

**NETWORK CONFIGURATION USING MIKROTIK AND MAINTENANCE
SERVER SYSTEM IN LINUX**

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

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APPROVAL

This Internship titled “**Network Configuration Using Mikrotik And Maintenance Server System In Linux**” submitted by Md. Hisham Hyder Karim, ID No: 152-15-6279 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.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Mr. Seraj Al Mahmud Mostafa, Senior Lecturer, Department of Computer Science and Engineering** Daffodil International University. We also declare that neither this internship report nor any part of this internship report has been submitted elsewhere for award of any Degree or Diploma. I also declare that, I collect information from Daffodil Online Limited (DOL), ISP Based Corporation, Books & Internet.

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

ABSTRACT

In the event that two and more PCs are interconnected and ready to trade information or data then we call organize. We need to build the quantity of PC's and trade information or data starting with one then onto the next that time we require some uncommon PC's are called Server. MikroTik is a minimal effort and simple accesses Router that can be utilized for little and huge arrange administration. Particularly this systems administration gadget suits for little system from each viewpoint like customer administration and security. MikroTik RouterOS is the working arrangement of MikroTik Router Board which may likewise introduce in a standard PC also, the PC will transforms into a MikroTik Router. Linux Server Administration is a well-known method for dealing with the system correspondence as far as its execution, dependability and security. This Internship shows the entire setup procedure of an ISP server Administration alongside the different administrations offered in Linux working framework. There is different kind of work in the system that is the reason additionally unique sorts of server and how to design different administration. For Example- DSN Server, Web Server, Mail Server, Proxy Server, FTP Server, Firewall.

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CHAPTER 1

Introduction

1.1 Introduction

This is the area of Information Technology. Presently a day's an extensive number of individuals everywhere throughout the world utilize web innovation and server is an a vital part. Linux is conceivably the most vital free programming accomplishment since the first Space War, or, all the more as of late. We can't do anything identifying with web correspondence without server. Temporary job is known as to increase sensible encounters from the diverse associations that will help a considerable measure to make a connection between the hypothetical and down to earth information. It adds profitable experience to the understudy's future profession way.

As an understudy of Computer Science and Engineering (CSE) of Daffodil International University, I have considered a ton of systems administration, Configuration, Operating System. Yet, this is inadequate to know the PC organizing, arrange security, working framework since it's a tremendous zone of the modem innovation, subsequently to get a sound information about PC organizing, Linux, Server Configuration, Server Maintaining, Configuration Using MikroTik. I was interested to do this internship in Daffodil Online Limited.

This Internship Report is "**Network Configuration Using MikroTik and Maintenance Server System in Linux**" At Daffodil Online limited. This report covers the whole project which I have done more about the Computer Networking, Linux, Server Setup, Configuration & network monitoring system.

1.2 Motivation

I discovered that Daffodil Online Limited (DOL) has an excellent reputation for customer satisfaction & services. Daffodil Online Limited (DOL) is well known and top ISP service provider in Bangladesh. I know that the combination of my

experience, education to computer science & engineering will make me an asset to Daffodil Online Limited.

I hope to evoke me to a few new difficulties and which will give me with a precarious gaining from DOL. I trust this entry level position will give me the perfect chance to broaden 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) temporary job experience will give me a thought regarding my future life and will be a brutal advance for my future instruction and in my calling.

1.3 Objectives

Linux operating system is a very generic term. Linux is a free operating system. At now Linux operating system provide graphical user interface so user easily operate this operating system. Linux operating system's main objective is to help more security on the network server. More objects are given bellow:

1. Install Linux interactively and with kick start.
2. Control common system hardware, administer Linux printing subsystem.
3. Create and maintain Linux file system.
4. Perform user and group administration.
5. Maintain the server system.
6. Create the basic server in Linux .

Integrate a workstation with an existing network.

1.4 Introduction to the company

The entry level position venture where I have taken my Training is Daffodil Online Ltd. Daffodil Online Ltd. prides itself as one of the main ISP Service Provider in Bangladesh. It is the most experienced and most established organization in the ICT field where its fundamental business morals is Long Tern Relationship with the clients. As it takes a gander at the development throughout the decade since its origin, they are amazingly glad for what they have accomplished, and considerably more amped up for their viewpoint for a similarly encouraging future.

It might satisfy you to realize that they began their activity in the year 2002. Amid the previous years, they expanded their task and administration portfolio as per the client's suggestion and thinking about requests of time. They worked with numerous national activities and universal associations and accomplished the notoriety. They are utilizing the most recent advances and updating the administrations wherever it is required. Their Corporate Network Solution division is able to give condition system and media transmission arrangements with a very effective specialized skill gathering.

1.5 Report Layout

The Report Arranges As Follows -

Chapter 1: Introduction and Described objective of internship, motivation of and Introduction of the Company.

Chapter 2: Organization introduction and Target Group, SWOT Analysis, Organization Structure.

Chapter 3: Daily Tasks, Projects activates, Event Task and Activities.

Chapter 4: Install and Configuration in Linux, step by step full describe with figure.

Chapter 5: About IP address for all class of IP with Subnet.

Chapter 6: Mikrotik Router And Configuration in Static, DHCP, PPPoE with figure.

Chapter 7: Conclusion and Future Career and future scope.

CHAPTER 2

Organization

2.1 Introduction

I want to rouse me to a couple of new troubles and which will give me with an elevated picking up from DOL. I believe this transitory activity will give me the ideal opportunity to expand 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) passage level position experience will give me an idea with respect to my future life and will be a fierce walk for my future direction and in my calling.

2.2 Target Group

Daffodil Online Ltd provides different It Services and Professional Training services.

These are given group:

- A. Corporate Internet Solution.
- B. Security Solution
- C. Domain Registration & web Hosting
- D. Web site Development
- E. Professional Courses & Training
- F. Open Source application solution
- G. Internet service provider.

2.3 SWOT Analysis

A SWOT examination of a media transmission association assesses the association's prosperity by looking resource characteristics and inadequacies concerning the idea of how it sends and gets data and information all around completed fiber-optic connections, frameworks, gathering devices and distinctive correspondences equipment. The examination furthermore perceives outside conditions and perils that may help or hurt the association later on. [3].

Strengths:

Characteristics of the business or project that give it an advantage

- We can react rapidly as we have no formality, and no requirement for higher administration endorsement.
- We can give better than average client mind, as the present little measure of work implies we have a lot of time to commit to clients.
- Our lead expert has a solid notoriety in the market.
- We can alter course rapidly on the off chance that we find that our promoting isn't working.
- We have low overheads, so we can offer great incentive to clients.

Weaknesses:

Characteristics of the business that place the business or project at a disadvantage

- Our organization has little market nearness or notoriety.
- We have a little staff, with a shallow abilities base in numerous territories.
- We are powerless against fundamental staff being debilitated or taking off.
- Our income will be inconsistent in the beginning times.

Opportunities:

Elements in the environment the business or project could exploit to its advantage

- Our business area is extending, with numerous future open doors for progress.
- Local government needs to energize neighborhood organizations.
- Our contenders might be ease back to receive new advancements.

Threats:

Elements in the environment that could cause trouble for the business or project

- Some extremely unique and especially financed reaches out there.
- Distribution transforms into an item and all scatterings end up being basically equal
- Which limits us to the server, where it's hard to create a gathering
- Developments in innovation may change this market past our capacity to adjust.
- A little change in the focal point of a substantial contender may wipe out any market position we accomplish.

2.4 Organization Structure

Daffodil Online Limited (DOL) introduced several technologies to meet the necessity of 21st century. In the last several years Daffodil Online Limited (DOL) has introduced more & more new technologies to the IT industry [1].

- Corporate Internet Solution :

At the season of beginning Daffodil Online Limited (DOL) began with web administrations with new innovation. Over the span of time DOL acquainted us numerous new advancements with meet the twenty first century challenges. Over the most recent 8 years Daffodil Online Limited (DOL) has presented us a few new idea and lunch new advances to the data association.

- Security Solution

Daffodil Online Ltd (DOL) gives the most recent security answers for its clients utilizing apparatuses from demonstrated security innovation sellers.

- Domain Registration

On the World Wide Web our space name is our own particular novel character. Any two gatherings can't ever hold a similar area name at the same time. So we require absolutely one of a kind Internet character. On the off chance that we have a business site or individual site on the Internet our space name is our own particular online brand and it might be said we can utilize our area name as our online business card.

- Web hosting

Server Specification: Super Micro Server, Xeon Processor, RAM 32GB, 4Tb HDD, Dual power unit, OS Linux

Data Center Location: Dhaka, Bangladesh

Control Panel: Fully Manageable C-panel, Fully Manageable ISP Config

Features:

- Data Transfer Rate/Monthly Bandwidth Unlimited
- Email Account
- Create Sub Domain
- MySQL 5.x Database Minimum 20 No's / Unlimited
- PHP5.x Version 5+
- FTP Account Full
- Access to a Log Files

- 99.9% Uptime Guarantee
- Unique IP Address
- Unlimited Bandwidth support

Security: Strong Firewall, Brute detection, Check Root Kit

- Web Development

Daffodil Online Limited (DOL) Offer us appealing website composition, improvement, dynamic and static sites for organizations around everywhere throughout the world. DOL likewise offers us E-Commerce, CMS and others web advancement and outline.
- SEO (Search Engine Optimization)

Scripts Turbo provides cost effective SEO Services. Our organic SEO techniques boost up sites to rank at top of popular search engines.
- SMS Service

Daffodil Online Limited (DOL) Offers SMS service. We can send our SMS from anywhere, All over the world using SMS service.
- Professional Courses

Daffodil Online Limited (DOL) gives us chance to take the most difficult and requesting IT (Information Technology) preparing and proficient courses in the day of globalization. Some expert course
- Which offered by DOL are given bellow.
 - Web site Development with Joomla
 - Training Course on Certified Ethical Hacking (CEH)
 - PHP and MYSQL for Site Development
 - E-commerce & Open source Joomla
 - Administration using Linux
 - Administration using Mikrotik

CHAPTER 3

Tasks, Projects and Activities

3.1 Daily Task and Activities

During my internship period, I had assigned some responsibilities. Those responsibilities, I was done successfully. Those responsibilities are given bellow :

- Work on a project to help automate or improve systems.
- Troubleshoot hardware and software problems, both on workstations and virtual servers.
- Perform general system maintenance and support
- Assist other Operations staff as needed
- Find solutions for mid-level problems that has no time to address.
- Research our company website provide weekly reports.
- Contribute in improving functionality and performance of computer systems
- Deployment of new servers

3.2 Events and Activities

Preparing is critical for temporary position is the main stage, when an understudy faces some issue amid entry level position, at that point it is obligatory to give preparing to address the issue. Issue has been identified& preparing can be tackling it. Preparing can be depicted aptitudes, ideas,, enhanced execution in temporary position condition. Those preparations I was going to in DOL are given how.

In this internship on daffodil online limited I have learned and performed the following tasks:

- Learning & understanding About Network Components.
- Learning & understanding Basics of Linux.
- Learning & understanding Linux Run Level.
- Linux Installation.
- Basic CentOS Commands.
- Linux User and Password Management.

- File and Directory Accessing.
- To Copy and Move File and Directories.
- Compressed and Decompressed File and Directories.
- File and Directory Permissions.
- Install, Update and Remove Package Using YUM.
- Concept of IP Addressing.
- Configuring IP Address in CentOS.
- Learning, understanding and configuring WEB Server.
- Learning, understanding and configuring FTP Server.
- Learning, understanding and configuring DNS Server.
- Learning, understanding and configuring MAIL Server.
- Firewall.
- Backup and Monitoring.

3.3 LINUX

The Linux open source working framework, or Linux OS, is an unreservedly distributable, cross-stage working framework in view of Unix that can be introduced on PCs, workstations, netbooks, portable and tablet gadgets, computer game consoles, servers, supercomputers and that's only the tip of the iceberg.

The Linux OS is as often as possible bundled as a Linux dispersion for both work area and server utilize, and incorporates the Linux portion (the center of the working framework) and in addition supporting devices and libraries. Famous Linux OS disseminations incorporate CentOS, Ubuntu, Fedora, Red Hat and openSUSE [2] .

3.4 Linux Kernel, Shell & Shell Script

Part is utilized as a part of UNIX like frameworks and is thought to be the core of the working framework. It is in charge of correspondence amongst equipment and programming segments. It is fundamentally utilized for dealing with the frameworks assets also .Linux shell is a UI utilized for executing the charges. Shell is a program the client utilizes for executing the summons. In UNIX, any program can be the clients shell.

A shell script, as the name recommends, is a content composed for the shell. Content here means a programming dialect used to control the application. The shell content permits distinctive orders entered in the shell to be executed [4].

3.5 Linux Basic Commands

Here shown the basic commands of Linux. Which are used for Linux CentOS server and Linux Operating System.

Table 3.1: Table of commands

Command	Example	Descriptions
Pwd	Pwd	Present working directory
Cat	Cat file name	Read file.
ls -l	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	history1000	Show the history
Useradd	useradd sadik	Create a user
Passwd	Passwd sadik	Given the passwd of user
Ifconfig	Ifconfig	Show network information
Cal	Cal 2017	Show the calendar
reboot	Reboot	Restart the OS
yum install	yum install packagename	Install software on linux
yum update	Install all update	New all update install
clear	Clear terminal window	Clears the complete window of your terminal.
chown	Changes owner file	Changes owner of a file or folde
firewall-cmd	CentOS Firewall	Critical system function
unzip	Unzips an archived folder	Commonly used with .zip file

CHAPTER 4

Installation and configuration in Linux

4.1 Installation of Linux CentOS6.4

I want to setup server configuration, server maintaining, providing server security. I need to install Linux CentOS OS on my server PC. We boot CentOS6.4 using bootable CD/DVD. Boot from media and generally, accept the defaults. I have an opportunity to provide time zone, a host name, configure network interfaces, provide DNS IPs, and domain search. If configured at this point, the installation script automatically configures the resulting installation using these settings. It is a time saver, however, I am going to assume these setting have not been set or changes will be needed.

4.2 Linux CentOS6.4 Installation Process

This Fig 4.1 show install CentOS6.4 & Test this media & install CentOS6.4 options and I can select my require option. I choose select "Install or upgrade an existing system".

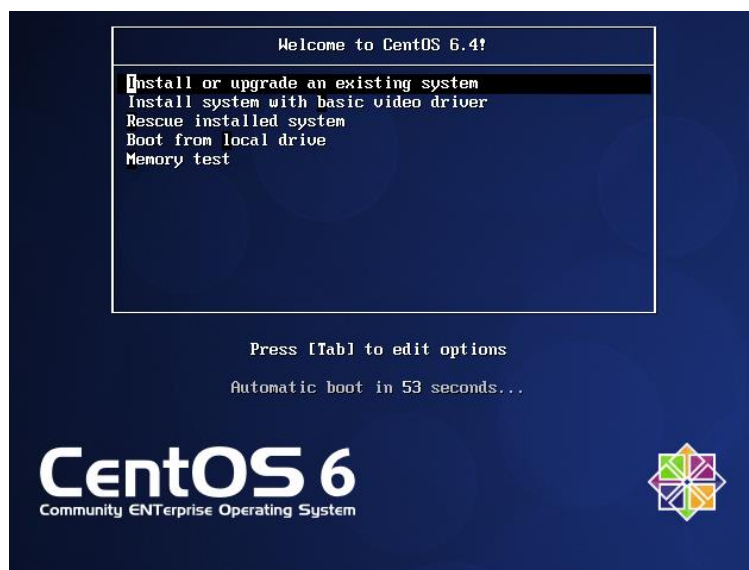


Figure 4.1: Linux CentOS install

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

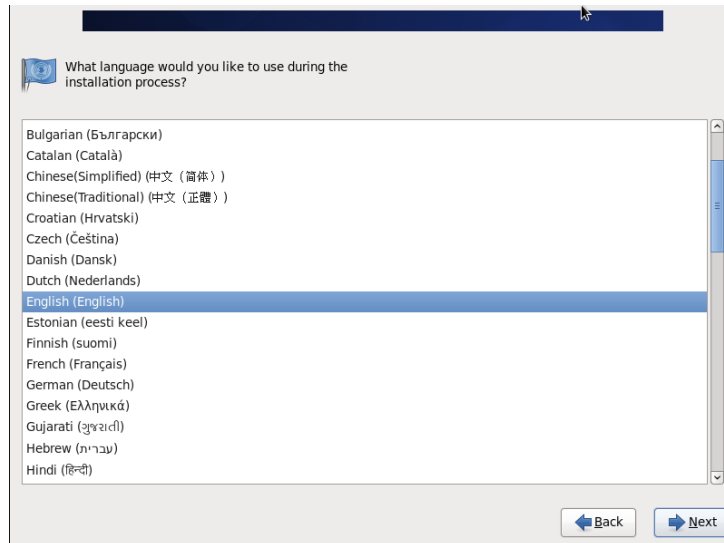


Figure 4.2: Select CentOS language

Next select keyboard (English US), I can correct date and time (Asia/Dhaka time zone), & Click Begin Installation.

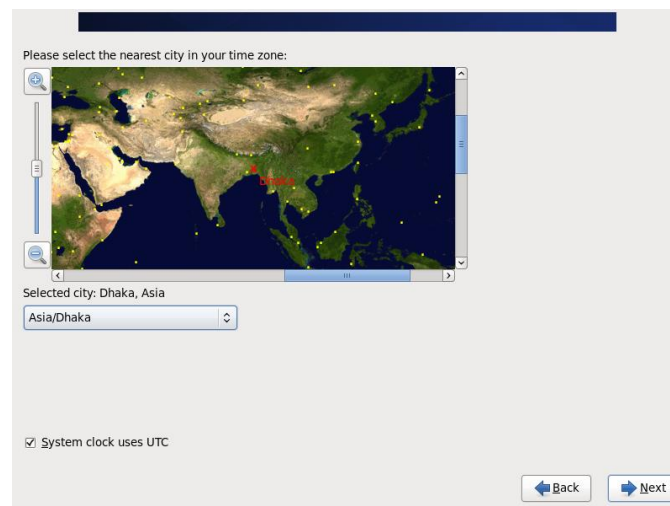


Figure 4.3: Time zone selection in CentOS

Set root Configuration , set root password under user settings. Which is shown in Figure.



Figure 4.4: Set password process

Which sort of establishment would you like? Select the "make custom design" this progression appeared in Figure.

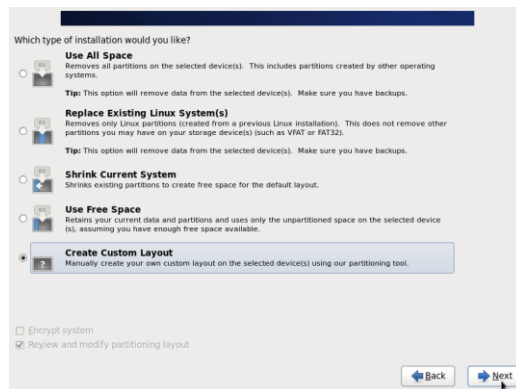


Figure 4.5: Set create custom layout

Presently, Select which mode on our screen, select "Desktop mode" Click on. This is appeared in Figure.

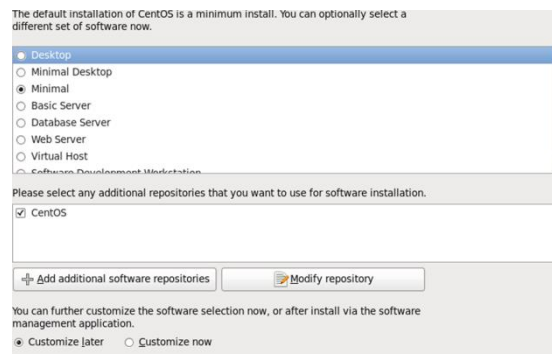


Figure 4.6: Select Desktop Mode

Now CentOS 6.4 start to install packages. in Figure



Figure 4.7: CentOS installing

Now, completed the package install. Use username and password during log In and open my Desktop screen shown in figure.

4.3 Linux Network Configuration

Open terminal and type: `vim /etc/sysconfig/network-scripts/ifcfg-eth0`

Edit:-

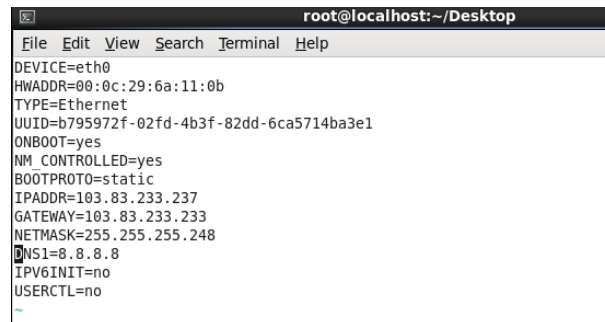
ONBOOT= yes

BOOTPROTO= static

IPADDR= 103.83.233.237

NETMASK= 255.255.255.248

GATEWAY= 103.83.233.233



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
DEVICE=eth0
HWADDR=00:0c:29:6a:11:0b
TYPE=Ethernet
UUID=b795972f-02fd-4b3f-82dd-6ca5714ba3e1
ONBOOT=yes
NM_CONTROLLED=yes
BOOTPROTO=static
IPADDR=103.83.233.237
GATEWAY=103.83.233.233
NETMASK=255.255.255.248
DNS1=8.8.8.8
IPV6INIT=no
USERCTL=no
```

Figure 4.8: Set IP Addresses.

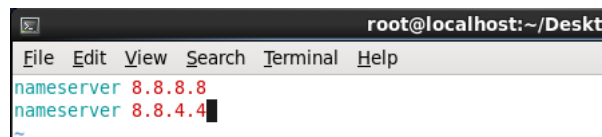
4.4 DNS configuration

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

Edit:

nameserver 8.8.8.8

nameserver 8.8.4.4



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
nameserver 8.8.8.8
nameserver 8.8.4.4
```

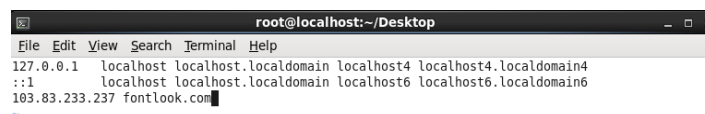
Figure 4.9: Set nameserver.

4.5 Host configuration

Open terminal and type : `vim /etc/hosts`

Edit:

103.83.233.237 fontlook.com



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
103.83.233.237 fontlook.com
```

Figure 4.10: Host Configuration.

4.6 Configure Bind as an Authoritative-Only DNS Server

Open terminal and type : vim /etc/hosts

4.7 Introduction

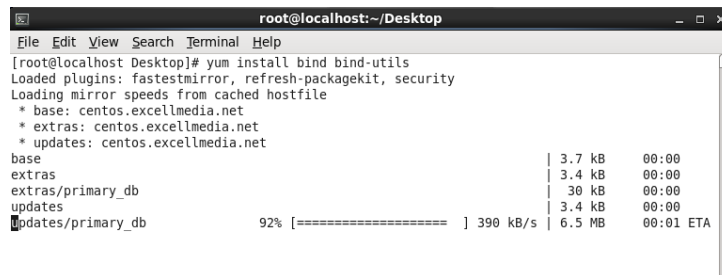
DNS, or the Domain Name System, is frequently a troublesome segment to get right when figuring out how to arrange sites and servers. While the vast majority will presumably utilize the DNS servers gave by their organization or their space recorder, there are a few favorable circumstances to making your own DNS servers.

Table 4.1: Table of DNS IP

Purpose	DNS FQDN	IP Address
Master name server	ns1.fontlook.com	103.83.233.235
Slave name server	ns2.fontlook.com	103.83.233.236
Web server	www.fontlook.com	103.83.233.237

4.8 Install Bind

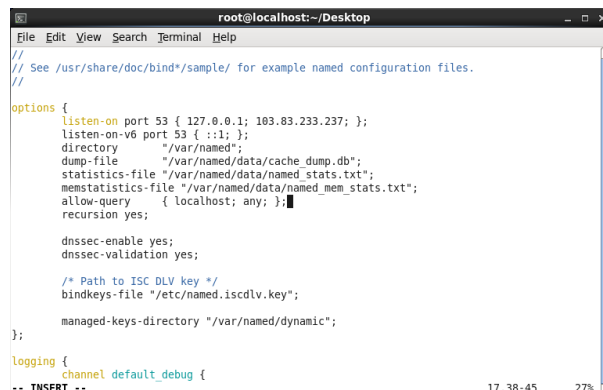
sudo yum install bind bind-utils



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
[root@localhost Desktop]# yum install bind bind-utils
Loaded plugins: fastestmirror, refresh-packagekit, security
Loading mirror speeds from cached hostfile
 * base: centos.excellmedia.net
 * extras: centos.excellmedia.net
 * updates: centos.excellmedia.net
base | 3.7 kB | 00:00
extras | 3.4 kB | 00:00
extras/primary_db | 30 kB | 00:00
updates | 3.4 kB | 00:00
updates/primary_db | 6.5 MB | 00:01 ETA
92% [===== ] 390 kB/s
```

Figure 4.11: Install Bind package.

vim /etc/named.conf



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
//
// See /usr/share/doc/bind*/sample/ for example named configuration files.
//
options {
    listen-on port 53 { 127.0.0.1; 103.83.233.237; };
    listen-on-v6 port 53 { ::1; };
    directory "/var/named";
    dump-file "/var/named/data/cache_dump.db";
    statistics-file "/var/named/data/named_stats.txt";
    memstatistics-file "/var/named/data/named_mem_stats.txt";
    allow-query { localhost; any; };
    recursion yes;

    dnssec-enable yes;
    dnssec-validation yes;

    /* Path to ISC DLV key */
    bindkeys-file "/etc/named.iscdlv.key";
    managed-keys-directory "/var/named/dynamic";
};

logging {
    channel default_debug {
-- INSERT --
17,38-45 27%
```

Figure 4.12: Host Configuration.

Edit:

Set IP 103.83.233.237

Add the forward zone and reverse zones.


```

root@localhost:~/Desktop
File Edit View Search Terminal Help
};
};
zone "." IN {
    type hint;
    file "named.ca";
};
zone "fontlook.com" IN {
    type master;
    file "named.localhost";
    allow-update { none; };
};
zone "233.83.103.in-addr.arpa" IN {
    type master;
    file "named.loopback";
    allow-update { none; };
};
include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";
-- INSERT --

```

Figure 4.13: Add forward and reverse zones.

vim /var/named/named.localhost

Go to forward zones and all in figure.

```

root@localhost:~
File Edit View Search Terminal Help
$STTL 1D
@ IN SOA ns1.fontlook.com root. (
                                01 ; serial
                                1D ; refresh
                                1H ; retry
                                1W ; expire
                                3H ) ; minimum
@ IN NS ns1.fontlook.com
@ IN A 103.83.233.237
~
~
~
~
~
~
~

```

Figure 4.14: Edit forward zones.

vim /var/named/named.loopback

Go to reverse zones and all in figure.

```

root@localhost:/var/named
File Edit View Search Terminal Help
$STTL 1D
@ IN SOA ns1.fontlook.com root. (
                                01 ; serial
                                1D ; refresh
                                1H ; retry
                                1W ; expire
                                3H ) ; minimum
@ IN NS ns1.fontlook.com
@ IN PTR fontlook.com
~
~
~
~
~
~
~

```

Figure 4.15: Edit reverse zones.

Now enter this command to start bind.

systemctl start named

My primary DNS server is now setup and ready to respond to DNS queries. Let's move on to creating the secondary DNS server. Configuration is same only change the IP address.

CHAPTER 5

About IP Address

5.1 About IP address

An Internet Protocol address (IP address) is a numerical name appointed to every gadget associated with a PC organizes that uses the Internet Protocol for correspondence. An IP address serves two main capacities: host or system interface ID and area tending to.

Web Protocol form 4 (IPv4) characterizes an IP address as a 32-bit number. Be that as it may, in light of the development of the Internet and the exhaustion of accessible IPv4 addresses, another adaptation of IP (IPv6), utilizing 128 bits for the IP address, was created in 1995, and institutionalized as RFC 2460 out of 1998. IPv6 organization has been continuous since the mid-2000s.

IP addresses are normally composed and shown in intelligible documentations, for example, 172.16.254.1 in IPv4, and 2001:db8:0:1234:0:567:8:1 in IPv6. The measure of the steering prefix of the address is assigned in CIDR documentation by suffixing the address with the quantity of critical bits, 192.168.1.15/24, which is comparable to the verifiably utilized subnet cover 255.255.255.0.

5.2 IP address classes

Table 5.1: Table of IP Address class

Class	1 st Octet Decimal Range	Network/Host ID (N=Network, H=Host)	Default Subnet Mask	Number of Networks	Hosts per Network (Usable Addresses)
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.N.H.H	255.255. 0.0	16,382 ($2^{14} - 2$)	65,534 ($2^{16} - 2$)
C	192 – 223	N.N.N.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 rang

Table 5.1: Table of Private IP Address class

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 5.3: Table of A class Subnet

Network Bits	Subnet Mask	Bits Borrowed	subnets	Hosts/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 5.4: Table of B class Subnet

Network Bits	Subnet Mask	Bits Borrowed	subnets	Hosts/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	2	4096	14
29	255. 255. 255.248	13	8192	6
30	255. 255. 255.252	14	16384	2

5.6 Class C Subnets

Table 5.5: Table of C class Subnet

Network Bits	Subnet Mask	Bits Borrowed	subnets	Hosts/subnet
24	255. 255.255.0	0	1	254
25	255. 255. 255.128	1	2	126
26	255. 255. 255.192	2	4	62
27	255. 255. 255.224	3	8	30
28	255. 255. 255.240	4	16	14
29	255. 255. 255.248	5	32	6
30	255. 255. 255.252	6	64	2

CHAPTER 6

MikroTik Router Configuration

6.1 MikroTik Router

MikroTik Ltd. Known internationally as MikroTik is a Latvian manufacturer of computer networking equipment. It sells wireless products and routers. The company was founded in 1995, with the intent sell in the emerging wireless technology market. As of 2014, the company has more than 100 employees. The company's products are known for being low-priced alternatives to expensive routers and Ethernet radio relay lines.



Figure 6.1: MikroTik Router

6.2 Features

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

- It can be used as a router
- 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
- It provides OSPF, BGP, Multiprotocol Label Switching (VPLS/MPLS), Open Flow etc.

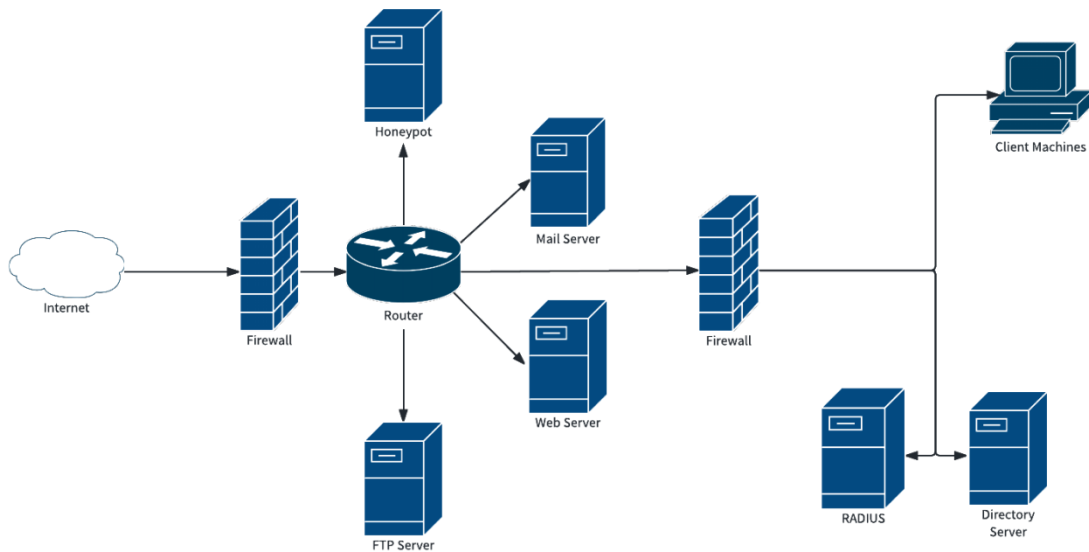


Figure 6.2: Router Network Diagram.

6.3 Initial Step Configuration MikroTik

- Insure Power to the MikroTik Router.
- Plug in a UTP cable in MikroTik LAN port and the other port to the PC.
- Browse with winbox.
- Click to icon and hare show a IP address and MAC address. Click to Mac address then write 'admin' in login box and don't need to give Password.
- First reset your Router use command (system reset-configuration).

6.4 Step Configuration WAN

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

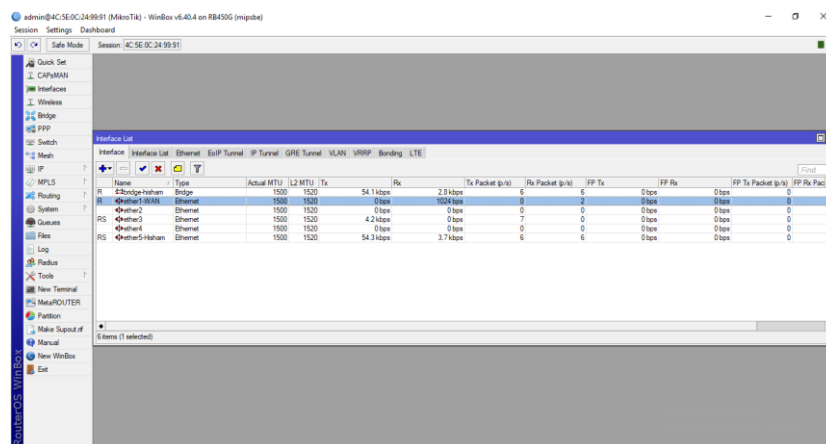


Figure 6.3: Interfaces in MikroTik Router.

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

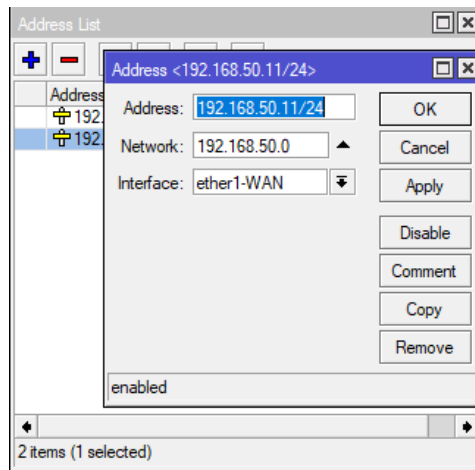


Figure 6.4: Set IP to WAN in Router.

IP > Route > “+” > Gateway, Set Gateway.

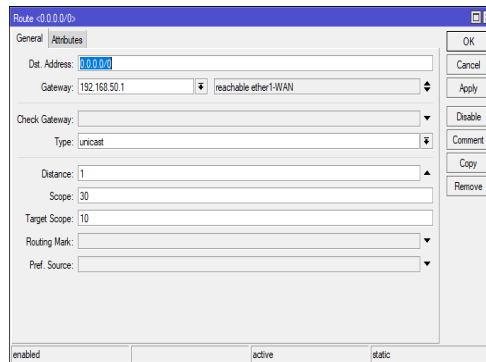


Figure 6.5: Set Gateway.

IP > DNS > Set DNS Servers.

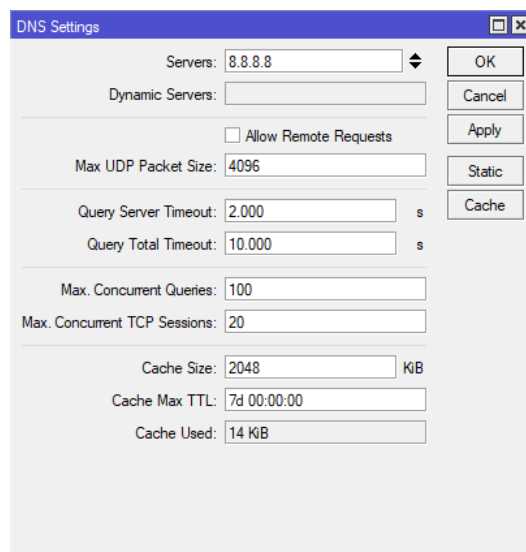


Figure 6.6: Set in DNS.

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

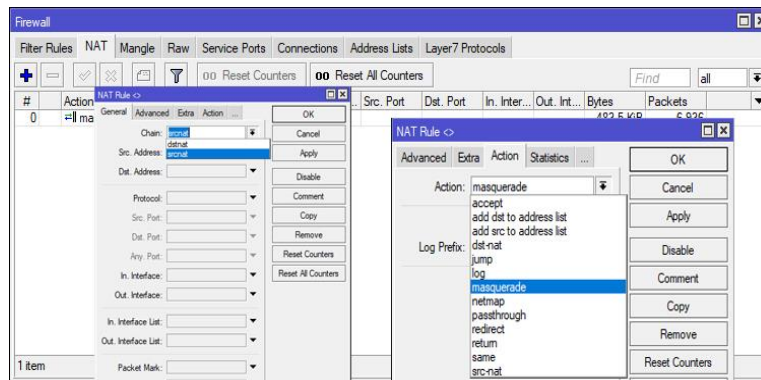


Figure 6.7: Shows NAT Rule.

6.5 Configuration Bridge

Go to Bridge > “+” > Set only Bridge name.

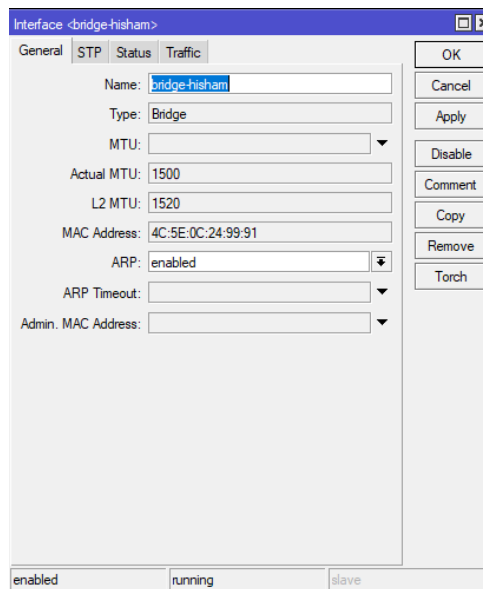


Figure 6.8: Shows create bridge.

6.6 Configuration DHCP with Bridge Mod

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

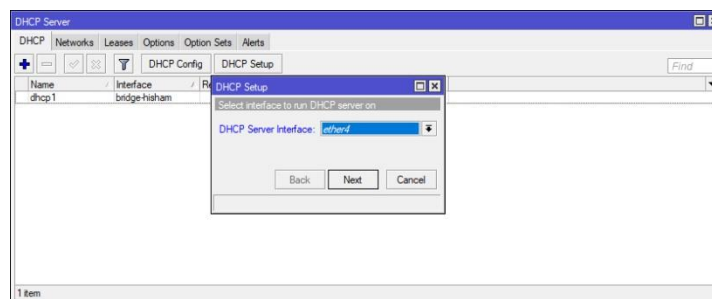


Figure 6.9: DHCP Server Setup.

6.7 Configuration Queues setup

Go Queues > “+” > setup new Queues for user.

We can easy set Download and upload speed for user.

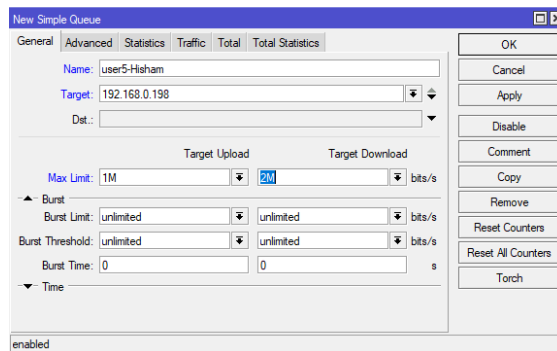


Figure 6.10: New Simple Queue.

Also you can set Deferent Profile in Types of Queues.

Queues > Queues Types > “+”, Set new queue

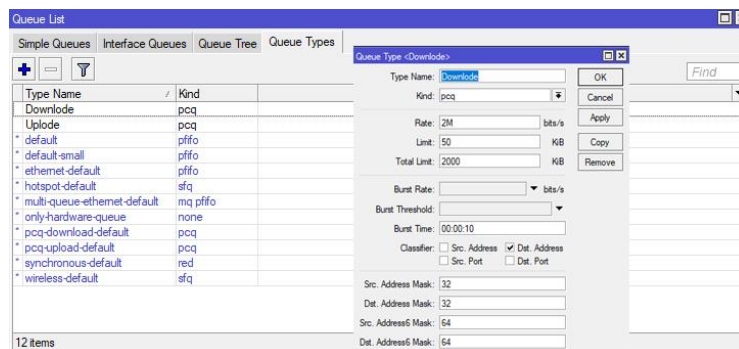


Figure 6.11: New Queue types.

6.8 Firewall Mangle setup

Go firewall > “+” > setup new Mangle Rule.

We can easy define individual server Download and upload speed for user.

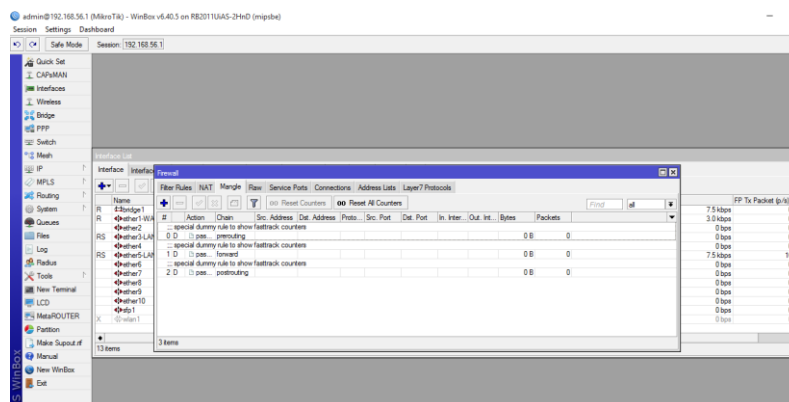


Figure 6.12: Mangle setup.

Set Chain name “prerouting” then to advanced tab and set Address

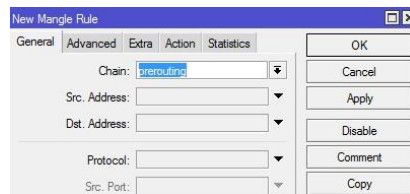


Figure 6.13: Mangle Rule in General.

Then to Action tab and set Action “mark connection” and New connection Mark “youtube”.

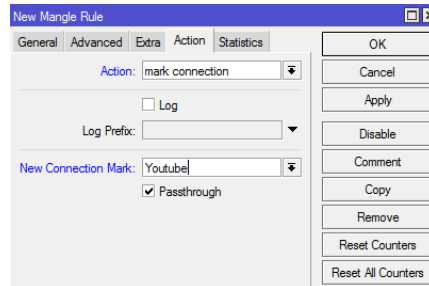


Figure 6.14: Mangle setup in Action.

Go Queues > “+” > setup new Queues for user

Name= Youtube

Target= LAN2

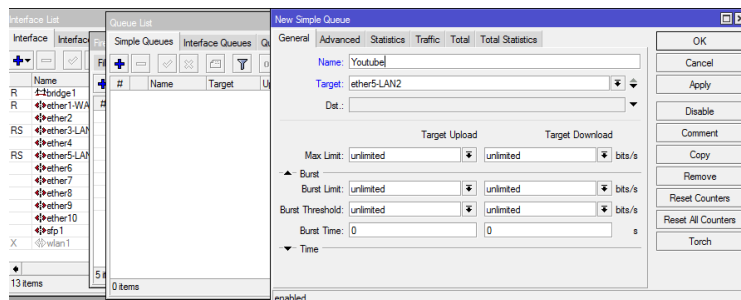


Figure 6.15: Mangle setup in Queues.

Then to Advanced tab and set

Packer Marks=Youtube

Queue Type= Upload and Downlaod

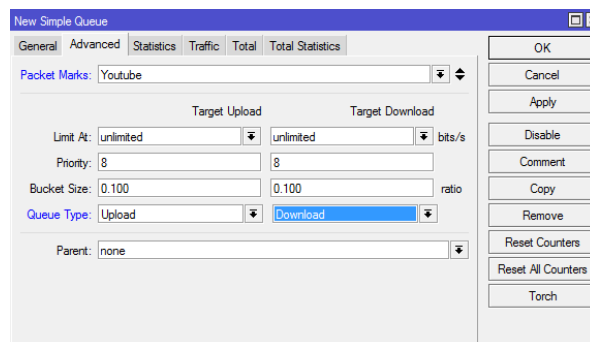


Figure 6.16: Mangle setup in Queues in Advanced.

CHAPTER 7

Competencies and Smart Plan

7.1 Competencies Earned

Internet development in DOL isn't solely the obligation of the lawmaking body and its associations. Private undertaking has a basic part to play, especially if Internet Service Providers (ISPs) are deregulated and are allowed to battle. The ideal conditions, shortcomings, and experiences expanded through this forceful condition will be discussed from the experience of one business arrange manager in the Philippines.

- Growing the Philippine network.
- Internet Development.
- ISP connectivity and resources.
- The commercial environment.
- Media, commerce, and the Web.
- Is It Appropriate.
- The community network.
- Cooperation and competition.
- Network users.
- Service: what and where.
- Walk-in access.
- References.
- Related Materials.

7.2 Reflections and plan

Reflection or considering our encounters, is the way to learning. Reflection grants us to look at our experiences, confer changes in light of our blunders, keep doing what is productive, and develop or modify past learning in perspective of new data. Reflection furthermore allows us to make relationship between courses or between work. By doing this, we begin to attempt diverse brilliant arrangement to expands our plan.

- Identify and engage a network of persons who share your concern.
- Define a service area and know your territory.
- Creating a Governing structure.
- Set up exploratory task force.
- Discover/uncover priority needs.
- Identify the strengths and weaknesses of your organization.
- Determine the skill level and qualifications of people who will carry out the tasks.
- Create an evaluation system to assess performance of staff.
- Outline who will be responsible for what within the organization.
- Identify the best channels through which you will reach individuals in you targeted audience.
- Determine the cost for carrying out your plan.

CHAPTER 8

Conclusion and Future Career

8.1 Discussion

The target of this impermanent activity is to get the data and capacities need to make ISP Setup and Administration in Linux Platform. The section level position focuses on Fundamental of Data Communication, Linux Essentials, Linux System Administrations, and Configuring Network Security and Services and some more. Linux is a full-included, generous UNIX working structure with a wealth of related free programming, prepared for supporting tip top framework organizations. The idea of Linux programming tries, strong, reinforced preparing stage appropriate for the corporate server condition. This entire hands-on course gives the data and aptitudes you need to present, mastermind and direct a Linux server for mission-essential framework organizations. You make sense of how to present and update key programming portions with the latest structures and enhance server security.

8.2 Conclusion

Linux is the Operating framework which offers such a wide verity of reliable, relentless and effective organization. We choice this working system not in light of its organizations but instead it is completely free. It has practically every kind of framework organization is there, including web servers Apache, Telnet, SSH, FTP, DNS, MAIL and significantly more. Linux offers a novel opportunity to learn structures programming with hand on inclusion. Since we have the source code open and a general arrangement of aides and associates, we can explore any subject we need to. Distinctive parts of Linux have been thought about or made as a component of academic work, for instance, graduate recommendations.

8.3 Scope for Future Career

Finding work can be a real challenge, especially if I don't have any experience. A successful internship can help me turn a experience into a career opportunity. So, as a successful internship my future scopes will be.

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

References

- [1] Learn All About the Company at : << <http://www.daffodilnet.com/> >> Last visit on 2 April'2018 at 10:00pm.
- [2] Learn about the Linux: << <https://opensource.com/resources/what-is-linux/>>>, Last visit on 2 April'2018 at 10:00pm.
- [3] Get the SWOT at: << https://www.mindtools.com/pages/article/newTMC_05.htm/ >> Last visit on 2 April'2018 at 10:00pm.
- [4] Learn about Linux Kernel, File System and Partition, Shell & Shell Script, Available at: <<<http://www.placementprofession.com/2011/09/linux-interview-question.html>>> Last visit on 2 April'2018 at 10:00pm.
- [5] Learn About Everything at: << <https://en.wikipedia.org/wiki/> >> Last visit on 2 April'2018 at 10:00pm.
- [6] Learn About the book in linux at: << <https://www.takeyoursuccess.com/> >> Last accessed on 2 April'2018 at 10:00pm.
- [7] Get knowledge linux different kind of book at :<< <https://www.amazon.com/Linux-Operating-Systems-Books/b?ie=UTF8&node=3849> >>Last accessed on on 2 April'2018 at 10:00pm.

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