INTERNSHIP ON SERVER CONFIGURATION ON MIKROTIK AND LINUX

SUBMITTED

BY

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

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DAFFODIL INTERNATIONAL UNIVERSITY
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APPROVAL

This Project/internship titled **"SERVER CONFIGURATION ON MIKROTIK AND LINUX"**, submitted by Al-Ashfak Ali Refath, ID No: 153-15-6577 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 14-9-19.

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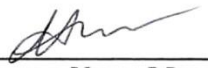

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DECLARATION

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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I am appreciative to Mr. Sabbir Ahamed, General Manager of Daffodil Online Limited. I am additionally appreciative to Mr. Mohammad Abul Basher, SystemAdmin, (Network & Training) of Daffodil Online Limited.Without their constant help I can't proceed with my Internship in the organization. Different individuals from the organization helped me immensely to do my Internship.

I extremely appreciative and wish significant obligation to **Abdus Sattar** Assistant Professor, Department of CSE Daffodil International University, Dhaka. Profound Knowledge and unmistakable fascination of administrator in the field of "Linux System and Network Administration" to do this entry level position. Her unending tolerance, insightful direction, persistent consolation, consistent and lively supervision, productive feedback, significant guidance, perusing numerous second rate draft and revising them at all stage have made it conceivable to finish this Internship.

I might want to offer heartiest thanks to **Dr. Syed Akhter Hossain, Professor and Head, Department of CSE**, for his kind help to finish my internship and also to other faculty member and the staff of CSE department of Daffodil International University.

ABSTRACT

When two or more PCs are interconnected and ready to trade information or data then we call Network. We require some extraordinary PC's are called Server. There are different kind of work in the system that is the reason additionally unique sorts of server have. For Example-DSN Server, Web Server, Mail Server, Proxy Server, FTP Server, Firewall. Every one of them works contrastingly and without them it is difficult to keep up a system. On the off chance that system is associated with the Internet and we need to secure your data they should setup server utilizing Linux Operating System. That why I have pick this subject of my report is "INTERNSHIP ON SERVER CONFIGURATION ON MIKROTIK AND LINUX" on ISP .The report talked about the reason for the particular MikroTik utilizing on ISP, equipment necessity for the server, picking programming and establishment procedure of the product, well ordered server setup process and straightforward investigating of the server.

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CHAPTER 1
Introduction

1.1 Introduction

Linux is potentially 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. So DNS server is imperative for web innovation. Temporary position is an old practice to influence understudies to comprehend the genuine working, condition and difficulties of occupations. Restorative Science, Engineering and Accounts all branches have their own significance of temporary position before degree grant. Today every business and trade is especially identified with programming based correspondence and web innovation. This is called E-Commerce. Web Banking, SMS Alert Banking, Mobile Banking, EFT (Electronic Fund Transfer) and so forth are impractical without server. DNS (area name framework) is additionally exceptionally helpful server and we can work diverse kinds of administrations by utilizing this framework. Web innovation, E-mail, E-Business, Telecommunication, Mobile innovation and so forth are impractical without server and DNS is one of them. Today, Banking industry and different business association absolutely relies on various sorts of Software and Online Technology and Server is exceptionally basic. ATM Technology (Switching Software), Banking Software, Debit Card, Credit Card, Online Transaction and so forth are especially relies on Software and distinctive sorts of Server and Linux is one of them.

1.2 Motivation

I am presently seeking after my Bachelors in Computer Science Engineering at Daffodil International University; I comprehend the significance of increasing down to earth learning which will supplement the course reading information and enable an understudy to pick up a more extensive point of view of the subjects.

Amid the temporary job I have discovered that I am superbly gifted in the points of interest of Linux system and server administration and mikroTik. As a web access supplier I've expressing what is on my mind extremely well, speaking with individuals, understanding their needs and giving them better administration.

1.3 Internship Objectives

My Internship program is to set myself up as a qualified one in the focused activity advertises. So this is exceptionally compelling of expertise advancement. I might want to accumulate some uncommon quality to give myself as gifted one

The Internshipin Computer engineering is intended to give work understanding while understudies arestill in school, to coordinate the job experience with academic training.

1.4 Introduction to the Company

Daffodil Online Ltd. prides itself as one of the leading nationwide Internet Service Provider (ISP) in Bangladesh. They are the most experienced and oldest company in the ICT field where they are basic business ethics is Long Term Relationship with they are customers. As we look at the growth over the decade since our inception, they are extremely proud of what they have achieved, and even more excited about they are outlook for an equally promising future. During the past years, they extended them are operation and service portfolio according to the customer's recommendation and considering demands of time. They worked with many national projects and international organizations and achieved the reputation. They are using the latest technologies and upgrading the services wherever it is required.

1.5 Report Layout

In the chapter (1)I have depicted goal of internship, Motivation of internship and Prologue to the organization.

In the chapter (2)I have depicted the philosophy of my temporary job. What's more, this part gives the data about where the entry level position has been connected to embrace this program. Likewise included about how performed the temporary job functions, about the organization, what are the IT benefit offered in DOL and what are the parts of in employments market of MikroTik routing configuration.

In the chapter (3)I have depicted about day by day undertaking and exercises, Events and Activities and Challenges.

In the chapter (4)I have depicted is Competencies Earned, Smart Plan, Reflections.

In the chapter (5)I have portrayed is Conclusion and Future Scope. I examine Future Scopes of Linux and compose conclusion.

CHAPTER 2

Internship Organization

2.1 Company Introduction:

Daffodil Online Ltd. (DOL) is proud to be one of the trailblazers and oldest ISP/ASPs in Bangladesh and providing one stop integrated ICT services and solution since July 2002. It has its own Fiber Optic & Radio Link WAN infrastructure to serve corporate, SME and individual clients. The institute worked with many national projects and international organizations with high appreciation from all concerned. It using the latest technologies and upgrading the services wherever it is required.

DOL has a very strong professional engineering and management team certified and associated with SUN, Cisco, Microsoft, Linux, and Oracle and actively involved with world leading computing associations including IEEE, ACM, ACS, BCS, and PMI. Its Corporate Social Responsibility ethos strengthens the sense of responsibility on Community, Workstation, Location and Market place.

2.2 Services and Market Situation

They are the most experienced and oldest company in the ICT field where they are basic business ethics is Long Term Relationship with the are customers. As they look at the growth over the decade since our inception, they are extremely proud of what we have achieved, and even more excited about our outlook for an equally promising future. Daffodil Online Ltd also provides different IT Services and Professional Training services. These are given below.

IT Services

- Corporate Internet Solution
- Security solution.
- Web hosting andDomain registration.
- DevelopmentWebsite.
- Open source application solution.
- Data Connectivity, Data center& Co-Location.
- Bulk SMS Service**.**

- Proxy & DNS Server solution, Mail Server Solution.
- And All computer accessories

Professional Training Services

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

2.3SWOT ANALYSIS

SWOT Analysis is a useful technique for understanding your Strengths and Weaknesses, and for identifying both the Opportunities open to you and the Threats you face

2.4Organizational Structure: Organizational Structure of Daffodil Online Ltd. Shown below in figure:

Figure :2.4 Organizational Structure

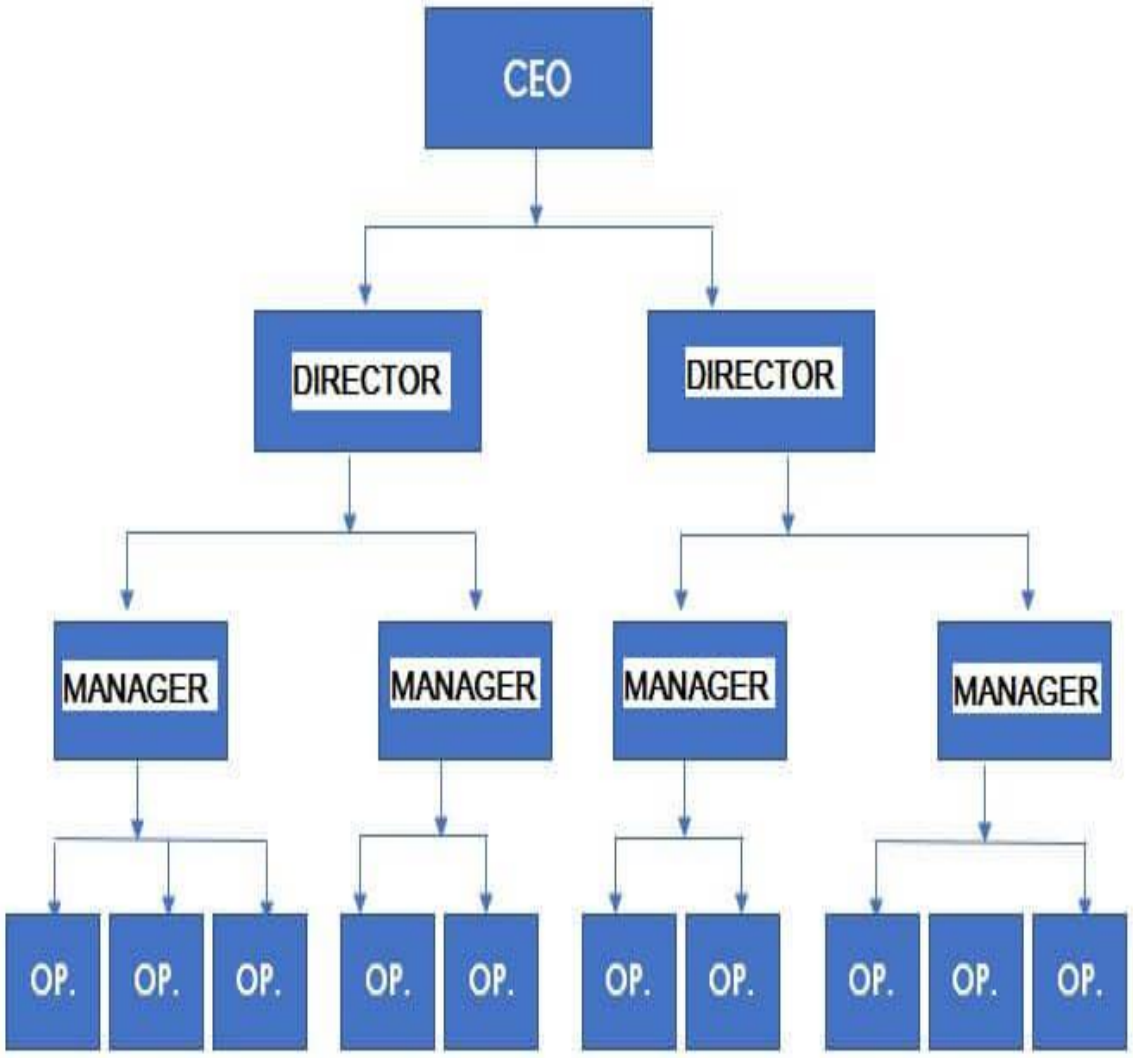

Figure : 2.4.1Organizational Structure

CHAPTER 3

Tasks, Events and Activities

3.1 Daily Tasks and Activities

Month - 1: In the first month of internship on daffodil online limited I have learned and Exercise the following topics:

- Learning & understanding About Network Components of Network.
- Learning & understanding Basics concept of router.
- Understanding different type router.
- Understanding Linux HDD Partitions
- Linux Installation.

Month - 2: In the second month of internship on daffodil online limited I have learned and performed the following topics:

- Static routing configuration.
- MikroTik router internal Operating
- Installation Router connectivity

Month – 3.1in the third month of internship on daffodil online limited I have learned and performed the following topics:

- Concept of IP Addressing.
- Configuring IP Address in Centos.
- Network cabling systems
- Routing protocols

Month – 4: The last month of internship on daffodil online limited I have learned and performed the following topics:

”*Running Server configuration on Linux* “

3.2 MikroTik Router

Mikro Tiks Ltd. Mention to universally as Mikrotik is a Latvian maker of pc organization gear. It offers remote items and switches .The organization was established in 1995.with the purpose or offer in the developing remote innovation showcasestarting at2014, the organizationhas in excess of 100 workers. The organization‘s items are known for being low –valued other options to costly switches and Ethernet radio transfer lines

3.3 Cloud core Router

MikroTik launchedin November 2012 the Cloud Core Router

incorporated unit which depends on the Tilera CPU supporting 16 to 36 CPU centers, 12 1000Base-T Ethernet interfaces, and up to four SFP (MiniGBIC) interfaces, and additionally "quick way" parcel sending between interfaces (with guaranteed 24 million bundles for every second sending rate). This unit focuses on the medium-sized system suppliers and also endeavor to be a very much valued contrasting option to the next more notable brands. MikroTik Cloud Core Router 1036 Series shows in fig 3.14

Fig 3.3.1: MikroTik Cloud Core Router 1036 Series

3.4 Propose Network Diagram (MikroTik Configuration)

3.5 Initial Step

- Plug in a UTP Cable in mikroTik LAN port and the other port to the PC
- Browse with Winbox .

  Click to icon and here show a IP address and MAC address .Click to Mac address then write :admin “ in login box and don’t need to give password.

3.6 Events and Activities

- 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.

3.7 Project Task and Activities

Linux Overview:

Linux is a group of free and open-source programming working frameworks worked around the Linux bit. Ordinarily, Linux is bundled in a frame known as a Linux dispersion for both work area and server utilize. The characterizing part of the Linux conveyance is the Linux portion, a working framework bit initially discharged on September 17, 1991, by Linux Torvalds.

Linux is prominent for his some trademark. Its open source working framework. Distinctive working framework gives diverse office. Microsoft Windows and Mac OS working framework gathering in working framework is the product that works your PC.

Linux has possessed work area record program and countless diverse programming applications. So here the unavoidable issue if does everything the Windows 10 then for what reason would I utilize Linux is My Computers working framework. There are few key contrasts between when it's another working framework. Windows and Mac OS Linux is open source programming which fundamentally anybody can change the working framework on the off chance that somebody doesn't make a difference waves appropriation In the all organs with this implies is the you have the opportunity of decision to discover a variant of the Linux the works best for you and trust me this dispersion of there for everybody every single working framework like Windows on Mac OS miss you require fine and dandy if there's something

about the route shouldn't something be said about's you know whether you simply almost no champs with English. Its have parcel of office to other.1st security, space administration, driver plate, hard, circle server offices is more given by other. The greater part of the think to this Linux server is get low spending plan and looks after cost. Generally that reason Bangladesh ISP and other association dreadful like Linux server.

3.8 Centos Install:

➢ 3.4.1 Creating Linux Partition

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

- **Root Partition: /**

❖ The *root* file system is represented by a forward slash (/) and It is a top of the directory tree and contains Linux and everything that you install with Linux in the computer.

❖ 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.The size of root partition will vary depending on what install or plan to installing.

- **Boot Partition: /boot**

❖ The segment boot (200 MB): the parcel mounted on/boot/contains the working framework bit (which enables your framework to boot Linux), alongside documents utilized amid the bootstrap procedure. Because of confinements, making a local ext3 parcel to hold these documents is required.

- **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.A swap partition of 2gb to 4gb .

- **Disk Partition**

The Disk partition past is mainly depends on two types. Partitioning divides a disk drive into one or more logical disks. Each partition is treated as a separate disk with its own file system. Partition information is stored in a partition table.

1.Primary Partitions

2. Extended Partitions

- ❖ The original partitioning scheme for PC hard disks allowed only four partitions, called primary partitions. To create more than four partitions, one of these four partitions can be divided into many smaller partitions, called logical partitions. When a primary partition is subdivided in this way, it is known as an extended partition. The fdisk utility is a common partition table manipulator for Linux

3.9 Linux set up in VMware:

To set up new virtual machine first we have been installed

The Oracle VM virtual Box. At first open create the New VM Virtual Box window. The setup wizard will install VM Virtual box and press next to continue shown in fig 3.9.

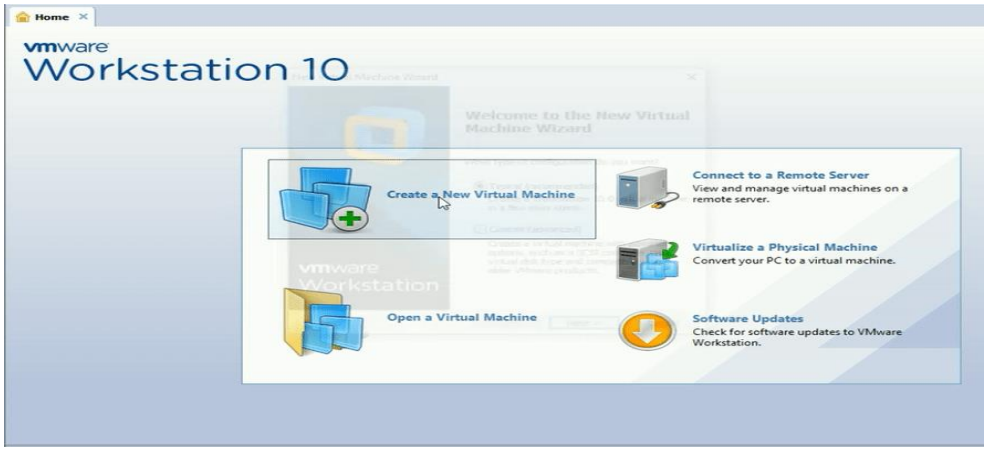

Fig 3.1: Complete the VM virtual box installation

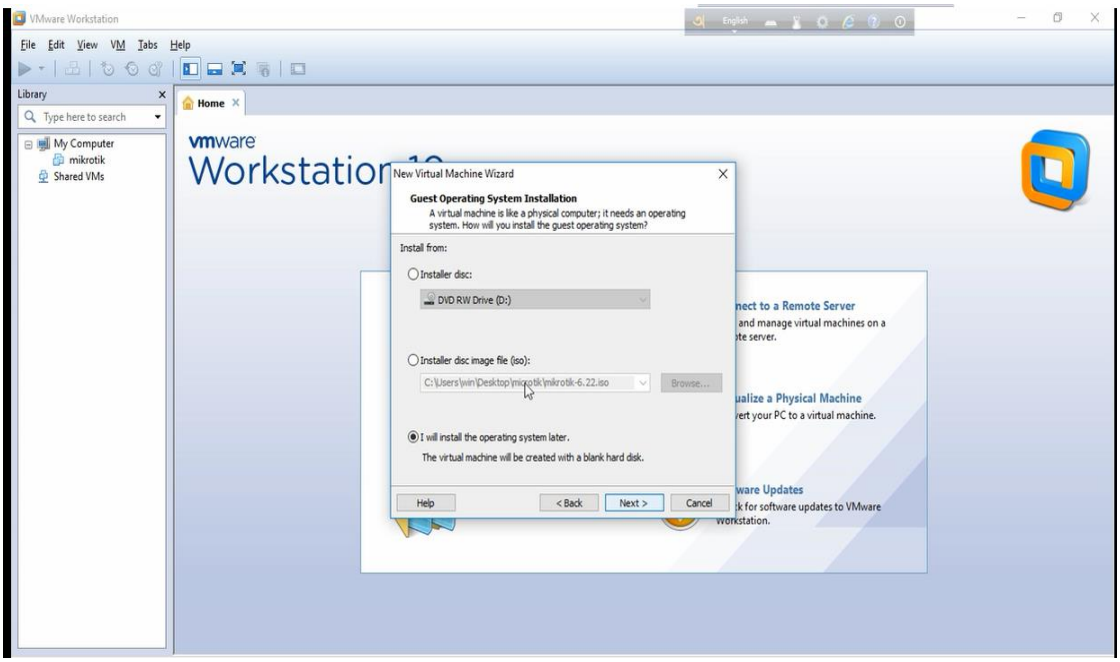

Fig 3.2: Create a virtual machine

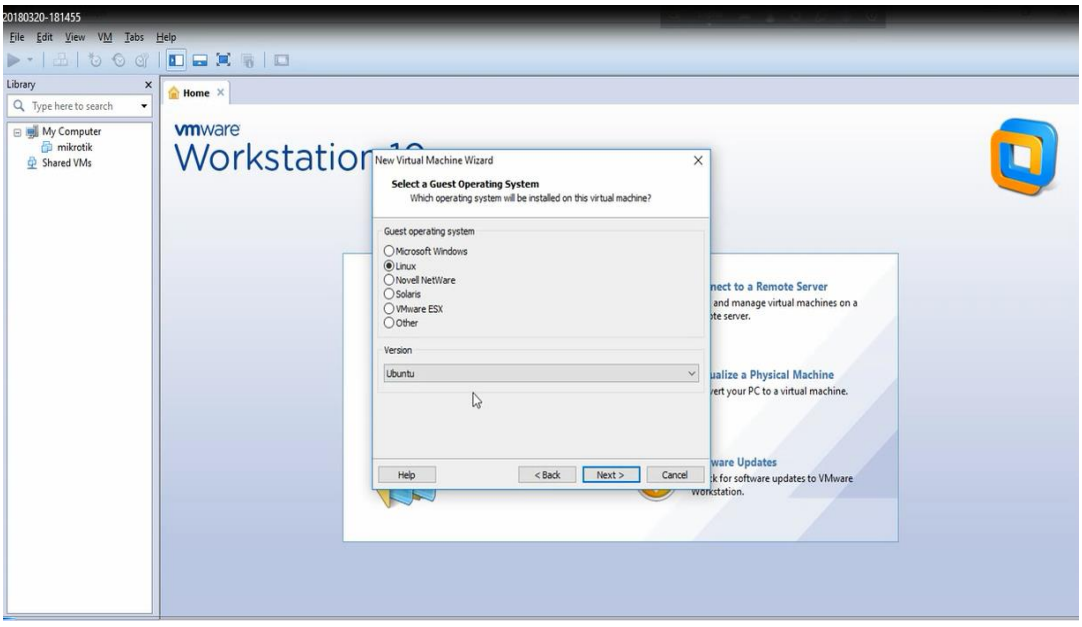

Fig 3.3: Create a virtual machine next step

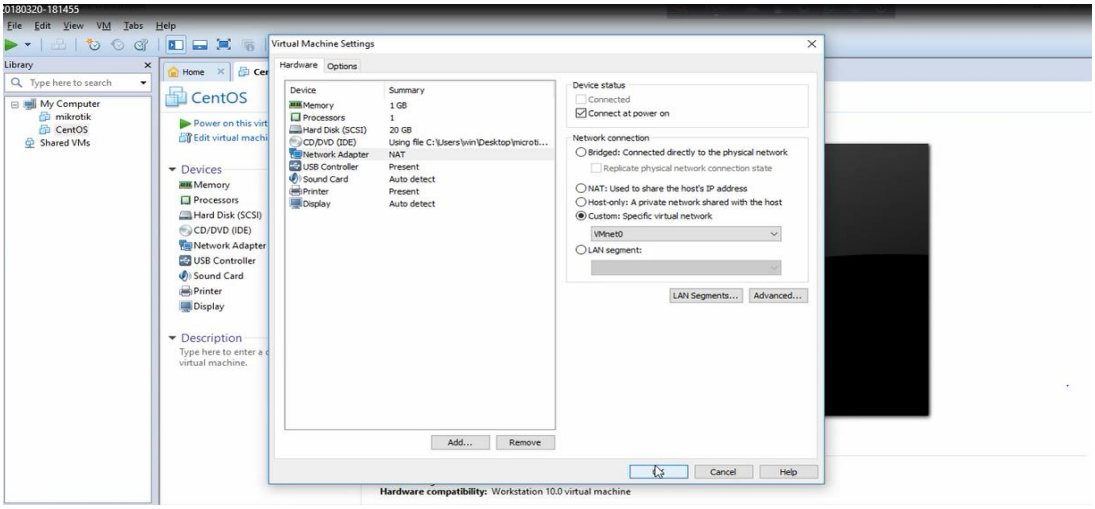

Fig 3.4: Create a virtual machine next step

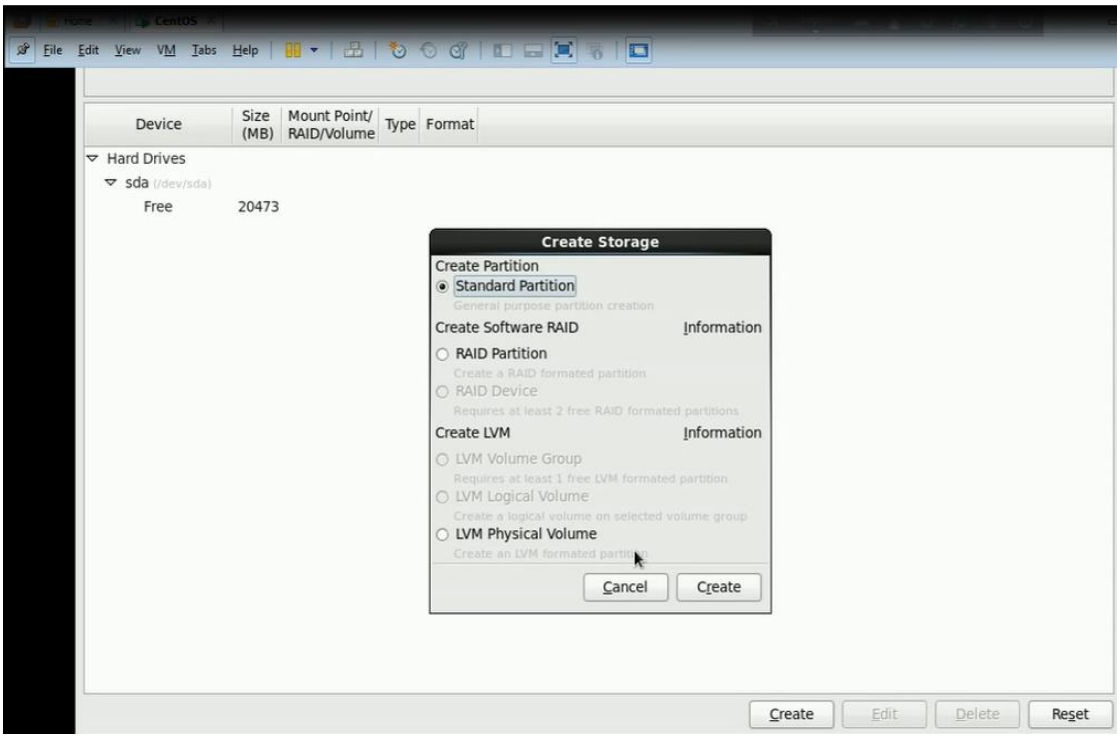

Fig 3.5: Create partition

Configure of boot partition file type ext4Fig 3.6shown in below.

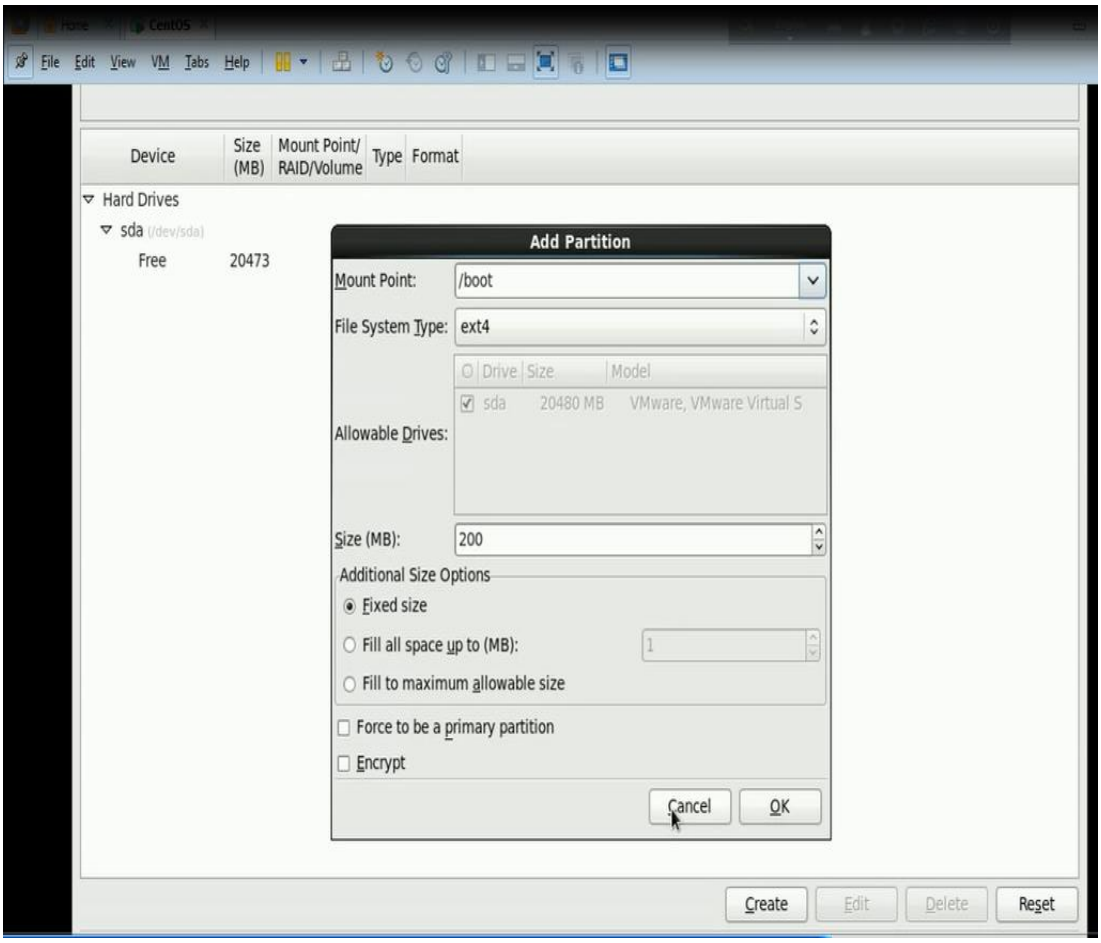

Fig 3.6: configure partition of /boot

Configuration of root partition Fig 3.4shown in below.

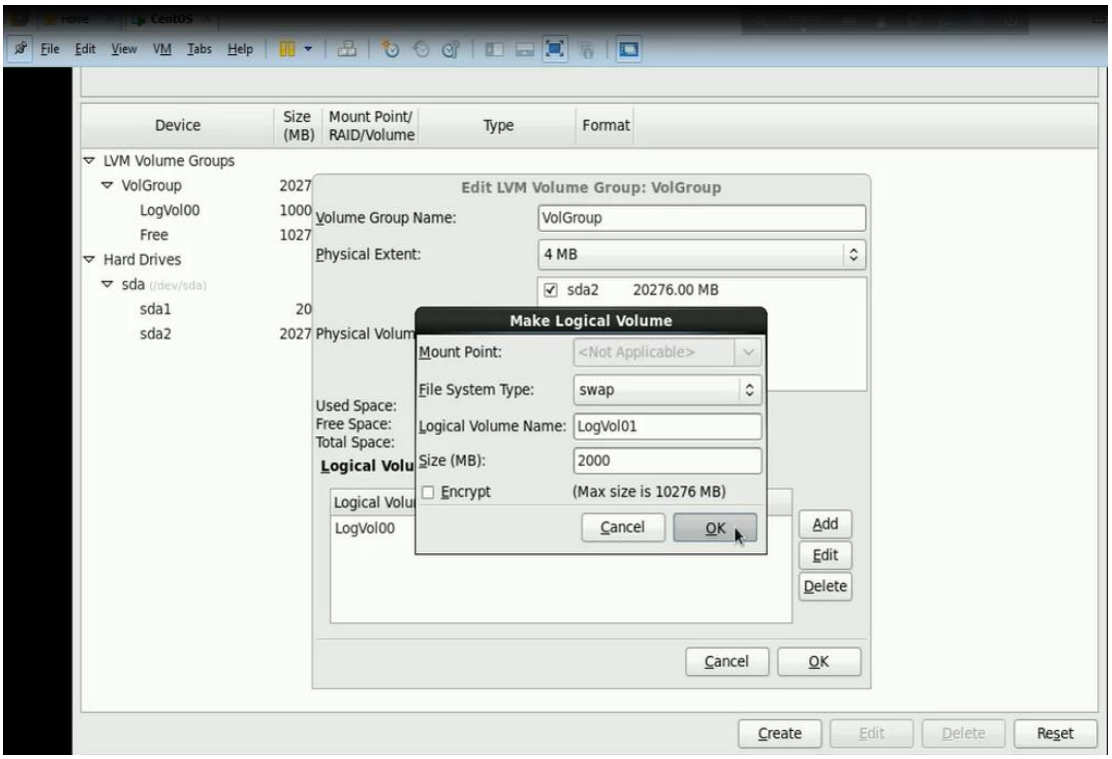

Fig 3.8: Partition of swap type fil

Configure of swap partition just work procedure like a RAM. Create process shown in Figure 3.9.

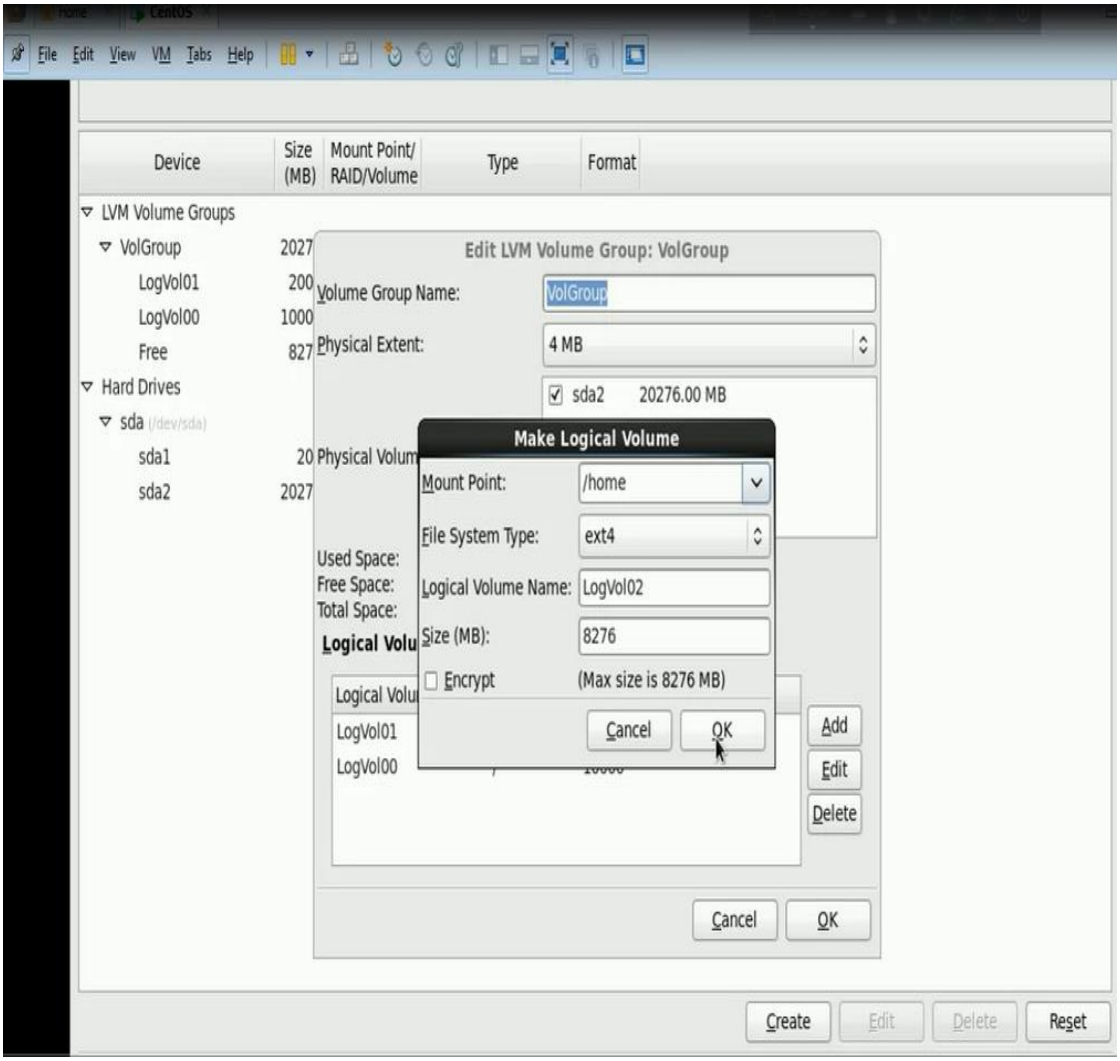

Figure 3.9: Partition of / home

Review partitioning layout, modify if needed. I have chosen default setup

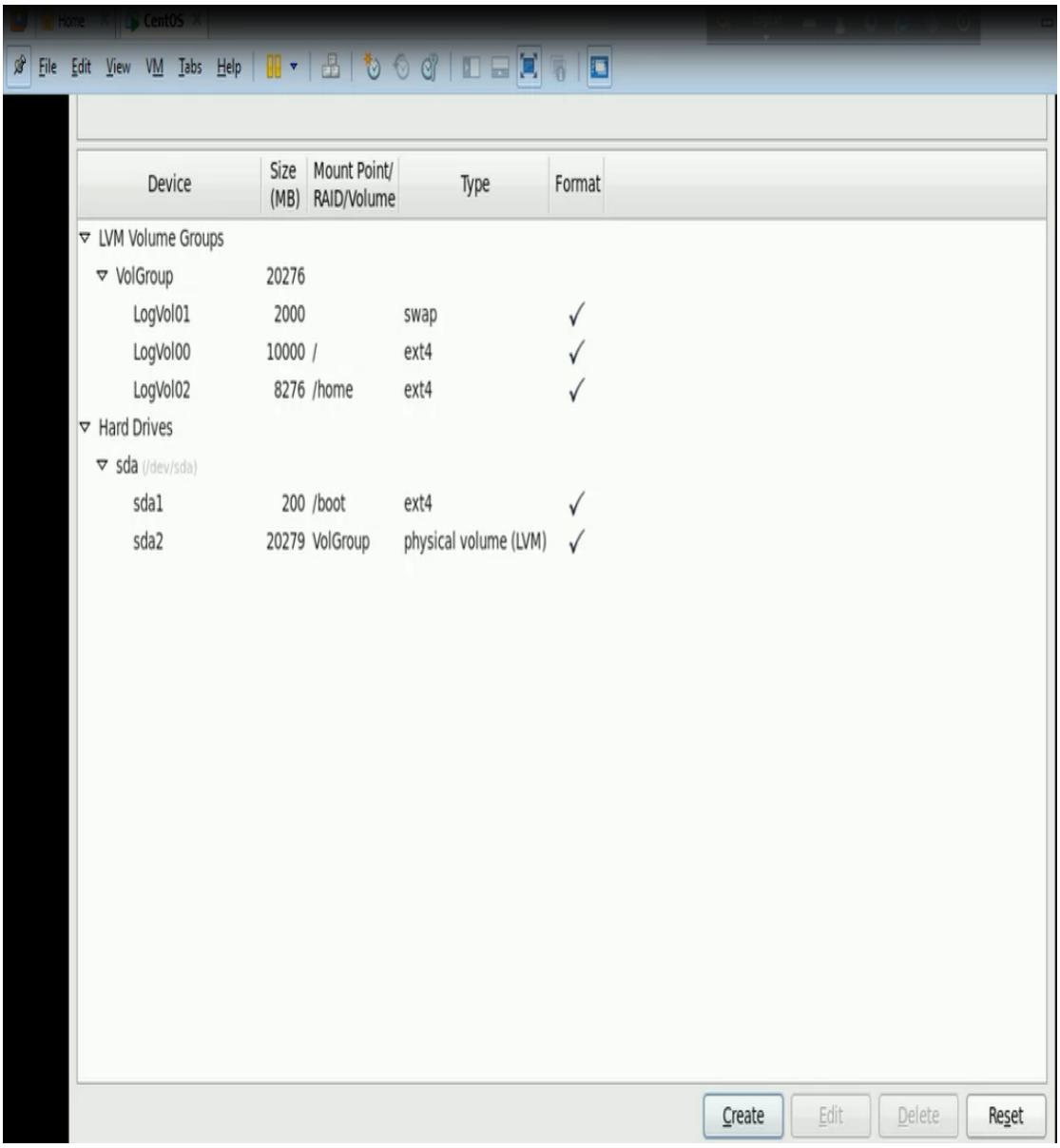

Figure 3.10: Choose RHEL 6 File system type.

Now ready to use RED HAT operating system shown Figure 3.11.

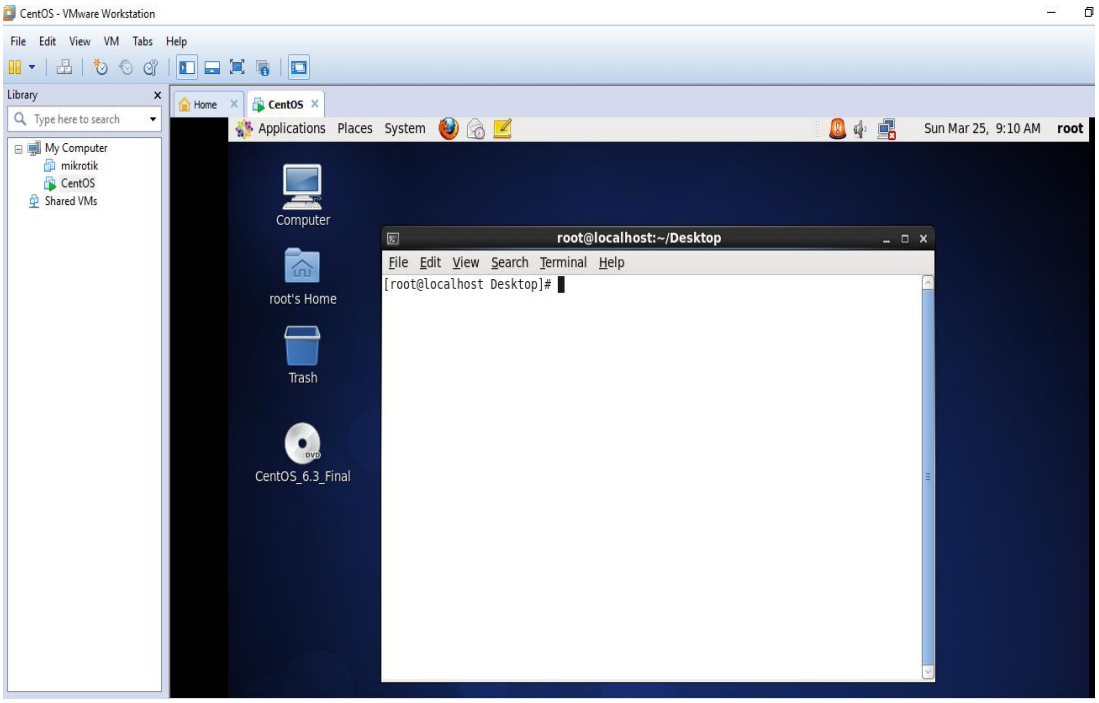

Figure 3.11: Complete installation

OPERATIONAL CODE OF LINUX

3.10 Details of user account and password and run level

Now describe to user account create, user password set, user password change, root password break clear Concept for Run Level and tar/untar and their effects.

Linux Run-Level Used by Centos

init 0 = Shut Down.

init 1 = Single User Mode.

init 2 = Multi User Mode.

init 3 = Full Multi User Mode.

init 4 = Unused.

init 5 = X-Window (GUI Mode)

init 6 = Reboot.

See the Run Level uses command:

#cat/etc/inittab

If forgot root password/don't know

Root password break- single user mode

- Reboot
- Press Esc to boot
- See the instruction under there and press e
- Select Kernel
- Edit ro into wr & at last edit quite into single then press Enter
- Press B

Now it will be in single user mode and then give the command—passwd

Then give the new password & Reboot.

The Basic Command of Linux Centos

Shutdown = poweroff , init 0, shutdown –h now .

Reboot = reboot or init 6 .

Logout = log the current user off the system.

Present Working Directory = pwd .

Create a blank file = touch fabeha(File name).

Check manual = man mkdir

Create a directory = mkdir fabeha(directory name).

List information about file = ls .

Chang Working Directory = cd /root/Desktop(directory path)

The Basic Command of Linux Centosshown Figure 3.12.

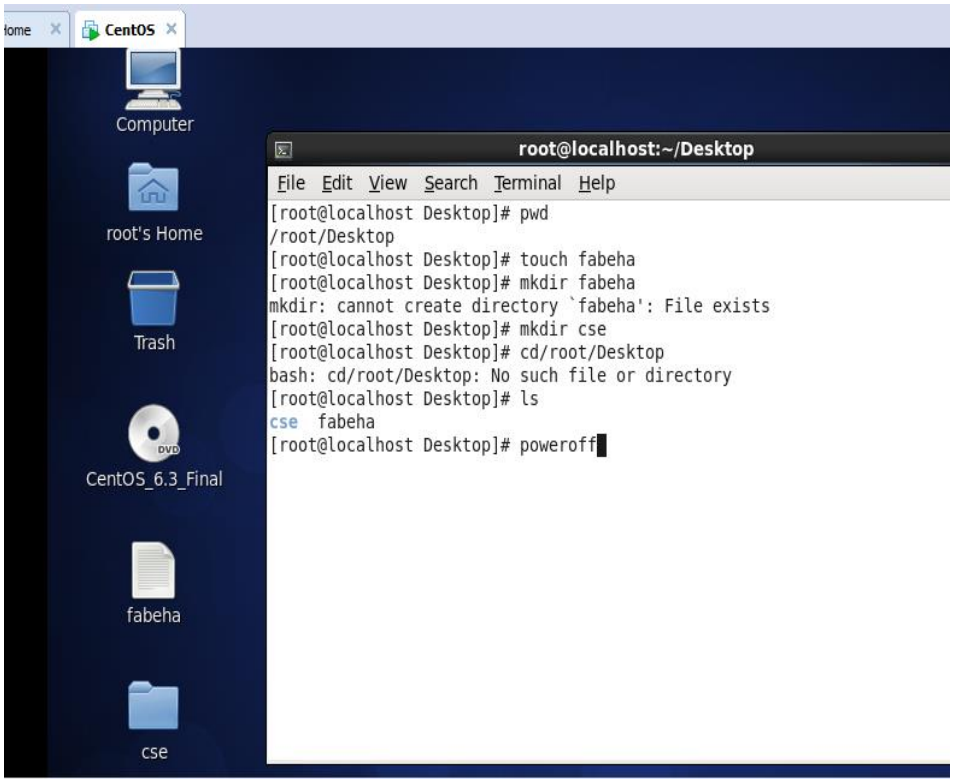

Figure 3.12: Command of Linux Centos

3.11 User Create and Password Management

Adding a user = adduser Fabeha(username).

Set a Password to New User = passwd fabeha(username).

Password Disable/Remove = passwd -d fabeha(username).

Verify user information = finger fabeha(username).

Locking an account = passwd -l fabeha(username).

Unlock an account = passwd –u fabeha(username).

Delete a user = userdel fabeha(username).

Delete a user with home directory = userdel –r fabeha(username).

User Create and Password shown Figure 3.13.

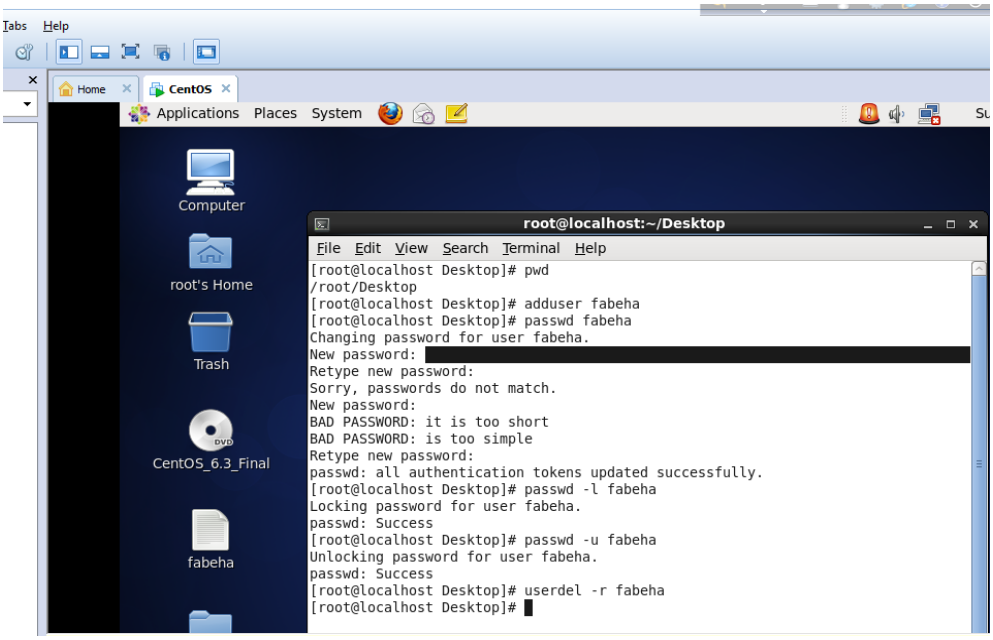

Figure 3.13.: User Create and Password

3.12 To Copy or Move a File

Copy = cp filename destination example: cp file1 /home/fabeha/afroz

Move = mv filename destination example: cp file1 /home/fabeha/afroz

Vi Editor

To Edit A File = vi Afroz(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 fa

To delete line number = set fabe

Search something = /abc for search abc

For Go top of the lines = :0

For Go bottom of the lines = :$

File Permission:

R= Read permission

W= Write Permission

X= Execute

Show the hidden file = ls –la

Check permission = ls –l

Change the Permission Field = chmod

File Permission create shown Figure 3.13.

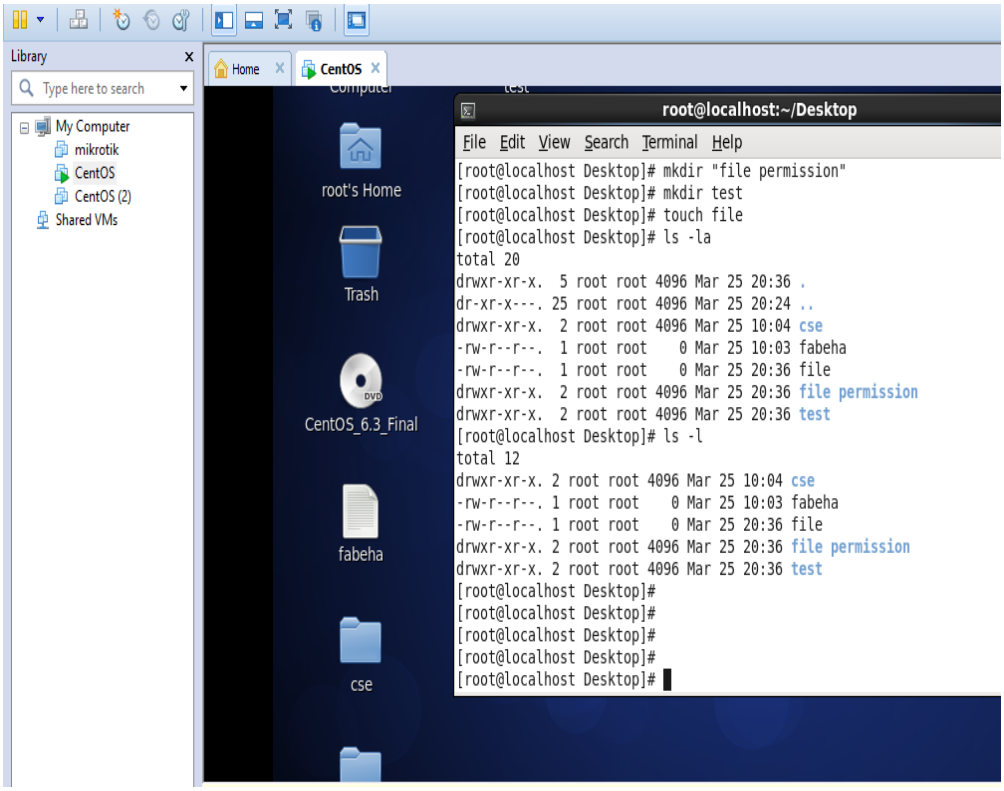

Figure 3.14.1: File Permission create

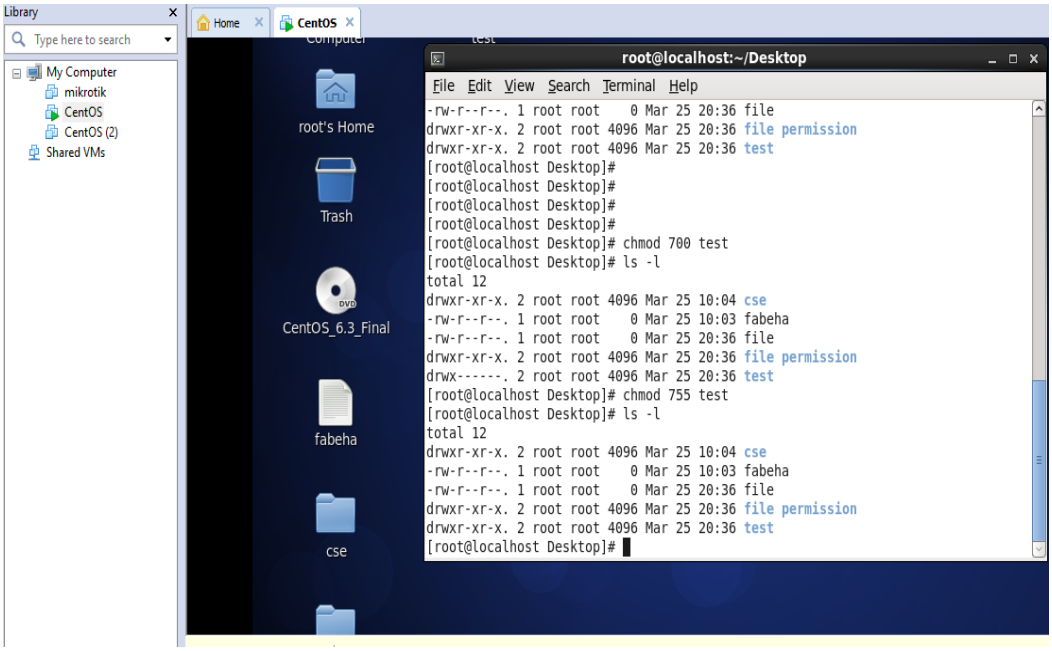

Figure 3.14.2: File Permission create

3.13 MikroTik Router

MikroTiks Ltd. sells wireless products and routers. The company was founded in 1995, with the intent ro 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

3.14 Useable Routers

Difference Company and ISP are uses different router and routing protocol. That's are uses as there preferred. In Daffodil Online they are use normally Mikrotik Router Rb2011UI, Mikrotik Router RB450, CRC1016 and uses switches is Cisco switches, as like cisco 2800 series.in server station use Juniper EX-Series. And for the Wi-Fi networks here mainly used Cambium.

In Daffodil Online network diagram is very simple use a main router to take bandwidth .and that router giving this a other router. Distribution switch are take connection for them and convert that to different department, then each determent has LAN and Wi-Fi for the user

Mikrotik Router Rb2011UiAS:

Mikrotik Router Rb2011UiAS has most features and interfaces from all our Wireless Router, it's have 600MHz 70K MIPS network processor.128 mb RAM, SFP cage, 5GB LAN ports and Ethernet ports.it has powerful dual chain 2.4Ghz 802.11 bgn Wireless. RJ45serial port and micro USB port. It is also desktop enclosure, two indoor antennas for wireless power sully and touch screen LCD panel

Figure 3.15: Shows Screen Print to Mikrotik Rouret

3.15 RouterOS

The main product of MikroTik is an operating system based on the Linux kernel, known as the MikroTik RouterOS. Installed on the company's proprietary hardware (Router board series), or on standard x86-based computers, it turns a computer into a network router and implements various additional features, such as firewalling, virtual private network (VPN) service and client, bandwidth shaping and quality of service, wireless access point functions and other commonly used features when interconnecting networks.

3.16 Static routing

First step to configure a MikroTik router is to assign WAN and LAN IP addresses in WAN and LAN interface accordingly. So, follow below steps to set WAN and LAN IP addresses in your new MikroTik router. Set up a Mikrotik router give power to the MikroTik router. Then connect in a UTP cable in MikroTik LAN port and the other port to the PC.

Step1: Now open Winbox GUI click to IP address and MAC address. Click to Mac address then write ‘admin’ in login box and don’t need to give Password.

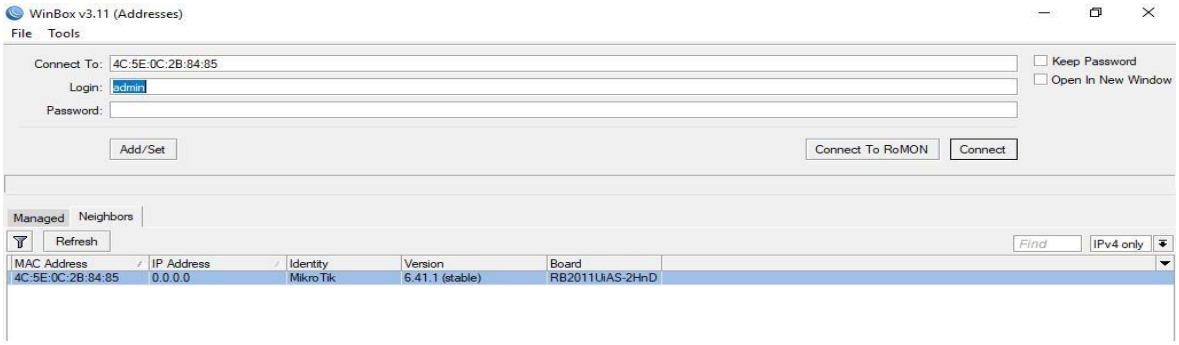

Figure 3.16: Shows Screen Figure :3.16 Print to connecting winbox interface

Step2: Go to the connected interface to changing name and define LAN and wan port. After that giving routes and getway. Here must be added Dist. Address. Giving the ip address and network address for each interface. Then applying NAT to eatable connection.

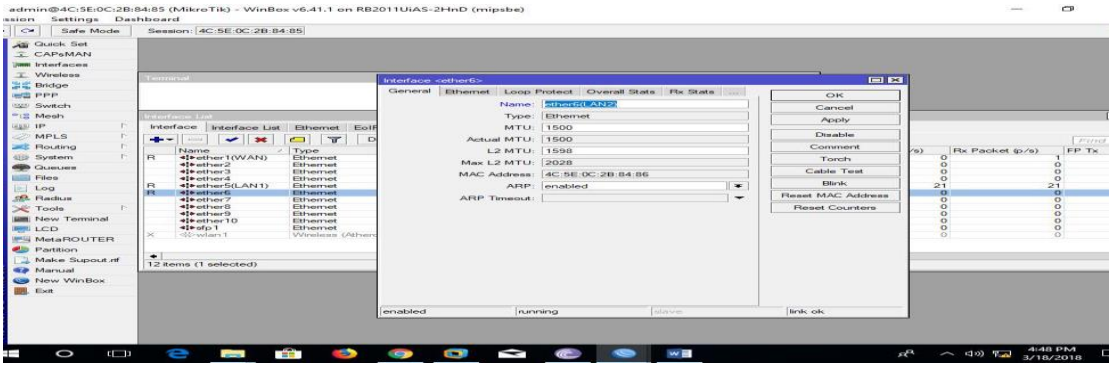

Figure 3.16.1: Shows Screen Print renaming connected port.

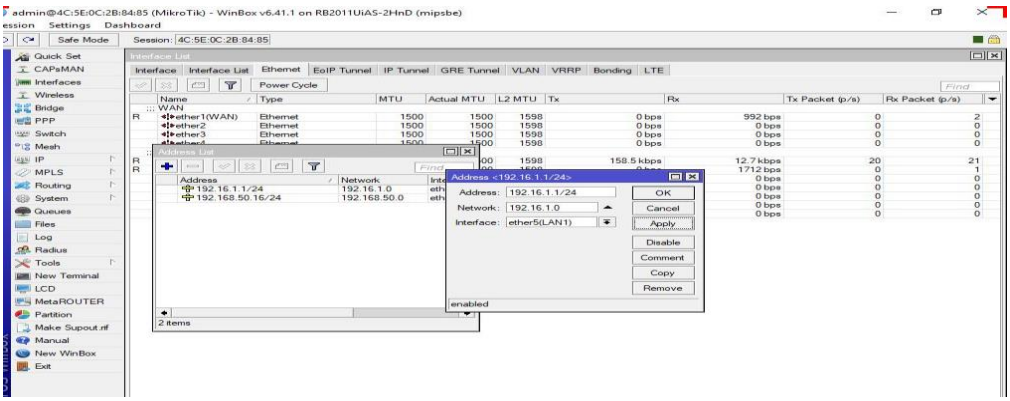

Figure 3.16.2: Shows Screen Print to giving ip for each connection

Step3:NAT; Go to firewall and select NAT. Here editing two option mainly.one is General; Chain: srcnat . Src. Address: local block/IP with subnet mask of the network and click apply and ok. Other is Action; in that choose ‘Masquerade’ and click Apply&Ok.

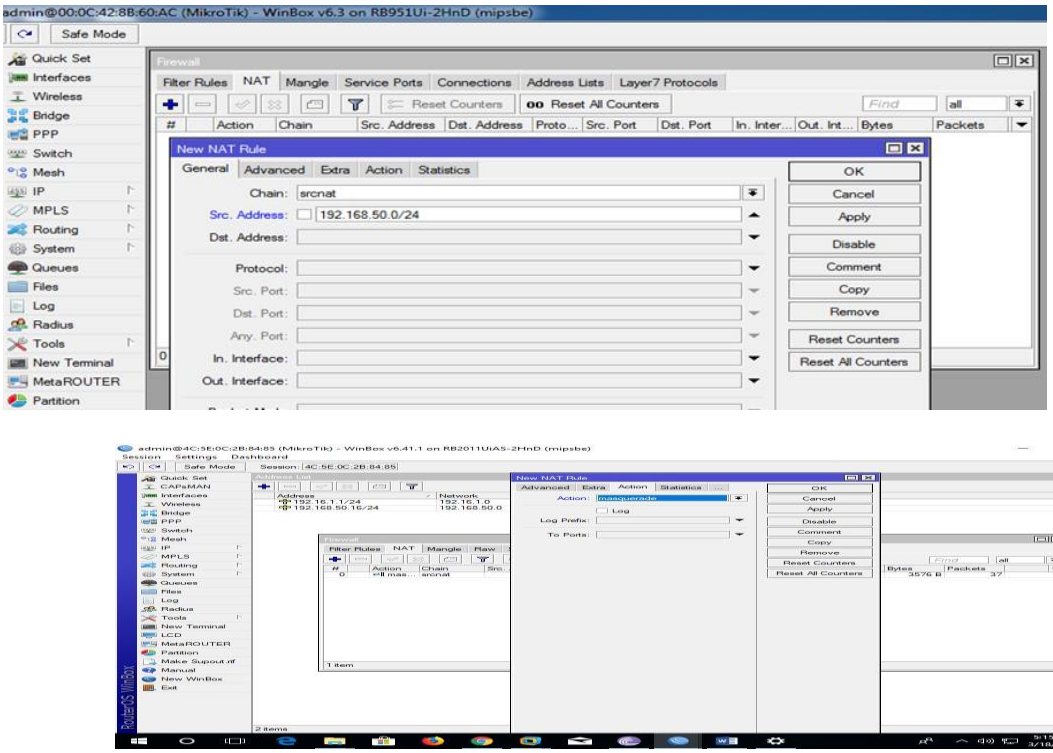

Figure 3.16.3: Shows Screen Print to doing NAT

Step4: After complete that put the ip in the same network in the Ethernet properties of the pc network adapter and give ip getway and DNS then click ok to start browse.

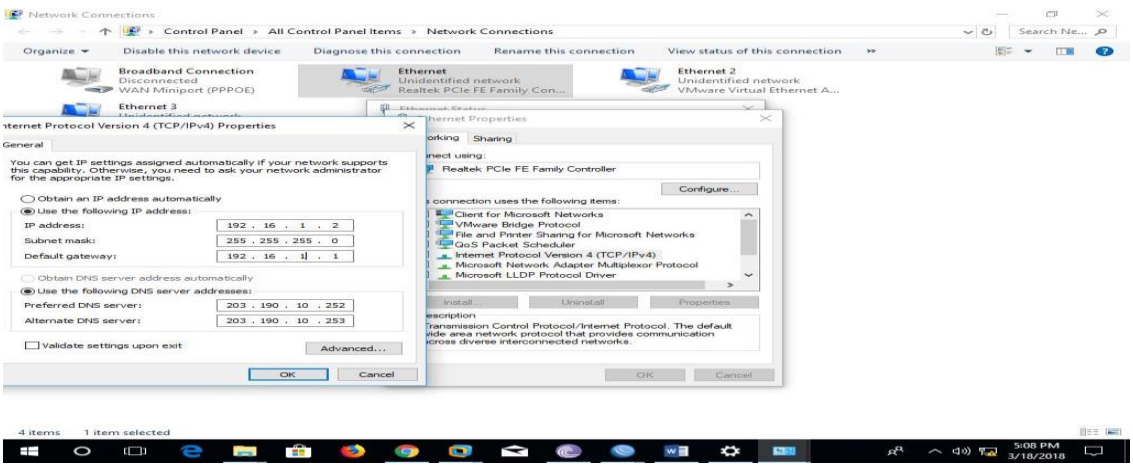

Figure 3.16.4 : Shows Screen Print to giving ip Address

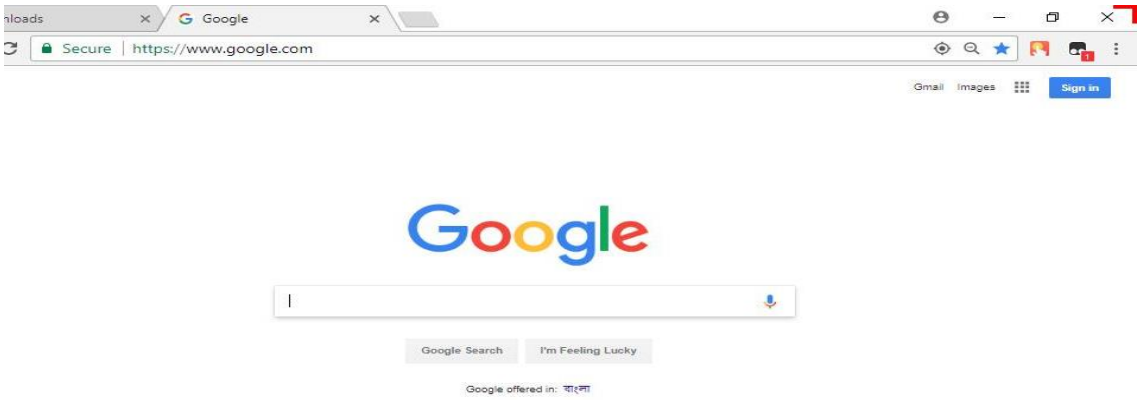

Figure 3.16.5: Shows Screen Print to browse websites

3.17 Dynamic routing: Dynamic routing makes automatic updates to route tables as the configuration of a network changes. For that recess I will show to creating DHCP Serve. DHCP means Dynamic Host Configuration Protocol. This network protocol that enables a server to automatically assign an IP address to a computer from a defined range of numbers configured for a given network.

Step1: Now open Win box GUI click to IP address and MAC address. Click to Mac address then write 'admin' in login box and don't need to give Password.

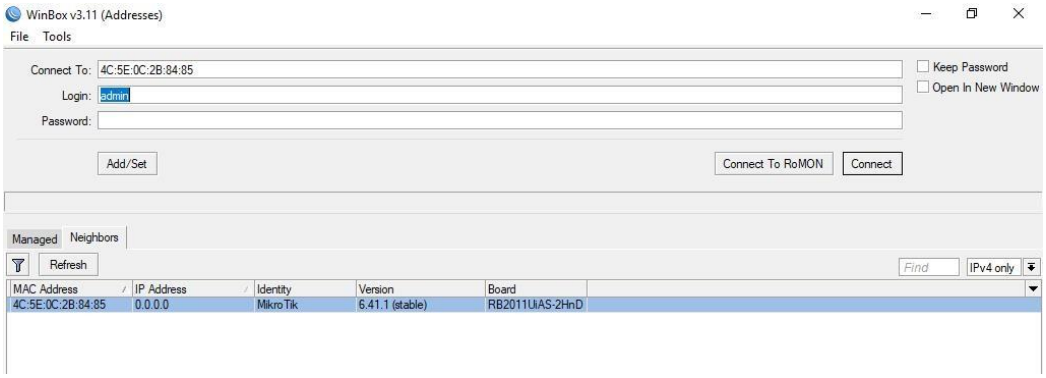

Figure 3.17.1: Shows Screen Print to connecting

Step2: Now go to DHCP serverand click DHCP setup.then give networkaddress with CIDR,and click next.then given Getway and click next.then here we can see pool address of DHCP server of that net work and click next.

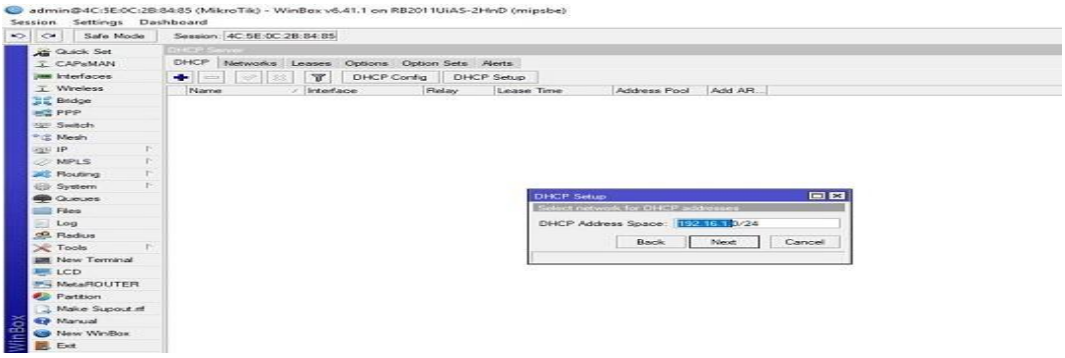

Figure 3.17.2: Shows Screen Print to give network address

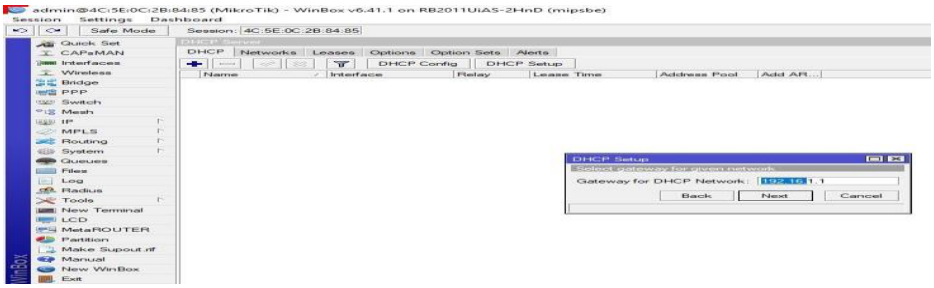

Figure 3.17.3: Shows Screen Print to giving getway.

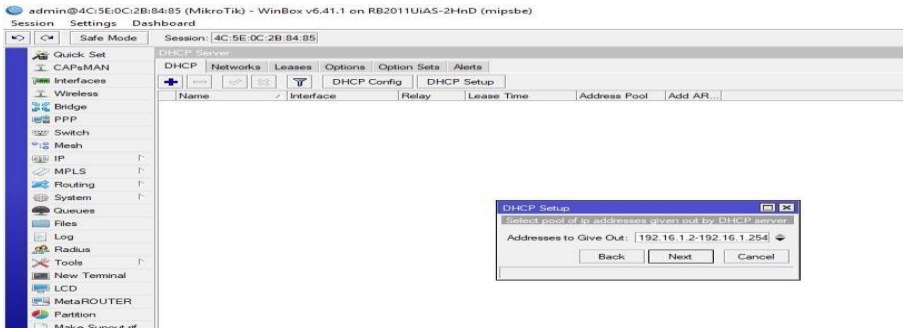

Figure 3.17.4: Shows Screen Print to show all useable ip.

Step3: After complete this then given DNS and Alternative DNS.then click next and DHCP serversetup is complete**.** Here we can add to many DNS.

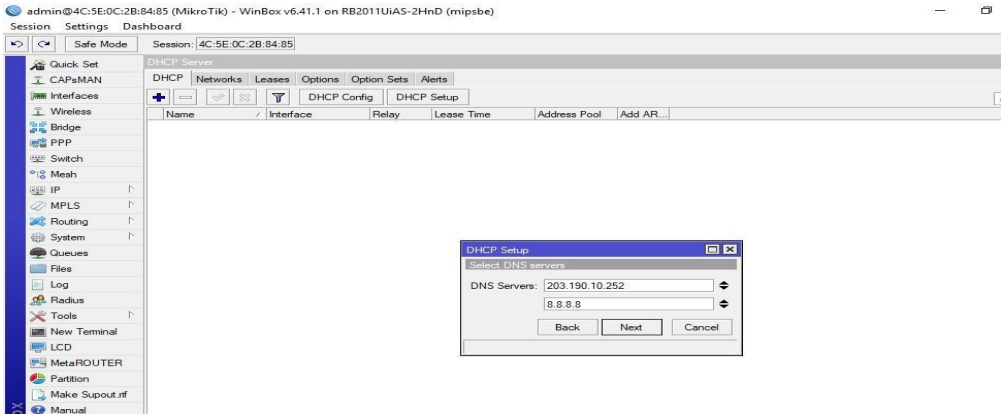

Figure 3.17.5: Shows Screen Print to giving DNS

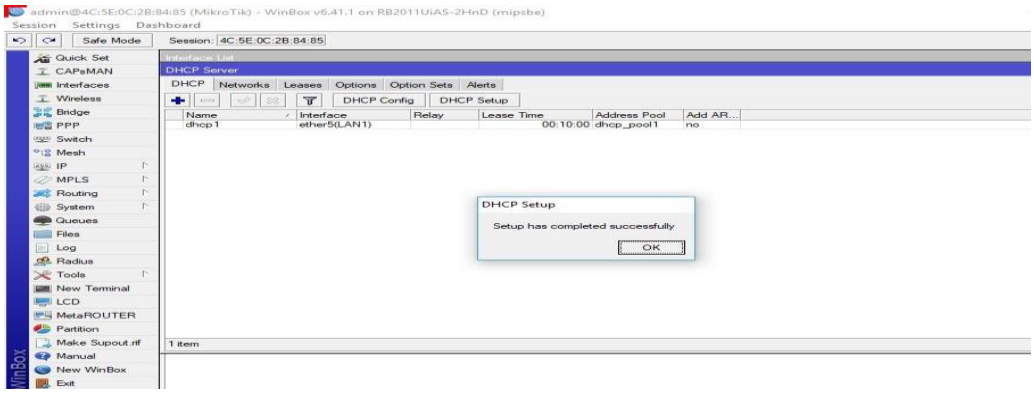

Figure 3.17.6: Shows Screen Print to configure DHCP

3.18 Bandwidth handling in Mikro Tik: The most of familiar and useable feature in Mikrotik is bandwidth maintains. It can be defining each or a total network upload and download bandwidth. It also separates bandwidth for different server. That process it can be use Network address, ip address MAC address. Now I show the process of separating bandwidth for different server or site.

Step1: The easiest way to setting bandwidth in a ip or network. So 1st go to queue and create a simple queue. Then giving queue name and ip address in Target address. After complete that given target upload & download max limit of bandwidth. Then apply ok. Target address may be defining interface or bridge, this one simple queue to limited with an ip address.

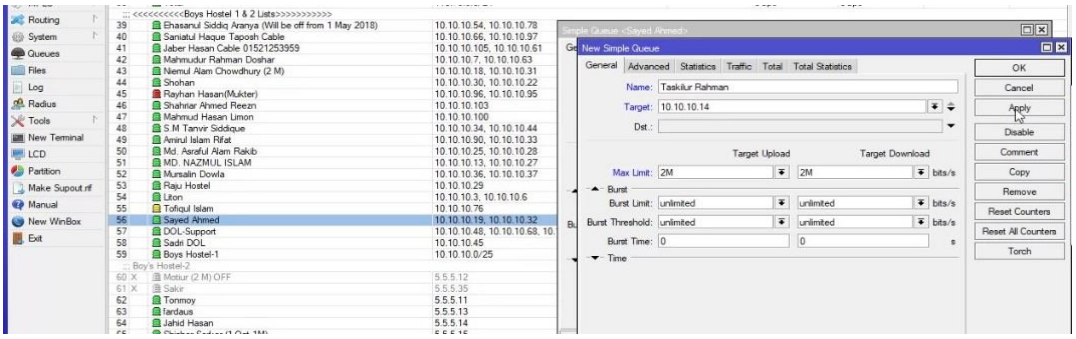

Figure 3.18.1: Shows Screen Print to add bandwidth in ip

Step1: Bandwidth assigning in YouTube separately. For that 1st for to ip, and click firewall. Then go to address list to see connected server. Then clock 'Mangle'. Now create a New Mangle. In that we have to done three changes for each. In General chain select is 'pre-routing', in advanced give src.address of name of server.in Action choosing mark connection and giving the name of server as like YouTube and click

Apply and ok. After complete then create two folders with bandwidth rate. One for src.address and other is dst.address.

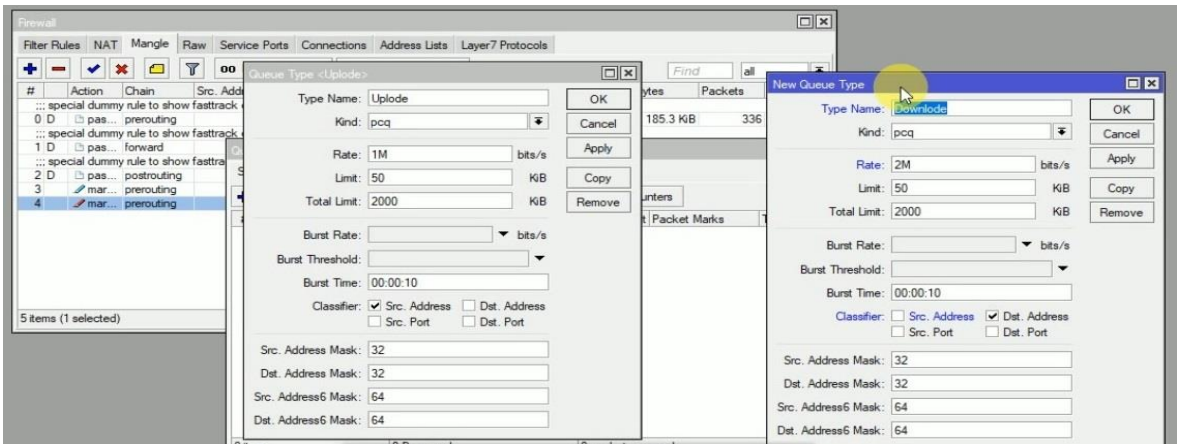

Figure 3.18.2: Shows Screen Print to create upload and download bandwidth queue

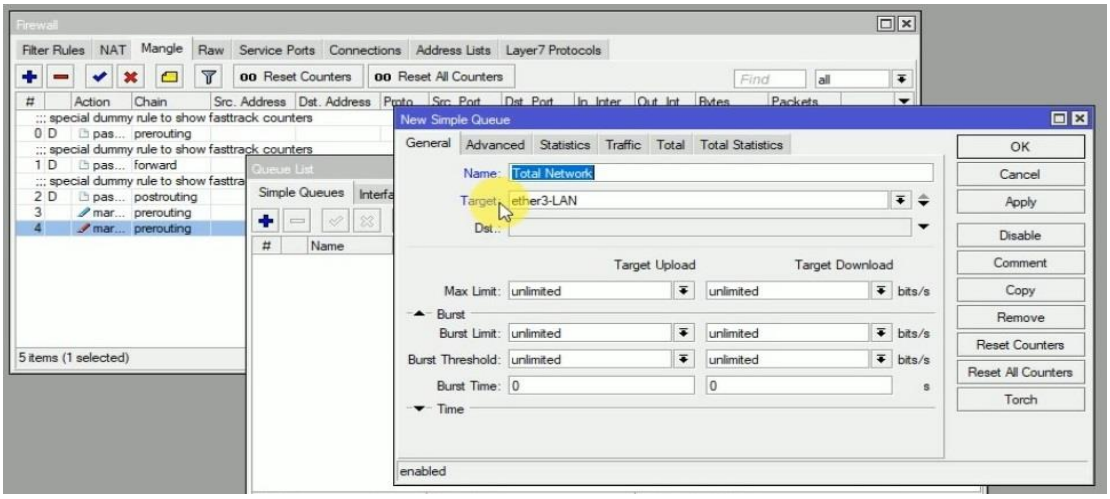

Figure 3.18.3: Shows Screen Print to a new queue with address.

Now create a new queue and giving a name and addressing port. It can be network address, ip or interface port. Then click advance, for changing packet mask option and two queue type. In packet mask given name of server as like YouTube and one queue is upload and one is download and click apply and ok.

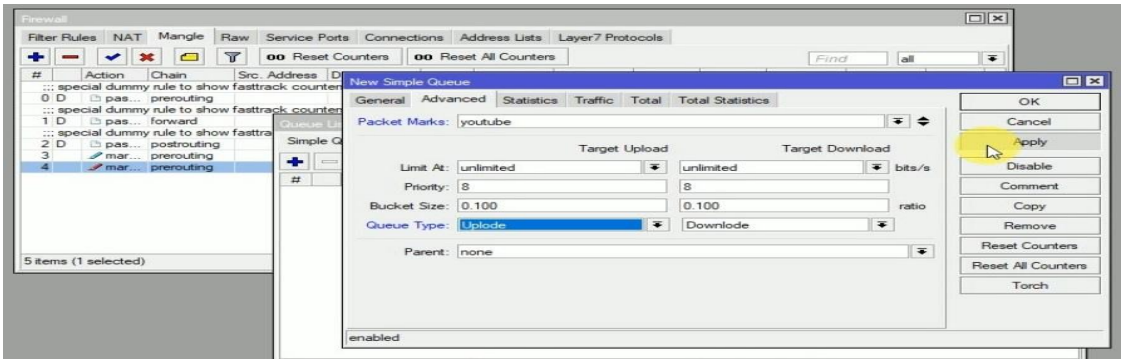

Figure 3.18.4: Shows Screen Print to assigning queue type in YouTube

Now open YouTube in browser and upload and download speed is shown in Queue list

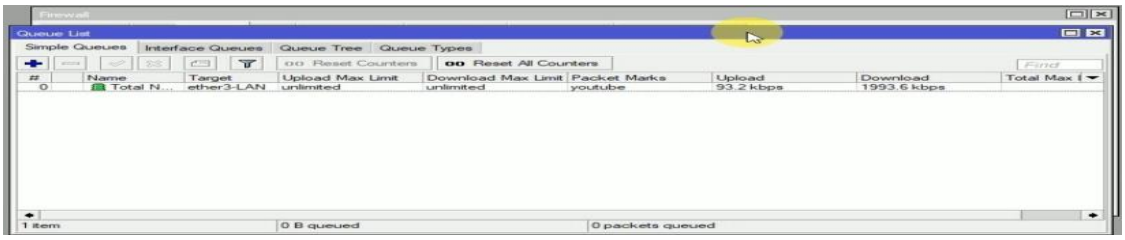

Figure 3.18.5: Shows Screen Print to show bandwidth in queue.

3.19 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
- 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)

3.20 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 2009

3.21 Router Board

The Router board line, combined with Router OS, is marketed at small- to medium-sized wireless Internet service providers 3.18, typically providing broadband wireless access in remote areas. Products include pre-assembled small office/home office (SOHO) routers, wireless 802.11n MIMO and TDMA devices for indoor and outdoor use, and also bare routers in form of printed circuit boards (PCBs) for integration into custom solutions. Also, the Router board line includes a series of Mini PCI and Mini PCI Express wireless adapters, supporting a range of IEEE 802.11 protocols, and designed to be used together with the router boards lineup.

Despite the fact that in-house developed Linux kernel patches required for hardware support are not made publicly available by Mikro Tik, many Router board boards and their versions are well supported by third-party Linux-based firmware's, notably Openwork

750G Series Mikro Tik Router Shows Figure 3.19

Figure 3.19: Shows Mikro Tik Router 750G Series

❖ 3.22 Cloud Core Router

MikroTik released in November 2012, The Cloud Core Router 3.19 figure integrated unit which is based on the Tilera CPU supporting 16 to 36 CPU cores, 12 1000Base-T Ethernet interfaces, and up to four SFP (MiniGBIC) interfaces, as well as "fast-path" packet forwarding between interfaces (with claimed 24 million packets per second forwarding rate). This unit targets the medium-sized network providers as well as try to be a well-priced alternative to the other more well-known brands[9].

MikroTik Cloud Core Router 1036 Series shows in figure 3.15

Figure : 3.20MikroTik Cloud Core Router 1036 Series

3.23 Propose Network Diagram (MikroTik Configuration)

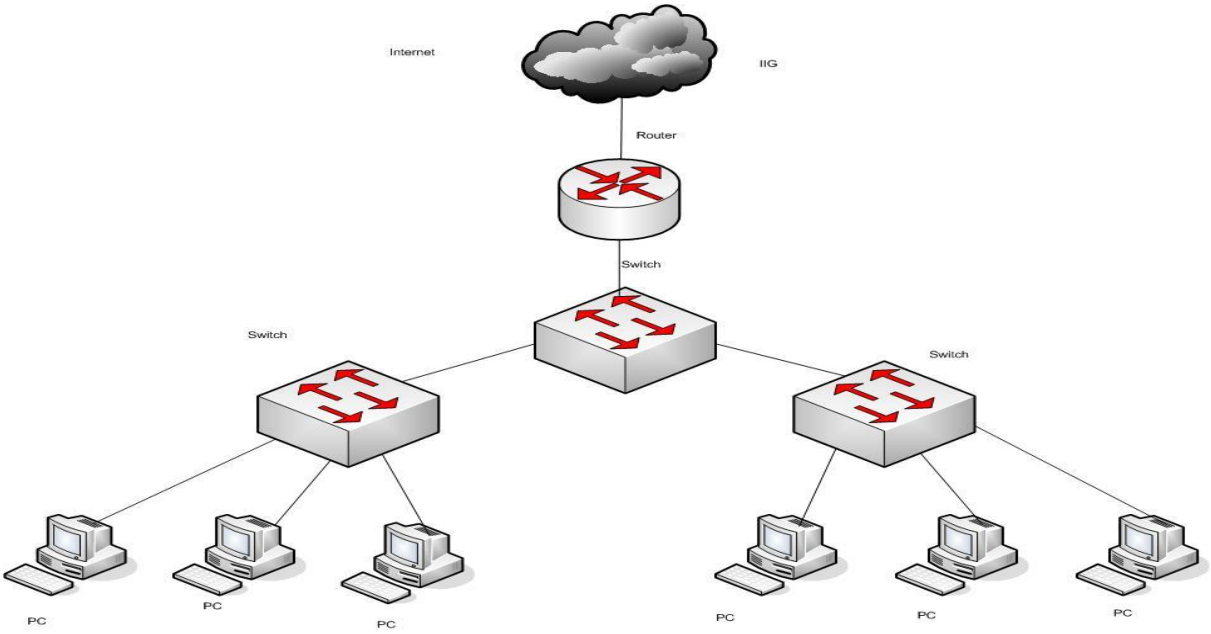

Figure : 3.21 Shows Network Diagram

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.

3.24 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

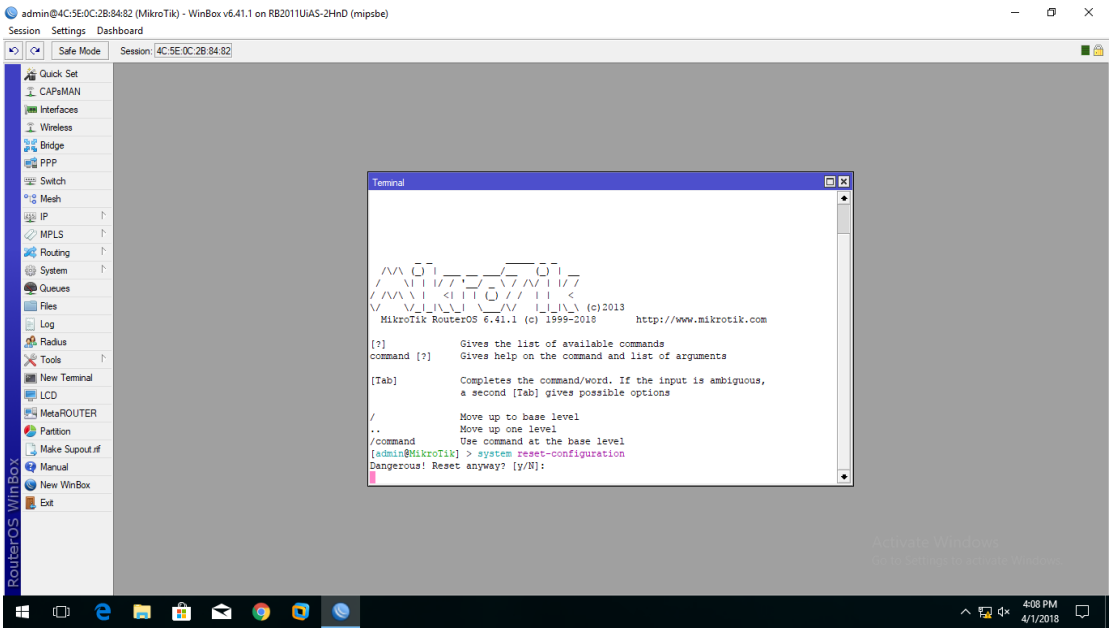

Figure 3.22.1: Shows Screen Print Reset MikroTik Router

✓ **Step 2**:

Defining routes or Setting up IP Address

Process:

IP > Address> "+" >give IP Address

Apply>Ok

IP > Route > "+" > Gateway>give Gateway

Apply>Ok

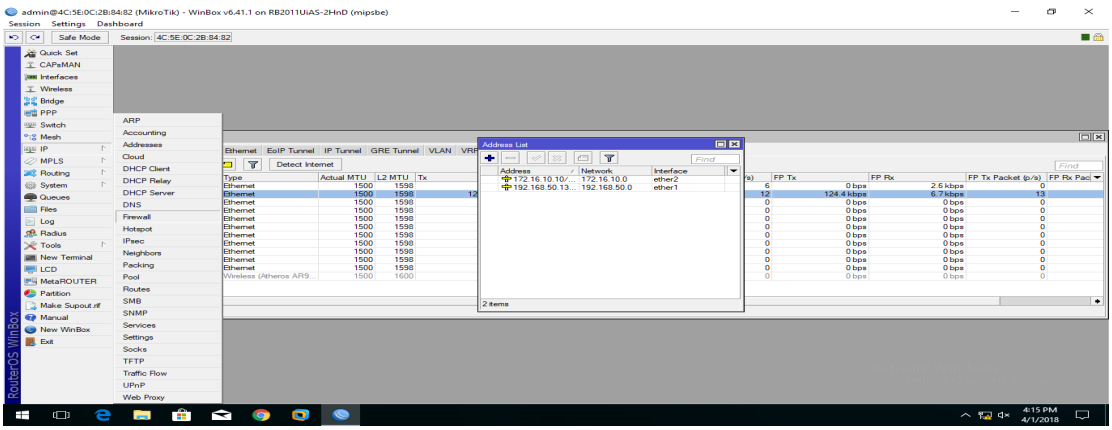

Figure 3.22.2: Shows Adding IP Address

Step 3

Process:

IP > Firewall > NAT > “+’

General:

Chain: srcnat

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

Action:

Masquerade

Apply>Ok.

Local Area network ip address NAT rule in fig 3.18 shows:

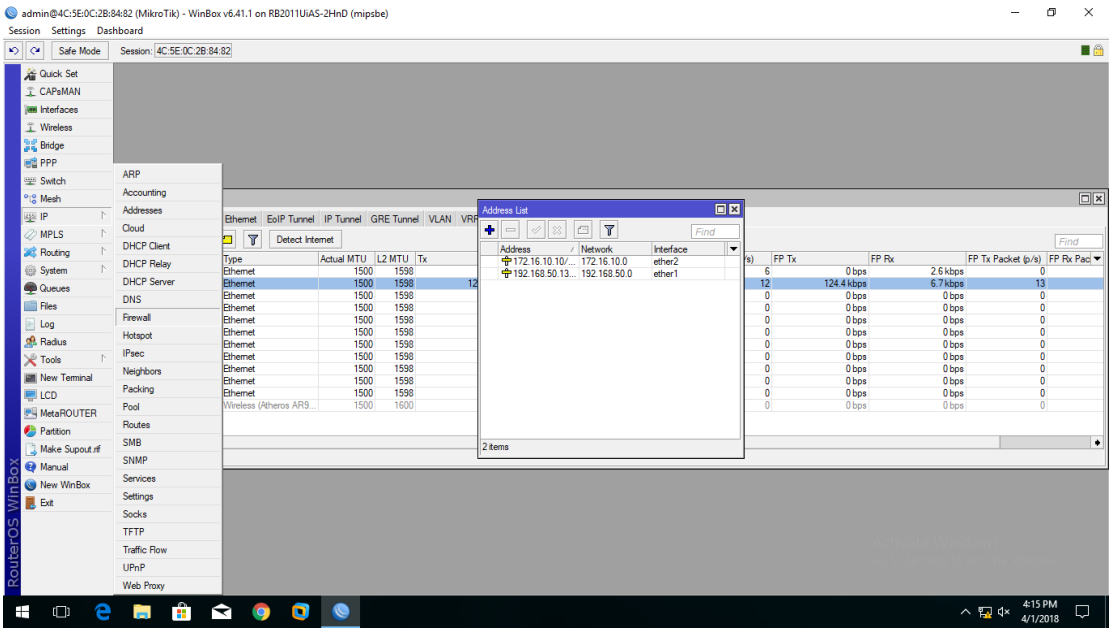

Figure 3.22.3: Shows Creating Firewall System

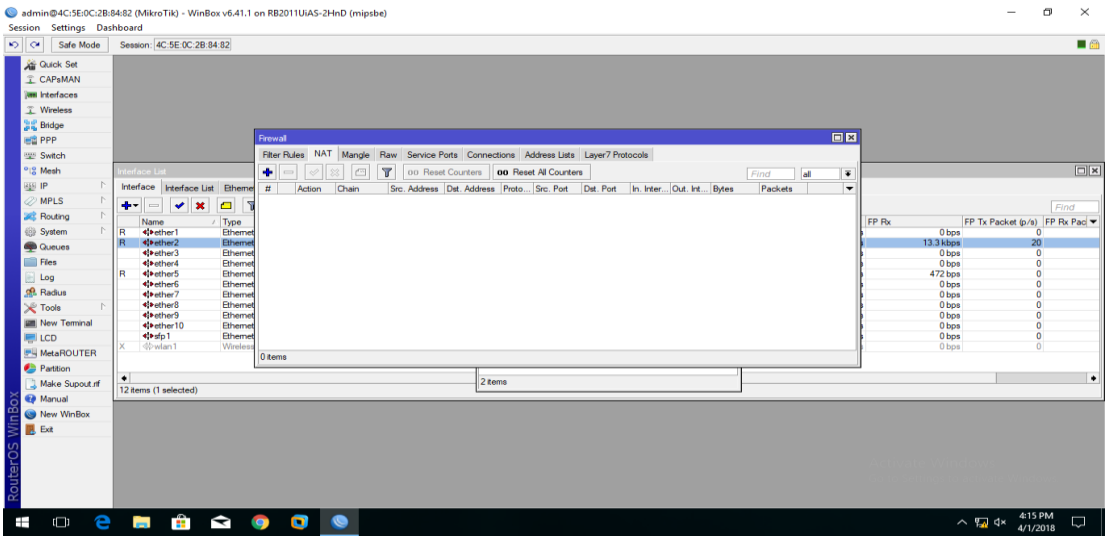

Figure 3.22.4: Shows NAT Portion

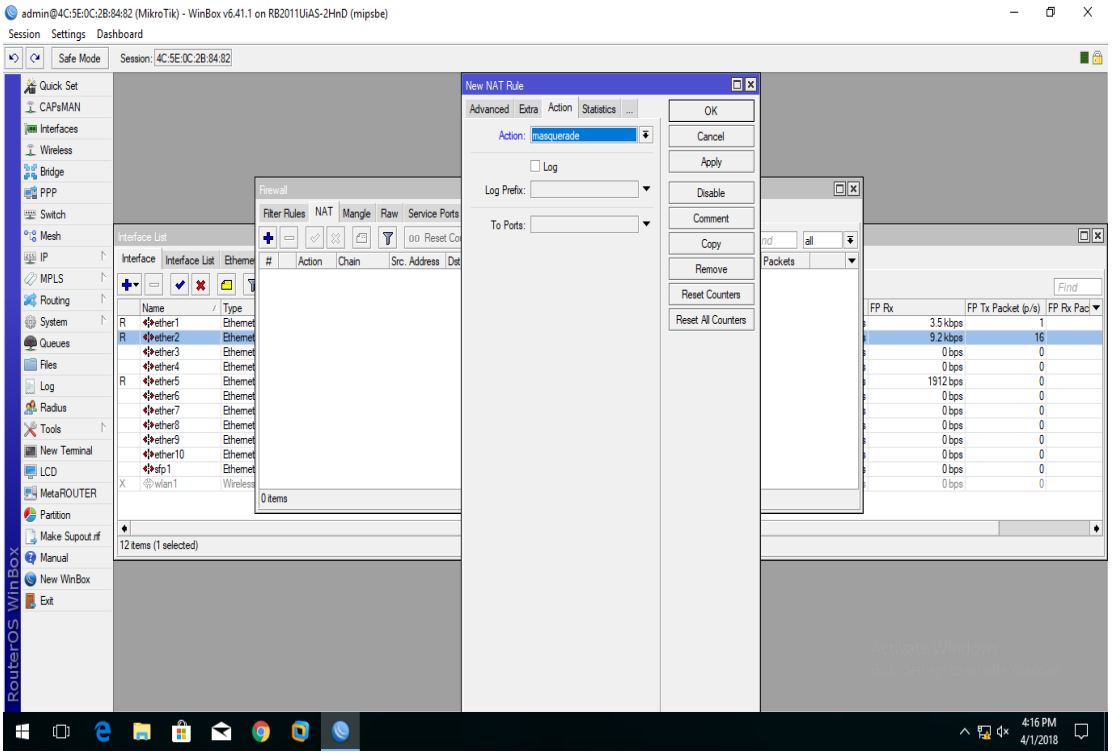

Figure 3.22.5: Shows Action Portion

✓ **Step 4:**

Doing the task of bridge connection the related ports with each other 3.24 in figure

Process:

Bridge>Ports> “+” > (bridge n, here n=1,2,3….)> Apply>ok

IP > DHCP Server > DHCP Setup > bridge 1> following Next Option

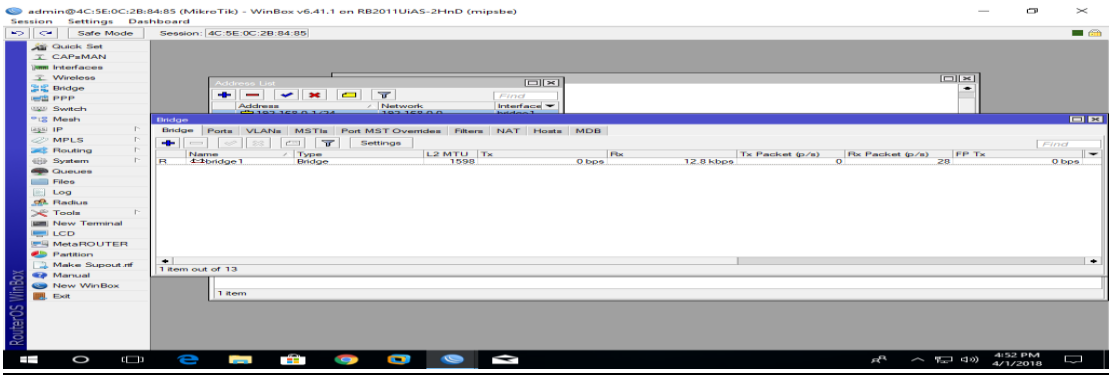

Figure 3.22.6: Shows Bridge 1 Portio

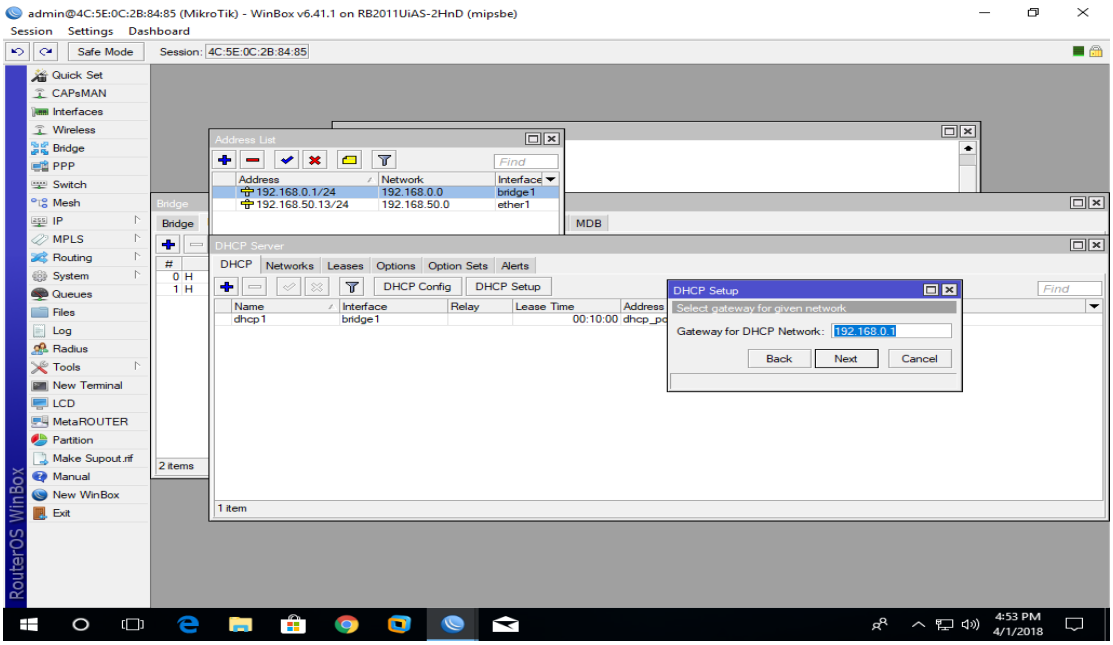

Figure 3.22.7: Shows DHCP Server Setup Portion

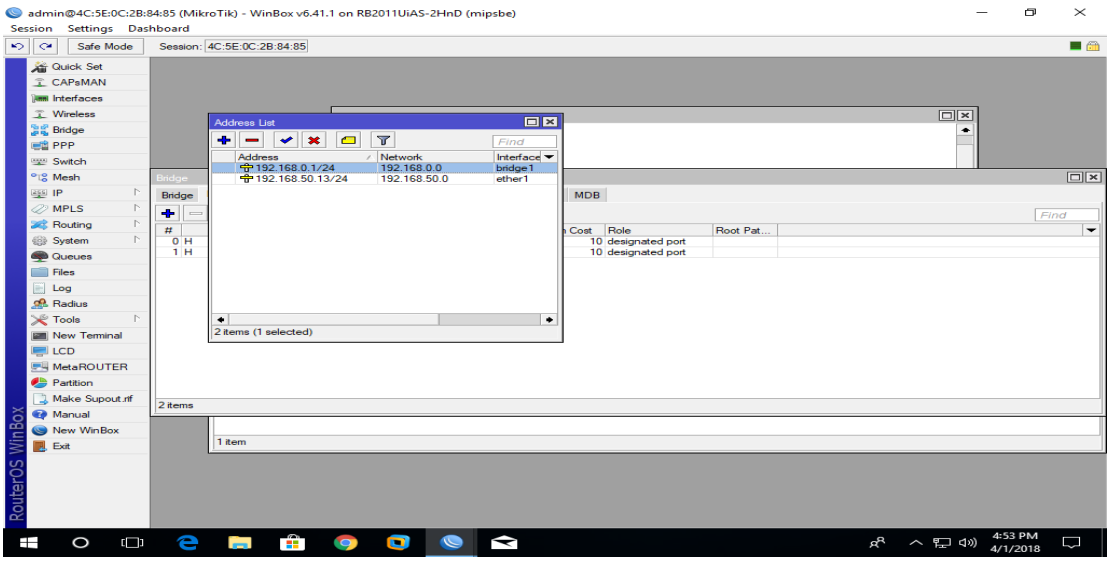

Figure 3.22.8: Shows CreatingBridge 1

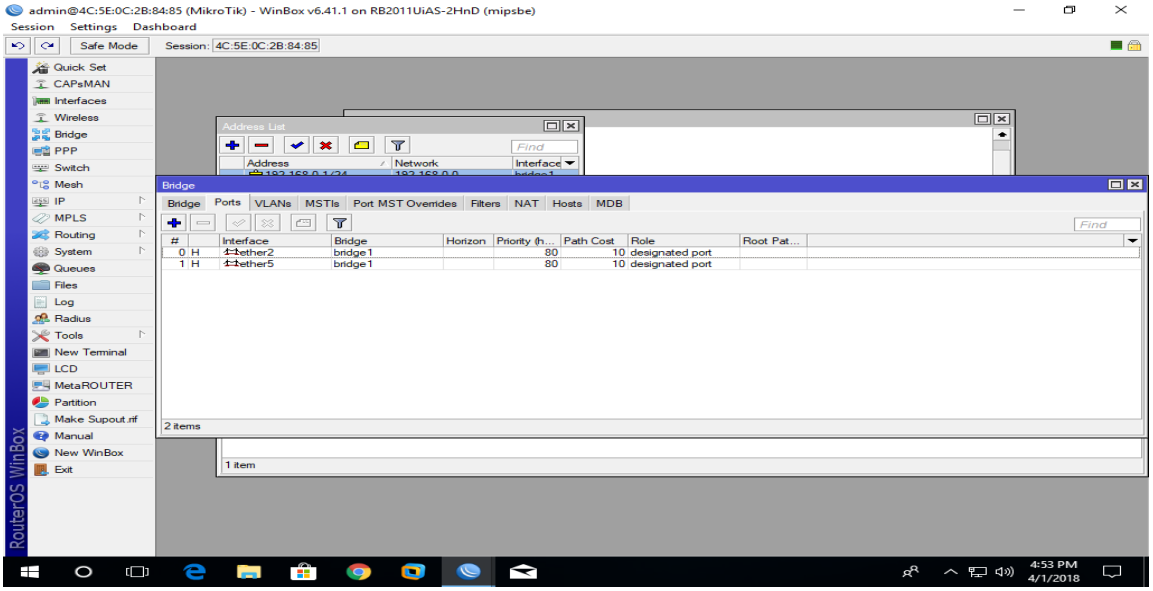

Figure 3.22.9: Shows CreatingTwo Bridg

✓ **Step 5**

Doing the task of pairing IP Merge the related ports with each other 3.30 in figure

Process:

IP > Firewall > Mangle> Files > Address.rsc>> New Terminal > Import Address.rsc

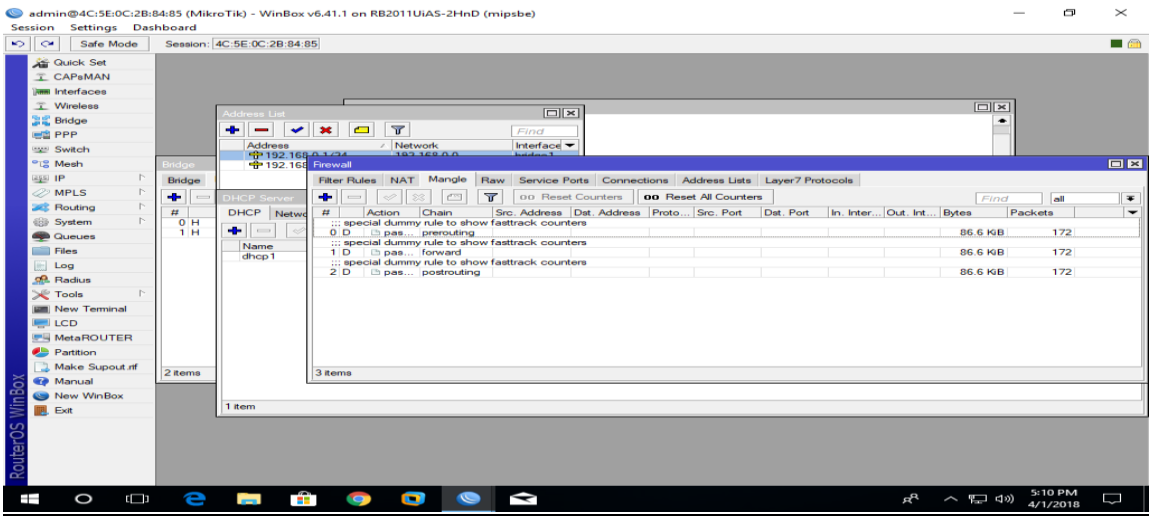

Figure 3.22.10: Shows the mangle options

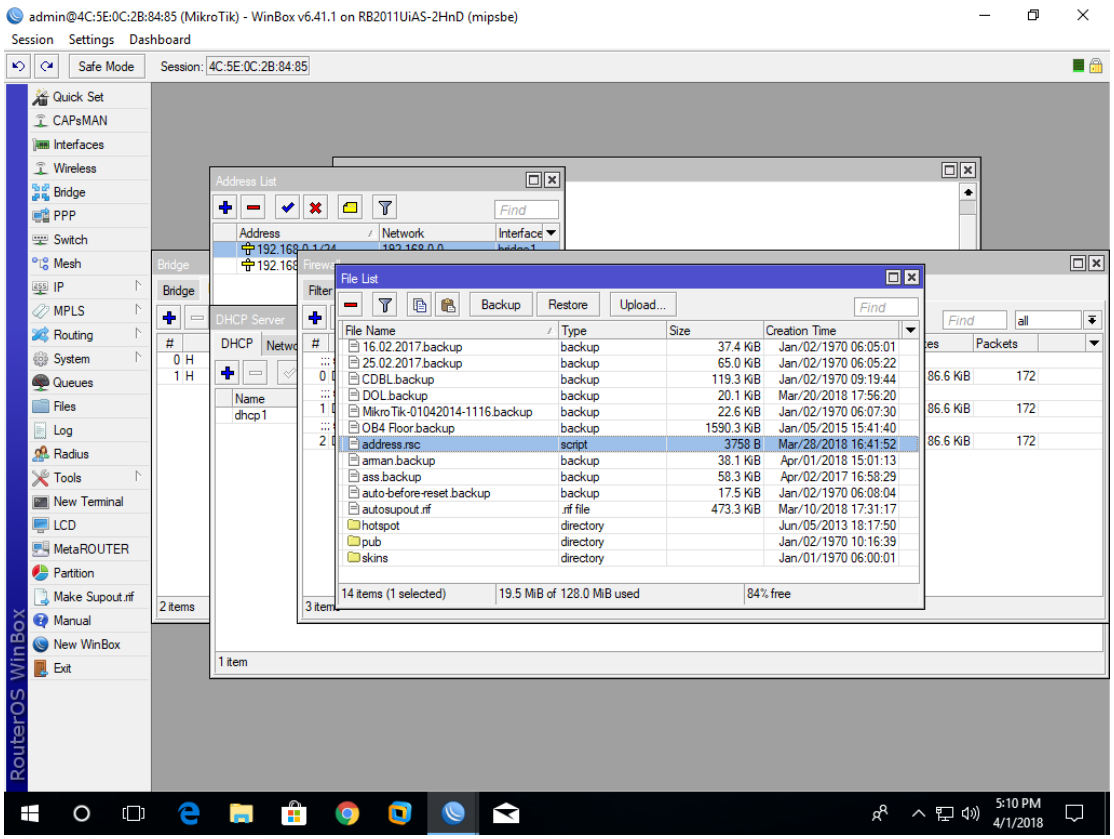

Figure 3.22.11: Shows the Address.rsc options

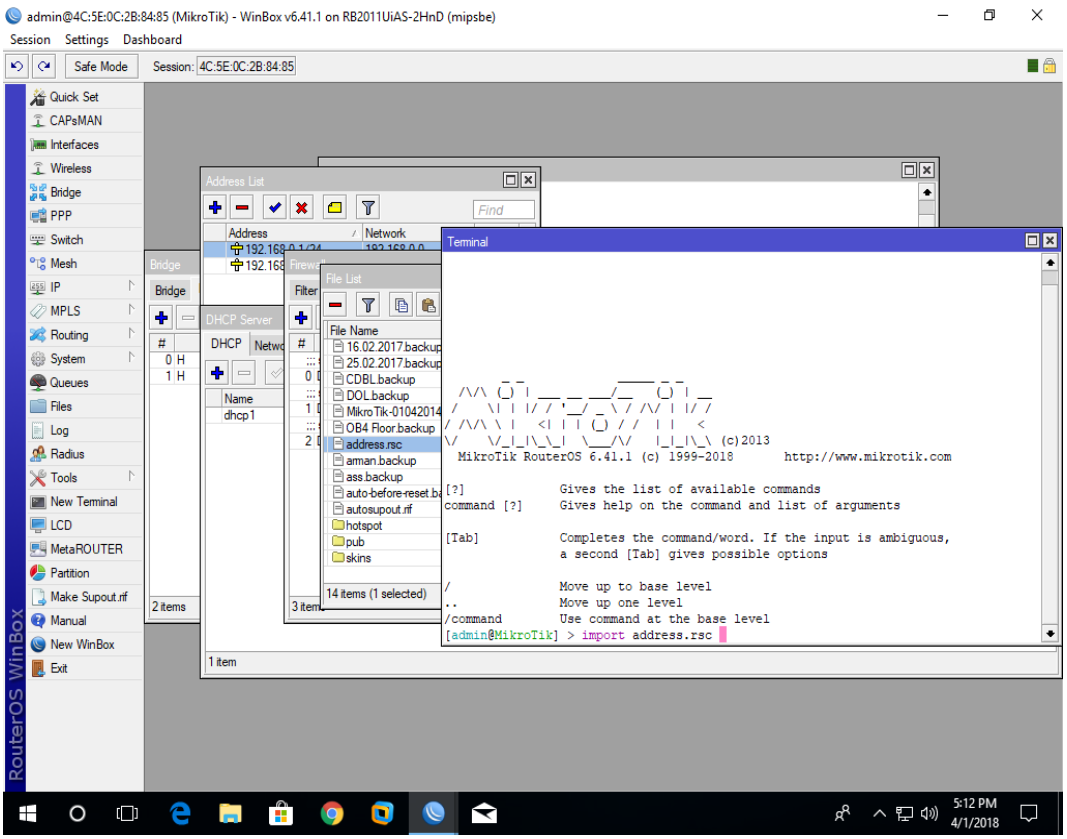

Figure 3.22.12: Shows the fig to check the options

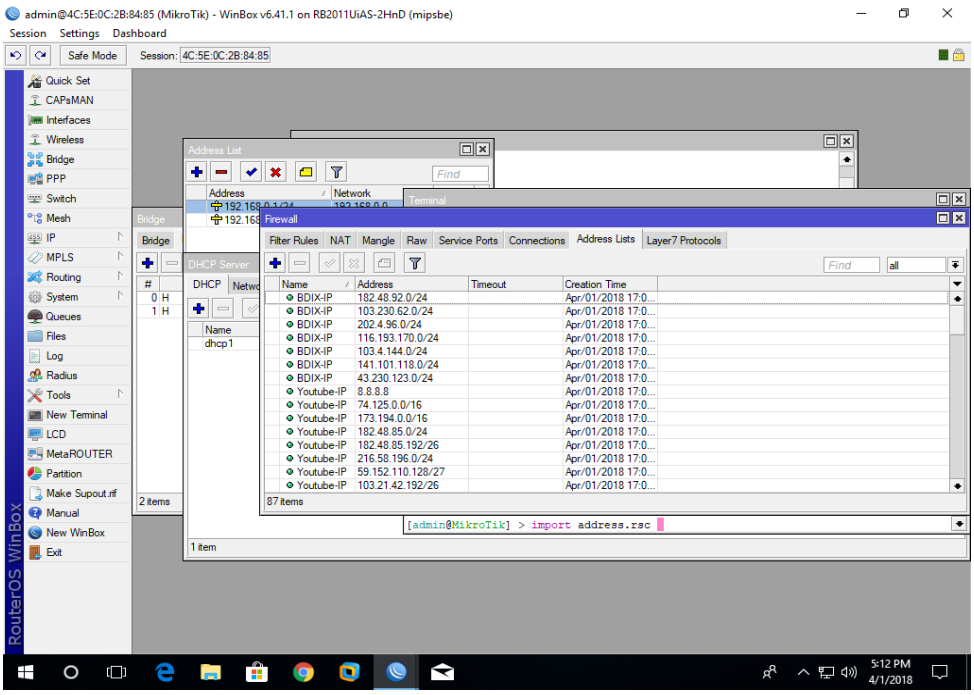

Figure 3.22.13: Shows the fig to check the options

✓ **Step 6**

Process:

IP > Firewall > Address list> Mangle> “ + “ > Action > Mask connection > New connection Mask Name (Youtube) > Advance > select theYoutube-IP > Apply > ok

General > Connection mask > youtube > Apply > ok

Action > Mask Packet > Youtube > Apply > ok

Queues > Queue Types > “ + “ > Type Name (Download) > kind > PCQ > Select rate > Apply > ok

Queues > Queue Types > “ + “ > Type Name (Upload) > kind > PCQ > Select rate > Select the Classifier src.Address > Apply > ok

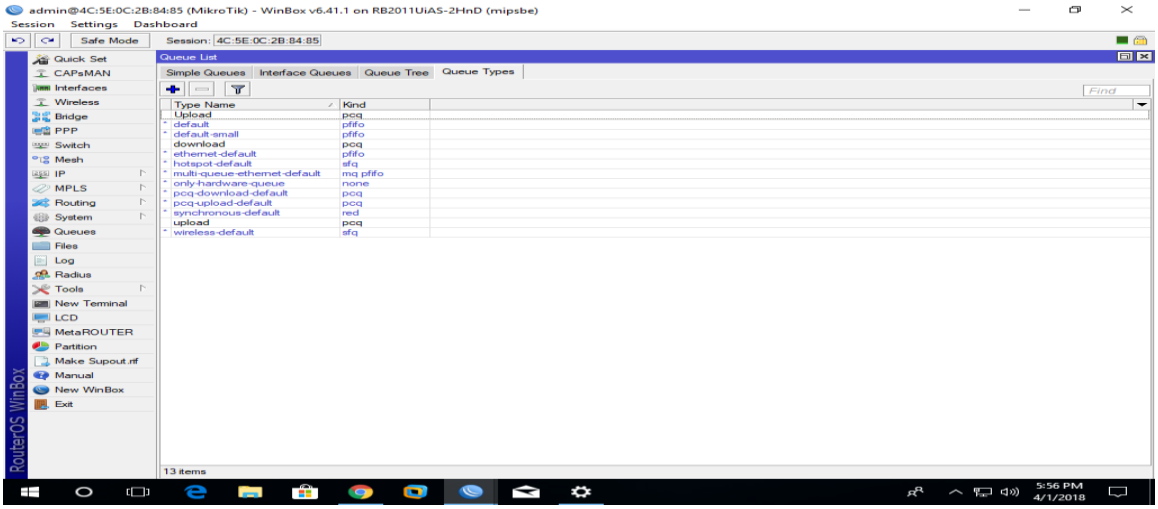

Figure 3.22.14: Shows the fig Queues list

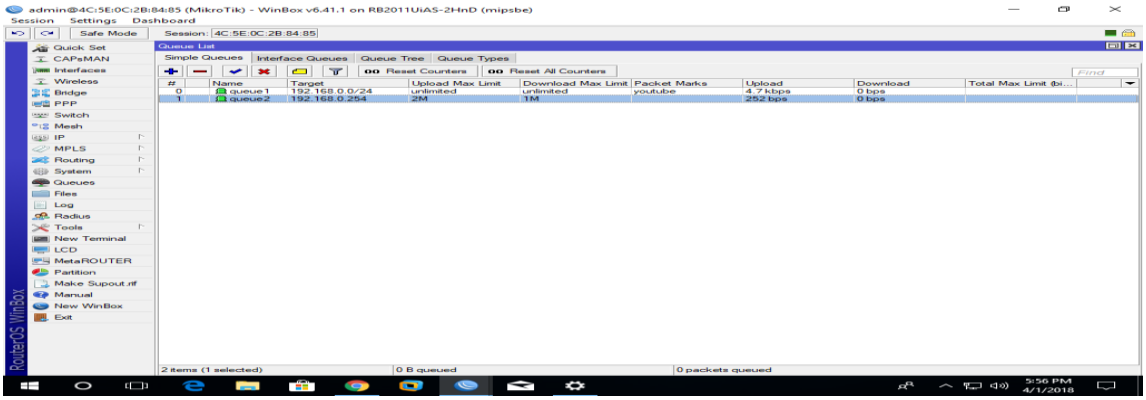

Figure 3.22.15: Shows the fig Upload & Download Rate

3.25 Challenges:

There's insufficient work doled out to me. I'm exhausted, underutilized, strumming my fingers at my work area and enticed to examine Facebook.

An excess of work: Because assistants are only happy to get a foot in the entryway, some work spots may exploit youthful laborers by giving them extend periods of time of dull monotonous work.

Hesitant to make inquiries: without warning there's a deluge of work, and I at last have the opportunity to substantiate myself! Yet, I don't know about x, y, z….I may feel the strain to be a free and independent laborer, however it's such a great amount of better to clear up vulnerabilities!

Contend with other Intern: Luckily I was an understudy; we make inquiries of each other and can without much of a stretch collaborate with ventures that have worked in groups where there was such a cooperative relationship. Assistants in a future employment opportunity, or a suggestion for a decent letter will contend in other office situations, may not be so well disposed.

A New Lifestyle: As a current college alumni, I might get used to another way of life that can be very jostling. Rather than awakening at eight and heading off to a couple of classes a day, I'm sitting at a work area 9-5. I may inhabit my folks to spare cash. The hours and the new living circumstance unmistakably make mingling more troublesome than previously.

CHAPTER 4
Competencies and Smart Plan

4.1 Competencies Earned:

Introduce and decommission of both system and server machines at two datacenters. Lead part in cutting edge Linux programming executions, for instance LDAP HA, adjusted to program learning results, field and temporary position assessments. The Student Association office reserves numerous understudy Intern Learning Outcomes: Gathering and sorting out data into an Internship Project Description: Participate in the overhaul of the Linux Lab site. LearningOutcomes. Introduce and Configure programming and redesigns; Install, design and test arrange Employer Services Furthermore, steady with the learning results, the Internship On-Site Supervisor will give an introduction concerning authoritative strategies and methodology.

Skills Earned or learning result is an announcement of what a student is required to know, comprehend or have the capacity to do because of a learning procedure. Introduce and decommission of both system and server machines at two datacenters. Lead part in cutting edge Linux programming executions, for instance LDAP HA, adjusted to program learning results, field and temporary position assessments. The Student Association office reserves numerous understudy Intern Learning Outcomes: Gathering and sorting out data into an Internship Project Description: Participate in the overhaul of the Linux Lab site. Learning Outcomes. Introduce and Configure programming and redesigns; Install, design and test arrange Employer Services

4.2 Smart Plan

For getting a better achievement, an organization set their top label management to make their plan unique and innovative from the other Organization.

4.3 Reflections

Daffodil Online Ltd. started they are operation in the year **2002**. During the past years, they extended they are operation and service portfolio according to the customer's recommendation and considering demands of time. They worked with many national projects and international organizations and achieved the reputation..

CHAPTER 5
Conclusion and Future Career

5.1 Discussion and Conclusion

Through this internship, I understand that one of the principle issues and time administration aptitudes and in addition self-inspiration. When I initially began I was seven hours per day, five days seven days will be ready to sit in an office and did not believe that.

When I understood what I needed to do my hours of covering isn't broken, so I arrange my normal everyday employment. This internship and time administration of the workplace for a long time, I needed to figure out how to propel yourself through. Regardless i'm searching for utilizing the organization concocted the different proposition and thoughts. Regardless i'm keeping my alternatives open to new openings, be that as it may, are proceeding to work for the University of Bangladesh on the planet. I'm getting a charge out of this profession. I keep on working hard for my position and plan to keep on learning about the business and meet new individuals will.

5.2 Scope for Further Career

Career opportunities are accessible in various zones under Linux. The profession openings in Linux's saying not just the Linux stage, it covers part of various regions like: Desktop Application Development, Kernel and a Device Drivers Development Today their gigantic request open source programming’s and the open source programming's designers and system engineers. There numerous organization today relocated to Linux and the open source software's. The organization like Google, Yahoo, Boeing, Lufthansa, wiki.org, numerous organizations relocated to financially savvy open source arrangement.

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Appendices

Appendix A: Internship Reflection

The essential objective of my internship in an expert setting, down to earth answers for certifiable issues is to apply the learning picked up in the classroom. What's more, professionally pertinent capabilities and connections in an expert setting, figuring out how to manage new learning, aptitudes, and the capacity to decide how to hone and create plans. Add to connect with other expert's directors and expert connections. To satisfy the obligations of internship, I'm practicing legitimate business manners. I am an association's central goal/vision is actualized, how to contact partners, how control is shared, how it is organized, how choices are made, how to comprehend the way of life of an expert association, and what level of responsibility and input to the association. With an appraisal toward the finish of my internship administrator and internship encounter going through individual gatherings gives a chance to take an expert conclusion. Internship encounters to plan for life in a worldwide society, administration and administration, my blessing to have the capacity to put it to utilize.

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)

INTERNSHIP ON SERVER CONFIGURATION - Refat

02/05/19

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