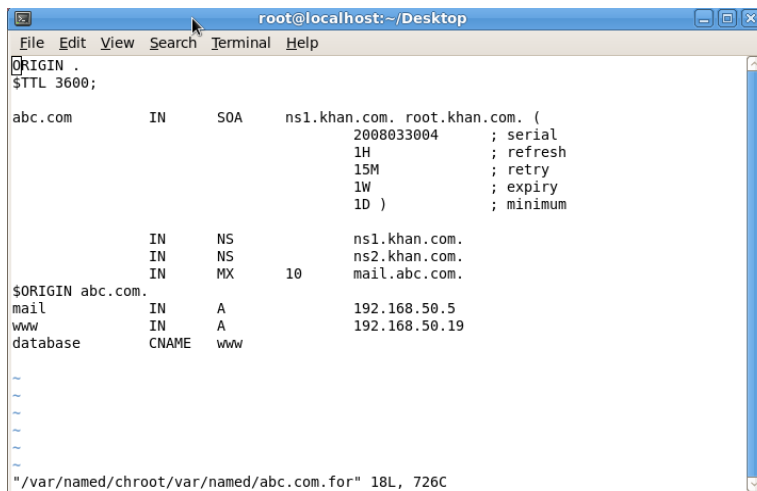


Figure 3.11: Shows Screen Print edit Forward Zone File for abc.com

➤ **STEP: 6**

Show 3.12 figure reverse zone file command

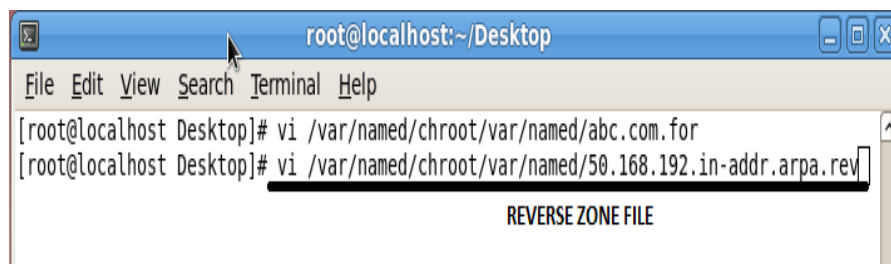
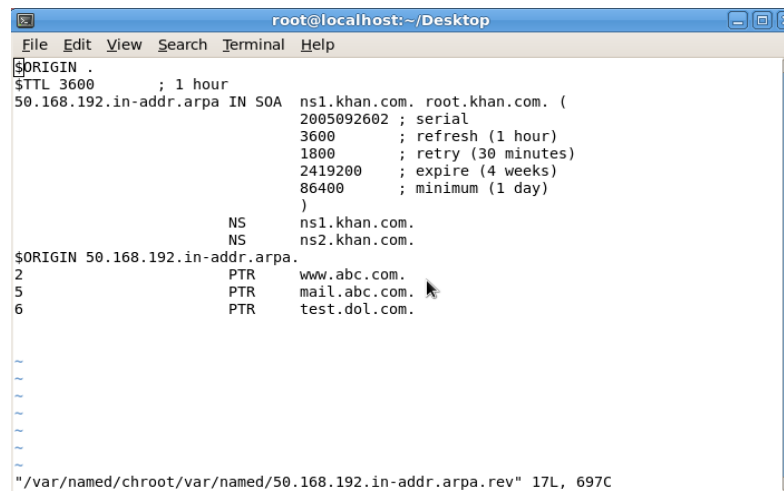


Figure 3.12: Shows Screen Print Edit Reverse Zone File

Show 3.13 figure Screen Print edit Reverse Zone file

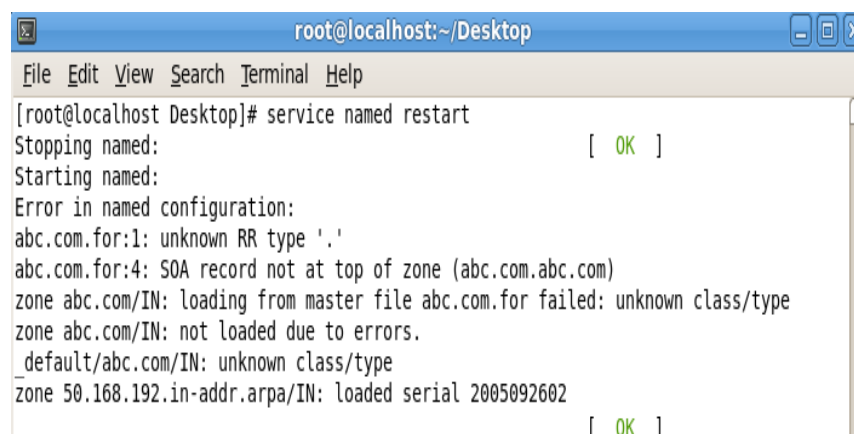


```
root@localhost:~/Desktop
File Edit View Search Terminal Help
$ORIGIN .
$TTL 3600           ; 1 hour
50.168.192.in-addr.arpa IN SOA ns1.khan.com. root.khan.com. (
    2005092602 ; serial
    3600       ; refresh (1 hour)
    1800       ; retry (30 minutes)
    2419200    ; expire (4 weeks)
    86400      ; minimum (1 day)
)
                NS     ns1.khan.com.
                NS     ns2.khan.com.
$ORIGIN 50.168.192.in-addr.arpa.
2             PTR     www.abc.com.
5             PTR     mail.abc.com.
6             PTR     test.dol.com.
~
~
~
~
~
~
~
~
~
~/var/named/chroot/var/named/50.168.192.in-addr.arpa.rev" 17L, 697C
```

Figure 3.13: Shows Screen Print Edit Reverse Zone File

➤ **STEP: 7**

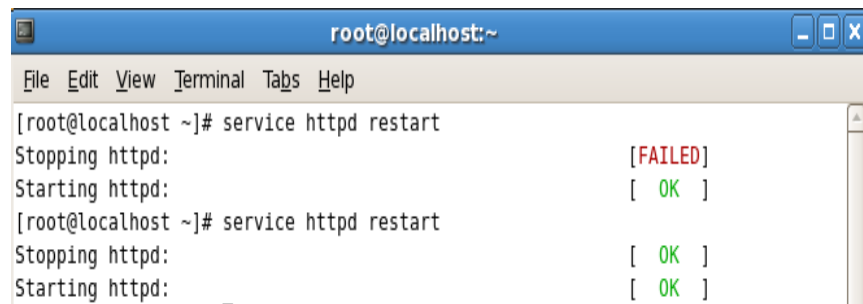
Restart the Service show 3.14 Figure



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
[root@localhost Desktop]# service named restart
Stopping named:                               [ OK ]
Starting named:
Error in named configuration:
abc.com.for:1: unknown RR type '.'
abc.com.for:4: SOA record not at top of zone (abc.com.abc.com)
zone abc.com/IN: loading from master file abc.com.for failed: unknown class/type
zone abc.com/IN: not loaded due to errors.
_default/abc.com/IN: unknown class/type
zone 50.168.192.in-addr.arpa/IN: loaded serial 2005092602
[ OK ]
```

Figure 3.14: Shows Screen Print service named restart

Show 3.15 Restart Web Server Service



```
root@localhost:~  
File Edit View Terminal Tabs Help  
[root@localhost ~]# service httpd restart  
Stopping httpd: [FAILED]  
Starting httpd: [ OK ]  
[root@localhost ~]# service httpd restart  
Stopping httpd: [ OK ]  
Starting httpd: [ OK ]
```

Figure 3.15: Shows Restart Web Server

➤ STEP: 8

Go to Browser and type abc.com in figure 3.16

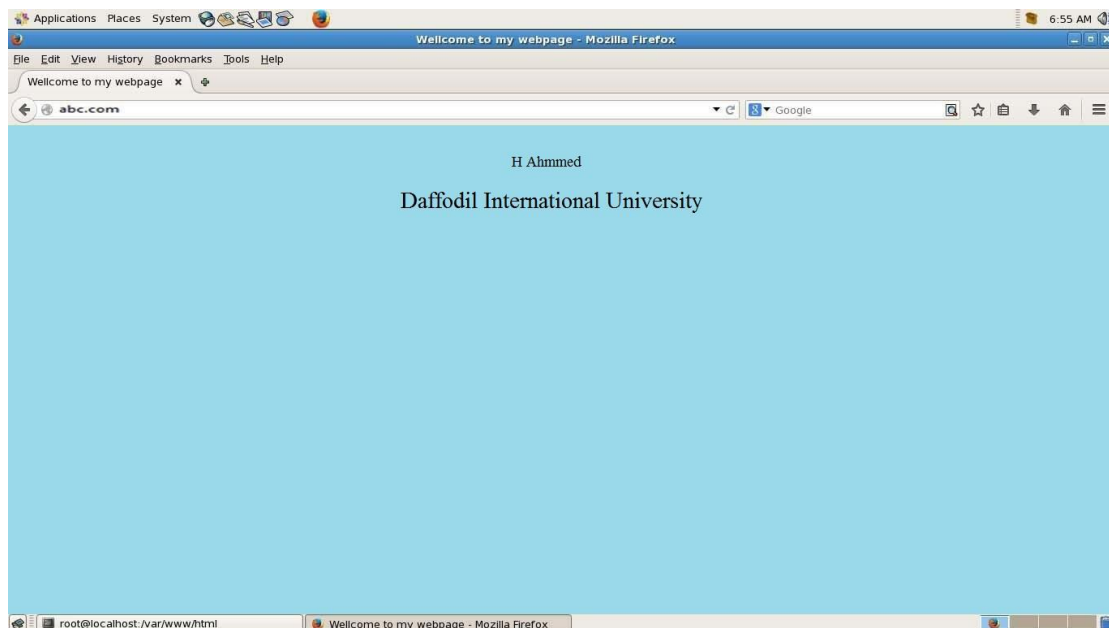


Figure 3.16: Shows Screen Print abc.com open in browser

Mail Server

Often as the "Mail Server", according to an e-mail server that acts as your virtual post office, a computer in your network. E-mail to a mail server for local users is stored in a storage area where the mail server, you must decide how to respond to a specific message destination, which consists of a set of rules specified by the user, the user's account on the mail server recognizes a database locally and with the will be dealt with, and the other to handle the transfer of messages from the mail server and e-mail client, which is the element of communication module.

Postmaster is usually referred to as the person responsible for the maintenance of the e-mail server (s) (system activity monitoring, editing users). Most mail servers during normal operation to work without any manual intervention [9].

➤ Mail Server Configuration

MUA = Mail user agent. Ex: Outlook, Eudora, Ms Outlook, Pine.

MTA=Mail Transfer Agent. Ex: Gmail, Exim, Sendmail, Post mail.

MDA=Mail Delivery Agent. Ex: Pros mail, Mail drop.

SMTP=Simple Mail Transfer Protocol. Used for sending, default port: 25.

POP3=Post Office Protocol 3.used for receiving, Default Port: 110.

IMAP=Internet Message Access Protocol. Used for receiving, Default Port: 143.

Here i have used their popular packages which are very easy to configure.

- Send Mail (for sending)
- Dovecot (for receiving)

➤ Setup mail server in centos 6

- Installing and configuring send mail
- Installing and configuring dovecot
- Creating users and testing

- ✓ **Step 1:** Before installation assign a static ip and add a host entry for your domain to That IP in the /etc/hosts file like: 192.168.0.15 daffodil.com
- ✓ **Step 2:** Install sendmail by using: yum -y install sendmail.
- ✓ **Step 3:** Install dovecot by using: yum -y install dovecot.
- ✓ **Step 4:** Install telnet by using: yum -y install telnet.
- ✓ **Step 5:** Now Edit the Sendmail Configuration File by Using: vi /etc/mail/sendmail.mc
Now Search the line: /masquerade and edit the line as:
dnl(MASQUERADE_AS(`daffodil.com`)dnl) and then Save the file.

- ✓ **Step 6:** service send mail restart.
- ✓ **Step 7:** telnet localhost 25.

```
Trying: 1 Connected to localhost.
Escape character is '^]'.
220mail.daffodil.com ESMTP Postfix
ehlollocalhost          {type this command}
250-mail.daffodil.com
250-PIPELINING
250-SIZE 10240000
250-VRFY
250-ETRN
250-STARTTLS
250-AUTH PLAIN LOGIN
250-AUTH=PLAIN LOGIN
250-ENHANCEDSTATUSCODES
250-8BITMIME
250 DSN
Quit                      {type this command}
221.2.0.0 Bye
Connection closed by foreign host.
```

- ✓ **Step 8:** Configuring dovecot
- ✓ **Step 9:** After installation open /etc/dovecot/dovecot.conf file and add the below line at the end of the file.please make sure mail_location and home_mailbox in sendmail configuration are using the same name.

```
prstocols = imap pop3
mail_location = maildir:~/mail
pop3_uidl_format = %08Xu%08Xv
```

- ✓ **Step 10:** service dovecot start to starts dovecot service:
- ✓ **Step 11:** Now test pop3 connectivity.

```
Telnet localhost 110
Trying: 1 Connected to localhost.
Escape character is '^]'.
+OK Dovecot ready.
Quit
+OK Logging out
Connection closed by foreign host.
```

- ✓ **Step 12:** Creating users and testing

Now create users to test your configuration.

```
useradd -m tanmoyl -s /sbin/nologin
```

and create passwords for the users created

```
passwdtanmoy
```

✓ **STEP 13:** Now I Can Test 3.17 figure my configuration by using thunder bird
Configuration details



Figure 3.17: Shows Screen Print POP3 and SMTP host and Port configuration

✓ **STEP 14:** Now I can send and receive mails using this server. In case of any issues Please check the log file /var/log/maillog. now my mail server is ready.

Or Here another Way for testing mail server:

- Telnet localhost 25.
- Mail from:tanmoy @daffodilnet.com
- Rept to:mail@yahoo.com or mail@gmail.com
- This is a test mail from mail server testing.
- Enter.

3.5 MikroTik Router

MikroTik is so internationally recognized as MikroTik is a Latvian manufacturer of computer networking equipment. Sells products and wireless routers. The company was established in 1995, with the intention of obtaining drainage technology in the market. Since 2014, the company has more than 100 employees. The products of the companies are known to make cost-effective alternatives with expensive routers and Ethernet radio relay ^[10].

3.6 RouterOS

The fundamental result of MikroTik is a working framework dependent on the Linux piece, known as the MikroTik RouterOS. Introduced on the organization's exclusive equipment (Router board arrangement), or on standard x86-based PCs, it transforms a PC into a system switch and actualizes different extra highlights, for example, firewalling, virtual private system (VPN) administration and customer, data transmission forming and nature of administration, remote passageway capacities and other generally utilized highlights while interconnecting systems. The framework is additionally ready to fill in as a host entryway based hotspot framework. [10].

3.7 Features

RouterOS 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
- 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

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

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

3.8 Release history

MikroTik has released different version of RouterOS at different times. Some of them are given below.

- RouterOS version **6**: May 2013
- RouterOS version **5**: Mar 2010
- RouterOS version **4**: Oct 2009
- RouterOS version **3**: Jan 2008 [12]

3.9 Router Board

The company produces a number of integral boards with an integrated circuit sold under the name of the Router Board and operations that operate a complete hardware operating system on RouterOS.

The router is also combined with RouterOS for small and medium-sized wireless Internet service providers 3.18, usually a broadband wireless access in free areas. Products include SOHO, MIMO and TDMA 802.11n wireless devices for both internal and outdoor use, such as simple PCB routers with integration in custom solutions. The router contains a line of Mini Adapters with PCI Mini and Mini PCI Express that supports the entire spread of IEEE 802.11 protocols and are designed for use and a router line.

Although the Linux elements are not needed for MikroTik hardware support in the public, many third-party Linux components provide many router boards and support their versions, that is, Openwork [13]

750G Series MikroTik Router Shows Figure 3.18:



Figure 3.18: Shows MikroTik Router 750G Series

❖ 3.10 Cloud Core Router

In November 2012, MikroTik broadcast the Cloud Core Router 3.19 based on the Tilera LAP with procedures handling 16 to 36, 12 1000Base-T Ethernet interfaces and up to four SFP (MiniGBIC) interfaces for packages between intermediate packets per second.) This unit focuses on the size of network providers and attempts to make an alternative to other grand bridges. [14].

MikroTik Cloud Core Router 1036 Series shows in fig 3.19



Figure 3.19: MikroTik Cloud Core Router 1036 Series

3.11 Propose Network Diagram (MikroTik Configuration)

Network Diagram shows in figure 3.20:

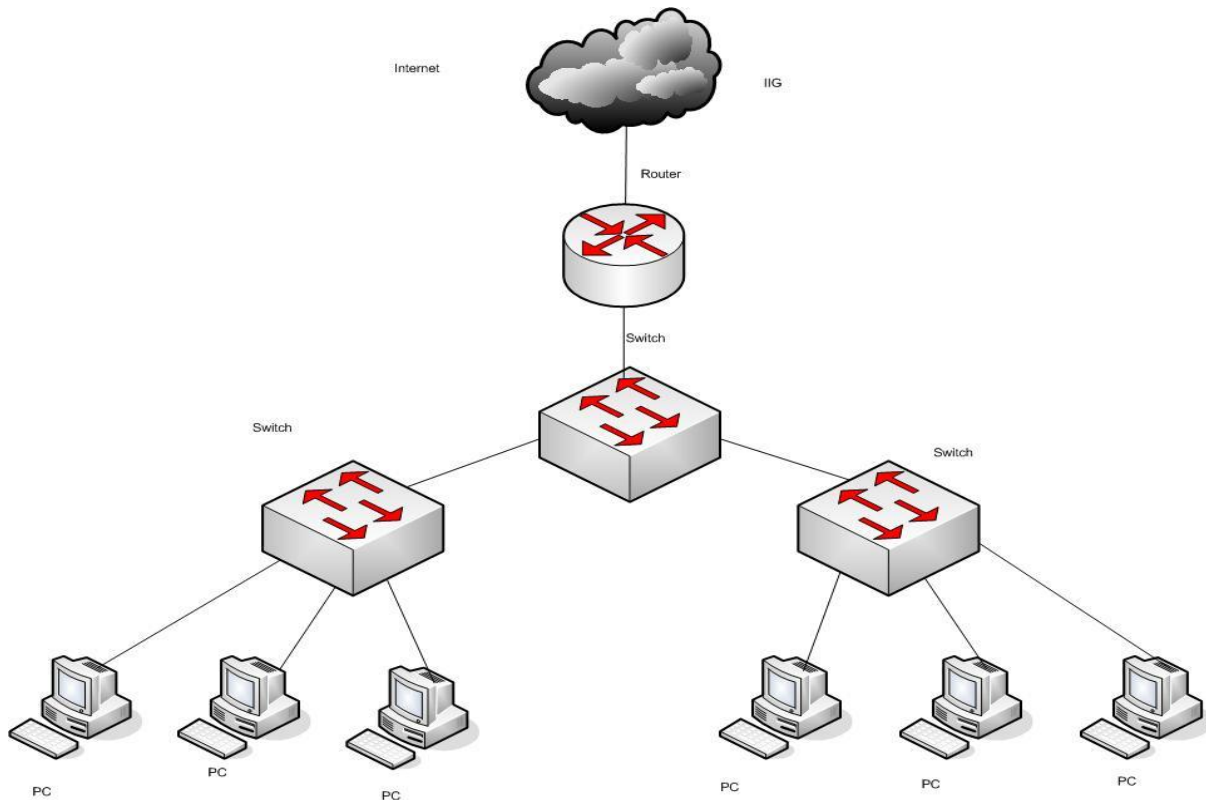


Figure 3.20: Shows Network Diagram

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

➤ 3.11.1 Initial Step

- Give 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.

Show in figure 3.21 mikroTik reset command

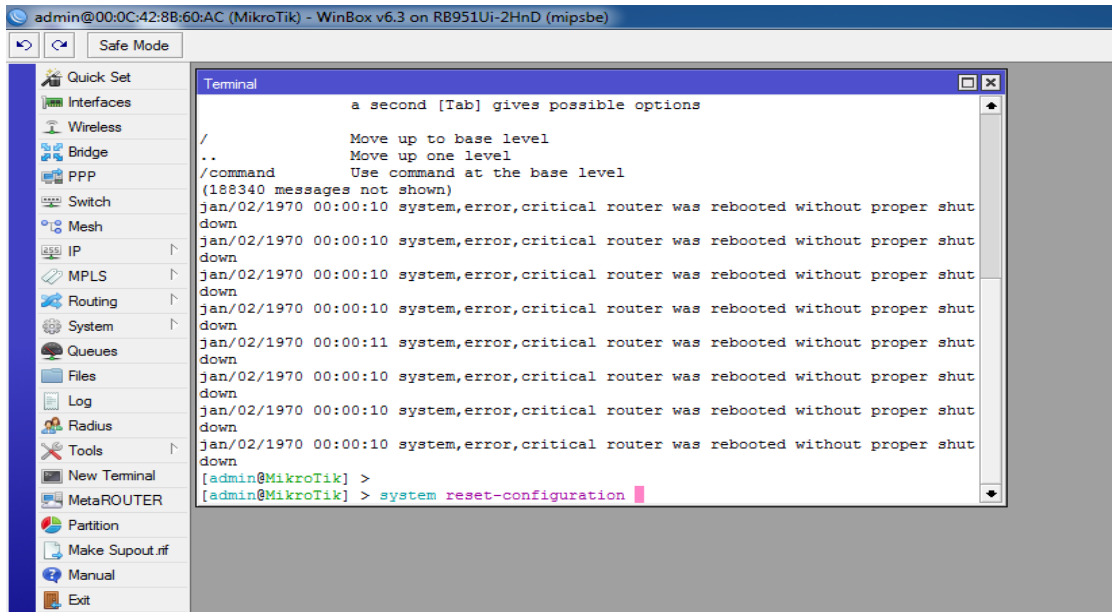


Figure 3.21: Shows Screen Print Reset MikroTik Router

✓ **Step2:**

Defining routes or Setting up Gateway

Process:

IP > Route > "+" > Gateway

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

Apply>Ok

IP add set in mikroTik router show in Figure 3.22

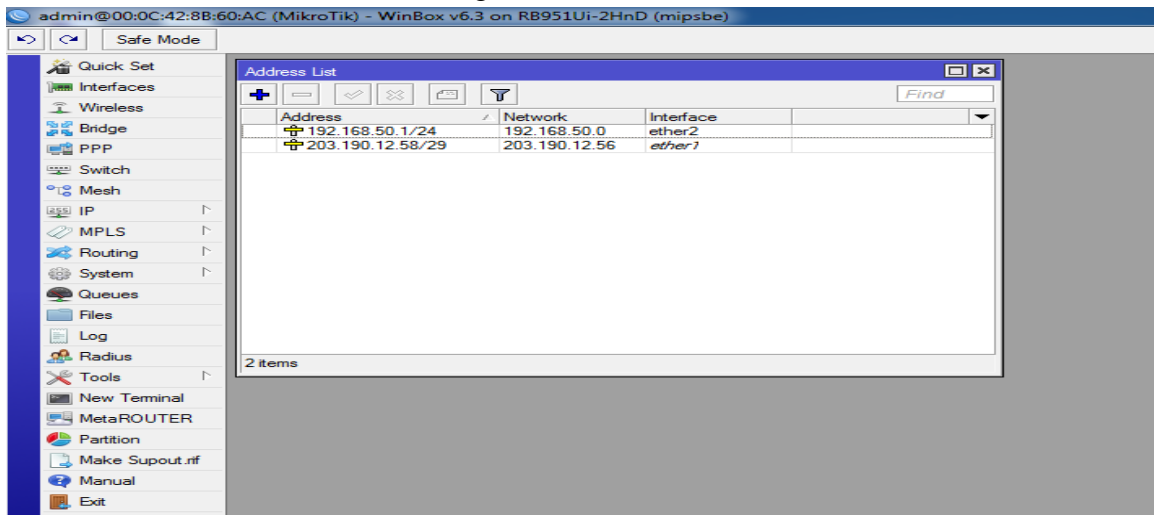


Figure 3.22: Shows Screen Print IP Address

Setup route ip add in figure 3.23 show:

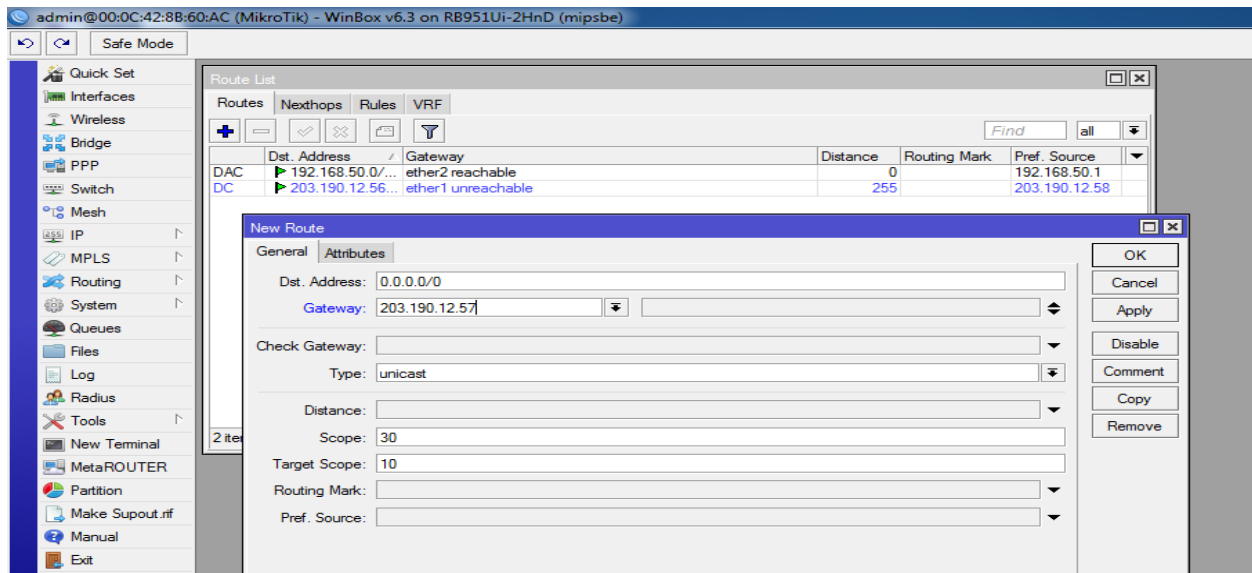


Figure 3.23: Shows Screen Print Gateway

Step3

Process:

IP > Firewall > NAT > “+”

General:

Chain:srcnat

Src. Address: local block/IP with subnet mask of the network.

Action:

Masquerade

Apply>Ok.

Local network ip address NAT rule in fig 3.24 shows:

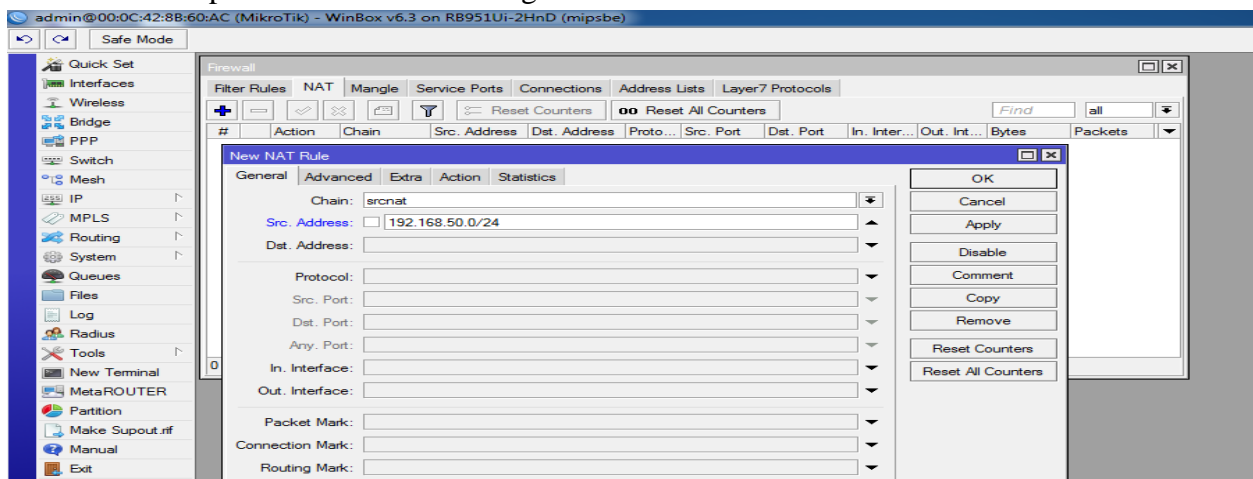


Figure 3.24: Shows Screen Print NAT Rule

Shows in Screen Print Firewall in fig 3.25:

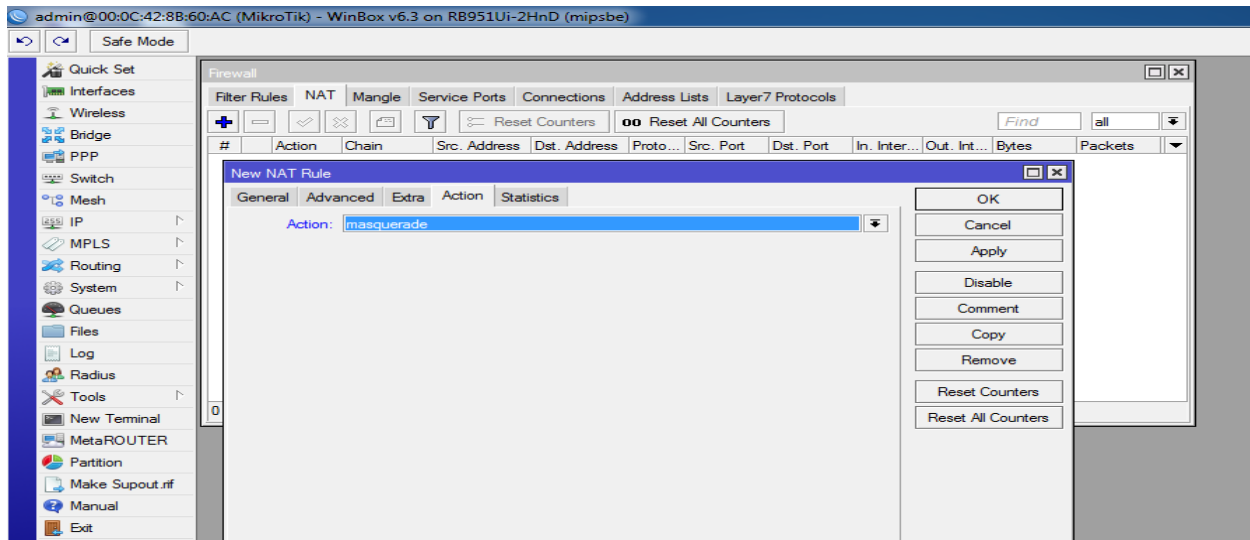


Figure 3.25: Shows Screen Print Firewall

✓ **Step 4:**

Doing the task of bridging the related ports with each other 3.26 in figure

Process:

Bridge> "+" > (bridge n, here n=1, 2,3....)

Settings:

- ✓ Tick mark to 3 options

Bridge Settings Screen Print shows in fig 3.26

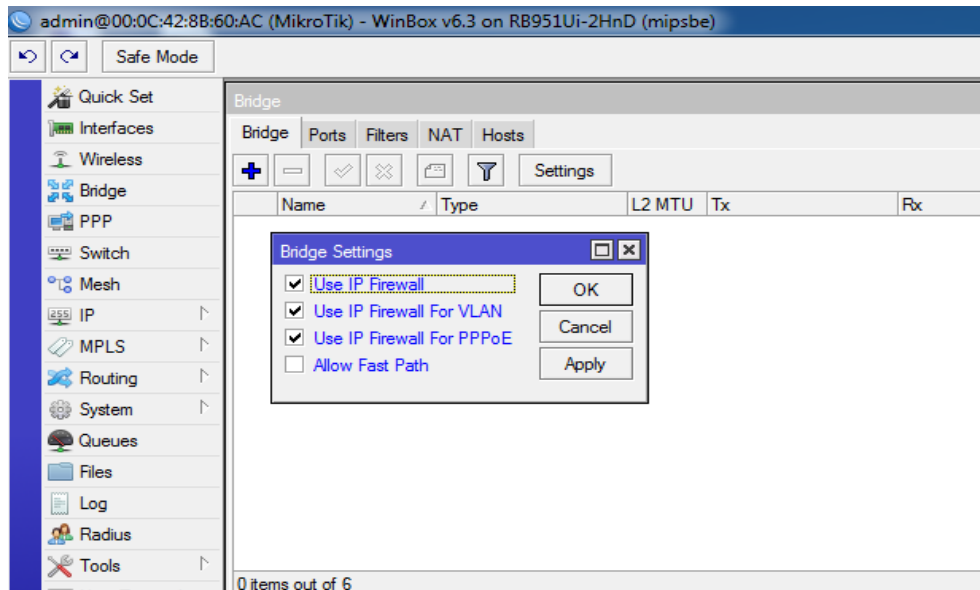


Figure 3.26: Shows Screen Print Bridge Settings

Ports:

ether2
ether3_LAN
ether4
ether5
wlan1

Router interface port in graphically 3.27 show

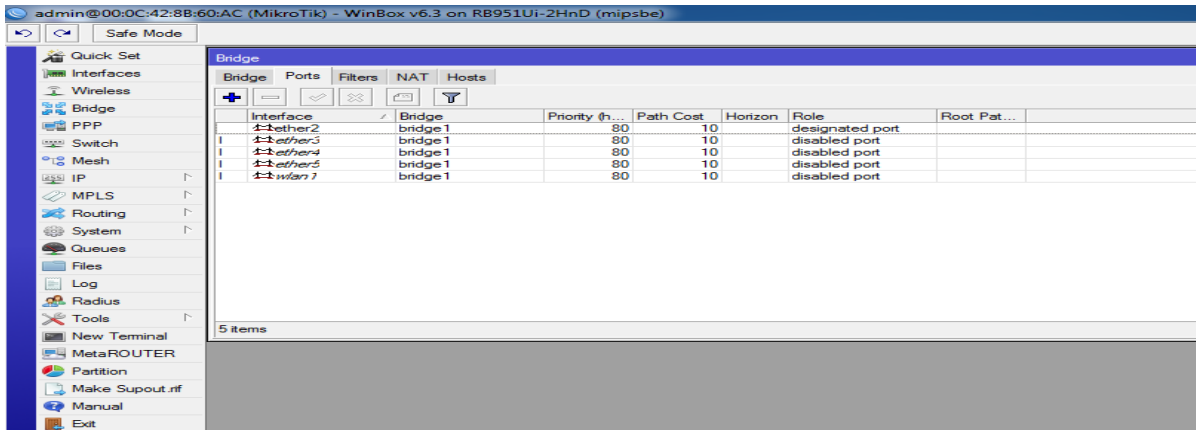


Figure 3.27: Shows Screen Print Bridge Ports Assign

✓ **Step 5:**

Knowing the profile of bridge with the DHCP Server 3.28 figure

Process:

IP > DHCP Server > Interface: bridge 1 (bridge name)

DHCP Setup Screen Print show in fig 3.28

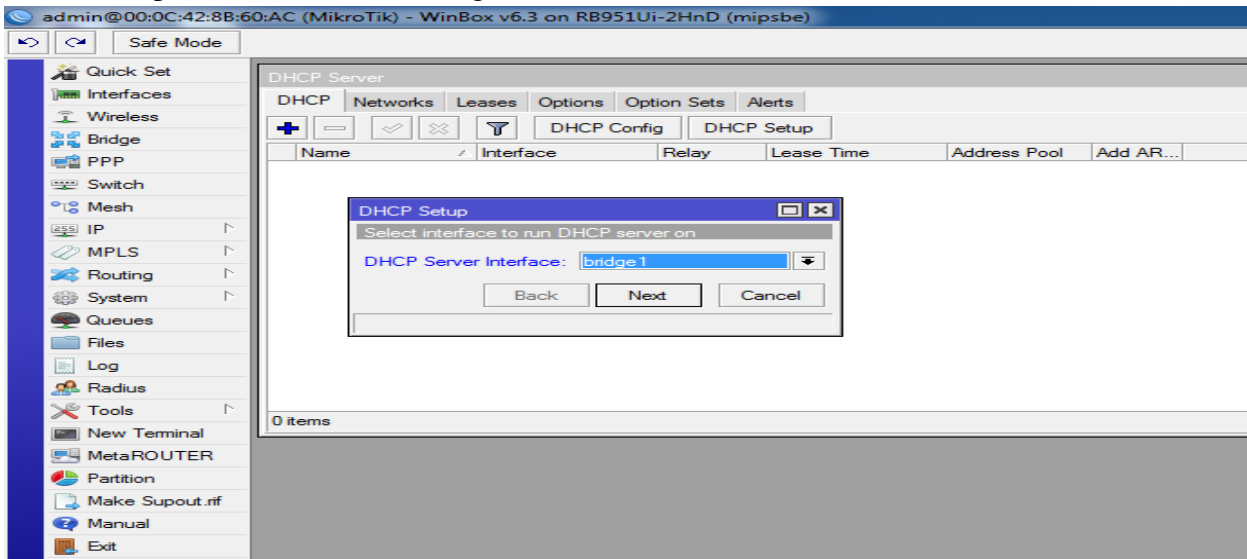


Figure 3.28: Shows Screen Print DHCP Setup

Local Network IP pool address shows in 3.29 Figure

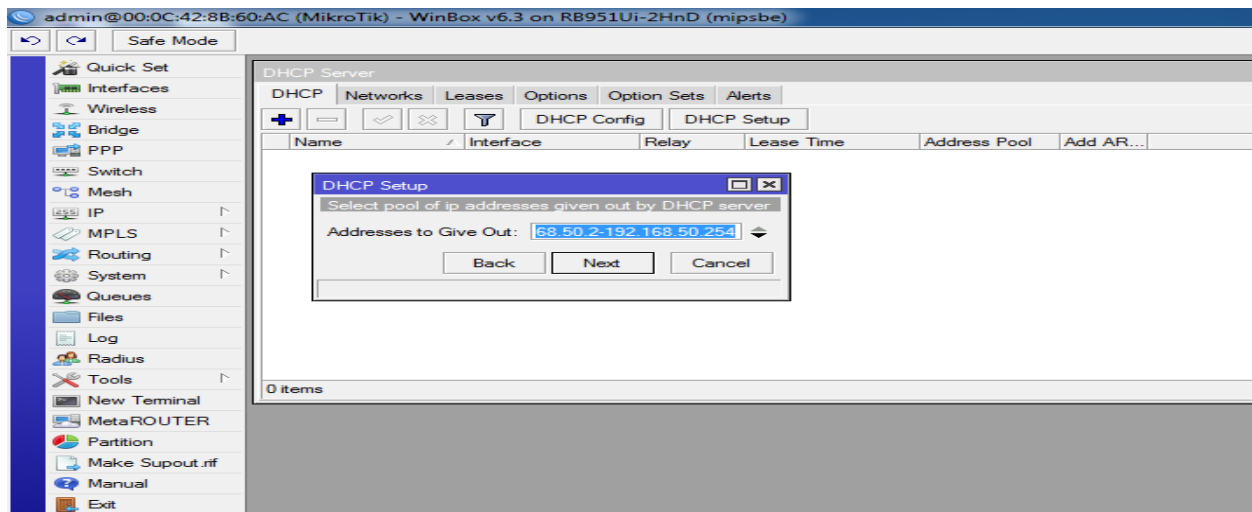


Figure 3.29: Shows Screen Print IP address pool of the local LAN.

Setup DNS ip address show in 3.30 Figure

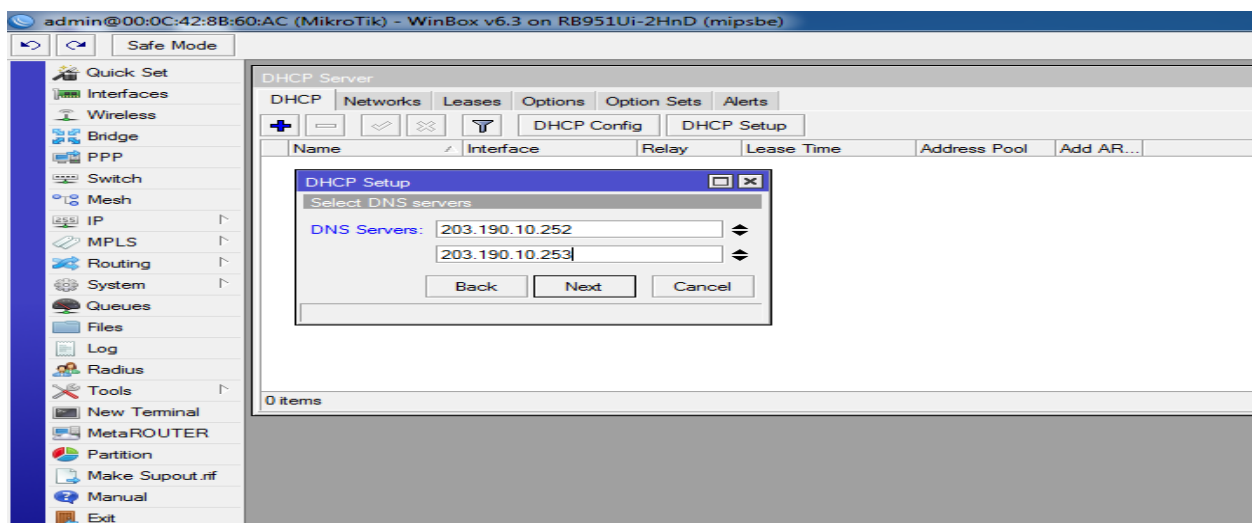


Figure 3.30: Shows Screen Print DNS Service

✓ **Step 6:**

Wireless LAN configuration

Process

Wireless > Wlan1 (enabling it with tick mark) > Mode: ap bridge

Wireless password setting shows in 3.31 Figure:

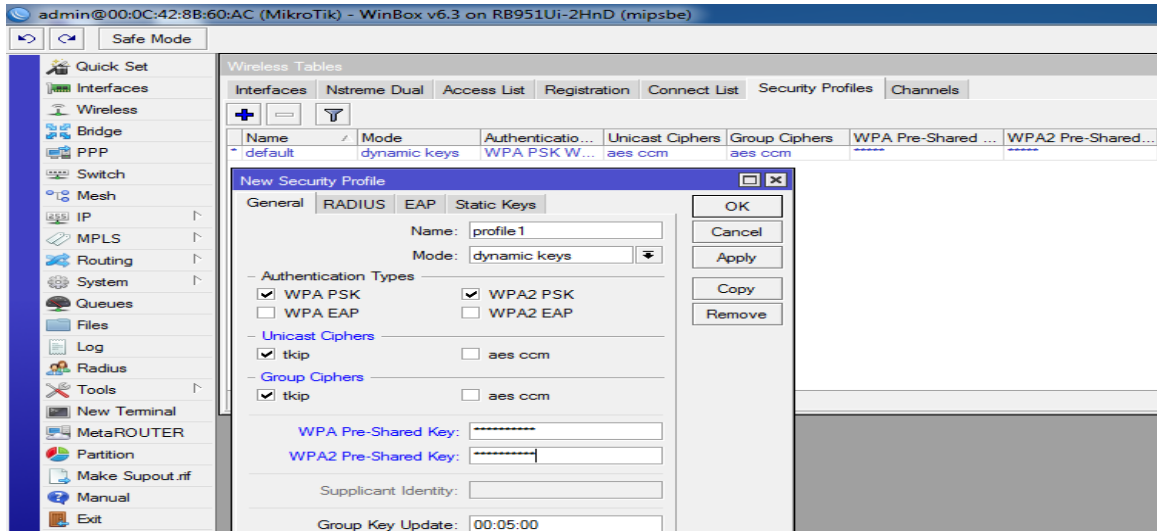


Figure 3.31: Shows Screen Print Wireless Security Setting

Wireless sitting SSID Mode show in Figure 3.32:

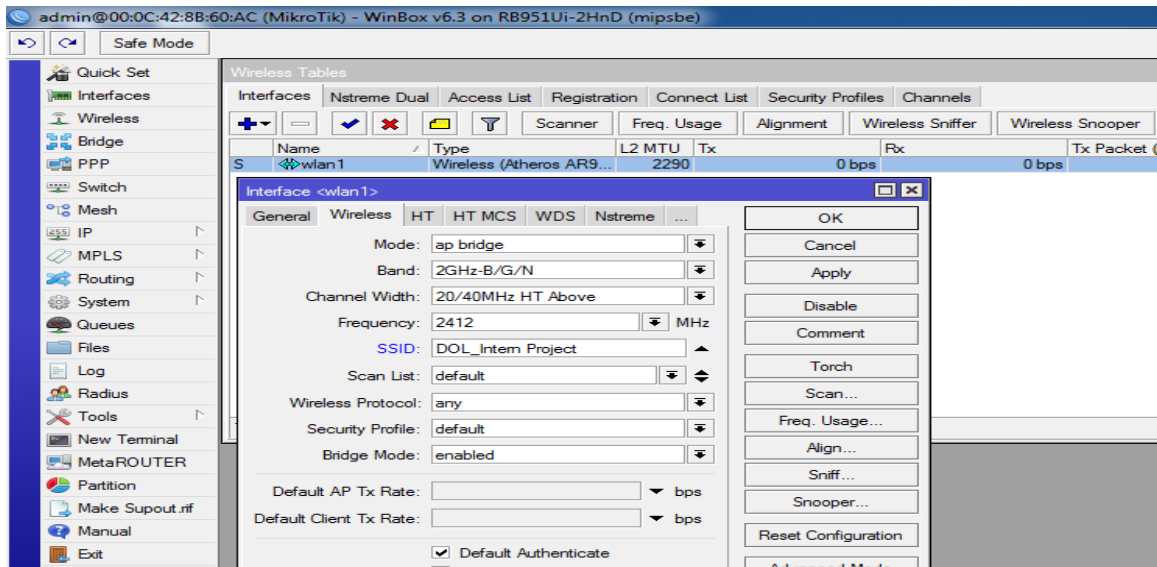


Figure 3.32: Shows Screen Print Wireless Setting

3.12 OSPF Configuration

For the project network I have configured OSPF in mikroTik router with an existing OSPF System that is provided from the Juniper router of the Data Centre. As a result it becomes a relative point-to-point OSPF for the network and was easy to configure. The configuration of OSPF in mikroTik router is given below with both GUI and with command line interface.

GUI Configuration;

✓ SETP 1:

Routing protocol OSPF selecting in shows at Figure 3.33

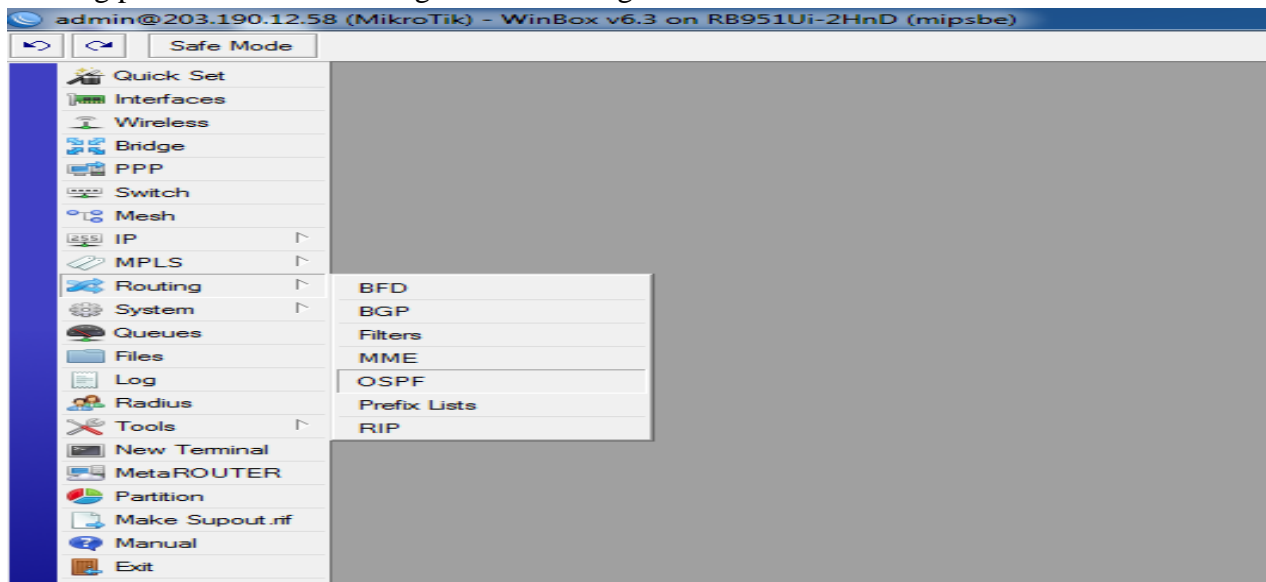


Figure 3.33: Shows Screen Print Router Home Page

✓ **SETP2: Network Configuration**

Here I have configured the network for OSPF. At first I have configured the WAN Network and then the LAN network shows in Fig 3.34:

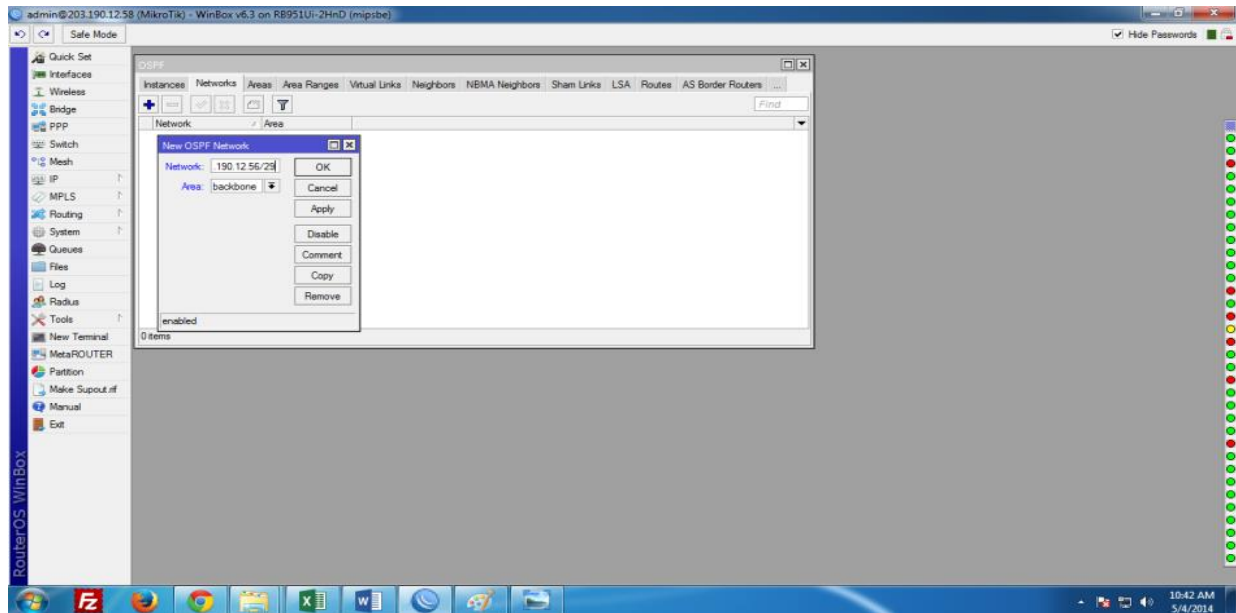


Figure 3.34: Shows Screen Print OSPF Network WAN Configuration

OSPF LAN network configuration in Figure 3.35:

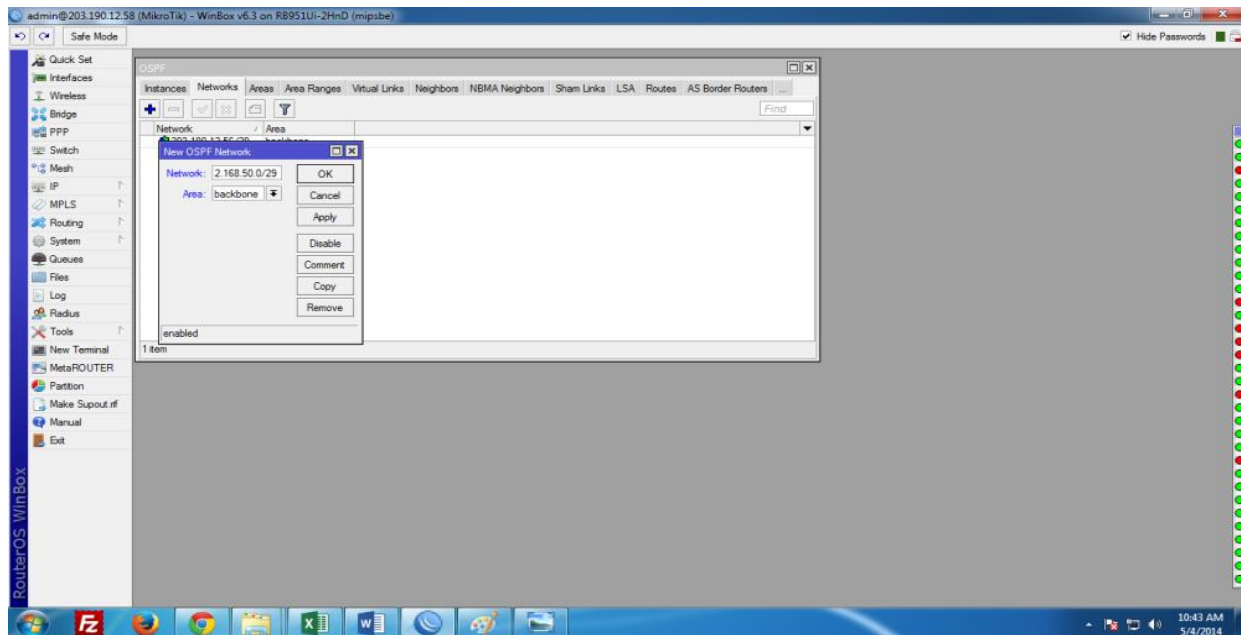


Figure 3.35: Shows Screen Print OSPF Network LAN Configuration

OSPF LAN and WAN ip address setup in 3.36 Figure:

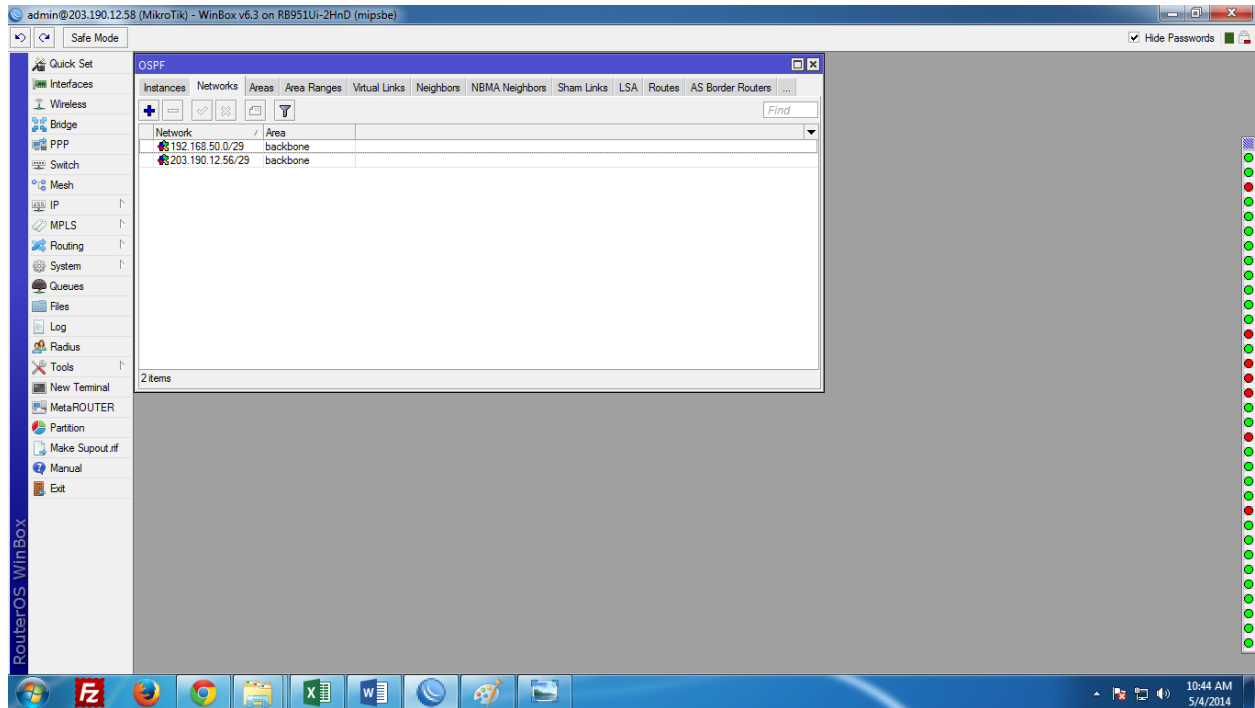


Figure 3.36: Shows Screen Print OSPF Network Address

✓ **STEP 3:**

Area Selection shows in figure 3.37:

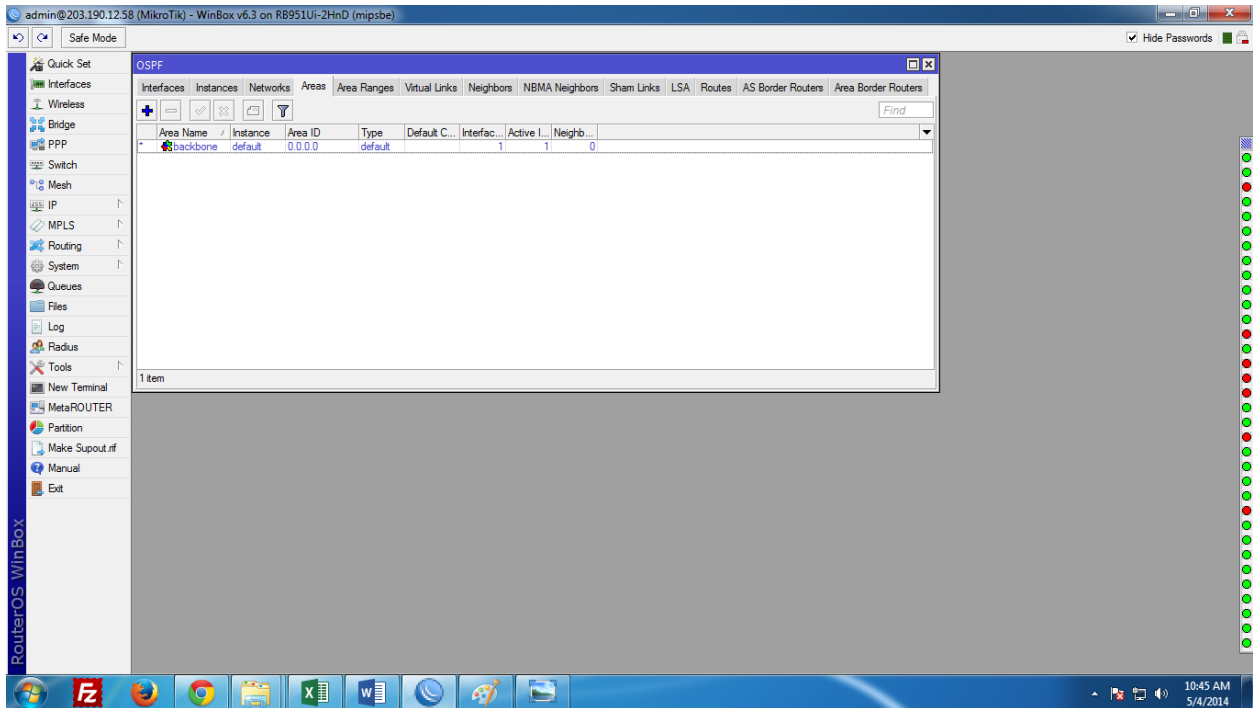


Figure 3.37: Shows Screen Print OSPF Network Area Selection

✓ SETP 4:

Interface selection shows in 3.38 Figure:

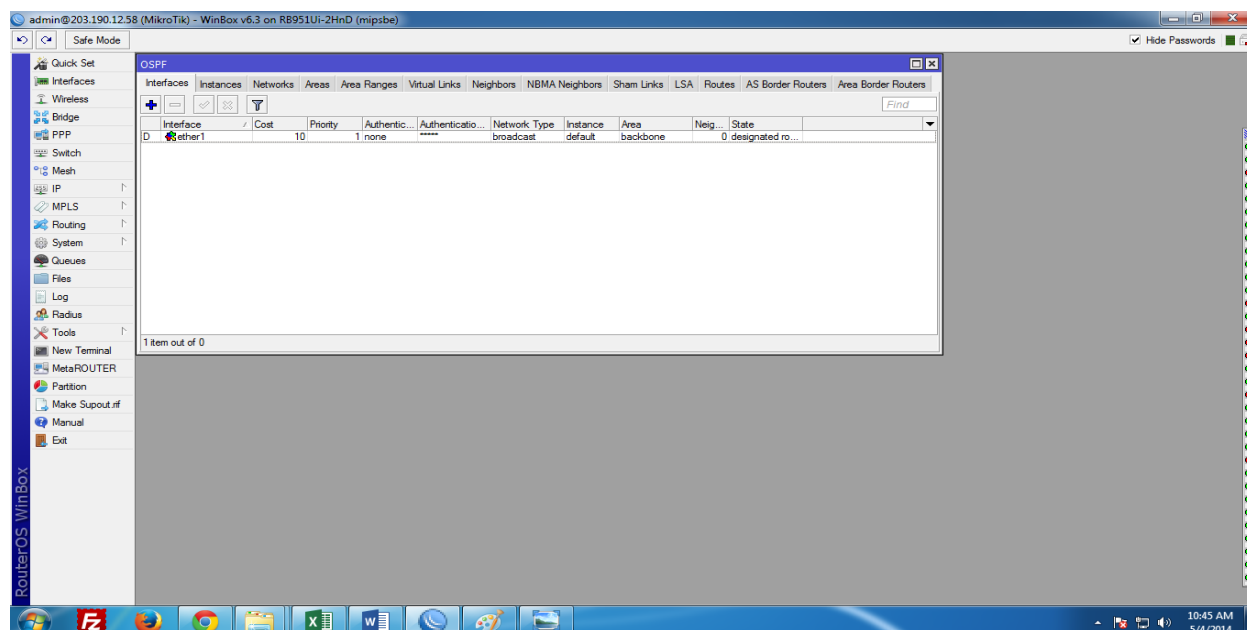


Figure 3.38: Screen Print OSPF Network Interface Selection.

3.13 Challenges

No work is a challenge, but four months of my internship and friends after listening to local hours, I think there are a number of joint challenges. In the opinion, the candidates are not paid / below, temporarily, and they are in the race to experience.

Occasionally road work: Not a good job. I'm scared, used abuse, tweak my fingers on the desktop and try to browse Facebook.

Too much work: If the trainers are happy to get the feet in the door, work centers can be used by young workers by their very long time of repetitive work.

You are afraid to ask yourself: The job ends and eventually I have the opportunity to create myself! But I'm not sure, x, y, z ... I can feel the pressure, is an independent and self-employed, but it is much better to explain the uncertainty!

League with another international center: happy I was a trainee; We ask questions about each other and we can easily collaborate with the projects that work in teams with such associations.

Trains in the next post will not open or recommend a good bookmark of the league in other offices that they cannot be as friendly.

New Lifestyle As a last-year teacher at a school I can use a new, potentially violent lifestyle.

Instead, he wakes up in the eighth and goes for a few more days, I sat on the 9-5 board. Perhaps I live with my parents to save money. Steels and new life settings make social communication faster than before.

CHAPTER 4

Competencies and Smart Plan

4.1 Competencies Earned

Learning or Learning is to read what the student knows, understands or can be as a result of the learning process. Installation companies and proposals in the network and servers on two data centers. The leading role in the implementation of advanced Linux software, such as LDAP HA, is present in the results of the programs, field management, and internships. The Student Association found a great introduction to learning: collecting and organizing information for the station project Description: Participating in the resumption of Lab. Learning results. Installation and software configuration and innovation; Installation, configuration and testing of employees • Back to learning outcomes, the Internet will provide guidance on organizational policies and procedures.

4.2 Smart Plan

Each company must have a smart plan to achieve success. In essence, some common things are the smart plan combination.

4.3 Reflections

Daffodil Online Ltd started its operations in 2002. Over the past years, the portfolio of operations and services has been expanded or recommended by the customer and time required. They have worked with many national projects and international organizations and have made a reputation. They use the latest technology and communications services where it is needed. They are Corporate Solutions that can provide sufficient networking and telecommunication solutions with a group of highly effective technical professionals.

CHAPTER 5

Conclusion and Future Career

5.1 Discussion and Conclusion

This entry level position was a brilliant and figured understanding. I saw the future and I will have my entitlement to connect with the horde of individuals who have done it. Through this training, I show a standout amongst the most vital issues and time administration abilities or self-inspiration. When I began, I had eight hours, and six days seven days he could sit in the inclining and he didn't think so. If I understand what I should do, my times have not been broken, and therefore organize my daily work. It was determined and the exact time to get the answer to the questions you want to learn. I would like to find this training and time management of the office to find out how I inspire myself. And yet looking for the use, the company has different designs and ideas. I love my opportunities open for new opportunities, but I always work with the University of Bangladesh around the world. I ask for that work. We will continue working and hope to learn more about this company and identify the importance of new people. It's a great experience, and I hope there is a lot of people in the second place!^[5]

5.2 Scope for Further Career

There are career possibilities available in different Linux areas. Linux platforms should be mentioned on the Linux platform, but it does many different areas like Desktop Application Development today, they are of great importance for source software developers, open source and network engineers. There are many businesses that move to Linux today and open source software. There are companies like Google, Yahoo, Boeing, Lufthansa, wiki. Org, many companies are after a cost-effective solution with an open source code. The great demand for qualified professionals in LINUX, MICROTIC, etc.

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Appendices

➤ **Appendix A: Internship Reflection**

The main purpose of my internship in a professional environment is the knowledge acquisition in the classroom for practical solutions with real problems. And learn relevant professional skills and relationships in a professional environment with new knowledge, skills, and capabilities to decide on surrender and plans. Add to network with leaders and professional relations of other professionals. I am professional in the field of exhibition for clients and professional labels and professional supervisors and other staff to learn about the behavior, such as interaction. To make my commitments, I make the relevant company colleagues. I am a mission/vision of the organization, how you get contact data with colleagues, how you can feel how structured it is how to make decisions on how to cultivate a professional organization, and the amount of accountability and feedback on the organization. With the assessment at the end of my internship and experience with the practice that takes place in individual meetings, can get a professional opinion. Believing with the practice of life for life in the world of society, leadership, and service, for my gift.

➤ **Appendix B: Company Detail**



Head Office

Name	Daffodil Online Limited
Address	102, Shukrabad (3rd floor), Mirpur Road, Dhanmondi, Dhaka - 1207, Bangladesh
Telephone	02-9143258-60
Fax	880-2-8116103
E-mail	info@daffodilnet.com
Website	www.daffodilnet.com
Type of Organization	Nationwide Internet Service Provider (ISP)
Employees	12

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