

ISP SERVER CONFIGURATION ON LINUX AND MIKROTIK

SUBMITTED

BY

Ujjal Kumar Dev

ID: 162-15-8029

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

Supervised By

Narayan Ranjan Chakraborty

Assistant Professor

Department of CSE

Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

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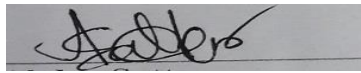
APPROVAL

This Internship titled “**ISP Server Configuration on Linux and MikroTik**”, submitted by Ujjal Kumar Dev, ID No: 162-15-8029 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 13 September 2019.

BOARD OF EXAMINERS

Dr. Syed AkhterHossain
Professor and Head

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

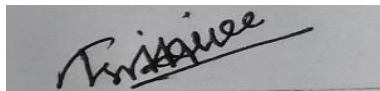


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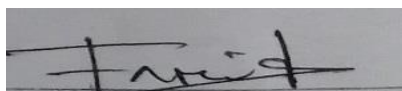


Internal Examiner

Shah Md. Tanvir Siddiquee

Assistant Professor

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



Internal Examiner

Dr. Dewan Md. Farid

Associate Professor


Department of Computer Science and Engineering
United International University

External Examiner

DECLARATION

I hereby declare that, this internship report is prepared by me, Ujjal Kumar Dev, ID No: 162-15-8029 to the department of Computer Science and Engineering, Daffodil International University. Under the supervision of **Narayan Ranjan Chakraborty, Assistant Professor, Department of CSE**, Daffodil International University. I also declare that neither this internship report nor any part of this internship report has been submitted elsewhere for award of any Degree or Diploma. I also declare that, I collect information from Daffodil Online Limited (DOL), Data Center and Internet Service Provider (ISP) Based Company, Books and Internet.

Supervised by:



Narayan Ranjan Chakraborty
Assistant Professor
Department of CSE
Daffodil International University

Submitted by:

Ujjal Kumar Dev
ID: 162-15-8029
Department of CSE
Daffodil International University

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

ABSTRACT

If two and more computers are interconnected and able to exchange data or information then we call network. We want to increase the number of PC's and exchange data or information from one to another that time we need some special PC's are called Server. There is various type of work in the network that is why also different types of server have. For Example- FTP Server, DSN Server, Mail Server, Web Server, Proxy Server, Firewall. Each of them works differently and without them it is impossible to maintain a network. If network is connected to the Internet and we want to secure your information they must setup server using Linux Operating System. That's why I choose this subject of my report is "Server Installation and Configuration on ISP (Linux Platform)". The report discussed about the purpose of the specific server using on ISP, hardware requirement for the server, choosing software and installation process of the software, step by step server configuration process and simple troubleshooting of the server.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This is the IT period. Today, many people around the world have long been an integral part of web innovation and long-term server access. Linux is probably a free programming success after the first place war or most of the late. So a domain name system server is important web innovate. Access level positioning is an ancient practice for understanding the true work, status, and difficulty of employees. Entry level positions have their own significance before being awarded degrees in all disciplines of medical science, engineering and accounting. Currently each business and business is featured. The Area name System is an additional support server and we can use this framework to perform different types of administration. Web innovation, e-business, telecommunications, e-mail, mobile innovation and many more are objectionable and without DNS on the server. Today, the banking industry and various business entities rely on completely different types of software and online technologies and servers. Banking software, credit cards and 40A all depend on this software and is one of several types of server & Linux.

1.2 Motivation

As I am now looking for my Bachelors in CSE at DIU, I have come to understand the importance of taking information from the world that will complement course study & helps an young students gain an more comprehensive view the subject. At the entry level location I discovered that I was modifying & editing the promoting Executive & Mikrotik servers. As a network access giver. My tendencies are too full to quickly understand & act, but I have the strength.

1.3 Internship Objectives

The ultimate final of I entry level position event are to identify myself as competent in the exhibition of focused activities. So it is effective in enhancing efficiency. I want to collect some unprecedented qualities to give myself. Entry level positioning in software engineering is to provide workload while studying in the school, to assist the underdog in changing the halls of work.

1.4 Introduction to the Company

The DOL proud of yourself on being one of the leading ISPs in Bangladesh. There is the most settled organizations the fields of ICT where they have an long haul association with their customers in their business fundamentals. As we look at development over the decades following our introduction, they have been unfathomably happy with what they have accomplished, & significantly they have expressed a vision for a more encouraging future.

1.5 Report Layout

Chapter "1" I describe the reason of the internship, the inspiration for internship, and the identity of the organization. (2) In the chapter I describe my internship method. This includes the internship do, about company, the IT offered by Daffodil Online Ltd and the role it plays in the Linux job market.(3) The competition I have described in the chapter on competent competition is (1) the conclusion of the chapter and the future opportunity described. I examine Future Scopes in Linux & compose the end.

CHAPTER 2

INTERNSHIP ENTERPRISE

2.1 About the Company

DOL is 1 of the main and most prepared ISPs in Bangladesh and has been giving its very own Fiber Optic One Foundation for serving corporate, SMEs providing stops in ICT administration and management since July 2012. The Foundation worked with high national gratitude to all involved with numerous national initiatives and public associations. It redesigns the space required by the administration, utilizing recent progress. Focus Corporate Network Solutions Division is equipped with exceptional production skills to provide the conditions for artisan and media transmission. DOL is a highly specialized expert designing and supervisor crew verified furthermore, associated with SEN, Microsoft, Linux and effectively connected to Global Driving with ACM. It corporate social obligation policy strengthens mindfulness of the community, workstations, locations and expectations of others in the marketplace. As a team concern, the DOL progresses through its projects and administration in three important stages, namely, guidance, country building and conditions [1].

2.2 Product and Market Situation

The DOL prides itself on being 1 of the lead ISPs in Bangladesh. They are extremely pleased with what we have achieved, and are growing equally in our vision for an exciting future, as they focus on developing decades of observance. DOL likewise manages individual IT service and provides professional trainings. These are given below.

➤ IT Services

- ISP
- The Art State of the Art Data Center.
- co-location center.
- Mail server solution.

2.3 Target Group

The organization clients base includes all customer organization, included new business. The company wants to focused on SOHO customer, as they are the ideal focus our new rapider contribution. Web notes these markets segment have unusually valuable administrative needs and are slowly building on promising, strategic clients.

2.4 SWOT Analysis

SWOT analysis's is valuable system for understand your weaknesses, strengths, and to differentiate between the threat your face.

➤ Strengths:

- People communicate between people
- Data Collection

➤ Weaknesses:

- Participants The new participants feel that there is a small degree of expertise expected to withstand the market
- Set companies need a large amount of cash to set up

➤ Threats:

- Economic Crisis - Homeowners Refuse to Build Their Broadband Membership Lack of Confidence in Displaying Improved Stock Market Newspapers.

CHAPTER 3

INTERNSHIP ROLES AND RESPONSIBILITIES

3.1 Daily Task and Activities

- Learn and understand about network components.
- Installing Linux
- Manage Linux users and passwords.
- File and Directory Permissions.
- Configuring FTP, NFS, WEB, PROXY, MAIL Server.

3.2 Creating Linux Partition

3 partition routes (/), / boot.

➤ **Partition: /boot**

Segment boot (500 MB): The boot / over / mounted segment contain working frame work part as well as side constraints on the documents used in the bootstrap method, creating a local ext4 parcel to documents. For most clients, a 500 Mb boot parcel is sufficient.

➤ **Partition: /**

The root partition where all files in the original partition have the "/" root directory. Requires a minimum of 4 GB HDD space.

3.3 Server Configuration

The Linux operating system has many servers. These include DHCP, DNS, NFS, FTP, mail, proxy, Samba server ISP.

Web Server

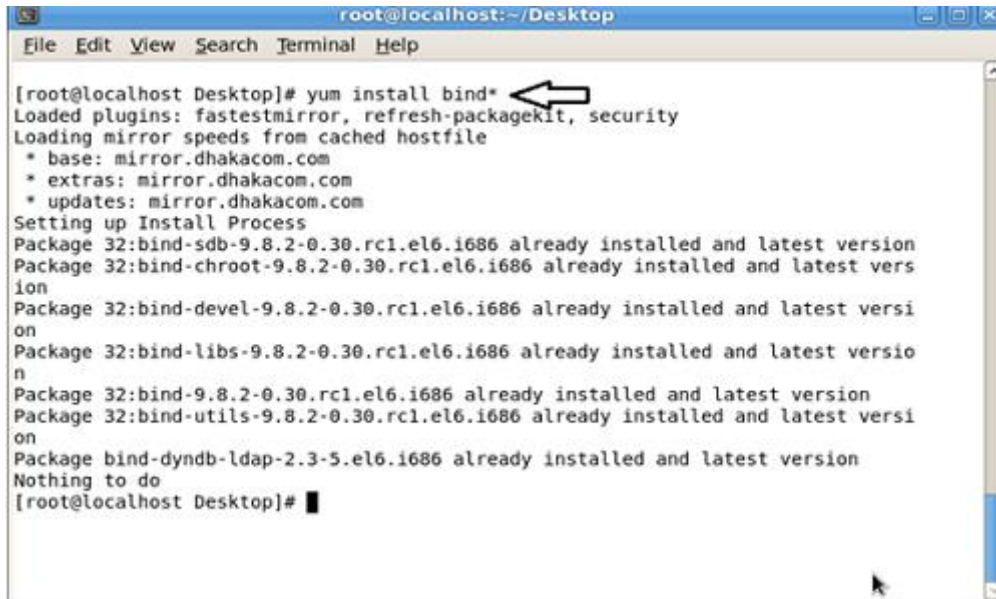
A web server is a PC that accesses a web page. Each server will have an IP address and possibly a region name[4].

Domain Name System

The host IP address & the PC is helpful, yet in each case the name is difficult to work with. For example, Consistently a large number of machines are popping up on the Internet, making it not easy to put everyone on cutting edge table. The domain name of the machine is the system-ip address on the net of all machines It determines the names and addresses and addresses of some individual variables[2]. For this situation, in the case of Register, the relation in the just name of machine & machine IP is 192.162.50.201 The domain name is the system-machine's other means are the machine name, the IP number; This is called the "turn of mapping". Domain Name System - An intermittent, dark zone of system resources. This is part of an initiative, we only have one server and one server to store the required DNS server, which illustrates how a typical domain name system might try to clear the server name[5]. A program called Unix is ending. This "software" bundle is composed by a section of the Internet Software Consortium. Most Linux extensions are associated with names and depending on the bundle's top or base case, often referred to as / usr / sbin /, depending on the rules of a bundle known as official. Using the domain name system is mostly an overview of the "Berkeley Internet Name Domain" initiative that maintain a programming under Linux. One of the notable programs stuck in the dub is "Bright," a daemon that responds to domain name system searches from remote devices. BIND 8/9 is the domain name currently used for the system. To get the database, it requires a domain name system server for its own site.[2]

➤ **Step:- 1**

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.dhakacom.com
 * extras: mirror.dhakacom.com
 * updates: mirror.dhakacom.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]#
```

Fig:-3.1 yum install bind.

➤ **Step:- 2**

Configuration using file editor- vi /var/name/chroot/etc/Name, Conf

The IP address of my PC is 192.168.50.19



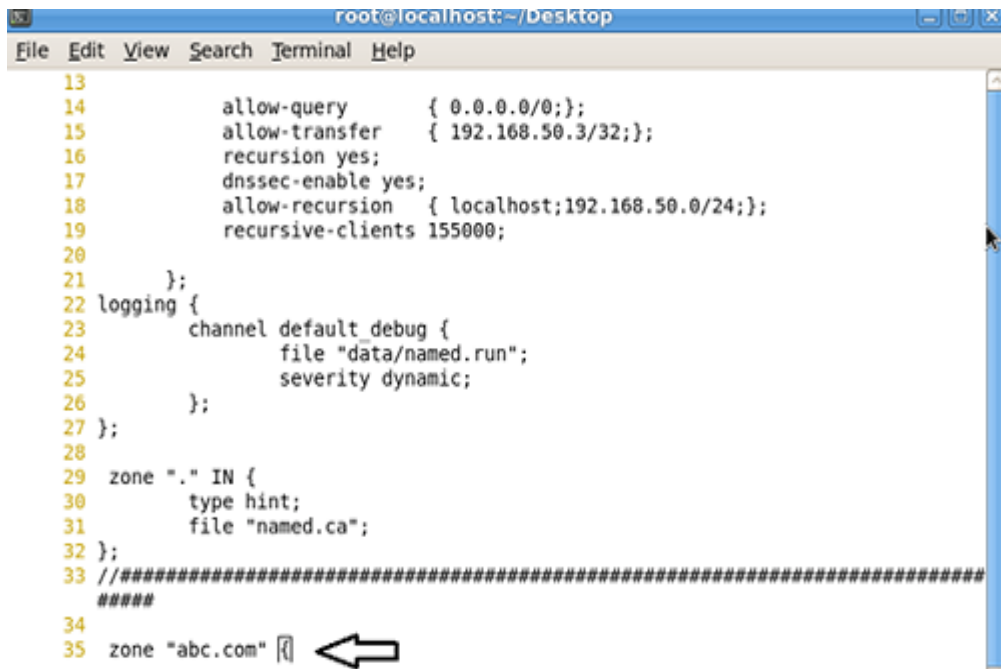
```
root@localhost:~/Desktop
File Edit View Search Terminal Help

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    menstatistics-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 --
```

Fig:- 3.2 Using VI EditorName, config file.

➤ **Step:- 3**

Testing I using for ABC.com



```
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     zone "abc.com" [ ] ←
```

Fig:-3.3 Web Address & Forward Zone

➤ **Step:- 4**

Enter We need to enter the IP in the previous- 192.168.50.11 as 150.168.192 without part of network



```
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" [ ] ←
```

Fig:-3.4 IP address for the inverse region.

➤ **Step:- 5**

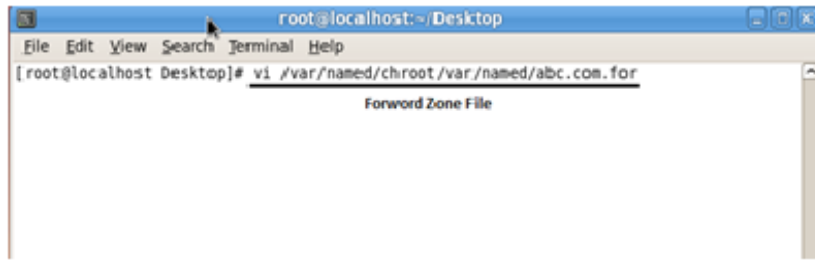


Fig:- 3.5 ABC.com for forward file zone

Create for forward file

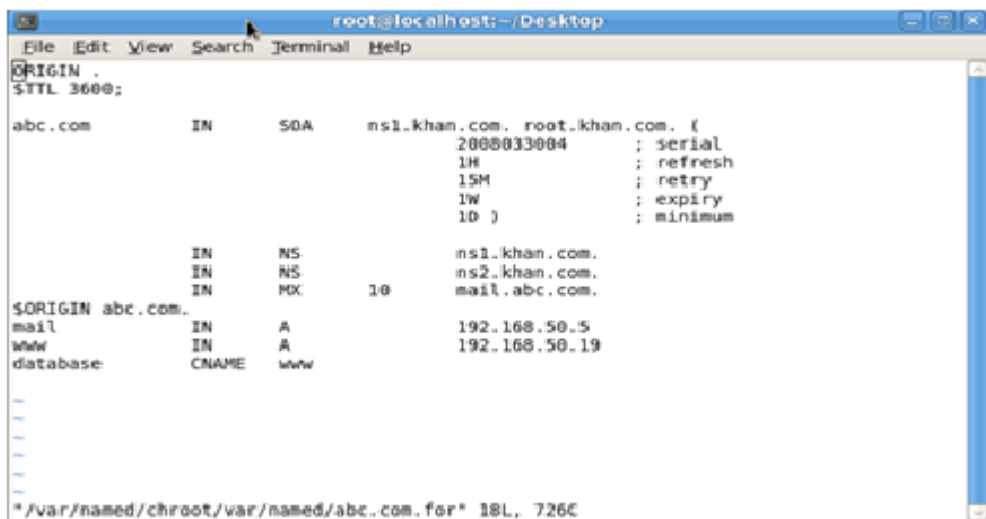


Fig:- 3.6 ABC.com for Forward File

➤ **Step:- 6**

Reverse file zone commands- vi /var/named/chroot/var/named/ 50.168.192.25

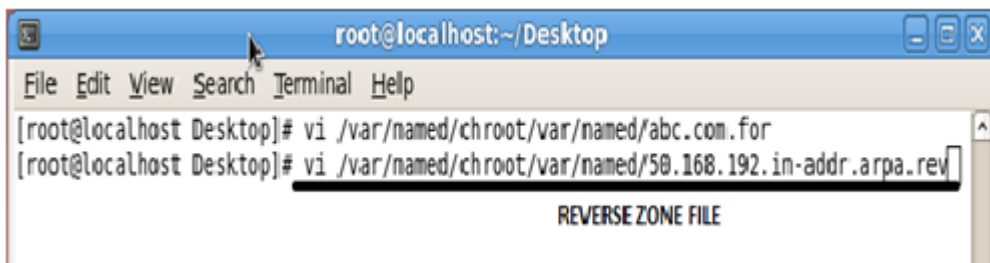


Fig:-3.7 Reverse Zone File

Reverse file zone Edit entire configuration file

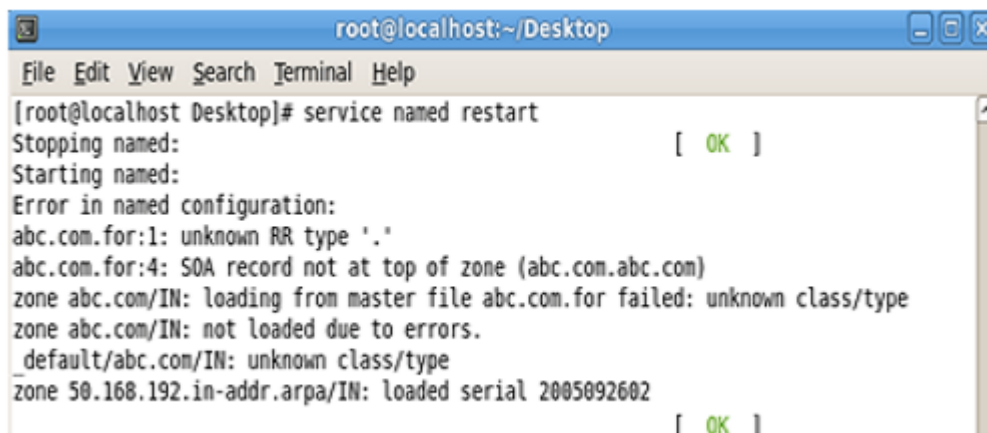


```
root@localhost:~/Desktop
File Edit View Search Terminal Help
$ORIGIN .
$TTL 3600          ; 1 hour
50.168.192.in-addr.arpa IN SOA ns1.khan.com. root.khan.com. (
                           2005092602 ; serial
                           3600      ; refresh (1 hour)
                           1800      ; 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
```

Fig:-3.8 Reverse file zone

➤ **Step:- 7**

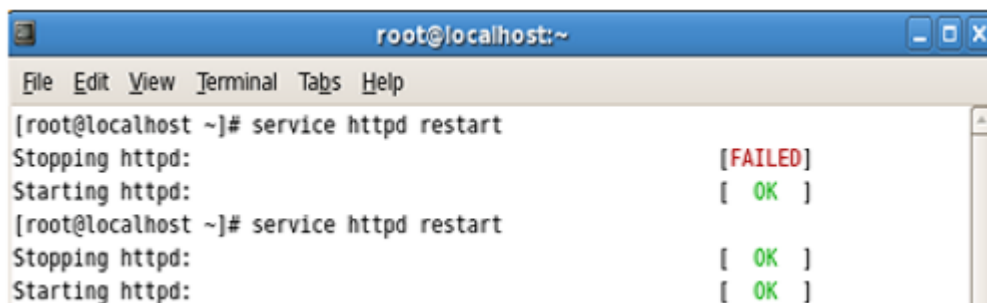
Restart Service command service 'named' restart



```
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 ]
```

Fig:-3.9 restart service

Restart service command service httpd restart



```
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 ]
```

Fig:-3.10 service httpd restart

Mail Server

Regularly referred to as leaves your system as you virtual of mail center, for nearby clients, the client is thrown into an email active zone where there is a mail server, how you should respond to your specific message. Should be selected, where client-defined multiplexes include Lee man-mail, client records are locally understood and managed on a mail server, and exchanged which are the components of the correspondence module, usually emailed. Most mail servers usually operate without any manual intervention[6].

3.4 MikroTik Router

Macro Tickle Limited is a worldwide global of PC organized hard-ware. Its sells remote item & switched. The company was founded with 1995 the goal of developing or selling remotely innovative showcases. Starting in the 21st, the company has 5 employees. The organization's items are known as expensive switches and low cost alternatives to the Ethernet radio transfer line[7].

3.5 RouterOS

The main result of Mikrotik depends on the parts of Linux operating system, know the Mikrotik routers. Familiar with standard X86-based PCs of the organization's exclusive tools, it transforms a PC into a system switch and applies several additional highlight. H-Energy other regularly used remote locations while highlighting the power structure and nature of the administration. The framework is set to fill the hosts-based hotspot structure in a similar way[8].

3.6 Features

The item gives Mikrotik a discussion and a wiki, giving different and temporary examples of setup. Routers IPv4 bolsters just as IPv6 The product almost all system interfaces that backup Linux part 2..6, except for the remote where Atheros and Prism chipsets 3.x Variants are the main incentive tool.

3.7 Router Board

By implementing such functional level of total equipment for routers, such as parts arranged under a router board, the company advances advertised circuit sheets. The router board line, which is connected to the routers, is rarely promoted by medium-sized remote Internet expert companies 3.12, providing broadband remote access to remote areas, usually indoor and open, usually providing small office / home office switch for air use. Reconnect with the remote 12.5n Mimo and TDMA gadgets and a custom system PCB type switches that reopen. Additionally, the router board line includes pioneers[8].



Fig:-3.11 MikroTik Router

3.8 Cloud Core Router

The Nov 2012, the Mikrotik Cloud Core Router 1.12 figure out the included unit, which supports 15 to 35 CPU centers, 121000 Base-T Ethernet & 4 SFP interfaces, depending on the "fast way" parcel within the interface. Shipping unit is contrary to a next growing burdens brands. As a well-evaluated options on the effort focuses on medium-sized systems suppliers[10].



Fig:-3.12 MikroTik Cloud Core Router

3.9 MikroTik Configuration

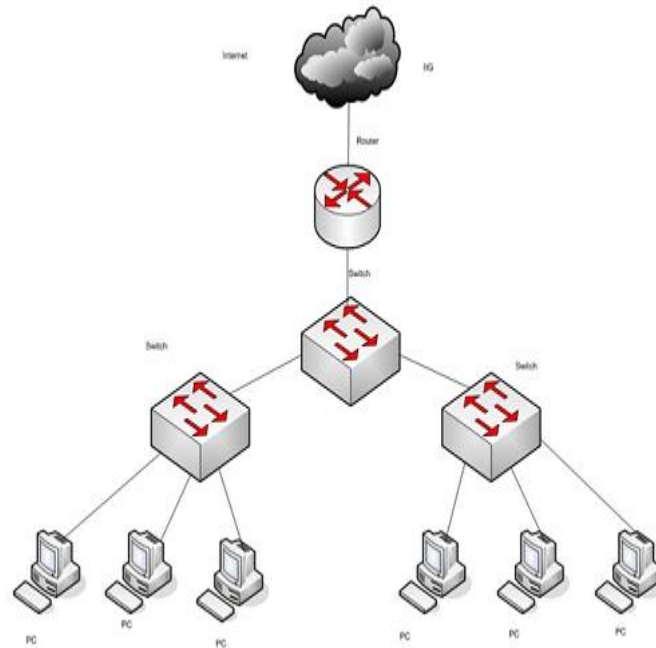


Fig:-3.13 Network Diagram

Winbox MikroTik Router a graphical configuration utility. First we should download the win-box. 3.13 Network Diagram does not require any installation so it can be run directly after downloading win-box.

3.10 INITIAL STEP

➤ **Step:- 1**

Reset MikroTik command:- system reset-configuration

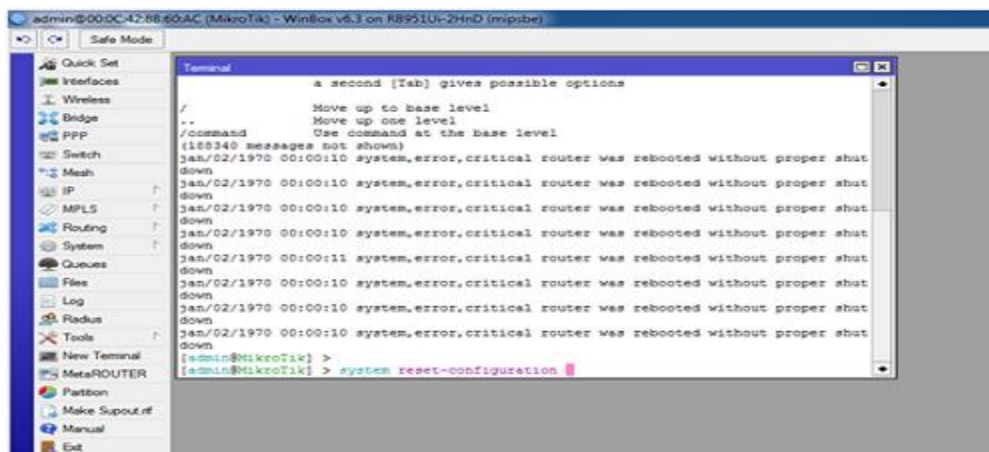


Fig:-3.14 reset router

➤ **Step:- 2**

Routes or Gateway Setting

Process:-

IP => Route => add “+” => Gateway

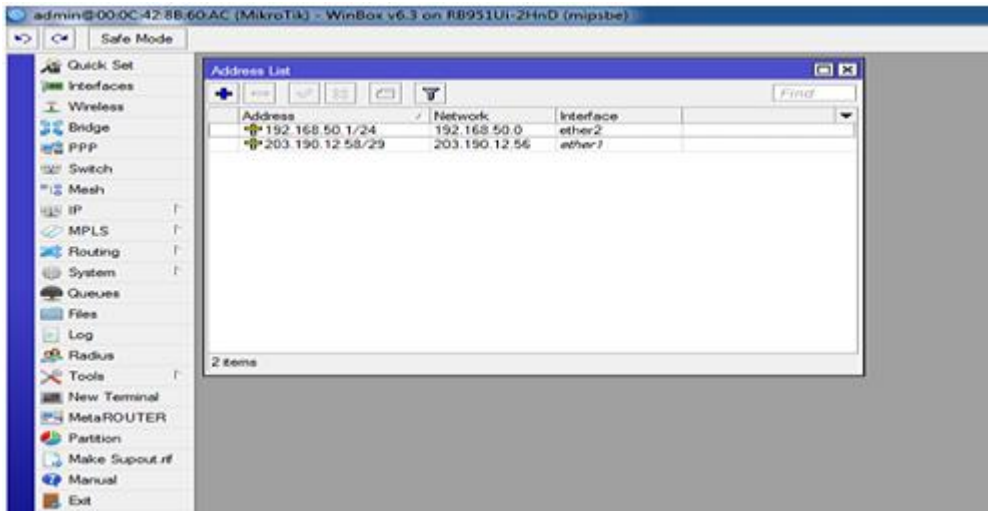


Fig:-3.15 Address list

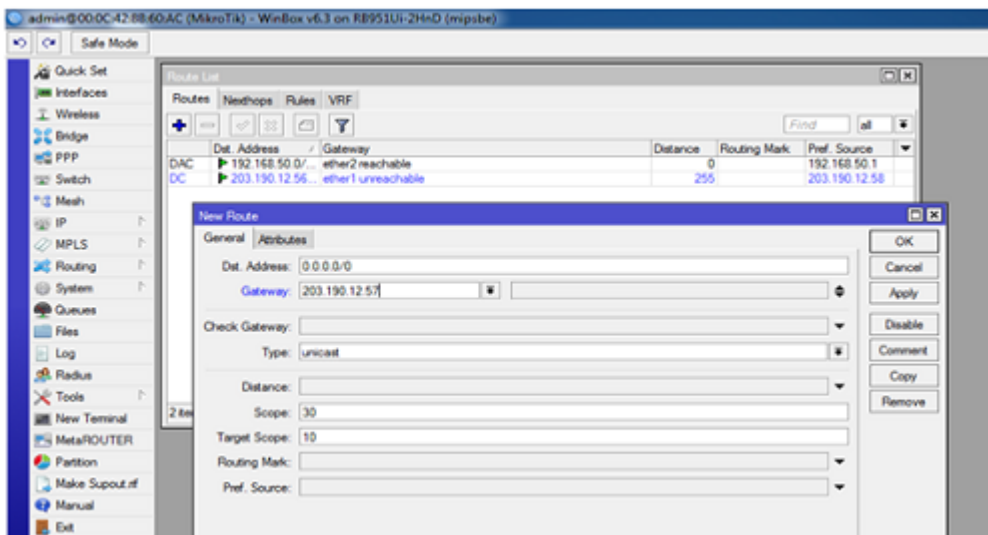


Fig:-3.16 Gateway Setting

➤ **Step:- 3**

Process:-

=> IP => FIREWALL => NAT=> Add “+”

action:

masquerades

apply

Ok.

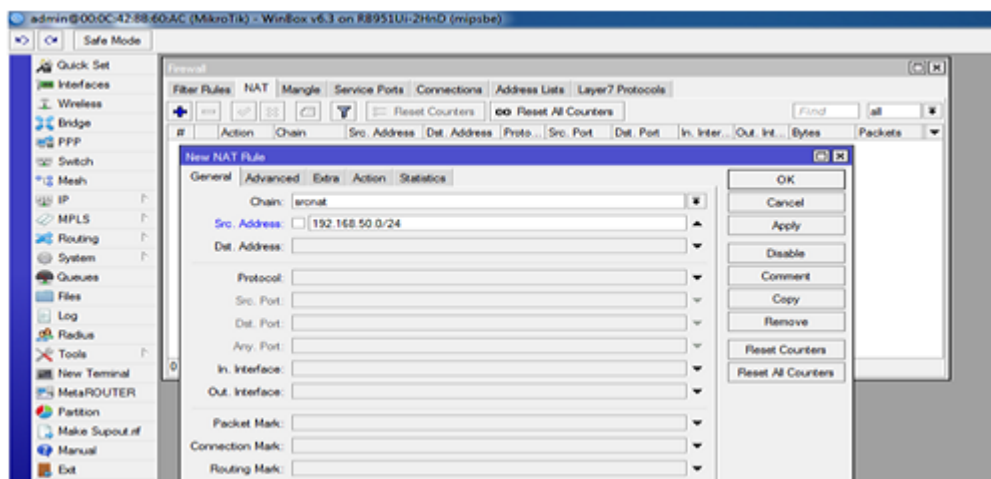


Fig:-3.17 Rule of NAT

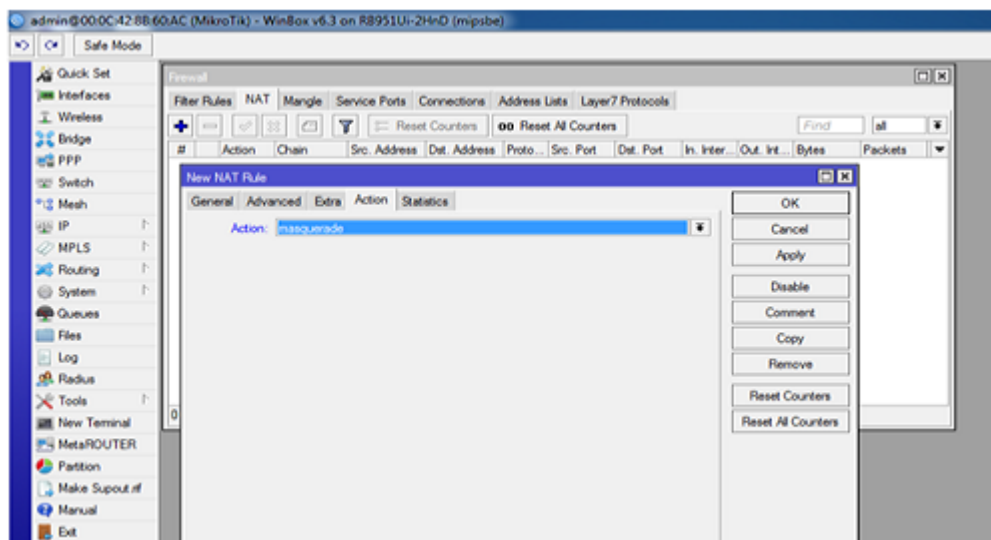


Fig:-3.18 Firewall

➤ **Step:- 4**

process:-

bridge => Add“+”

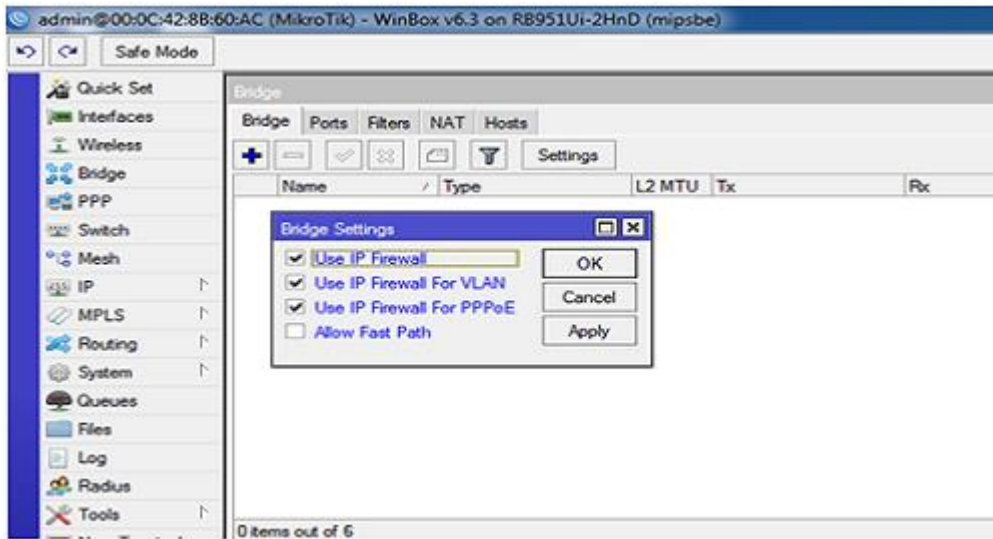


Fig:-3.19 Settings Bridge

Ports:-

ether2_LAN

ether4

ether5

wlan1

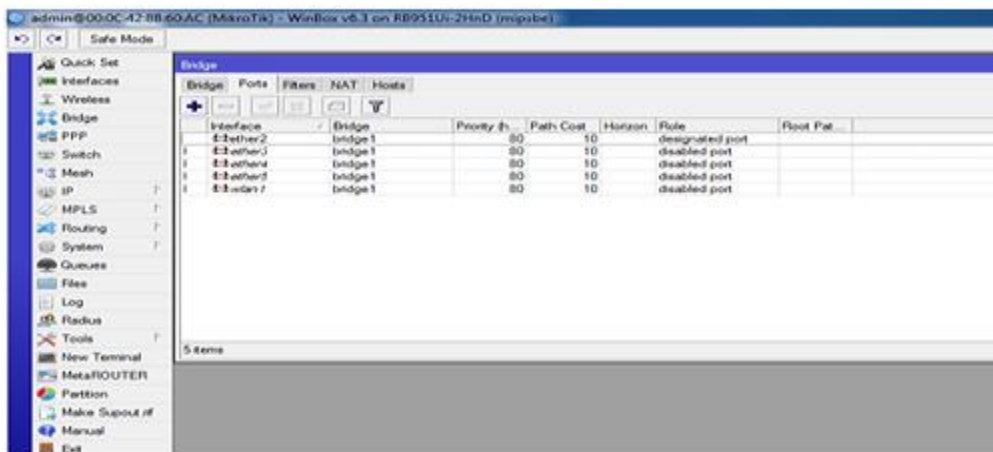


Fig:-3.20 Assign Bridge Ports

➤ Step:- 5

process:-

IP => DHCP Server => Interfaces:- Bridges

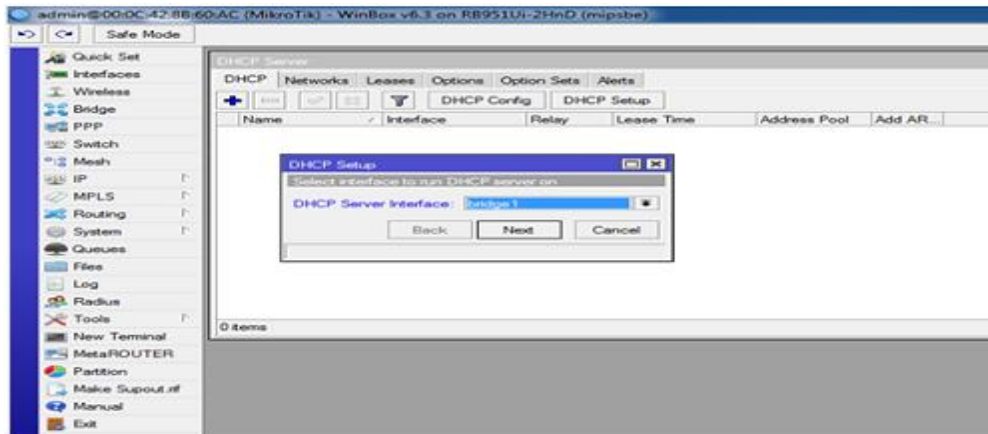


Fig:-3.21 Setup DHCP

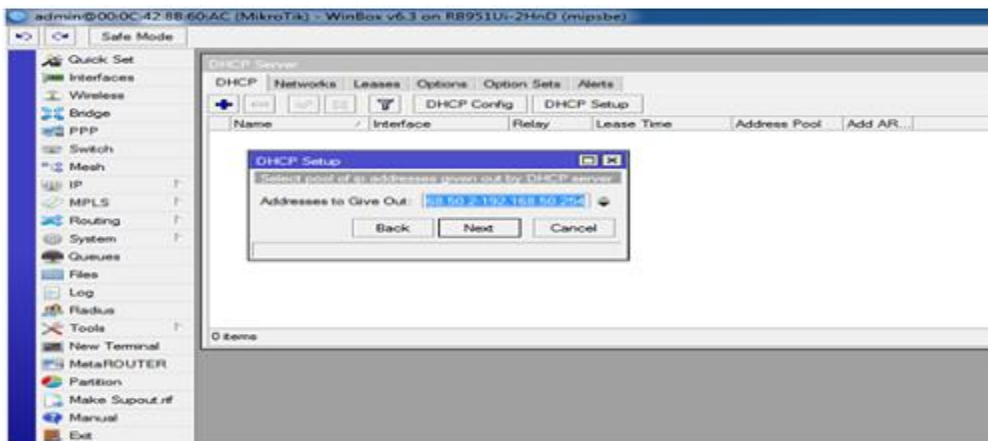


Fig:-3.22 The local LAN of IP address pool.

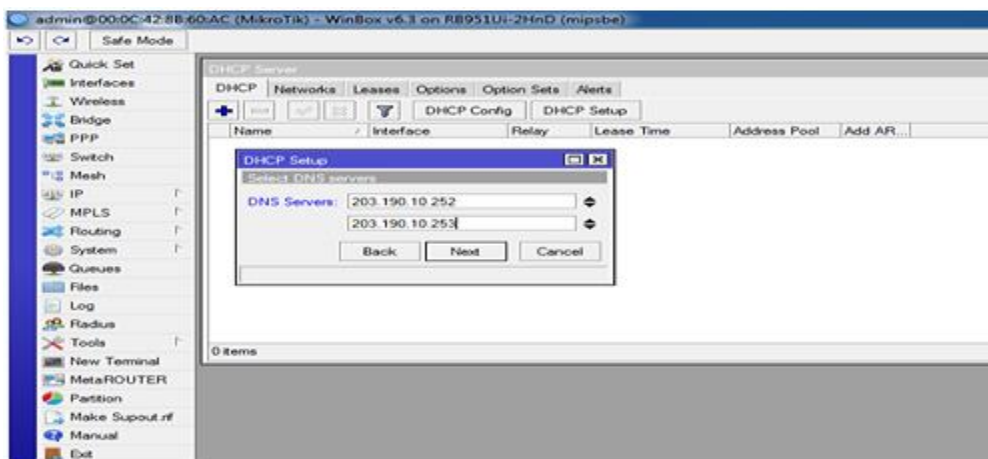


Fig:-3.23 DNS Service

➤ **Step:- 6**

Configuration wireless LAN

Process:-

Wireless =>Wlan1=>Mode:-AP Bridge

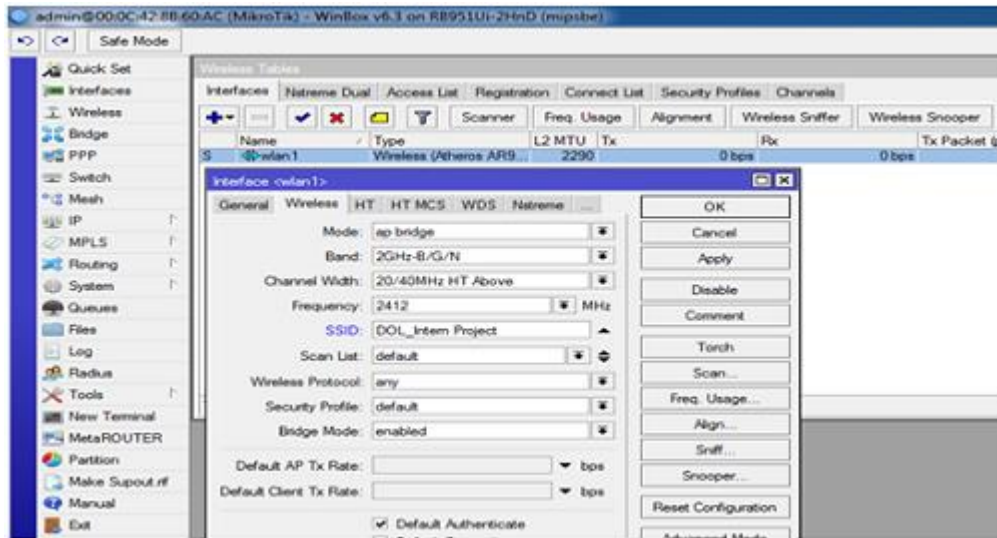


Fig:- 3.24 Setting Wireless

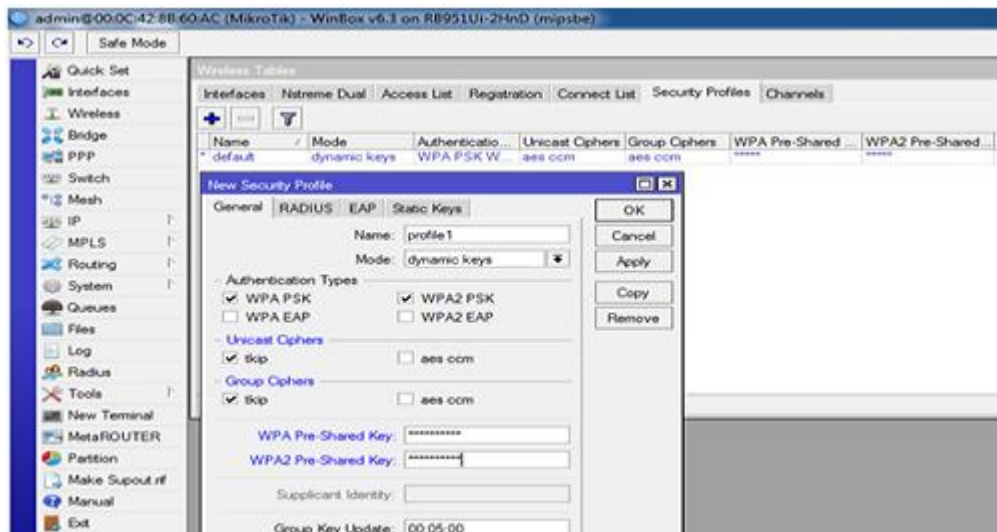


Fig:-3.25 Setting Wireless Security

3.11 OSPF Configuration

To organize the task I designed the OSPF on the Mikrotik switch with the current OSPF system that was fed from the Juniper switch to the data center. So it turned into a relative OSPF the system, and it wasn't easy to design. The design the OSPFT on the Mikrotik switch are offered in both order line interface. Configuration GUI.

➤ **Step:- 1**

Routing => OSPF

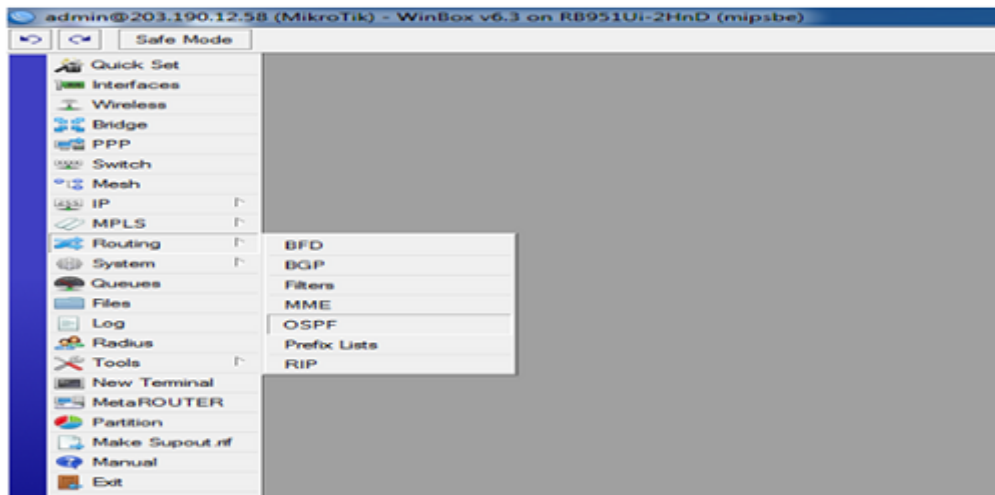


Fig:-3.26 Home Page Router

➤ **Step:- 2**

Configuration Network

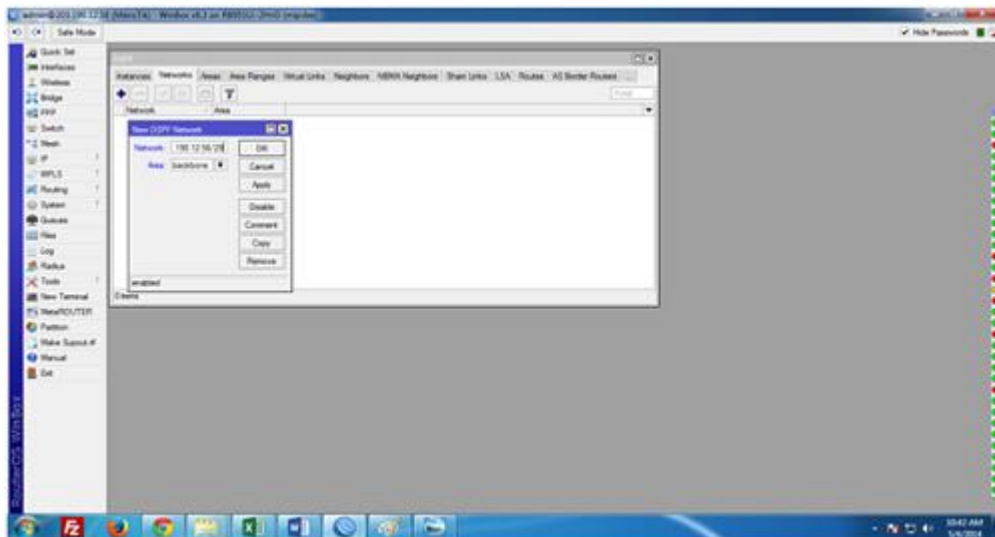


Fig:-3.27 Configuration OSPF

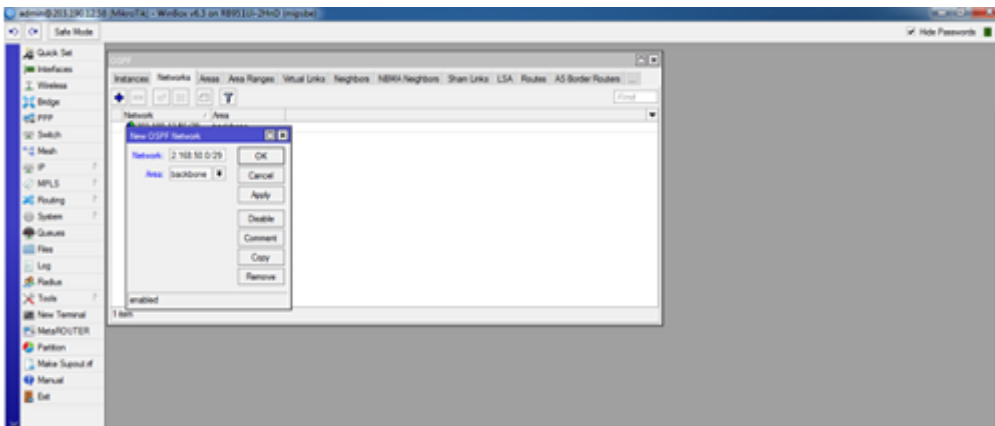


Fig:-3.28 Configuration OSPF

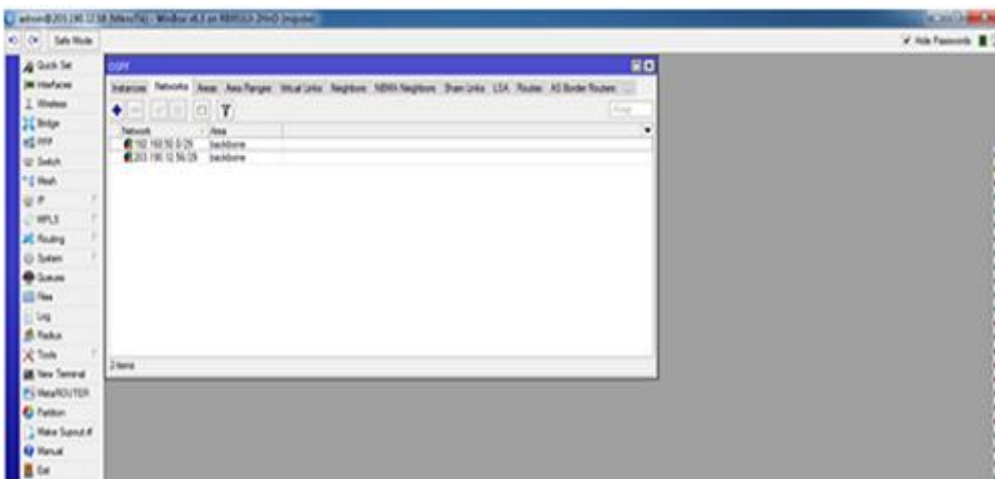


Fig:-3.29 OSPF Address

➤ **Step:- 3**

Selection Area

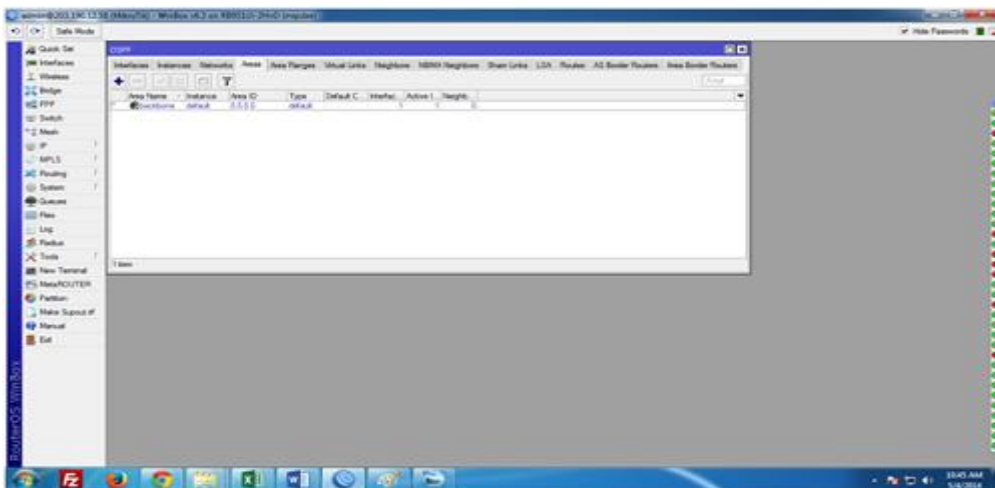


Fig:-3.30 OSPF Selection Area

➤ Step:- 4

Selection Interface

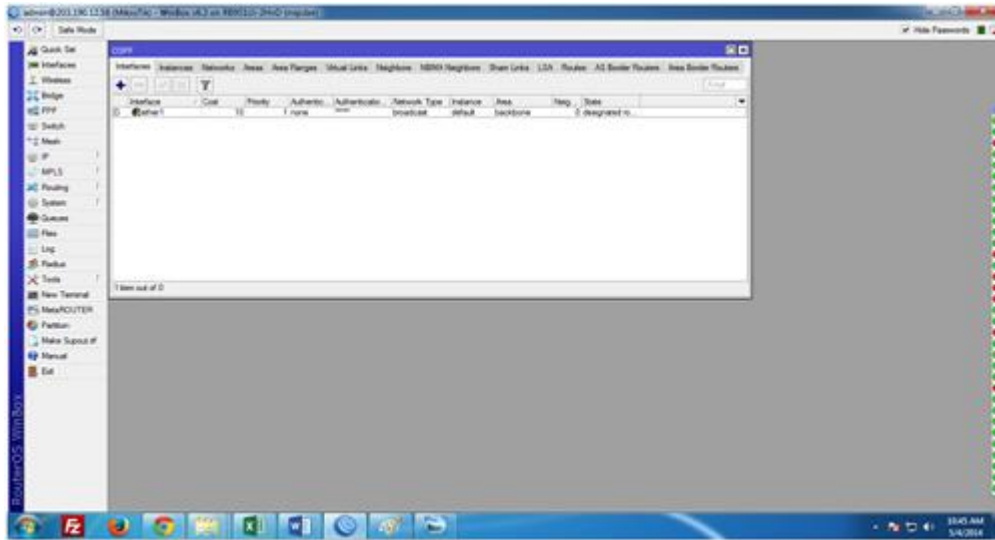


Fig:-3.31 OSPF Selection Interface

3.12 Challenges

None of the tasks faced the challenge, yet for the four months I had been involved in a temporary position and sharing colleagues in the context of during party, discovers that there were some common disadvantages assistant. I think it helps with for thinking : unpaid / underpaid, temporary and they leading the way. A lot of work over time: I have a lot of work to do. I am tired, useless, jerking my fingers in my workplace & am to check out FB. Lots of work: Since the underdogs are only happy with the way they enter the undercarriage, some workplaces can exploit the young workers with extremely dull and relentless work. Reluctant to ask: Suddenly the work has come together and in the end may feel stressed as an autonomous and independent worker, but it is better than such a large amount to explain weaknesses! Rival interns: Fortunately I was an assistant; We can do so without asking too much to each other and much to do with activities that work in groups that had such an activity relationship. Advice for future employment assistants or a decent letter will conflict with the terms of another office, it may be inviting. A New Lifestyle: running college's student. I can probably enjoy life slowly acc Instead of waking up at eight o'clock and commuting to the many days of multiple classes. I'm sitting at 9-5 in a workplace. I can stay with my people to set aside cash.

CHAPTER 4

COMPETENCIES AND SMART PLAN

4.1 Competencies Earned

The result of gaining power or learn are a declaration learner needs to know, understand or have the option of doing. Introducing and decommissioning both the system and the server machine on two datacenters. Leadership in executing Edges Linux program, for example, outcomes, alignment with work evaluations. Student Association Office Supports Continuous Intern Education Results: Collect and manage data for an internship: and conduct recruitment services. In addition, the estimable, internship on-site supervisor with instructional results will provide a guide to the hierarchical approach and methodology.

4.2 Smart Plan

Every organization needs to have a good plan in order to achieve success. Basically a good plan can be made by combining some simple things.

4.3 Reflections

The DOL started the task in 2002. In previous years, they expand their work administrative portfolio indicators, thinking about client suggestions time requests. They work in many national enterprises associations and rose to fame. There updating anywhere the administration needs to exploit recent progress. These Corporate Network Solutions departments are skilled at delivering conditional measures and media transmission systems, with exceptional effective specialized skills.

CHAPTER 5

CONCLUSION AND FUTURE CAREER

5.1 Discussion and Conclusion

The survey has been a great and remunerative background to this temporary position. I have seen the future and I will almost certainly support the opportunity to coordinate with many people to ensure that through this temporary work, I discover that a fundamental problem and time board is just as appropriate as self-motivation. When I started. When I realize that I need to cover my longevity is not broken, I equip my normal daily employment. Composing and this is the appropriate time, should be taught. This temporary position and time was required for a long time to understand how to operate the workplace board, myself. Regardless I am seeking to utilize the various suggestions and thinking of the organization. In spite of everything, I am keeping my choices open to new possibilities, such as trying. I am get charged with this job. I've been nodding my head for my position and wanting to find a business and meet newcomers. It was a great encounter, and I believe the other young people did a great job in it![3]

5.2 Scope for Further Career

Professional opening are accessible with different zone under Linux. Opening up Linux professions is not just a reference at the Linux level, it also spreads parcels such as. Today many companies have migrated from Linux open sources software. Companies likes Yahoo, Google, Boeing, WKRG, Lufthansa are leading many organizations towards open source management. Experts have unlimited interest in Linux, Mikrotik and many more.

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