INTERNSHIP ON NETWORK AND SYSTEM ADMINISTRATION WITH MIKROTIK AND LINUX PLATFORM

SUBMITTED

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APPROVAL

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DECLARATION

I hereby declare that, this internship report is made by me, Amanullah Khan ID No: 152-15-6299 to the department of Computer Science and Engineering, Daffodil International University. Under the supervision of **Masud Rabbani Lecturer, Department of CSE,** Daffodil International University. I also attest that, this internship report has been made by me for the goal of Some Blessing of the Necessity for the Degree of Bachelor of Science (BSC) in Computer Science & Engineering (CSE).

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

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ABSTRACT

MikroTik Router operating system is the operating system of MikroTik Router board-hardware. The computer includes lot of variety of features for IP & wireless networks. These functions include Firewall, Nat, Routing, Hotspot, Bandwidth Limiter, DNS server, Point to Point Tunneling Protocol, Hotspot, DHCP server, and many other features. As a student of CSE, I have completed my internship report in DOL "on Network and System Administration with MikroTik and Linux platform". The report is a requirement of the internship program for my Bachelor of Science course degree. The report discussed about the purpose of the specific server using on ISP.

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CHAPTER 1

Introduction

1.1 Introduction

Network and System Administration With MikroTik and Linux platform is Main objective of my internship program is to prepare myself as a skilled person in the competitive job market. So internship is very essential for skill development. I would like to achieve some special quality in order to prove myself as a skilled one. The Daffodil international university has a nice opportunity that was the internship system. We get it on the last semester. It is my big challenge to prove me, in any time anywhere in any place. The full system support given by daffodil online ltd (DOL). On that company I want to gather a large technical knowledge. For that region I want to say that I was very proud of me to get Daffodil international university.

1.2 Motivation

As a Linux system and networking administrator, there are very good job areas in Bangladesh and in the world. I think Linux system and network administration are most important in networking. Because we are completing Cisco certified network Associated (CCNA). Moreover Linux has own secured Kernel to protect it from Virus so we not need to buy antivirus to protect our system. So I use a free Operating System CentOS-6 to setup this system to make this cost effective.

1.3 Internship Objectives

To understand the functioning and working conditions of a corporate company. To gain skills that could help me in my future career. To see what it is like to work in a professional environment. To enhance my communication skills. Today, most organization use mikroTik router for ISP configuration and use Linux operation system. Linux operating system is one open source operating system. Actually Linux operating system used for server configuration. Conceptually, Linux is considered the world most powerful, flexible and robust server based operating system.

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1.4 Introduction to the Company

Daffodil Online Ltd Is one of the most Internet Service Provider (ISP) and ASPs in Bangladesh and providing one stop integrated ICT services and solution since July 2002. DOL is going to conduct the most challenging & demanding IT professional courses and training in the day of globalization. Daffodil Online Limited (DOL) is one of the fastest ISP's in Bangladesh to connect-everyone, anywhere all the time to deliver high quality Information and Communication Technology (ICT) services at a reasonable price. DOL use the latest technologies and upgrading the services wherever it is required.

1.5 Report Layout

Chapter-1 I have described objective of internship, Introduction, Motivation of internship and Introduction to the company. **Chapter-2** I have described About Company Profile. I describe about DOL, service, etc. **Chapter-3** I have described about daily task and activities, Challenges, etc.**Chapter-4** I have described is Smart Plan, Competencies Earned and Reflections.**Chapter-5** I have described Conclusion and Future Scope. Scopes for futher career.

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CHAPTER 2
ORGANIZATION

2.1 About 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.

2.2 Product and Market Situation

Daffodil Online Ltd. Provides different type of IT Services and Professional Training services.

- **IT Services:**
- Web Designing,
- Website development
- Web hosting
- Domain registration
- Web development
- Internet Service Provider
- Hi speed Wi-Fi Zone
- Bulk SMS Service. etc

- **Professional Training Services:**
- Network and system administration With Linux
- Network and system administration With Mikrotic
- MYSQL and PHP .
- Web Development Design using Joomla. etc

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2.3 Target Group:

Daffodil Online Ltd. One of the most Internet Service Provider (ISP) in Bangladesh. They are the oldest and most experienced company in the ICT field.

(DOL) also provides different type of professional training services and IT Services in Bangladesh.

2.4 SWOT Analysis

SWOT Analysis is a useful technique for understanding your Weaknesses, Strengths, Opportunities and Threats related to business competition or project planning.it is a strategic planning technique used to help a organization or perso

2.5 Organizational Structure

Here, Figure 2.1- show the Organizational-Structure of **DOL** Daffodil Online Limited.

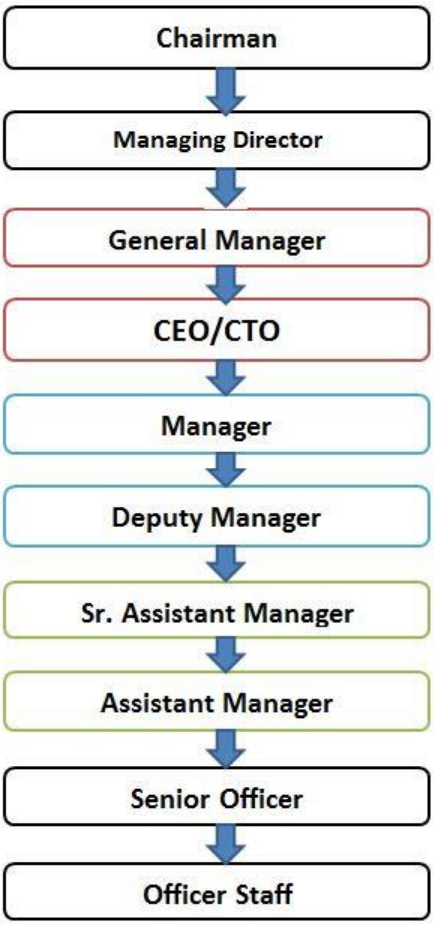

Figure 2.1: Organizational Structure of Daffodil Online Limited (DOL)

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CHAPTER 3

Tasks , Events And Activities

3.1 Daily Tasks and Activities

1st Month: First month of my internship I have learned the following topics:

- Learning & understanding About Basic Networking, Ipv4 Addressing and Subnating .
- Learning & understanding About Network Components of Network and Cabling (FTP, Fiber Optic).
- Understanding Basic routing & cisco switching commands
- Learning & understanding About cisco switch configuration
- Understanding VLAN, TELNET, SSH in Cisco switch and Router
- Learning & understanding Basics concept of router.
- Understanding different type router.
- Learning & understanding routing configuration
- How router works.

2nd Month: Second month of my internship I have learned the following topics:

- MikroTik router installation.
- Static routing configuration.
- Dynamic routing configuration
- Bandwidth management Using MikroTik router
- Maintenance MikroTik router
- Maintenance routing protocols

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3rd Month: Third month of my internship I have learned the following topics:

- Linux Installation.
- Understanding partitions
- IP Addressing.
- Package Install, Remove, Update using [yum]
- Centos6 IP Address Configuring

4th Month: 4th month of my internship I have learned the following topics:

- WEB Server.
- FTP Server.
- SAMBA Server.

3.2 Activities and Events:

- Basic routing & cisco switching commands using
- Mikrotik Routers Troubleshooting
- Understanding About
- LAN and Ciscoswitches Troubleshooting
- Bandwidth management
- Understanding VLAN, TELNET, SSH
- Understanding About Basic Networking
- Understanding About Centos6 Installation
- Understanding About Cabling Using FTP
- Understanding About WEB, FTP, SAMBA Server.

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3.3 Project Task and Activities:

Learning & understanding About Basic Networking, Ipv4 Addressing and Subnating . About Network Components of Network and Cabling (FTP, Fiber Optic). Understanding Basic routing & cisco switching commands. MikroTik router installation, bandwidth management and MikroTik router maintenance

Understanding About cisco switch configuration. Understanding VLAN, TELNET, SSH in Cisco switch and Router. Learning & understanding Basics concept of router. Understanding different type router. And understanding linux Installation and different type of server.

3.4 Basic Configuration of Cisco Switch

- **Cisco Switch:** Figure 3.1 show about cisco Switch.

Figure 3.1: Shows a Cisco Switch

- **Line console password setting :**

First of all, go to Switch CLI and then type given codes below. Figure 3.2 Show Line console password setting

```
Switch>en
Switch#conf t
Switch(config)#hostname Amanullah   [ change the hostname ]
Amanullah(config)#
Amanullah(config)#line c
Amanullah(config)#line console 0
Amanullah(config-line)#
Amanullah(config-line)#pass
Amanullah(config-line)#password 12345  [Here password is the command & set the password ]
Amanullah(config-line)#login
Amanullah(config-line)#exit
Amanullah(config)#exit
```


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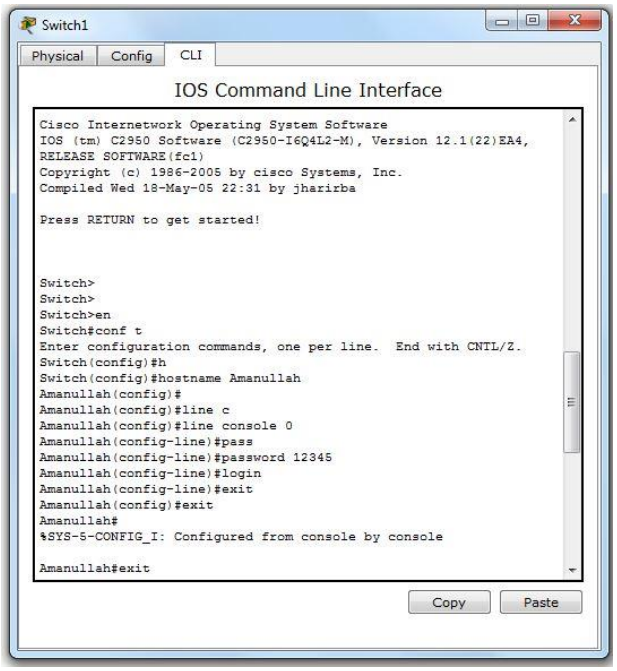

Figure 3.2: Shows Line console password Configuration

- **Verify line console password:** Figure 3.3: Shows Verify line console password

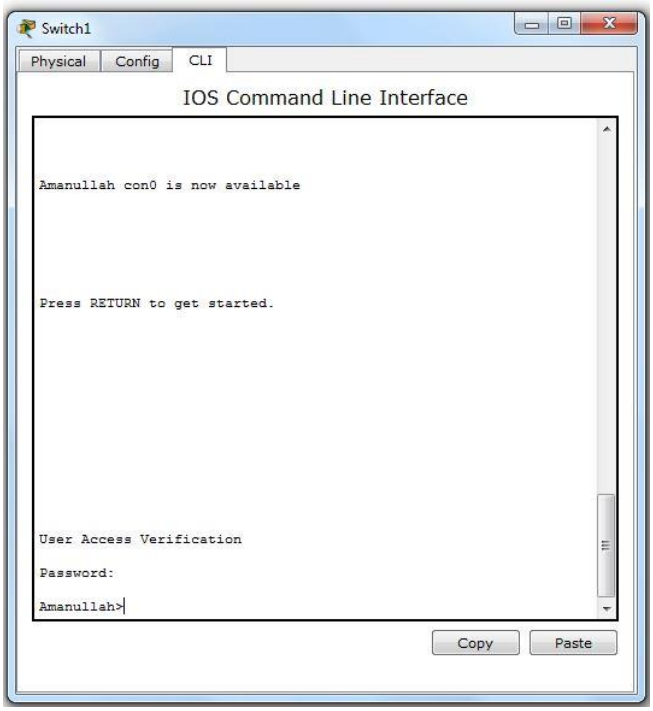

Figure 3.3: Shows Verify line console password

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- **Privileged Mode Security :**

First of all, go to Switch CLI and then type given codes below . in figure 3.4: Shows User Access Verification

```
Amanullah>en
Amanullah#conf t
Amanullah(config)#ena
Amanullah(config)#enable s
Amanullah(config)#enable secret abcd
Amanullah(config)#exit
Amanullah#exit
```

The switch now asks for the password.

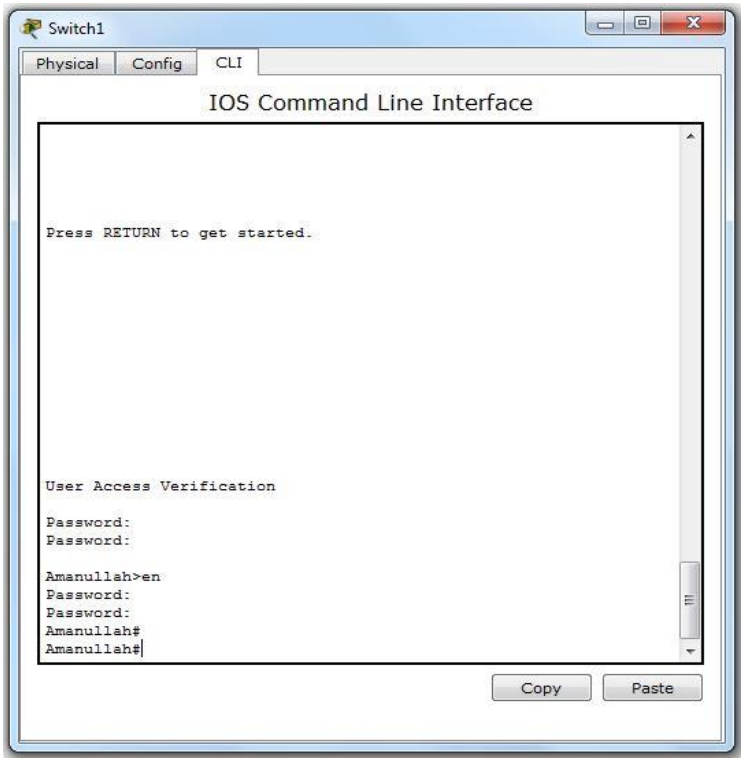

Figure 3.4: Shows User Access Verification

3.5 Telnet Configure On Cisco Switches

After telnet services configure in a switch to access it remotely from anywhere. In figure 3.5: Shows Configure telnet configuration

- **Configure Telnet :** Go to Switch CLI and then type given codes below

```
Amanullah>en
Amanullah#conf t
Amanullah(config)#int
Amanullah(config)#int v
Amanullah(config)#int vlan 1
Amanullah(config-if)#ip add
Amanullah(config-if)#ip address 192.168.10.1 255.255.255.0
```


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Amanullah(config-if)#no sh
Amanullah(config-if)#no shutdown
Amanullah(config-if)#Exit

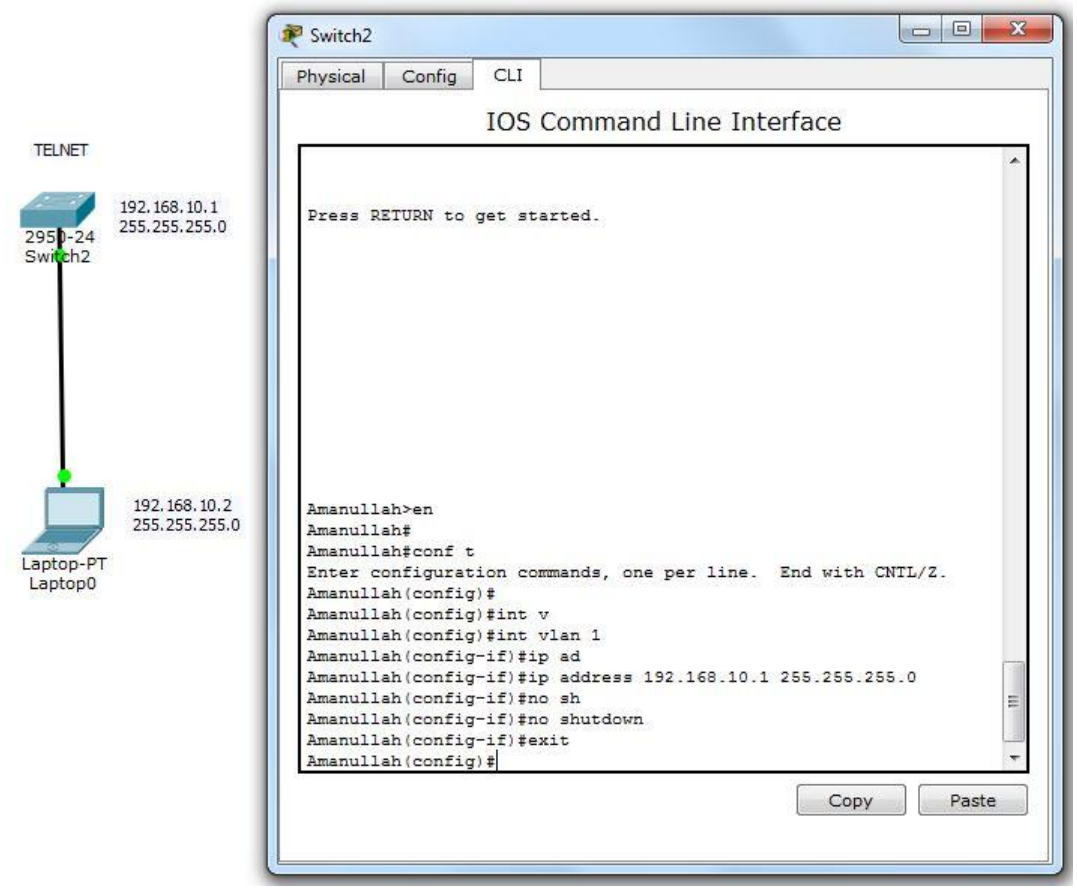

Figure 3.5: Shows Configure telnet

After adding ip address than go to Switch CLI and set line vty 0 4 for access telnet. In figure 3.6: Shows Telnet User Access Verification

Amanullah>en
Amanullah#conf t
Amanullah(config)#lin
Amanullah(config)#line v
Amanullah(config)#line vty 0 4
Amanullah(config-line)#pass
Amanullah(config-line)#password 123456789
Amanullah(config-line)#login
Amanullah(config-line)#exit
Amanullah(config)#

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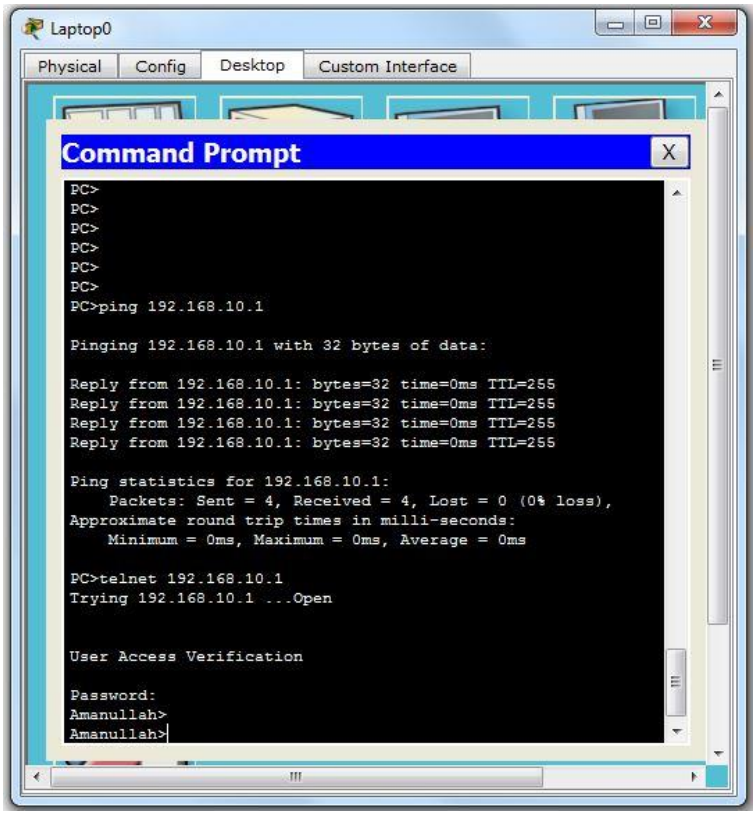

Figure 3.6: Shows Telnet User Access Verification

First of all, go to the PC's command prompt and then type given codes below

PC > telnet 192.168.10.1

Trying 192.168.10.1 …Open

User Access Verification

Password:

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3.6 VLAN configuration

As an example, you can see a VLAN topology below. In this topology, 2 Cisco switches and 8 PCs are used. In Figure 3.7: Shows VLAN topology. And Figure 3.8 , Figure 3.9 Show about VLAN Configuration on Switch-1 and Switch 2

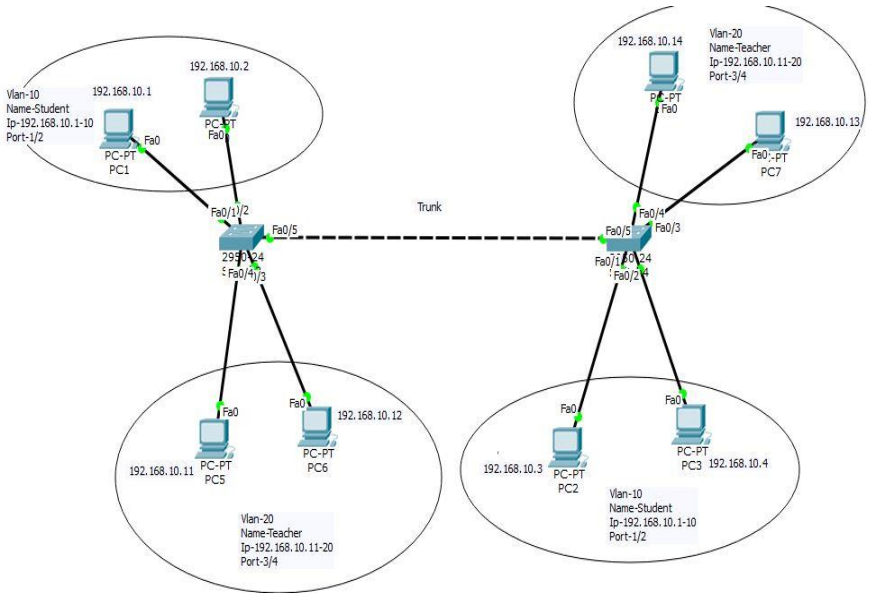

Figure 3.7: Shows VLAN topology

VLAN on Switch-1 and VLAN on Switch-2 Configuration Process Show to the Appendix-C page.

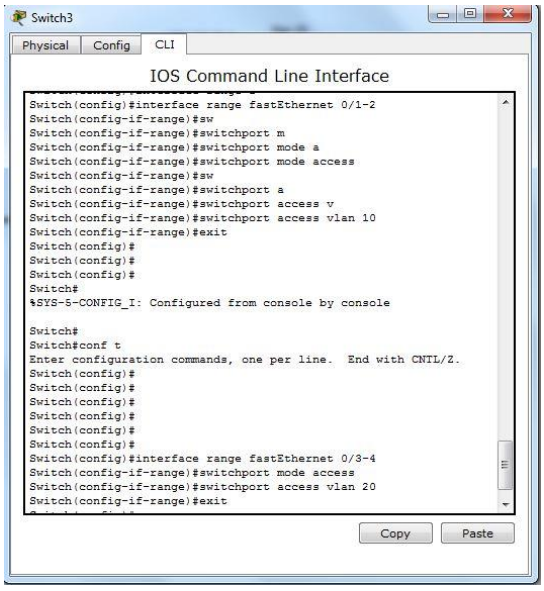

Figure 3.8: Shows VLAN Configuration on Switch-1

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VLAN Configuration on Switch-2: Figure 3.9: Shows about VLAN Configuration on Switch-2

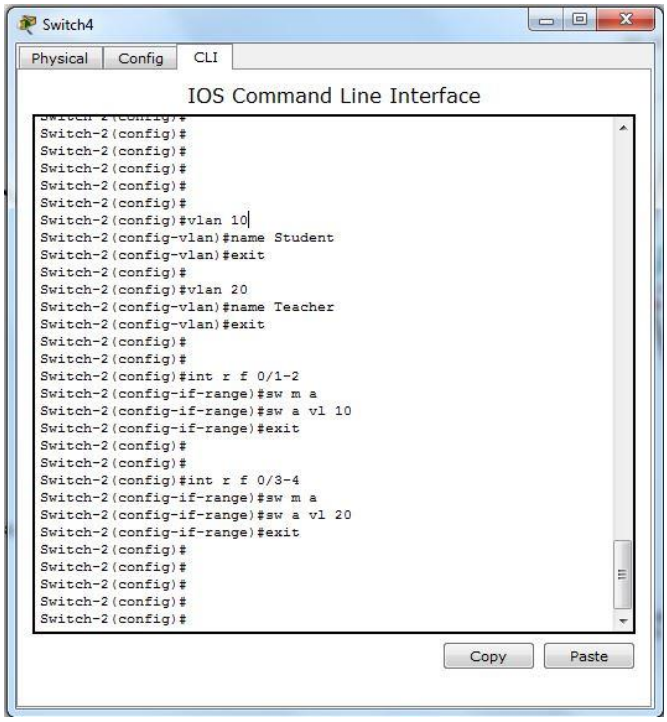

Figure 3.9: Shows VLAN Configuration on Switch-2

Vlan Trunks :

Trunks are commonly used between switches and other network devices such as a router, another switch, or a server. A network technician must be very familiar with configuring a trunk and ensuring it works properly.

Trunk Port Assign:

Switch(config)#
Switch(config)#interface fastEthernet 0/5
Switch(config-if)#description trunk
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#

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3.7 MikroTik Router

- **MIKROTIK ROUTER RB2011UIAS :** Figure 3.10: Shows about Rb2011UiAS Mikrotik Rouret.

Figure 3.10: Shows Rb2011UiAS Mikrotik Rouret

3.8 MikroTik Static IP Configuration:

- **First Of All**
- Power on the MikroTik Router
- Unshielded-Twisted-Pair cable Plug-in Between mikroTik router and PC
- open Winbox.exe

Here ISP has given a IP address, Gateway, DNS and Subnetmask. E.g.

- IP address: 192.168.101.0/24
- Gateway: 192.168.101.2
- Subnet Mask: 255.255.255.0

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WAN-Configuration: Figure 3.11: Shows Router Interface List.

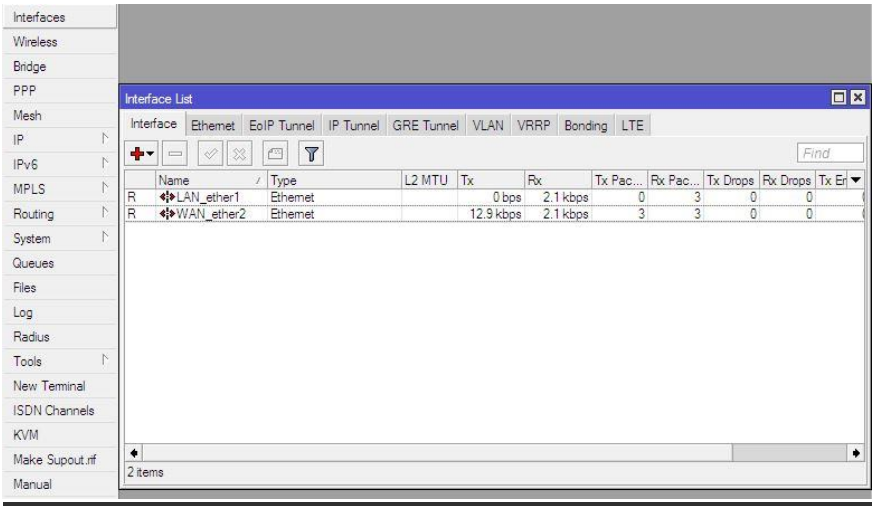

Figure 3.11: Shows Router Interface List

Step 1. winbox open: IP → Address → New address : → 192.168.101.130/24 →Interface : WAN_ether2 → Apply → OK. Figure 3.12: Shows Adding IP address for WAN_ether2

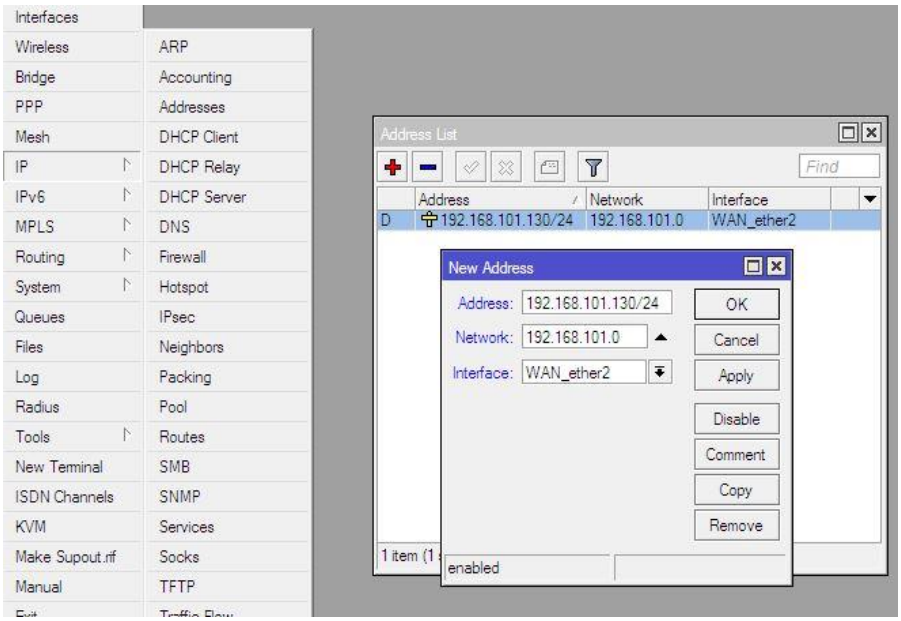

Figure 3.12: Shows Adding IP address for WAN_ether2

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Step 2: IP → Routes →New Routes→ Gateway : (192.168.101.2) → Apply → OK !
Figure 3.13: Shows Adding gateway for WAN_ether2

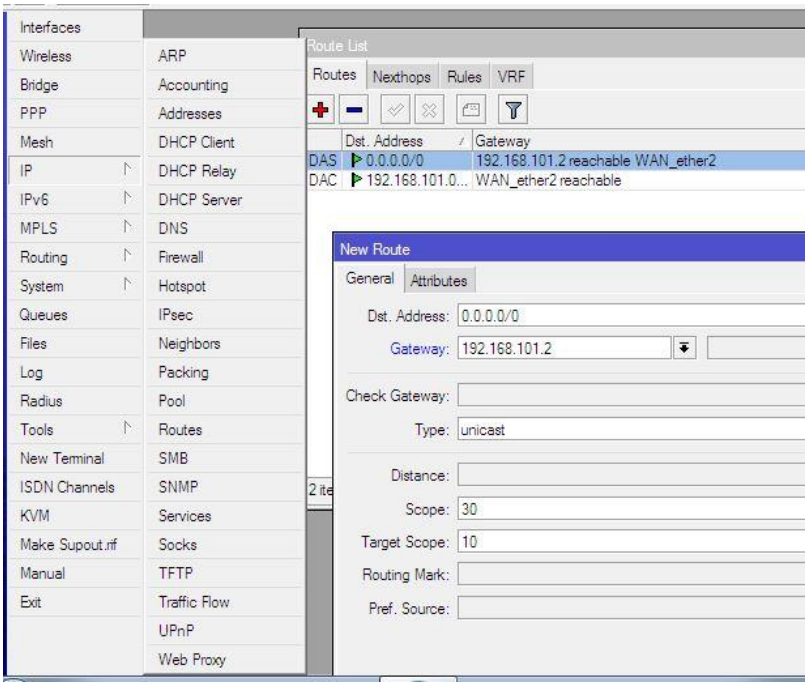

Figure 3.13: Shows Adding gateway for WAN_ether2

Step 3: IP → DNS → DNS Settings→1st DNS servers= 8.8.8.8 and 2nd DNS servers= 8.8.4.4→ Apply → OK ! Figure 3.14: Shows about Adding DNS Server

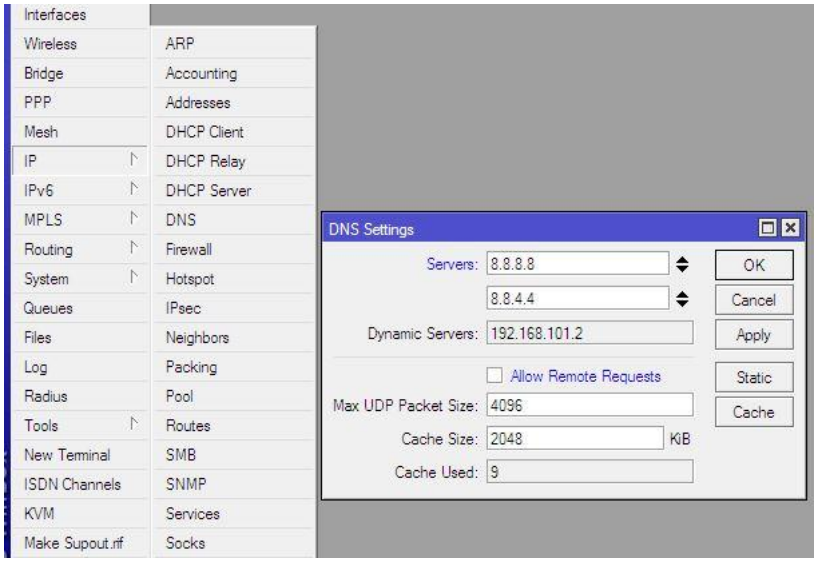

Figure 3.14: Shows Adding DNS Server

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- **LAN-Configuration:**

1st Step: Firstly go to IP →Than go to Address →New address→ address: →10.10.10.1/24 →Interface LAN_ether1 → Apply than Ok ! Figure 3.15: Shows Adding IP Address for LAN_ether1

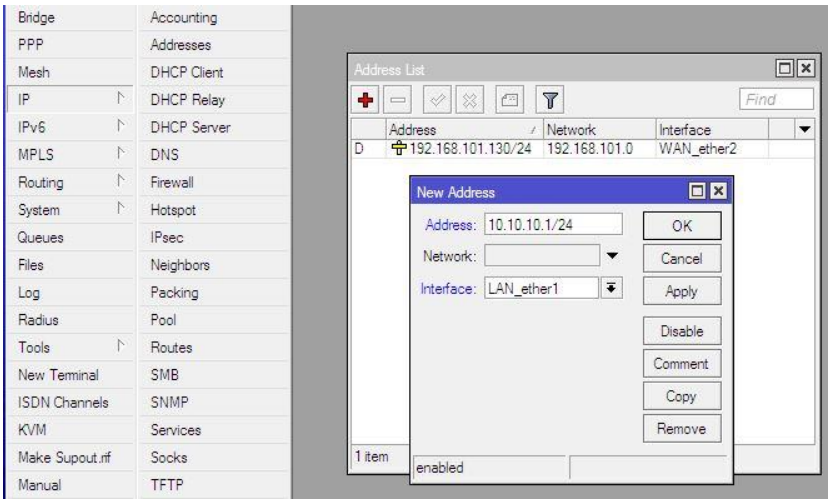

Figure 3.15: Shows Adding IP Address for LAN_ether1

2nd Step: First of all go to **IP** →Than go to**Firewall** → NAT → General → here given Chain: **srcnat** →Adding ip address Src. Address: **10.10.10.0/24** Figure 3.16: and Figure 3.17 show about Create NAT

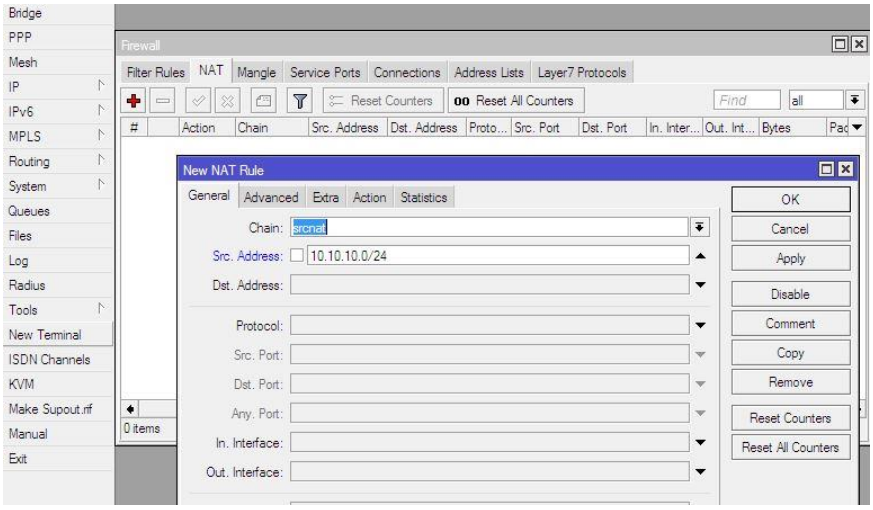

Figure 3.16: Create NAT

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3rd Step: IP → Firewall → NAT→ action →select **masquerade** →Apply than Ok!

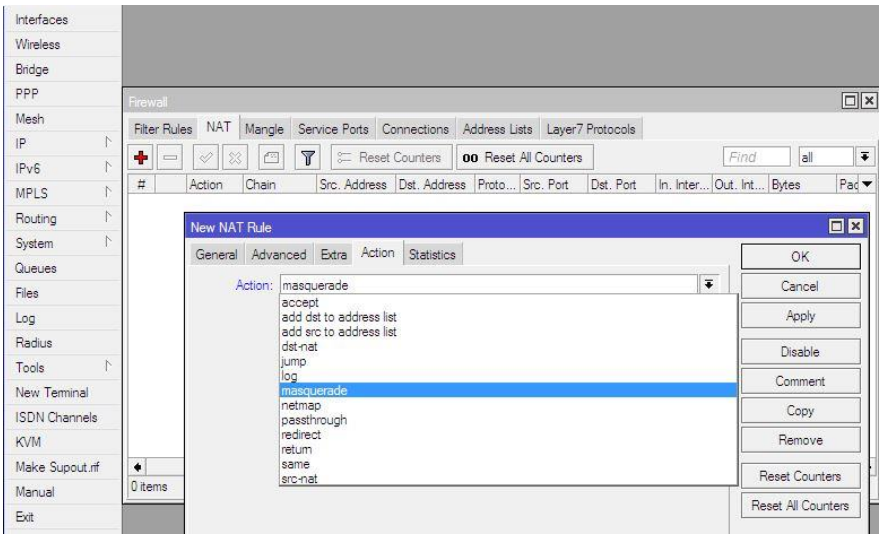

Figure 3.17: Create NAT

- **User PC configure:**

go to your PC →Local Area Connection →TCP/IPv4 Properties → Use the following Ip Address =10.10.10.10, S Mask=255.255.255.0, gateway=10.10.10.1 and DNS
Figure 3.18: Shows Adding IP Address for User Pc

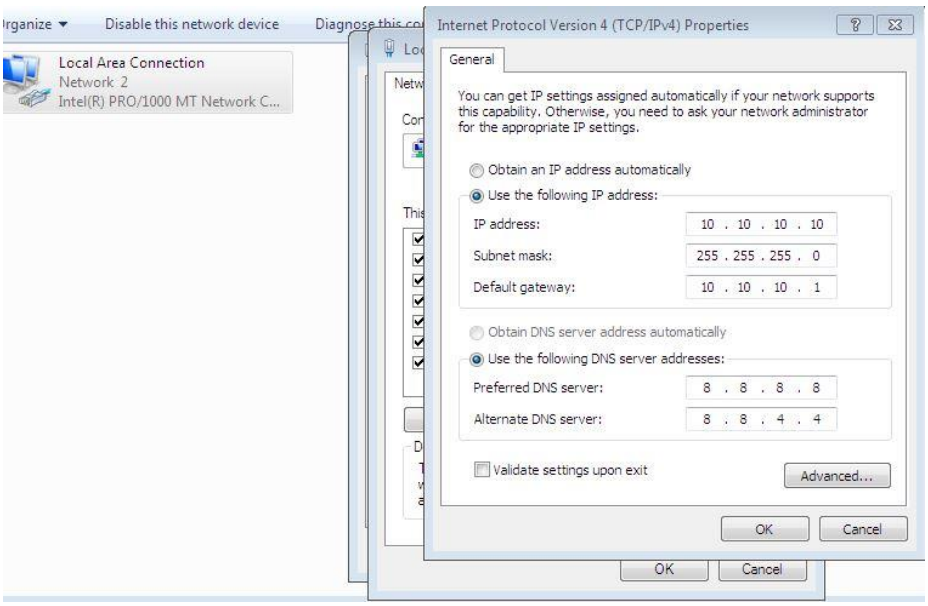

Figure 3.18: Shows Adding IP Address for User Pc

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- **Bridge Configuration :** here step 1,2,and 3 show about create bridge and Figure 3.19, Figure 3.20 and **Figure 3.21 show Bridge Configuration**

Step 1: Bridge →New Interface →Name: Lan_bridge →Apply→Ok

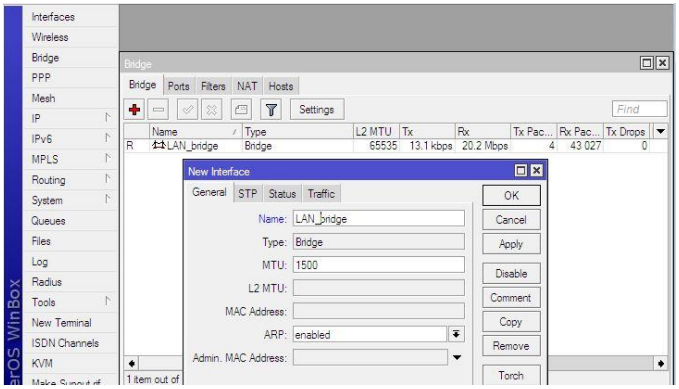

Figure 3.19: Bridge Configuration

Step 2: Bridge →Ports →select all interface under of bridge →Apply→Ok

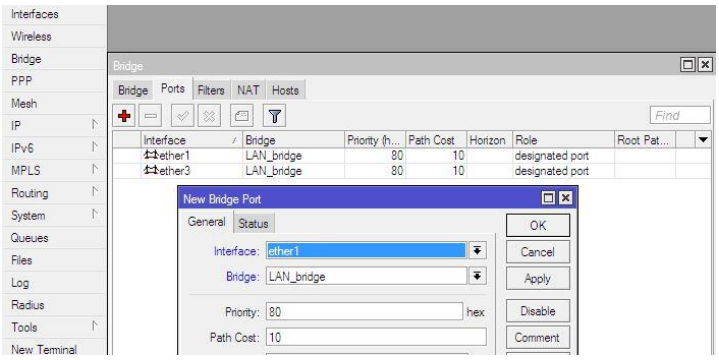

Figure 3.20: Configuration Bridge

Step3:

IP→Address→AddressList→NewAddress→Ip=10.10.10.1/24→Interface=Lan_bridge→Apply→Ok

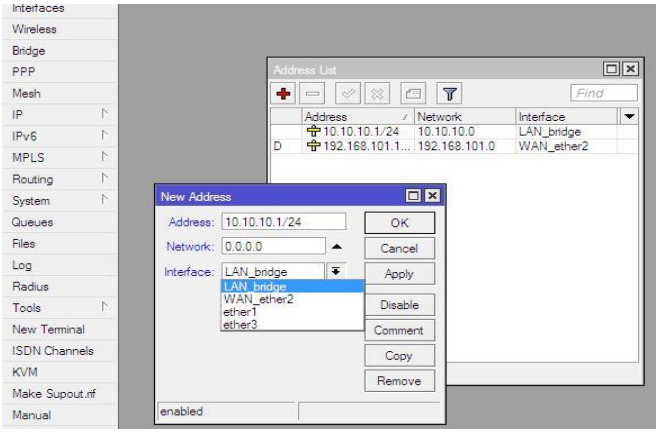

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Figure 3.21: Bridge Configuration

3.9 Bandwidth Management :

Here I'm Discuss about Dedicated and Shear bandwidth Control in Mikrotik

- Simple Queues (Dedicated Bandwidth)
- PCQ
- Total Bandwidth Queues
- Priority Bandwidth
- Parent Queues Share Bandwidth.
- **Simple Queues (Dedicated Bandwidth) :**

Fast of all go to Queues → Queues List → (+) → New simple Queue →General →

[Given Name: **Amanullah_1Mb**, Target IP Address: **10.10.10.10** And Select Max limit: Upload=1M , Download=1M] → apply →Ok Figure 3.22: Shows Dedicated Bandwidth Configuration

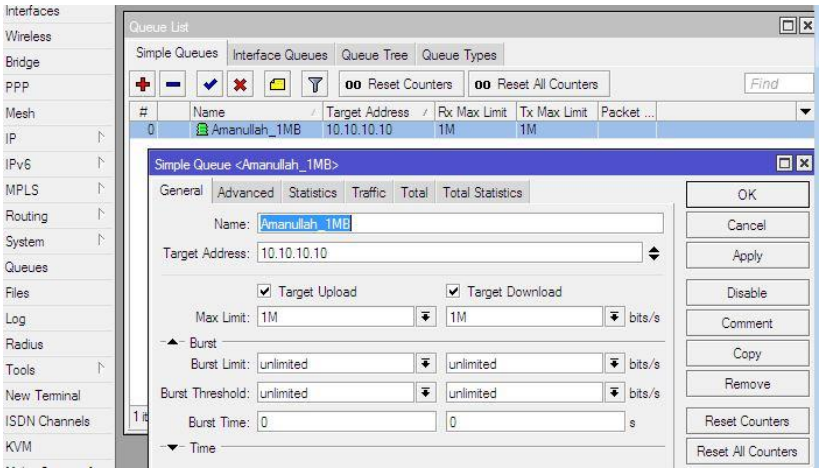

Figure 3.22: Shows Dedicated Bandwidth Configuration

- **PCQ :**

First go to Queues → Queue Type →New Queue type [Typename= **1_MB**, Kind= **pcq** , Rate= **1MB**, Select **Src** and **Dst** Address] →Apply → Ok [Same Way to create 2MB, 3MB and 4MB etc. pcq] . Figure 3.23: Shows PCQ Configuration.

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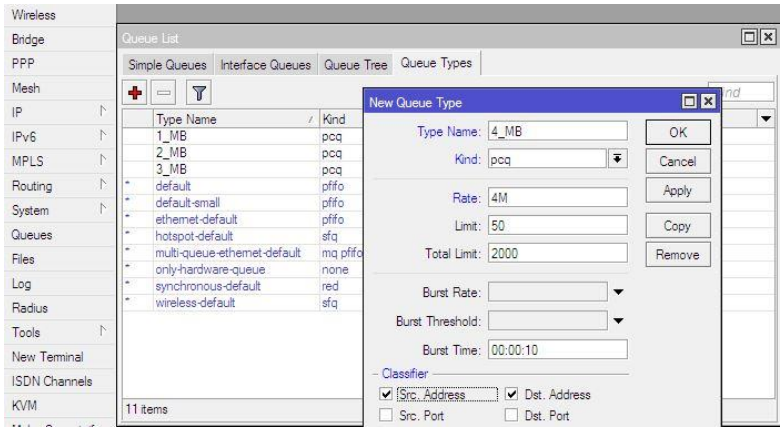

Figure 3.23: Shows PCQ Configuration

Simple Queue → (+) → New simple Queue → General →[Name: **1MB_User**, Target Address: **10.10.10.0/24** And given Max Limit: Up=**200M** Dow=**200M** go to Advanced Figure 3.24: Shows PCQ Configuration

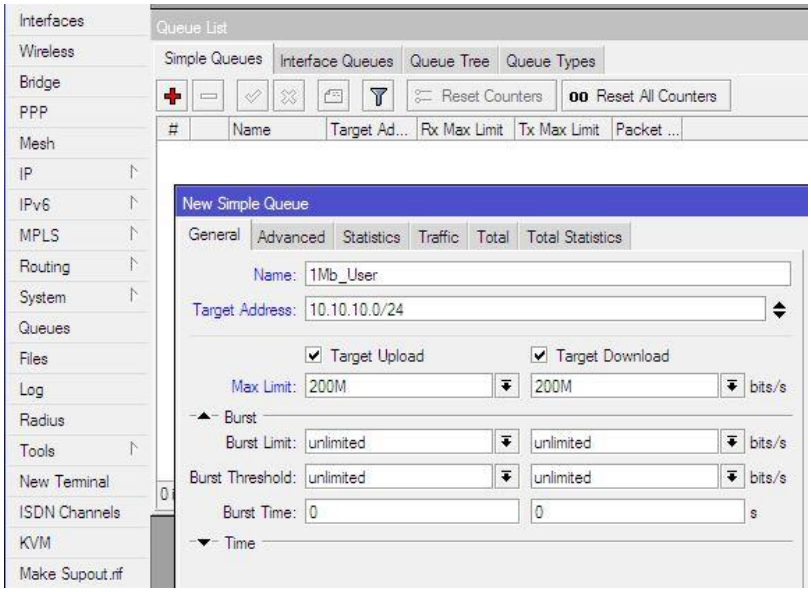

Figure 3.24: Shows PCQ Configuration

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Advanced → Queue Type : Up= Select **1_M** and Dow= **1_M** → Apply → Ok

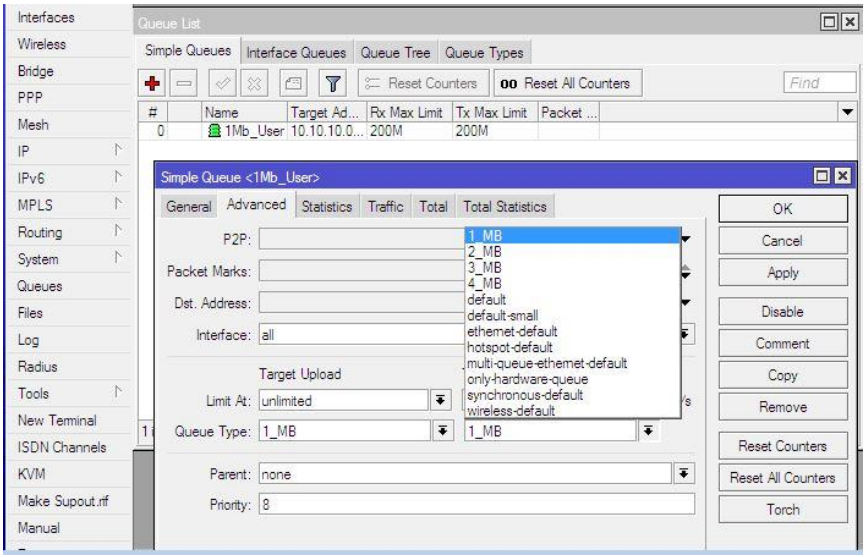

Figure 3.25: Shows PCQ Configuration

- **Total Bandwidth Queues :**
  Queue → Simple Queue → (+) → General → [Name: Total_Bandwidth, Target Address: 0.0.0.0/0, Max Limit: Up= 500M, Dow= 500M] → Apply →Ok Figure 3.26: Shows Total Bandwidth Queue Configuration

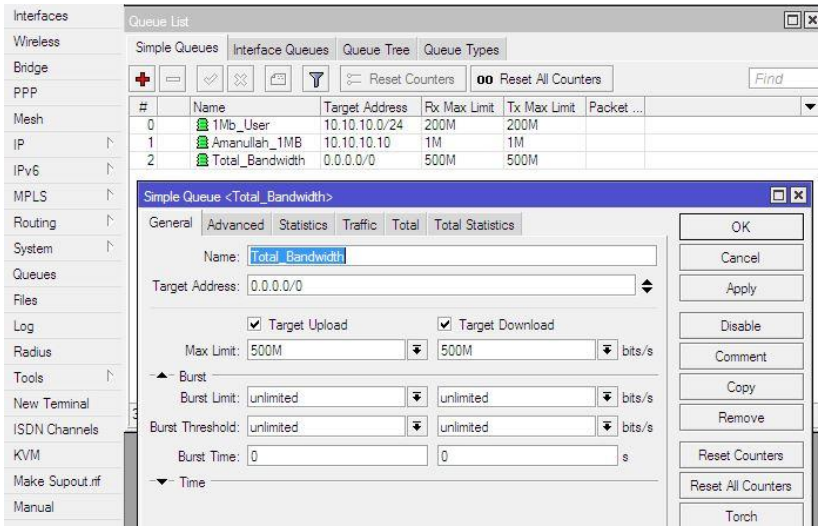

Figure 3.26: Shows Total Bandwidth Queue Configuration

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- **Priority Bandwidth :**
  Queue → Simple Queue → (+) → General → [Name: **CHR**, Target Address: **10.10.10.50**, Max Limit: Up= **10M**, Dow= **10M**] → And go to Advanced .
  Figure 3.27 and 3.28: Shows Priority Bandwidth Queue Configuration

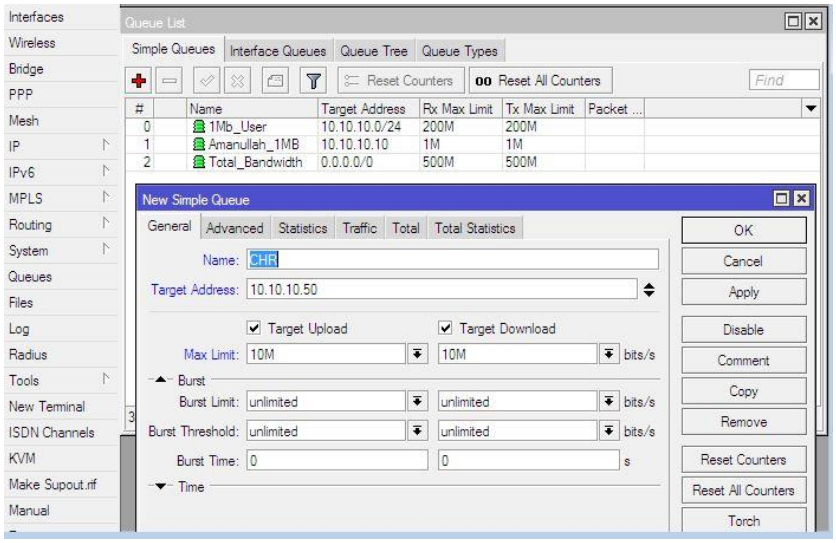

Figure 3.27: Shows Priority Bandwidth Queue Configuration

Advanced → **Priority** = **1** →Apply → Ok

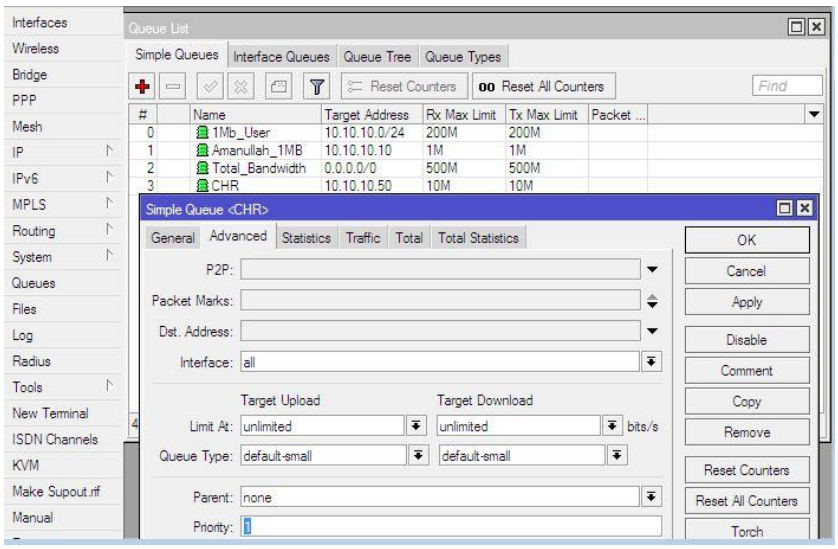

Figure 3.28: Shows Priority Bandwidth Queue Configuration

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- **Parent Queues Share Bandwidth**

Queue → Simple Queue → (+) → General → [Name: **1MBShareUser**, Target Address: **10.10.10.0/24**, Max Limit: Up= **1M**, Dow= **1M**] → Apply → Ok

Same Way to Create **1MBShareUser-1** IP=10.10.10.23**,** **1MBShareUser-2** IP=10.10.10.25 **1MBShareUser-3** IP=10.10.10.28 Figure 3.29 , 30 and 31: Shows Parent Queues Share Bandwidth Configuration

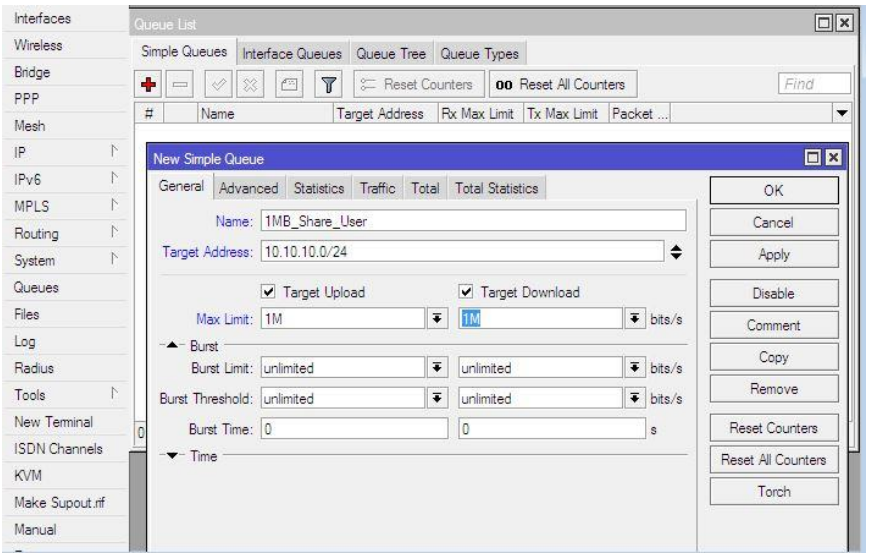

Figure 3.29: Shows Parent Queues Share Bandwidth Configuration

Click On **1MBShareUser** and go to → Advanced → Selecet [Parent : **1MBShareUser-1]** → Apply → Ok

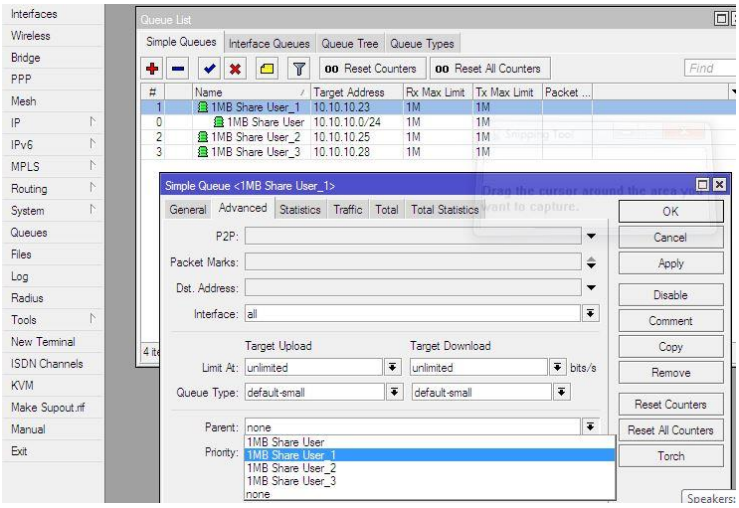

Figure 3.30: Shows Parent Queues Share Bandwidth Configuration

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Same way to Select **1MBShareUser-2** And **1MBShareUser-3**

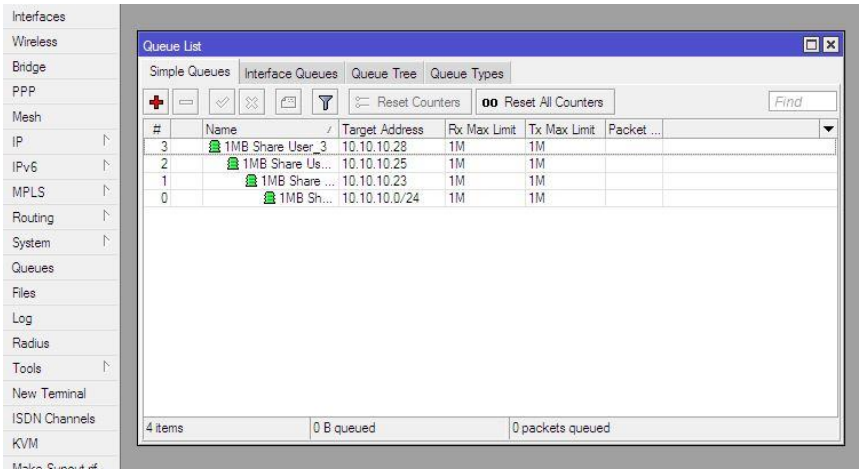

Figure 3.31: Shows Parent Queues Share Bandwidth Configuration

3.10 Centos Installation

- **Linux Set up in VMware**

We virtualized our project by using VMware which is able to run multiple virtual machines. To set up new virtual machine first we have been installed the VMware. Figure 3.32, 3.33, 3.34, 3.35 and 3.36 : Shows about Create a new Virtual machine.

- Go to Create a new Virtual machine and select Typical than click next
- Select Typical than click next

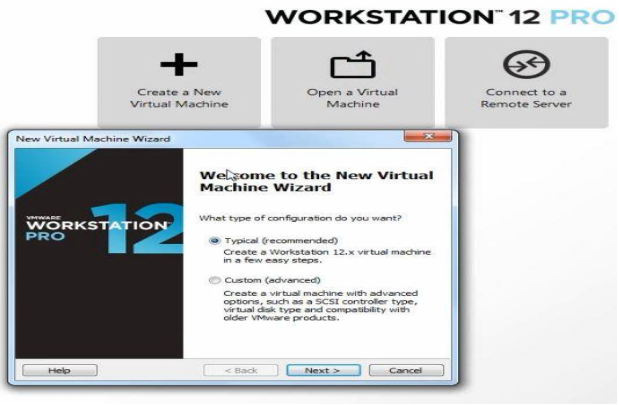

Figure 3.32: Shows Create a new Virtual machine

- Figure : Select→ I will install OS later and Click Next

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Figure 3.33: Shows Create a new Virtual machine

- Select OS Linux and Version-centos 64 bit

Figure 3.34: Shows Create a new Virtual machine

- Select Virtual machine as a single file

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Figure 3.35: Shows Create a new Virtual machine

- Select CD/DVD and Browse The ISO File

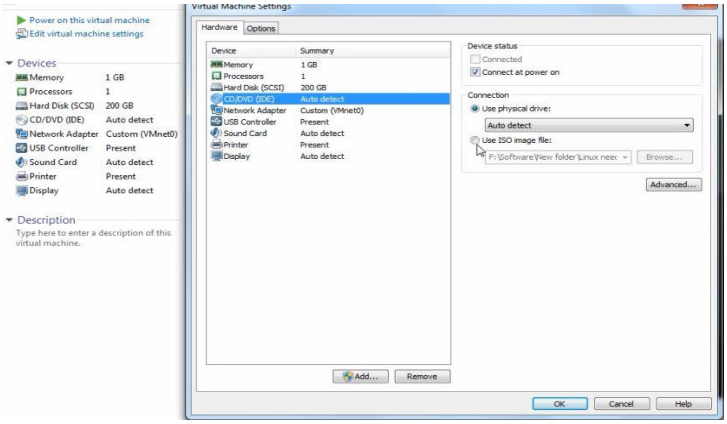

Figure 3.36: Shows Create a new Virtual machine

- Power on The Virtual Machine
- Select **Install** and Press the **Enter** key. Figure-3.37,3.38,3.39,3.40,3.41,3.42, 3.44, 3.45,3.46 : show about Centos-6 Installation

Figure 3.37: Centos-6 Installation

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- Select the **Skip** key

Figure 3.38: Centos-6 Installation

- Select **basic storage device** & Click Next

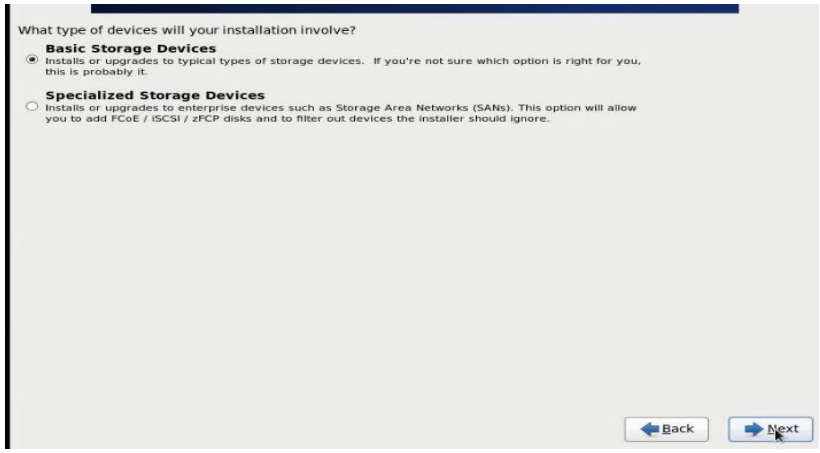

Figure 3.39: Centos-6 Installation

- Click **Discard any Data** than Click Next

Figure 3.40: Centos-6 Installation

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- Ensure **Root Password** and Click next

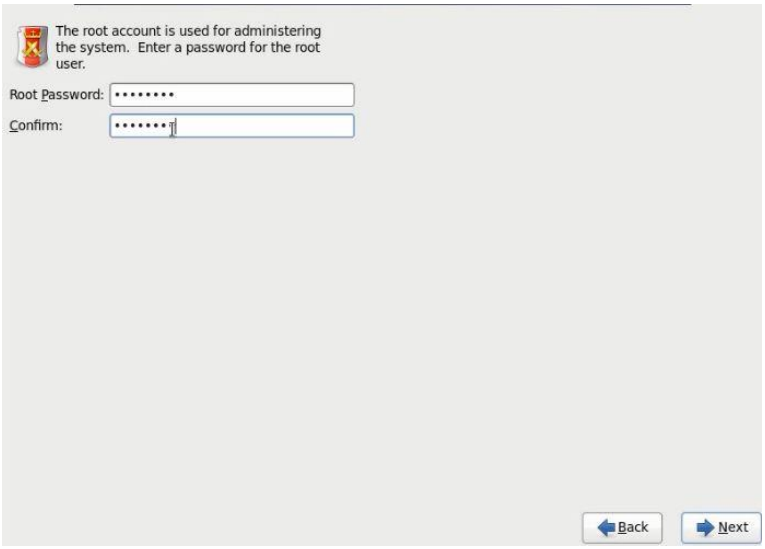

Figure 3.41: Centos-6 Installation

- Select **Custom layout** and Click next

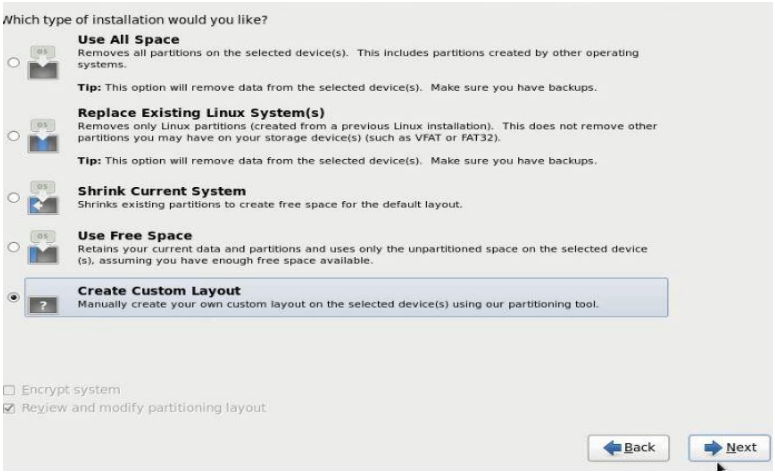

Figure 3.42: Centos-6 Installation

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3.11 Linux Partition

Create 3 Partitions:

1→Root (/)

2→/boot

3→swap

- First of all select total free space →**Create** →**select standard partition** → **Create**→ **Mount point: (/ Boot) | Size: 500** →**Ok**
- Select Free space → **Create** → **Select physical volume** →**Create**→ **Select fill to maximum allowable size** → **Ok**
- Create→ **LVM Volume Group**→ **Create**→ **Set VG name**→ **Ok**
- Select Free space → **Create** →**Select LVM Logical Volume**→ **Create**→ **File system Type : Swap | Size :2048** → **OK**
- Select Free space → **Create** →**select LVM Logical Volume**→ **Create**→ **Mount point : (/) | size: (100000)** →**Ok**
- Select Free space → **Create** → **Select LVM Logical Volume**→ **Create**→ **Mount point : (/home) | Size: (Select total size)** →**Ok**

Create Partition and then click next. Figure 3.43: Create Centos 6 Partition.

Figure 3.43: Create Centos 6 Partition

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- Select Desktop

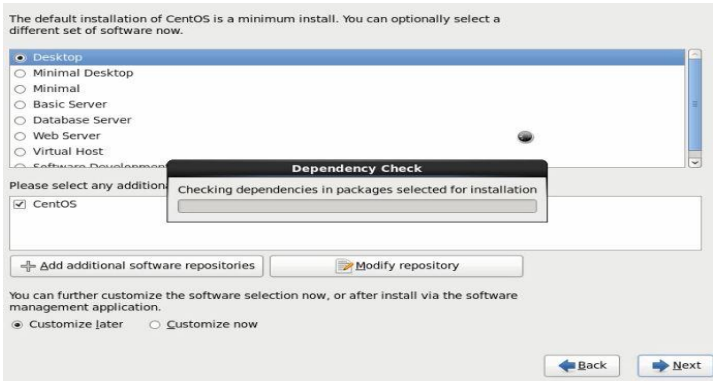

Figure 3.44: Centos-6 Installation

- Than Select Reboot and Click Next

Figure 3.45: Centos-6 Installation

- Type Your Root Password and click Login

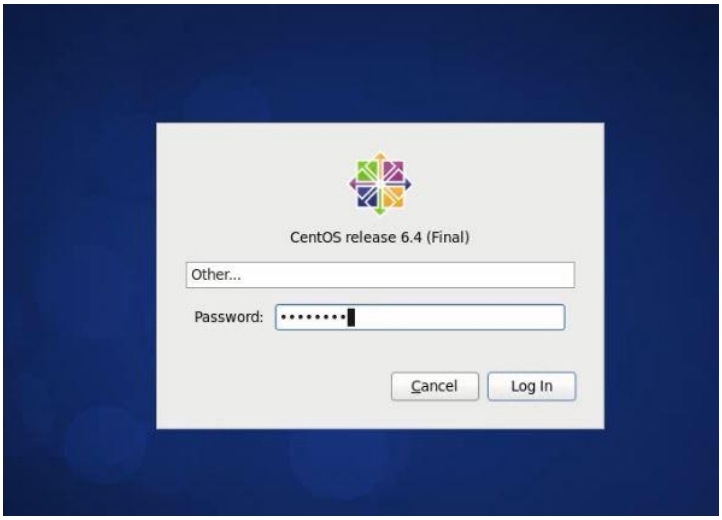

Figure 3.46: Centos-6 Installation

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3.12 Centos-6 Run Level :

Run-level 0 [Shut Down], Run-level 3 [Full Multi User Mode], Run-level 1 [Single User Mode],

Run-level 4 [Unused], Run-level 2 [Multi User Mode], Run-level 6 [Reboot]

3.13 Move And copy:

copy a File:

[cp –r / daffodil / root / desktop]

Move a File:

[mv /root / desktop / Amanullah]

3.14 Remove, Install & update Packages Using YUM;

Install package:

[yum **install vim –y**]

Remove Packges:

- Uninstall a package using yum

  [yum **remove samba-y**]

Update Packges:

- Update a package using yum
  [**yum update Firefox**]

3.15 Server Configuration:

Working Details:

- **FTP Server.**
- **Web Server.**
- **Samba Server.**
- **Mail Server.**
- **Nagios Server.**

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- **Add, Change and Delete and IP Address In Centos 6 operating system:**

To configure the main IP address as static, you must change the entry for eth0 in /etc/sysconfig/network-scripts/ifcfg-eth0. To carry out this change, enter the following:-

 # vi /etc/sysconfig/network-scripts/ifcfg-eth0 [For Minimal Mode commad]

 # vim /etc/sysconfig/network-scripts/ifcfg-eth0 [For Desktop Mode commad]

DEVICE=eth0

BOOTPROTO=static

ONBOOT=yes

BROADCAST=

IPADDR= 192.168.50.16

NETMASK=255.255.255.0

GETEWAY= 192.168.50.1

DNS1=8.8.8.8

DNS2=8.8.4.4

After complete this change than Save it and type CD to Exit

3.16 FTP Server

- **Server Needed**
  - New Operating System
  - IP Configuration
  - Host Name Sate
  - SELinux Configuration
- **FTP :**

  FTP is a File Transfer Protocol. Ftp is the standard network protocol used for transfer files between a server on a computer network and client.

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- **Server Configuration:**

[Step 1] First of all Install the package (vsftpd) by using this command (#yum install vdftpd –y). Figure 3.47: Shows Install a package using yum install

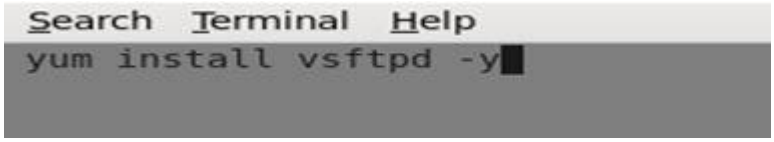

Figure 3.47: Shows Install a package using yum install

[Step 2] Now Edit the Configuration file by using this command (#vim /etc/vsftpd/vsftpd.conf). Figure 3.48: Shows Edit the Configuration file command

Figure 3.48: Shows Edit the Configuration file command

[Step 3] Go the line 12 no Line and change the line anonymous Enable = [Yes to No]. Figure 3.49: Shows FTP Configuration Process

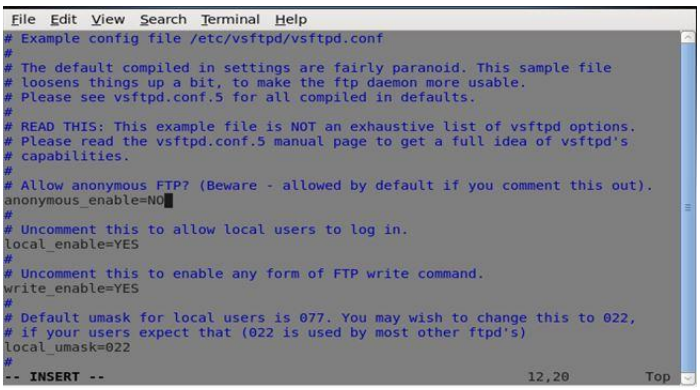

Figure 3.49: Shows FTP Configuration Process

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[Step 4] Go to line no 85 and 97 active the line by deleting [#]. Figure 3.50: Shows FTP Configuration Process

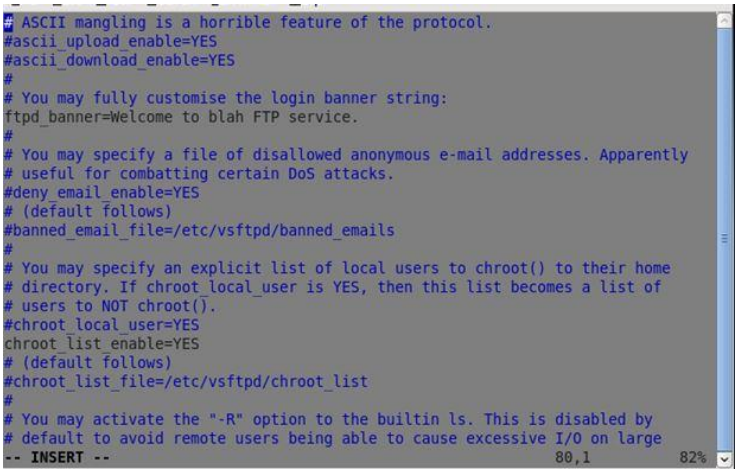

Figure 3.50: Shows FTP Configuration Process

[Step 5] Now Edit the Configuration file by using this command [#vim /etc/sysconfig/iptables]. Figure 3.51: Shows FTP Configuration Process

Figure 3.51: Shows FTP Configuration Process

[Step 6] Now the Configuration and write those things. Figure 3.52: Shows FTP Configuration Process.

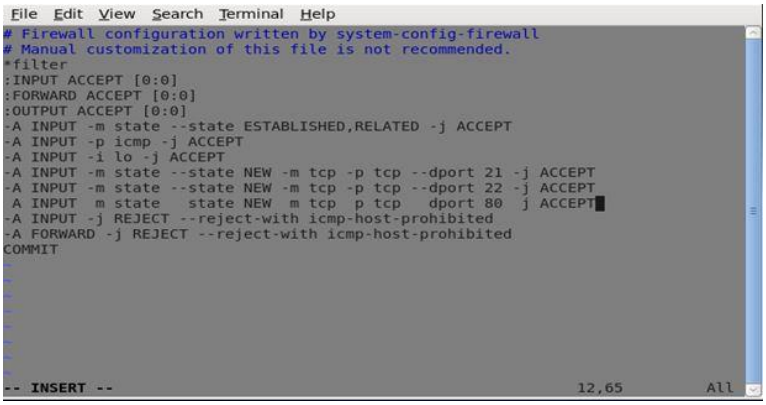

Figure 3.52: Shows FTP Configuration Process

[Step 7] Now I have to write [#adduser] for FTP user and [#password] for password

#User name Amanullah

#Password *******

[Step 8] Now I have to open browser and given **ftp://192.168.50.16**

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3.17 Web Server:

- Configuring :
- Package Name: [**httpd]**
- Default http port: [80]
- Default https Port: [443]

[Step 1] firstly install a **httpd** package by **yum** install [#**yum install httpd –y]**

[Step 2] Now command [**#service httpd start]** Then [**#chkconfig httpd on]**

[Step 3] Now default location command is [**#cd /var/www/html**] then creating a Static Site command [**#vim index.html**]

[Step 4] Now use file location this command [**#cd /etc/httpd/conf]**

Then vim configures file location and this command [**#vim httpd.conf.]**

[Step 5] At last open browser and write **http:// 192.168.50.16** and show my web page.

3.18 Challenges:

There are many different types of challenges have to be faces during my Internship. And I am correcting all the problems.

- I have to be so careful during execution- because the commands are very case sensitive.
- Router Configuration Problem during working MikroTik router
- Password management challenges faces during working Linux server.
- Winbox Connection Problem during working MikroTik router
- Router Configuration Problem during working MikroTik router
- Find Network system problem and fix them.
- Find Network Software problem and solve it.
- During the installation of the server, various challenge I faced.

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CHAPTER- 4

Smart Plan and Competencies

4.1 Competencies Earned:

- Concept of IP Addressing.
- Develop solutions for technical issue, networking & security problems.
- understanding About cisco switch configuration
- Understanding VLAN, TELNET, SSH in Cisco switch and Rou
- Install MikriTik OS.
- Know About Static routing configuration
- Know About Dynamic routing configuration
- Bandwidth management
- Maintenance MikroTik router
- Install, configure, and troubleshoot client network operating systems.
- Install Linux based OS in server and system.
- Expert in command line based system in Linux.
- Clear concept about file system structure of Linux operating system.
- Configuration of various servers like Web Server, FTP Server and Mail Server.
- Configuration HTTPD access, NFS access, and Telnet access.
- Acquiring about computer network software, components of a network.
- Configuring IP Address in CentOS.

4.2 Smart Plan:

For gain the success every company should have a smart plan. Generally some common things and personal creativity of combination create a smart plan.

4.3 Reflections:

Daffodil Online Limited confers Work Life Balance. DOL confer me scale between personal life& work. It's having knowledge of balance will improve job conception.

My work environment is transparent and open form of communication. Employees of DOL are always keeping desired communication between them. Office work becomes significant because the employee knows what they really avail sense gives for DOL. Daffodil Online Limited confer me transparent & open communication between employee and me.

Daffodil Online Limited confer me training & development expertness when change is more protrusive ever before, it's necessary for organizations keep along with changes and train employees.

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Team work is most important for organizations. Its help find out a problem discuss together. This is a work of identity and everybody working for them. Everybody working by to achieve a bigger goal and works as a team work. I am learning strong team spirit from Daffodil Online Limited (DOL).

CHAPTER- 5

Future Career and Conclusion

5.1 Conclusion and Discussion:

MikroTik OS is designed as a network Router. MikroTik Router operating system is the operating system of MikroTik Router boardhardware. The computer includes lot of variety of features for IP & wireless networks. These functions include Firewall, Nat, Routing, Hotspot, Bandwidth Limiter, DNS server, P to P Tunneling Protocol, Hotspot, DHCP server, and many other features. As a student of CSE, I have completed my internship report in DOL "on Network and System Administration with MikroTik and Linux platform". The report is a requirement of the internship program for my Bachelor of Science course degree. The report discussed about the purpose of the specific server using on ISP. And Linux is a open source and free operating system.Linux is an operating system Just like WIN-7, WIN-10, WIN-8, WIN-XP and Mac OS. There are different type versions of Linux. Such as- Ubuntu, Centos, Fedora etc.

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5.2 Scope for Further Career:

My future scope is very exception. A successful internship can help my future scope and turn on an experience into a career opportunity. My future scope is desire.

- Work on a network administrator.
- Linux administrator.
- Network engineer.
- Industrial engineer.
- Systems engineer
- Systems Administrator
- Build release management Engineer
- Linux Engineer
- Java Developer
- Linux Engineering Admin
- TechOps Engineer

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References:

[1]Get idea about DOL https://www.daffodilnet.com/ (Used in 1.4 Introduction to the Company and 2.1 About the Company)

[2]Learn about mikrotik https://mikrotik.com/aboutus (Used in 3.7 Mikrotik router)

[3]Learn about web serser https://whatis.techtarget.com (Used in 3.17 Web Server)

[4]Learn about ftp serser https://www.ostechnix.com/setup-ftp-server-step-by-step-in-centos-6-x-rhel-6-x-scientific-linux-6-x/ (Used in 3.16 Ftp server)

[5]Learn mikrotik https://mikrotik.com/ (Used in 3.7 mikrotik router)

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Appendix A:

Internship Reflection:

The primary goal of my internship in a professional setting, practical solutions to real-world problems is to apply the knowledge gained in the classroom. And professionally relevant competencies and relationships in a professional setting, learning to deal with new knowledge, skills, and the ability to determine how to sharpen and develop plans. Add to network with other professional's supervisors and professional relationships. To fulfill the duties of my internship, I'm exercising proper business etiquette. I am an organization's mission vision is implemented, how to contact colleagues, how power is shared, how it is structured, how decisions are made, how to understand the culture of a professional organization, and what degree of accountability and feedback to the organization. With an assessment at the end of my internship supervisor and internship experience running through individual meetings provides an opportunity to take a professional opinion. Internship experiences to prepare for life in a global society, leadership and service, my gift to be able to put it to use.

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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	NationwideInternet Service Provider (ISP)

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Appendix C:
VLAN Configuration On switch-1 And Switch-2:

- **VLAN Configuration on Switch-1:**

```
Switch>
Switch>en
Switch>enable
Switch#conf  t
Switch(config)#vl
Switch(config)#vlan 10
Switch(config-vlan)#name Student
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#vl
Switch(config)#vlan 20
Switch(config-vlan)#name Teacher
Switch(config-vlan)#exit
```

- After adding Vlan Name Than Assign interface name in VLAN 10 and Vlan 20

```
Switch(config)#
Switch(config)#
Switch(config)#int r f 0/1-2
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#sw m a
Switch(config-if-range)#
Switch(config-if-range)#sw a vlan 10
Switch(config-if-range)#exit
Switch(config)#
Switch(config)#int r  f 0/3-4
Switch(config-if-range)#
Switch(config-if-range)#sw m a
Switch(config-if-range)#
Switch(config-if-range)#sw a vlan 20
Switch(config-if-range)#exit
Switch(config)#
Switch#
```


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- **VLAN Configuration on Switch-2:** After Configuration Vlan 10 Than Same Way to configuration on VLAN 20

```
(config)#
 (config)#vlan10
(config-vlan)#
(config-vlan)#nameStudent
 (config-vlan)#
 (config-vlan)#exit
(config)#vlan20
 (config-vlan)#
 (config-vlan)#nameTeacher
 (config-vlan)#
 (config-vlan)#exit
 (config)#int r f 0/1-2
 (config-if-range)#sw m a
 (config-if-range)#sw a vl 10
 (config-if-range)#exit
 (config)#int r f 0/3-4
 (config-if-range)#sw m a
 (config-if-range)#sw a vl 20
 (config-if-range)#exit
 (config)#
```


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