

**Internship on Networking and Server Administration in
Daffodil Online Limited**

SUBMITTED

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

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APPROVAL

This Project titled “**Internship on Networking and Server Administration**”, submitted by **Md. Asadullah Al Mamun, ID No: 172-15-9859** 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 **08 July 2020**.

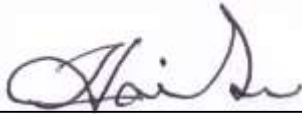
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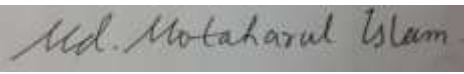
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We hereby declare that, this internship report has been done by us under the supervision of **Md. Abbas Ali Khan, Lecture, Department of CSE**, Daffodil International University. We also declare that neither this internship report nor any part of this internship report has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

If a group of two or more devices are interconnected and exchange information or data that is known as network. We want to raise the number of device or PC and sharing data or information from one to another provide various functionality we need special PC's are called server. There is provide various type of functionalities in the network that is also have different types of server. For Example- Web Server, FTP Server, NFS Server, Samba Server, Proxy Server, Nagios Server, etc. Each of them work severally and it is not possible without them to maintain a network. A Data center is as the prime reservoir for all system of IT materials, servers includes, subsystems storage, networking equipment routers, switches, firewalls etc. If the data center is connected to the internet and secure our information that must be setup secure network and server using Linux Operating System. That's why I choose my report is "Networking and Server Administration".

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Information Technology is currently running. The whole world is now day by day more people are using internet technology. Every website host server and people can discover any. The server is part for information technology. Each server needs to run the operating system for servers and services. a server needs a smooth and reliable service to its clients. Linux is probably the most important acquisition of the free operating system as the original battlespace or current. We cannot do anything posted on the internet without network communication. So that the server administrator is very important for the configuration, maintenance, and monitoring. An internship is a practice for the real work, the environment, and the challenge to get a job. Business, Engineering, and Medicine all the parts have to apprentice themselves before the importance of the final award title. Currently, the increase in all business and trade is very much using Internet protocols and software-based communication. All processes referred to the ordering system, E-Commerce, banking sector, warning SMS Banking, Mobile Banking, Electronic Funds Transfer, etc. are not possible without the server and the Internet. In this time all business organizations and the banking industry are totally dependent on online technology and various types of software and servers is required. Online transactions, debit cards, credit cards, ATM booths, banking software, etc. need software that is very safe and redundancy and store data on the server. Linux server operating system is one that is very useful for the Linux server business, banking, education, web hosting, and personal productivity.

1.2 Motivation

Motivation is a major force for each person. If you have a low power of motivation you don't succeed in your life. In this world, people who have the motive force must arrive at their destination. I am currently pursuing my bachelor's in Computer Science and Engineering at Daffodil International University. I appreciate the consideration of practical knowledge that will equip achievement copybook knowledge and help students gain a broader perspective of subjects. During the internship period, I have prepared that I am totally skilled in the details of the administration server and network management. As an internet service provider, I've got when I was in very good, communicate with others, understand their needs and services, and provide them with better service. My skills remain in my ability for the public to read and access the situation and act quickly and intelligently.

1.3 Internship Objectives

The ultimate goal of my internship program is to prepare myself as a right in the competitive job market. So this is very effective in developing skills. I would like to gather some extraordinary qualities to provide me as a man. Internship in applied sciences is for the provision of expertise working with the service provider, while the unit students from the area still learning to coordinate the skills of working with educational support and help a student to create the transition from employment to room. Motivated and autonomous desire to work.

1.4 Introduction to the Company

Daffodil Online Ltd is a conceit as one of the outstanding big national Internet service provider (ISP) in Bangladesh. They are the oldest company in the field of ICT and more experienced for service, they are the basic principle is a customer service business for a long term relationship.

Daffodil Online Limited began creation in 2002, it was itself made for continuous improvement of updated technology. Daffodil also made online a mix of IT professionals and dedicated workforce who is sincere secretes important to achieve customer satisfaction in IT business solutions and standards qualified computer education and training

researchers. They are very proud of what they accomplished, and also more than excited about their vision of the future. The national project over worked and they reached the reputation of the international organization. They use the latest equipment and technology and upgrading the service, it is necessary. They are the departmental server and network solution is able to provide services and telecommunications solutions with a group of highly skilled technical experience.

1.5 Report Layout

In Chapter -1 I said the purpose of the internship introduction, introduction to the company and motivation of internship.

In Chapter -2 I described my method of internship. And in this part gives all the information about where the company was taken an internship associated responsibilities. Also figured out how to make the internship work. Daffodil online offered what is the IT service, work responsibilities, and what is the role of the market in the use of network and server administrator.

In Chapter -3 I said about internship daily tasks and activities, events and activities and challenges.

In Chapter -4 I said that competence is intelligent design, reflections, won more.

In Chapter -5 I have just described is the future scope of internship and conclusion. I talk to the future extension of the server administrator and write a conclusion.

CHAPTER 2

ORGANIZATION

2.1 About the Company

As this can be a planet in the twenty-first century, IT (Information Technology) is taking part in a very important role in the survival and therefore the growth of each industry and organization.

In broad terms, people like to see the internet as a cloud, you put your data in one place, comes from the place you want on the other side. In fact, the internet is the tens of thousands of kilometers of fiber optic cable, hundreds of thousands to millions of kilometers of copper wire, and hardware and software to connect them all together in an exaggerated, fast, and independent network. But do not be worried, that's not terrible: you only need to worry about a small part of the network, you can let someone else worry about relaxing, and you even get someone to scream when something is wrong. Currently, each operating desire for significant IT involvement in the economic development of the country.

Speaking of ISPs (Internet Service Providers), ISP-level association may be a company that has access to the internet. ISPs directly connect clients to the net via copper cable, wireless, and fiber optic connections. ISP uses technology to transform customer's deployment to attach to their networks.

Daffodil on-line Ltd (DOL) is proud to be one of the trailblazers and the oldest ISP / ASP in Asian countries and provide one-stop integrated ICT services and the resolution of the Gregorian calendar month since 2002. It has its own infrastructure Fiber Optic WAN to serve the company, SMEs and individual buyers. As we glance expansion over the last decade because we tend to start, we tend to square measure very pleased with what we have achieved. We tend to square measure even excited about our prospects for AN equally promising future. We have got to work together with several national organizations to come and internationally with high appreciation from all involved. We tend to square the size of the latest technology and enhance victim services where needed. Company Network Department of resolution we are able to provide state-of-the-art telecommunications network and technical consulting solutions with a herd of very economical. DOL include engineering and skilled management team is very strong and the related certified by Microsoft, Sun, Cisco, Oracle, and Linux and is actively attached to the world's leading association of computing together with ACM, BCS, ACS, IEEE and PMI.

Social Responsibility attribute our company strengthens our sense of responsibility to the Community, the digital computer, location, and the Market. As the attention of the herd,

DOL promote the three major platforms such as education, environment, and development of the nation, through our programs and services. [1]

2.2 Product and Market Situation:

Daffodil on-line Ltd (DOL) is one of the leading suppliers of Internet Service Provider (ISP) in Bangladesh. They are tough and the oldest leading company in the field of ICT. DOL basic business ethics is "Long-term relationships with customers and consumers". Because they give the impression of being in the expansion of more than a decade since our origination, they were extraordinarily pleased with what we've achieved, and even many excited about the prospects for the future are equally promising. Daffodil on-line Ltd (DOL) also provides a completely different service IT Services and Professional Training. These products are given below:

2.3 IT Services

- Corporate Internet Services
- Network Design and Solution
- Create Wi-Fi Zone and Smooth Services
- Security solution.
- Threats solution.
- Domain registration and website hosting.
- Website design, development and maintenance.
- National Internet Service Provider.
- Date connectivity provide.
- DNS Server resolution.
- Mail Server facility.
- Professional Course and Training service.

Professional Training Workshop

- Red Hat Certified Engineer(RHCE)
- Red Hat Certified System Administrator(RHCSA)
- ISP Setup and administrator using Mikrotik and Linux
- Cambium Networks
- Cisco Certified Network Associate(CCNA)
- Website design and development.

2.4 Target Group

Target group:

Company client base includes all consumers, every small and medium enterprises, including start-ups. The organization plans to concentrate SOHO clients, as this is an excellent target for the victims of a new high speed, and has the best growth potential for the company. Internet Solutions feel that this market segment has a specific rating and refinement want, and create additional dedicated, reliable customers.

There has been a proliferation of broadband Internet connections. With such a large number of individuals to enjoy a fast connection at work, they are not willing to trot out the dial-up receptions association. With the advent of Wi-Fi technology, customers will now get pleasure from fast association while not having to put the cables are valuable because the signal is distributed via radio waves. Targeted market segments are students, professionals, technicians.

2.5 SWOT Analysis

SWOT Analysis is a necessary deftness for intellect your capacity and ailing, and for placing both the occasion open to you and the intimidation your face.[2]

➤ **Strengths**

- ✓ All communication between customers separated by distance. (With at home or at work)
- ✓ Support work at home with comfort.
- ✓ Collecting information. (Company's assets)
- ✓ Online business creation and provide the service provide.
- ✓ High speed offered.
- ✓ Own infrastructure.
- ✓ Can offer bundled services (1-stop shopping)

➤ **Weaknesses**

- ✓ Service problem Sometimes facing our company
- ✓ The market is competitive for many retailers
- ✓ More tax on price and service options.
- ✓ No expertise with quality of service guarantees
- ✓ Many customers competitive for capability
- ✓ A large amount of money to the company until graduation.

➤ **Opportunities**

- ✓ Our company use to take up new technologies.
- ✓ Products & Services line should be expanded. The company's target is to launch this service as currently achieved.
- ✓ Create awareness in customer's mind
- ✓ Free training for professional course.
- ✓ Multiple Target market
- ✓ Our company is IT skill developing.

➤ **Threats**

- ✓ Sometimes the system failure of any kind.
- ✓ Some clients left the service.
- ✓ Threats Security is a major issue in the system.

2.6 Structure of Organizational

Daffodil Online Ltd. Organization Structure. Show in fig 2.6:



CHAPTER 3

TASKS, PROJECTS AND ACTIVITIES

3.1 Daily task and activities

In the internship on Daffodil Online Limited I learned practically works and performed the following tasks:

➤ **Server Administration**

- ✚ Server Installation and Configuration.
- ✚ HDD partition and backup.
- ✚ About Linux server Basic.
- ✚ Understanding Linux server run level.
- ✚ Basic command in Linux Centos.
- ✚ User & password management in server administrative user and client.
- ✚ Move and copy directory or files.
- ✚ Permission accessing directory and file
- ✚ DHCP IP address configuration in Linux Centos.
- ✚ Static IP address configuration in Linux Centos.
- ✚ Package install, status, update and remove using yum.
- ✚ Remote login configuration & monitoring.
- ✚ Web Server Configuration.
- ✚ Nagios Server Configuration.
- ✚ DNS Server Configuration.
- ✚ Using many kind of equipment Cisco, Mikrotik, tower server & rack server

➤ **Network Administration**

- ✚ Study and accessing about all network components.
- ✚ Study and about all network protocol.
- ✚ How to connectivity provide in WAN & LAN.
- ✚ Configuration in Static, DHCP, PCQ, PPPoE, Mangle. .
- ✚ BGP, VLAN, WLAN, Hotspot, Tunneling.
- ✚ Packet filtering, Bandwidth manager.

3.2 Events and Activities

- + Network design, configuration and implementation, practical work.
- + Monitor and maintain server systems and network devices.
- + Router and troubleshooting switches.
- + Network fault repair and troubleshoot
- + Server troubleshooting the problem.
- + Technical support for clients using the remote or physical support.
- + Business network design solutions and suggestions IT company.
- + Maintenance of the data center.
- + Domain hosting and maintain.
- + Checking the fiber optic cable, fiber optic media converter and device problems.
- + Server Space cracking temperature and other issues.
- + Office network support.

3.3 Project Task and Activities

3.3.1 Server Administration

Server administration is an advanced computer networking topic that includes server installation and configuration, server role, storage, active directory and group policies, files, print and web services, remote access, virtualization, application servers, problem solving, performance and reliability.

Some common examples of server operating systems:

- + Linux server OS
- + Windows server OS
- + Mac OS X server

Why Choose Linux Server

- + Open Source.
- + Free of cost
- + Better Stability and Flexibility
- + Easily Modifiable.
- + Highly Secured.
- + Trouble-Free Updates.
- + Does not require any Antivirus.
- + Freedom of Choice.
- + Ease of Use.
- + Complete package of software.
- + Hardware support

- ✚ Access to open source applications
- ✚ Easier to modify
- ✚ Community support.

So, I choose centos 6.4 and 7 in Linux server OS. [5]

CentOS-7 Installation:

Now, Firstly I installation CentOS 7 Linux GUI server. So show the image and select install Centos OS Linux 7 by fig: 3.3.1 [7]



Figure 3.3.1: Select install centOS 7

- ❖ The Next step select language then continue by fig: 3.3.2



Figure 3.3.2: Select language.

- ❖ The next step set Date & Time then select done by fig: 3.3.3



Figure 3.3.3: Set Date & Time.

- ❖ The next step is the process of disk partition. A disk partition is a major part of the server installation. For Linux OS installation we must need to make 4 partitions.

This are:

- I. Home partition: /home
- II. Boot Partition: /boot
- III. Root partition: /
- IV. SWAP partition: swap

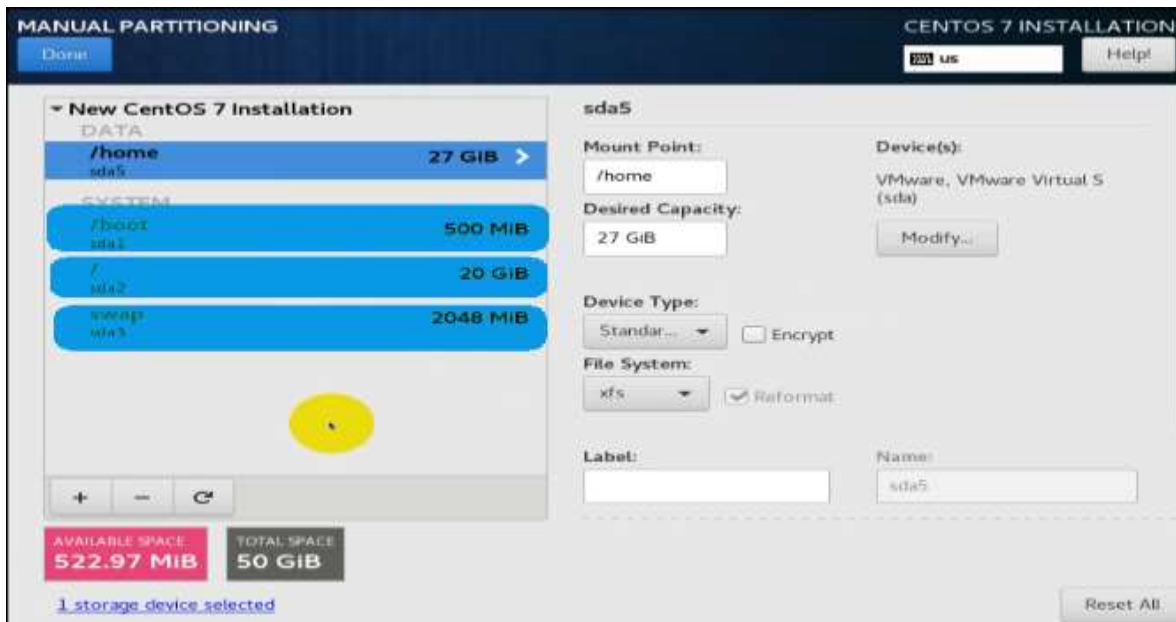


Figure 3.3.4: Create partition.

- ❖ The next step is Software selection. Here we select the Server with GUI mode by fig: 3.3.5



Figure 3.3.5: Software Selection

- ❖ Next step is User Settings. Here we set Root password and create User. Now show by fig: 3.3.6



Figure 3.3.6: User Settings

- ❖ Set the root password by fig 3.3.7

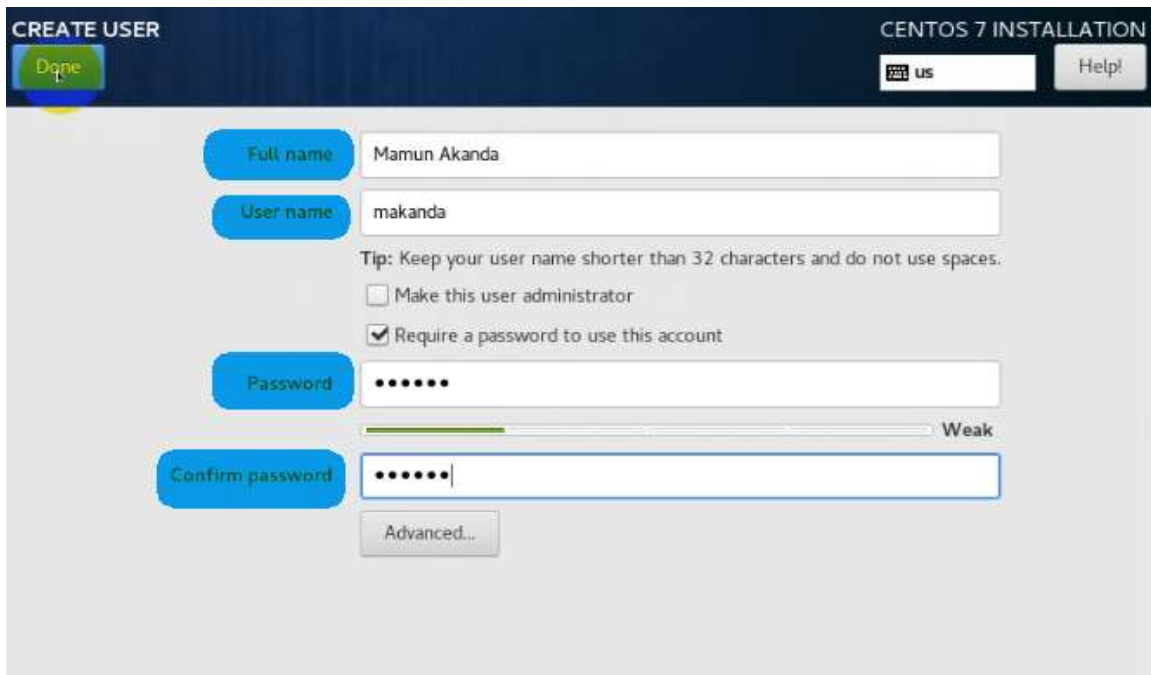


Figure 3.3.7: Root Password

❖ Linux Server CentOS 7 User Creation by fig: 3.3.8

The screenshot shows the 'CREATE USER' window in the CentOS 7 installer. The title bar includes 'CENTOS 7 INSTALLATION' and a language dropdown set to 'us'. A 'Done' button is in the top left. The main area contains several input fields and checkboxes:

- Full name:** Mamun Akanda
- User name:** makanda
- Tip:** Keep your user name shorter than 32 characters and do not use spaces.
- Make this user administrator
- Require a password to use this account
- Password:** [masked with dots]
- Confirm password:** [masked with dots]
- Password strength:** A progress bar indicates the password is 'Weak'.
- Advanced...** button below the confirm password field.

Figure 3.3.8: Create User

Run-Level command by CentOS 7

Show all run Level:

```
#cat /etc/init
```

```
init 0           =Power off.
init 1           =Single User Mode.
init 2           =Multi User Mode without NFS.
init 3           =Full MultiUser Mode.
init 4           =Unused.
init 5           =X-Desktop (Graphical user Mode)
init 6           =Restart.
```

See current run-level = `who -r`

The Basic Linux Command in Centos 7

```
#pwd           =present working directory
#ls            = list directory contents
#cd            = change current directory
#cal           = display a calendar
```

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| | |
|------------|--|
| #logout | = pc logout for current user |
| #reboot | = pc restart |
| #shutdown | = pc shutdown |
| #date | = show the date |
| #touch | = create file text |
| #mkdir | = create directory |
| #rmdir | = remove directory |
| #man, help | = help for any command details |
| #nano | = file edit |
| #locate | = find any file and directory |
| #echo | = display a line of text |
| #cat | = read any text file |
| #vim | = a programmers text editor |
| #sudo | = execute a command as another user |
| #df | = report file system disk space usage |
| #du | = estimate file space usage |
| #tar | = manual page convert for tar |
| #zip | = package and compress (archive) files |
| #unzip | = list, test and extract compressed files in a ZIP archive |
| #uname | = print system information |
| #chmod | = change file mode bits |
| #hostname | = show or set the system's host name |
| #ping | = send ICMP request to network hosts |
| #clear | = clear the terminal screen |
| #history | = show all command use terminal |
| #w | = Show who is logged on and what they are doing. |
| #whoami | = print effective user id |

Any directory or file to copy or move

| | |
|-----|--|
| #cp | =copy file and directory, example: #cp /home/sadri /root/Desktop/ |
| #mv | = move file and directory, example: #mv /home/sadri /root/Desktop/ |

User and Group Management:

| | |
|------------------|--------------------------------------|
| #adduser sadri | = Add a local user |
| #passwd sadri | = Set a password for new user |
| #passwd -d sadri | = password disable or remove in user |
| #finger sadri | = user information verify |

| | |
|---------------------------------|--|
| #passwd -u sadri | = User unlock |
| #userdel sadri | = delete a user |
| #userdel -r sadri | = Delete a user and user folder with home directory. |
| #useradd -d /ver/mail sadri | = User add different directory location. |
| #useradd -u 600 sadri | = Create new user with specific user ID. |
| #cat /etc/passwd | = Show all users information. |
| #cat /etc/passwd grep sadri | = Show specific user information. |
| #groupadd sadri | = Adding a group. |
| #useradd -u 502 -g 500 sadri | = Create new user with specific group ID. |
| #useradd -a 2019-04-30 sadri | = Add user account with expiry date. |
| #useradd -s /sbin/nologin sadri | = Create user without login shell. |
| #usermod -c "mail user" sadri | =user modification & set comment user. [8] |

3.3.2 Network Configuration for CentOS 7

DHCP Configuration:

- ❖ Show the server interface use to command:# ifconfig.

```

Applications  Places  Terminal
mamunakanda@localhost:/home/mamunakanda

File Edit View Search Terminal Help
[root@localhost mamunakanda]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    ether 00:c:29:b2:a6:75  txqueuelen 1000  (Ethernet)
    RX packets 16  bytes 960 (960.0 B)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 0  bytes 0 (0.0 B)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
    inet 127.0.0.1  netmask 255.0.0.0
    inet6 ::1  prefixlen 128  scopeid 0x10<host>
    loop txqueuelen 1000  (Local Loopback)
    RX packets 248  bytes 21592 (21.0 KiB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 248  bytes 21592 (21.0 KiB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
    inet 192.168.122.1  netmask 255.255.255.0  broadcast 192.168.122.255
    ether 52:54:00:57:55:0b  txqueuelen 1000  (Ethernet)
    RX packets 0  bytes 0 (0.0 B)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 0  bytes 0 (0.0 B)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

```

Figure 3.3.9: Show the IP address in interface.

- ❖ Next show the Network adapter port use to command:
cd /etc/sysconfig/network-scripts

```
[root@localhost mamunakanda]# cd /etc/sysconfig/network-scripts/
[root@localhost network-scripts]# ls
ifcfg-ens33  ifdown-ib      ifdown-ppp      ifdown-tunnel  ifup-ib      ifup-plusb     ifup-Team      network-functions
ifcfg-lo     ifdown-ipppp  ifdown-routes  ifup           ifup-ipppp  ifup-post     ifup-TeamPort  network-functions-ipv6
ifdown      ifdown-ipv6   ifdown-sit     ifup-aliases  ifup-ipv6   ifup-ppp      ifup-tunnel
ifdown-bnep  ifdown-isdn   ifdown-Team    ifup-bnep     ifup-isdn   ifup-routes   ifup-wireless
ifdown-eth   ifdown-post   ifdown-TeamPort ifup-eth      ifup-plip   ifup-sit     init.ipv6-global
```

Figure 3.3.10: Show the Network adapter port

- ❖ Open Network adapter ens33 file location use to command:

```
[root@localhost network-scripts]# vi ifcfg-ens33
```

Figure 3.3.11: Edit ens33 file appropriate path.

- ❖ Edit ens33 file for DHCP:
BOOTPROTO=dhcp
ONBOOT=yes

```
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=dhcp
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens33
UUID=7223f365-854c-46f7-84c6-2fdd0b993df0
DEVICE=ens33
ONBOOT=yes
```

Figure 3.3.12: Network configuration for DHCP

- ❖ Now Network package restart use to command:# service network restart

```
[root@localhost network-scripts]# service network restart
Restarting network (via systemctl): [ OK ]
```

Figure 3.3.13: Network package restart.

❖ Check the Internet use to ping command: # ping 8.8.8.8

```
[root@localhost network-scripts]# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=52 time=67.4 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=52 time=66.2 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=52 time=65.9 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=52 time=66.4 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=52 time=66.1 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=52 time=66.2 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=52 time=66.6 ms
64 bytes from 8.8.8.8: icmp_seq=8 ttl=52 time=67.1 ms
64 bytes from 8.8.8.8: icmp_seq=9 ttl=52 time=66.7 ms
64 bytes from 8.8.8.8: icmp_seq=10 ttl=52 time=68.4 ms
64 bytes from 8.8.8.8: icmp_seq=11 ttl=52 time=66.8 ms
64 bytes from 8.8.8.8: icmp_seq=12 ttl=52 time=66.6 ms
64 bytes from 8.8.8.8: icmp_seq=13 ttl=52 time=67.8 ms
64 bytes from 8.8.8.8: icmp_seq=14 ttl=52 time=67.0 ms
64 bytes from 8.8.8.8: icmp_seq=15 ttl=52 time=66.3 ms
^C
--- 8.8.8.8 ping statistics ---
15 packets transmitted, 15 received, 0% packet loss, time 14034ms
```

Figure 3.3.14: ping for network check

DHCP Configuration completed for CentOS 7.

Static Configuration:

- ❖ Edit ens33 file for Static:
 - BOOTPROTO=dhcp
 - ONBOOT=yes
 - IPADDR=enter my IP address
 - NETMASK=enter my subnet mask
 - GATEWAY=enter my gateway

```
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=static
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens33
UUID=7223f365-854c-46f7-84c6-2fdd0b993df0
DEVICE=ens33
ONBOOT=yes
IPADDR=192.168.1.110
NETMASK=255.255.255.0
GATEWAY=192.168.1.1
~
~
```

Figure 3.3.15: Network configuration

In the above figure, the Network device, Boot protocol, Class 'C' IP address, Subnet mask and also DNS have been configured.

- ❖ Now open the resolv.conf file and set the DNS use to command:
#vi /etc/resolv.conf

```
[root@localhost network-scripts]# vi /etc/resolv.conf
```

Figure 3.3.16: Edit resolve.conf file for dns server IP.

- ❖ Edit the file and input DNS IP.

```
# Generated by NetworkManager
nameserver 103.60.172.20
nameserver 8.8.8.8
nameserver 8.8.8.8
~
```

Figure 3.3.17: Input DNS nameserver IP.

- ❖ Then the network has been restarted for the purpose of starting the network.
service network restart

```
[root@localhost network-scripts]# service network restart
Restarting network (via systemctl): [ OK ]
```

Figure 3.3.18: Restarting process of the network system

- ❖ Check the Static Configuration & Internet use to command: # ifconfig

```
[root@localhost network-scripts]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.110 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::d13b:3c7a:6a57:4759 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:b2:a6:75 txqueuelen 1000 (Ethernet)
    RX packets 232 bytes 25082 (24.4 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 155 bytes 16814 (16.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Figure 3.3.19: Static configuration & network check.

3.3.3 Server Configuration

In the data center, the Server Configuration is the most significant goal. In the major subject which service provides in the server. Difference server configuration for different service providers. Within some server is

- ✚ DNS Server.
- ✚ Yum Server.
- ✚ Samba Server.
- ✚ Mail Server.
- ✚ Web Server
- ✚ FTP Server. [9]

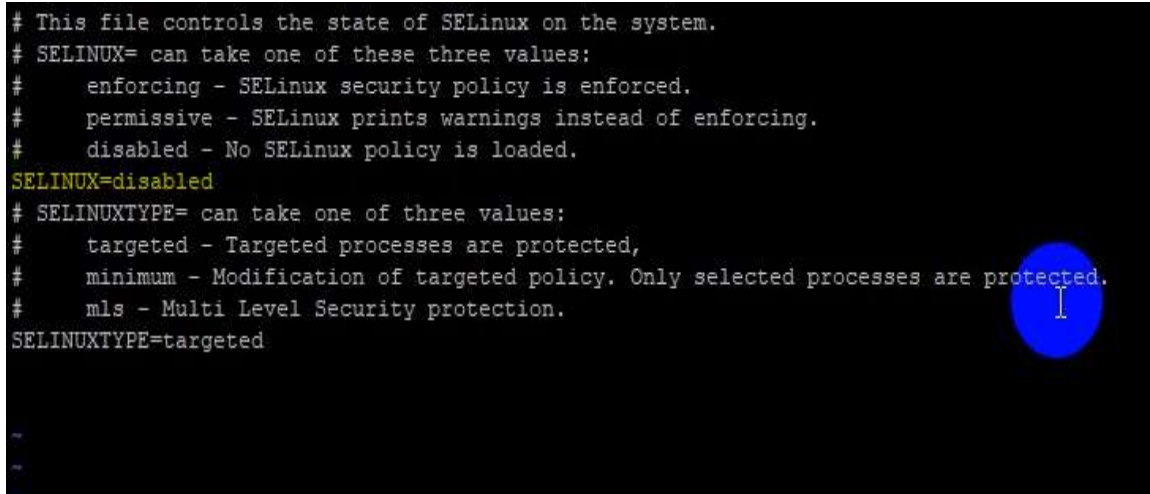
3.3.4 DNS Server Configuration

The server is an important part of any computer network. Web communications today cannot imagine without a DNS Server. DNS is a client server protocol where the DNS client requests for domain name resolution and response DNS Server on it. Each network must have the DNS Server for local DNS servers to improve network performance by caching DNS information and serve local DNS requests. DNS Server can be configured either Windows or Linux operating system. . [10]

- ✚ SELINUX and Firewall Configuration
- ✚ Setting static hostname
- ✚ Installing BIND package from YUM repository
- ✚ Resetting DNS IP address and verifying resolver configuration
- ✚ Allowing DNS Server IP and Network
- ✚ Set Forward and Reverse Zones
- ✚ Creating Forward and Reverse Zone Files
- ✚ Editing Forward Zone File
- ✚ Editing Reverse Zone File
- ✚ Restarting DNS service and enabling auto start at boot time
- ✚ Checking DNS

3.3.5 SELINUX and Firewall Configuration: SELINUX disabled use to command:

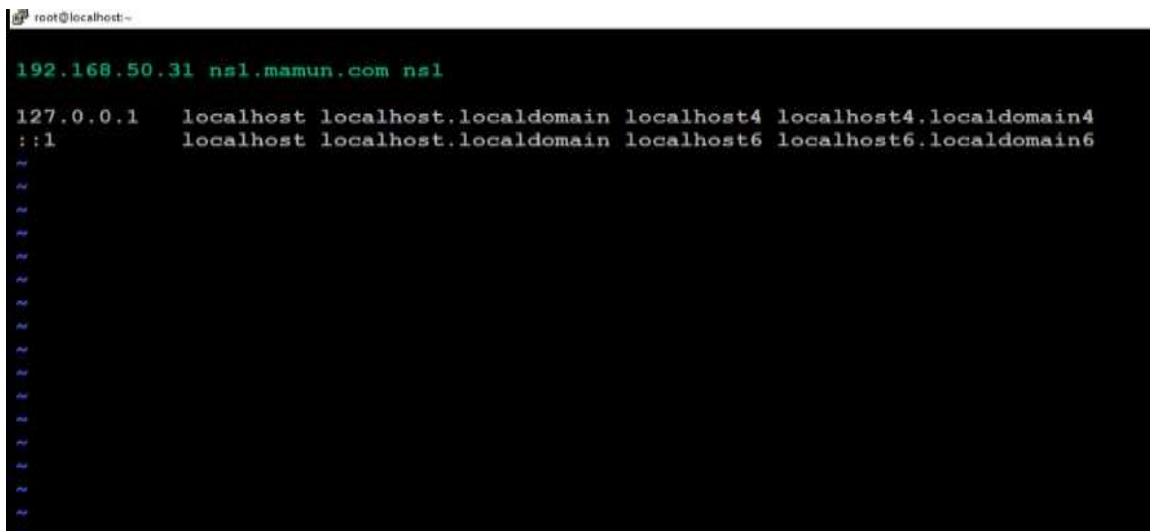
```
# vi /etc/sysconfig/selinux
```



```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of three values:
#   targeted - Targeted processes are protected,
#   minimum - Modification of targeted policy. Only selected processes are protected.
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted
~
~
```

Figure 3.3.20: SELINUX and Firewall Configuration.

3.3.6 Setting Static Hostname: Now we will put local resolver entry in the host file. For this configuration, I used the domain name mamun.com and hostname ns1. So, open the hosts file and put down on the bottom line and then save and exit. Command: # vi /etc/hosts



```
root@localhost:~# vi /etc/hosts
192.168.50.31 ns1.mamun.com ns1
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
~
~
~
~
~
~
~
~
~
~
~
```

Figure 3.3.21: Hostname setup

Now reboot my server use to reboot command: # reboot

```
[root@localhost ~]# reboot
```

Figure 3.3.22: Reboot Server.

3.3.7 Installing BIND Package from YUM Repository: Install BIND package from YUM repository. # yum install bind* -y

```
[root@ns1 ~]# yum install bind* -y
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.dhakacom.com
 * extras: mirror.dhakacom.com
 * updates: mirror.dhakacom.com
Package 32:bind-export-libs-9.11.4-9.P2.el7.x86_64 already installed and latest version
Package 32:bind-license-9.11.4-9.P2.el7.noarch already installed and latest version
Package 32:bind-libs-lite-9.11.4-9.P2.el7.x86_64 already installed and latest version
Resolving Dependencies
--> Running transaction check
--> Package bind.x86_64 32:9.11.4-9.P2.el7 will be installed
--> Processing Dependency: python-ply for package: 32:bind-9.11.4-9.P2.el7.x86_64
```

Figure 3.3.23: Install BIND Package.

3.3.8 Allow DNS Server IP and Network: Replace current DNS IP with your DNS Server IP using command:# vi /etc/named.conf

```
13 listen-on port 53 { 127.0.0.1; 192.168.50.31; };
14 // listen-on-v6 port 53 { ::1; };
15 directory "/var/named";
16 dump-file "/var/named/data/cache_dump.db";
17 statistics-file "/var/named/data/named_stats.txt";
18 memstatistics-file "/var/named/data/named_mem_stats.txt";
19 recursing-file "/var/named/data/named.recursing";
20 secreots-file "/var/named/data/named.secreots";
21 allow-query { localhost; 192.168.50.0/24; };
22
23 /*
24 - If you are building an AUTHORITATIVE DNS server, do NOT enable recursion.
25 - If you are building a RECURSIVE (caching) DNS server, you need to enable
26 recursion.
27 - If your recursive DNS server has a public IP address, you MUST enable access
28 control to limit queries to your legitimate users. Failing to do so will
29 cause your server to become part of large scale DNS amplification
30 attacks. Implementing BCP38 within your network would greatly
31 reduce such attack surface
32 */
33 recursion yes;
34
35 dnssec-enable no;
36 dnssec-validation no;
```

Figure 3.3.24: Replacing DNS IP Address

3.3.9 Set Forward and Reverse Zone: The default zone file is `named.rfc1912.zones` (located in `etc` directory) that contains zone information. We will create a forward zone directive for our domain (`mamun.com`) and a reverse zone directive for our LAN block (`192.168.50.0/24`). # `vi /etc/named.rfc1912.zones`

```

31 zone "1.0.0.127.in-addr.arpa" IN {
32     type master;
33     file "named.loopback";
34     allow-update { none; };
35 };
36
37 zone "0.in-addr.arpa" IN {
38     type master;
39     file "named.empty";
40     allow-update { none; };
41 };
42
43
44
45 zone "mamun.com" IN {
46     type master;
47     file "mamun.com.for";
48     allow-update { none; };
49 };
50
51
52
53
54 zone "50.168.192.in-addr.arpa" IN {
55     type master;
56     file "mamun.com.rev";
57     allow-update { none; };
58 };

```

Figure 3.3.25: Set Forward and Reverse Zone

3.3.10 Create Forward and Reverse Zone Files: In zone file, we have declared that our forward zone file is `mamun.com.for` and reverse zone file is `mamun.com.rev`. # `cd /var/named`

```

[root@ns1 ~]# cd /var/named/
[root@ns1 named]#
[root@ns1 named]#
[root@ns1 named]# ls
chroot      data        dyndb-ldap  named.empty  named.loopback
chroot_sdb  dynamic     named.ca    named.localhost  slaves
[root@ns1 named]# cp named.localhost mamun.com.for
[root@ns1 named]# cp named.localback mamun.com.rev
cp: cannot stat 'named.localback': No such file or directory
[root@ns1 named]# cp named.loopback mamun.com.rev

```

Figure 3.3.26: Create Forward and Reverse Zone Files

3.3.11 Edit Forward Zone Files: Now open the forward zone file and add the following lines in this file use to command: # vi mamun.com.for

```

1 $TTL 1D
2 @      IN SOA ns1.mamun.com. root.mamun.com. (
3                                     0      ; serial
4                                     1D     ; refresh
5                                     1H     ; retry
6                                     1W     ; expire
7                                     3H )   ; minimum
8      IN      NS      ns1.mamun.com.
9      IN      A      192.168.50.31
10 ns1  IN      A      192.168.50.31
11 web  IN      A      192.168.50.32

```

Figure 3.3.27: Edit Forward Zone Files

3.3.12 Edit Reverse Zone Files: The reverse zone file is required to resolve IP address to name. Open the reverse zone file and put the following lines in this file and use to command: # vi mamun.com.rev

```

1 $TTL 1D
2 @      IN SOA  ns1.mamun.com. root.mamun.com. (
3                                     0      ; serial
4                                     1D     ; refresh
5                                     1H     ; retry
6                                     1W     ; expire
7                                     3H )   ; minimum
8      IN      NS      ns1.mamun.com.
9 31     IN      PTR    ns1.mamun.com.

```

Figure 3.3.28: Edit Reverse Zone Files

3.3.13 Restarting DNS Service and Enabling Auto Start at Boot Time:

DNS Server configuration is now complete. Now restarting DNS Service with the following command.

```

[root@ns1 named]# systemctl restart named

```

Figure 3.3.29: Restarting DNS Service.

3.3.14 Checking DNS: The nslookup tool is used to view name to IP address or IP address to name resolution. So, issue the nslookup command to view whether your configured DNS Server can resolve DNS request or not. # **nslookup ns1.mamun.com**

```
[root@ns1 named]# nslookup ns1.mamun.com
Server:          192.168.50.31
Address:        192.168.50.31#53

Name:   ns1.mamun.com
Address: 192.168.50.31
```

Figure 3.3.30: Checking DNS Server.

3.3.15 Network Administration

MikroTik: MikroTik is a manufacturer of network equipment Latvia. The company develops and sells wired and wireless network routers, network switches, access points, as well as the operating system and additional software. The company was founded in 1996 with a focus on selling equipment in emerging markets. Until September 2018, the company has more than 140 employees. In 2015, with EUR 202M-20 largest companies in Latvia with income. [11]



Figure 3.3.31: MikroTik Router

Router Features

RouterOS supports many applications used by Internet service providers. For example

- + It can be used as a router
- + It provides OSPF, BGP, Multiprotocol Label Switching (VPLS/MPLS), Open Flow etc.
- + It can be used as a switch or bridge
- + Provides PPPoE Client-Server.
- + Provides VPN-Virtual Private Network.
- + Provides Firewall rules.
- + Provide DHCP Server service.
- + Provide Wi-Fi and captive portal based Hotspot System.
- + Bandwidth management is very easy.
- + Easy GUI interface.
- + Easy administration.
- + Supports both IPv4 and IPv6.

3.3.16 DOL Network Diagram

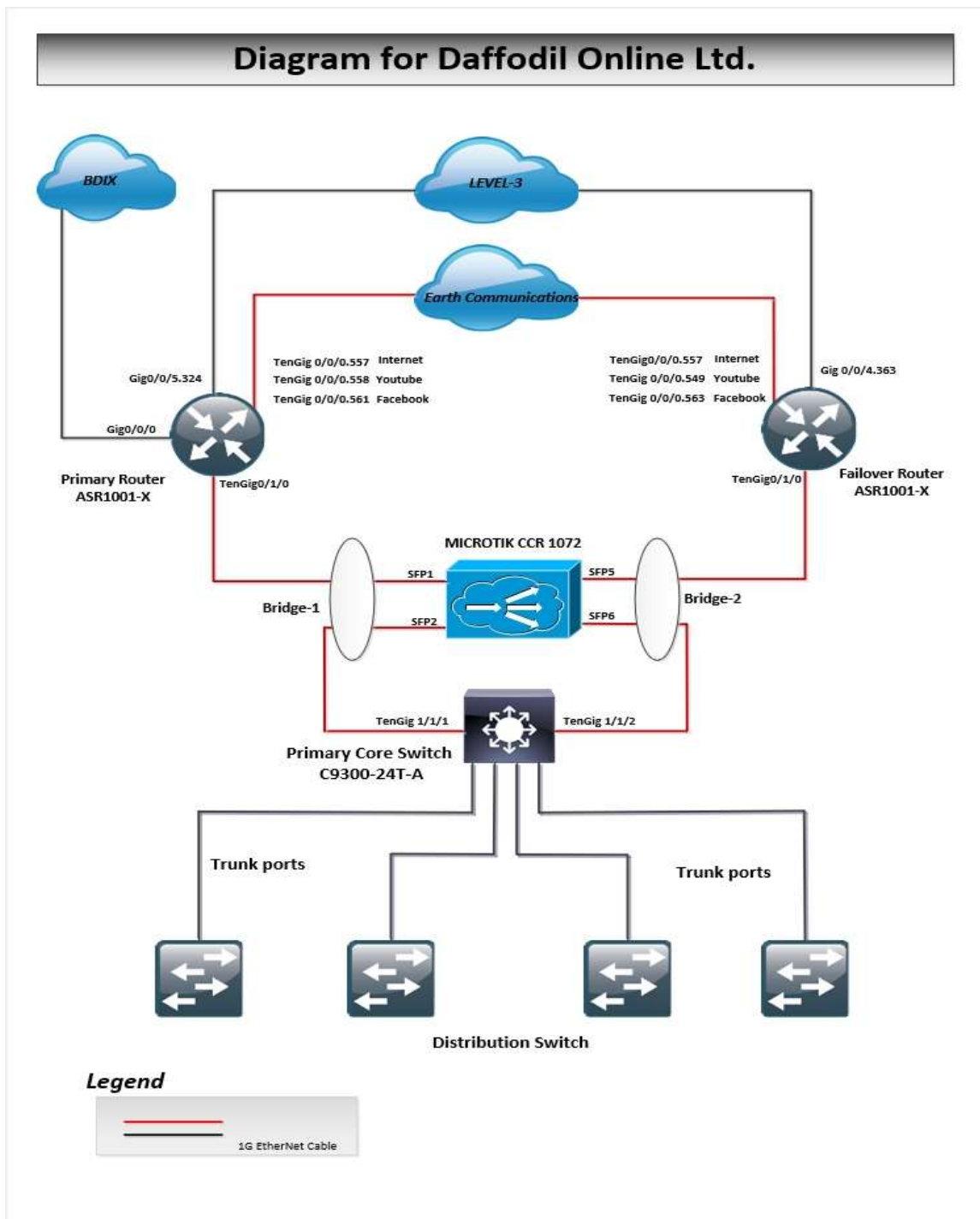


Figure3.3.32 – Network Diagram for DOL.

3.3.17 Static Configuration in MikroTik: There are three way we can configure MikroTik Router for WAN side. Basically Static, DHCP, Ppoe. Now I will configuration Static IP

Step-1: IP > address > + >

The screenshot shows a 'New Address' dialog box with the following fields and values:

- Address: 172.16.10.1/24
- Network: 192.168.50.0
- Interface: ether4-LAN

Buttons on the right include OK, Cancel, Apply, Disable, Comment, Copy, and Remove. The status at the bottom is 'enabled'.

Figure: 3.3.33: Set IP

Step-2: IP > Routes > + > set Gateway

The screenshot shows a 'New Route' dialog box with the following fields and values:

- Dst. Address: 0.0.0.0/0
- Gateway: 192.168.50.1
- Type: unicast
- Distance: (empty)
- Scope: 30
- Target Scope: 10
- Routing Mark: (empty)
- Pref. Source: (empty)

Buttons on the right include OK, Cancel, Apply, Disable, Comment, Copy, and Remove. The status at the bottom is 'enabled'.

Figure 3.3.34: Set Gateway

Step-3: IP > DNS > set DNS Servers

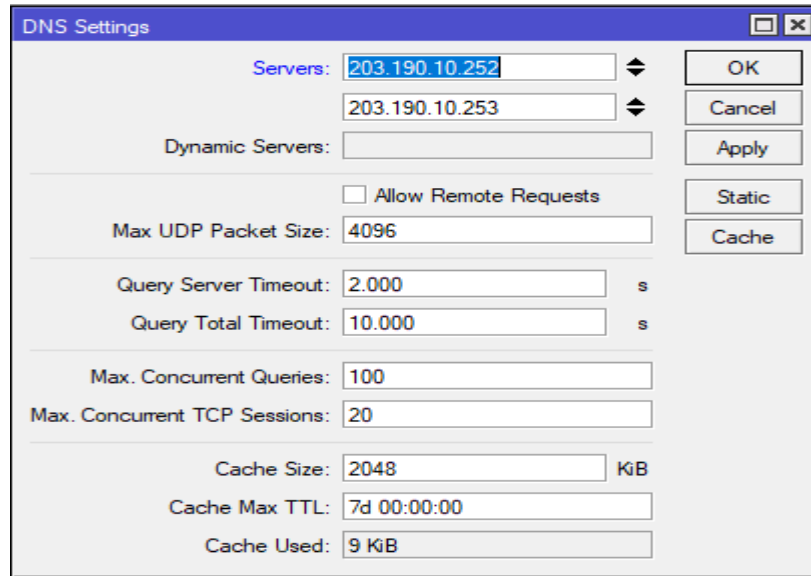


Figure 3.3.35 Set DNS Server

Step-4: IP > Firewall > NAT + General > Chain=srcnat > Src. address=172.16.10.0/24 > Action > Masquerade > Apply > OK

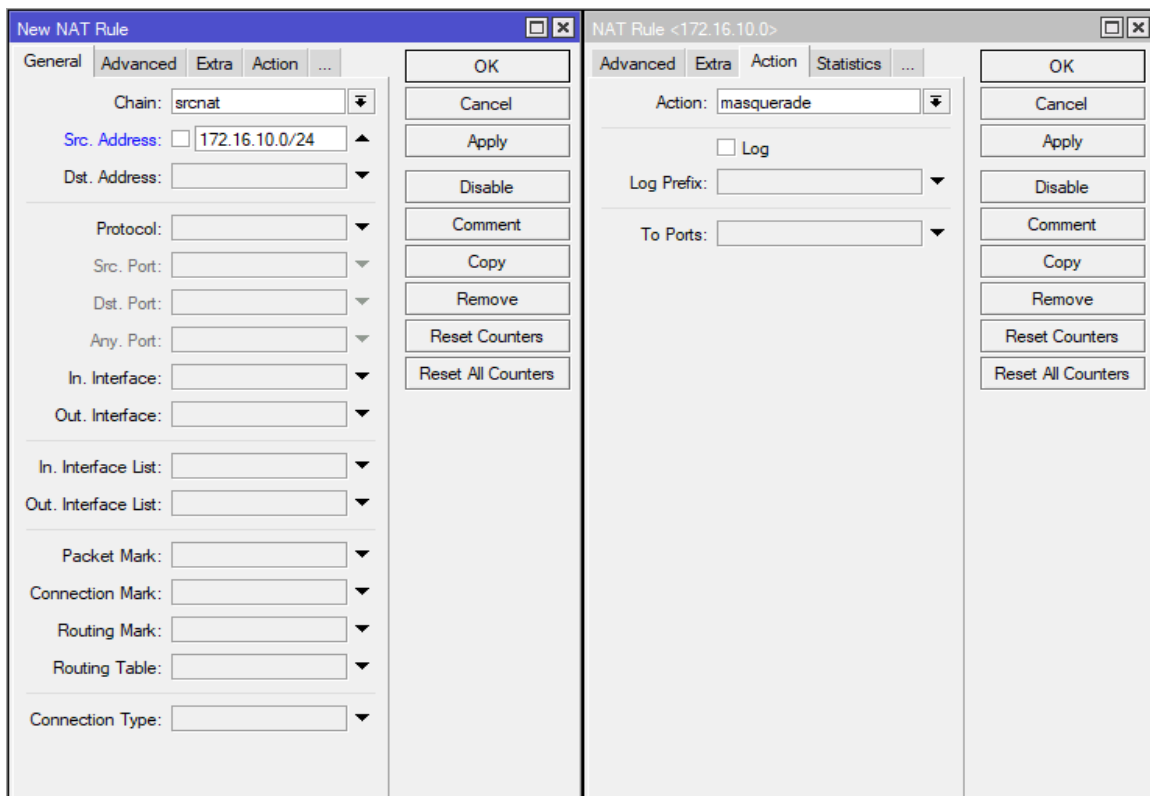


Figure 3.3.36: Firewall

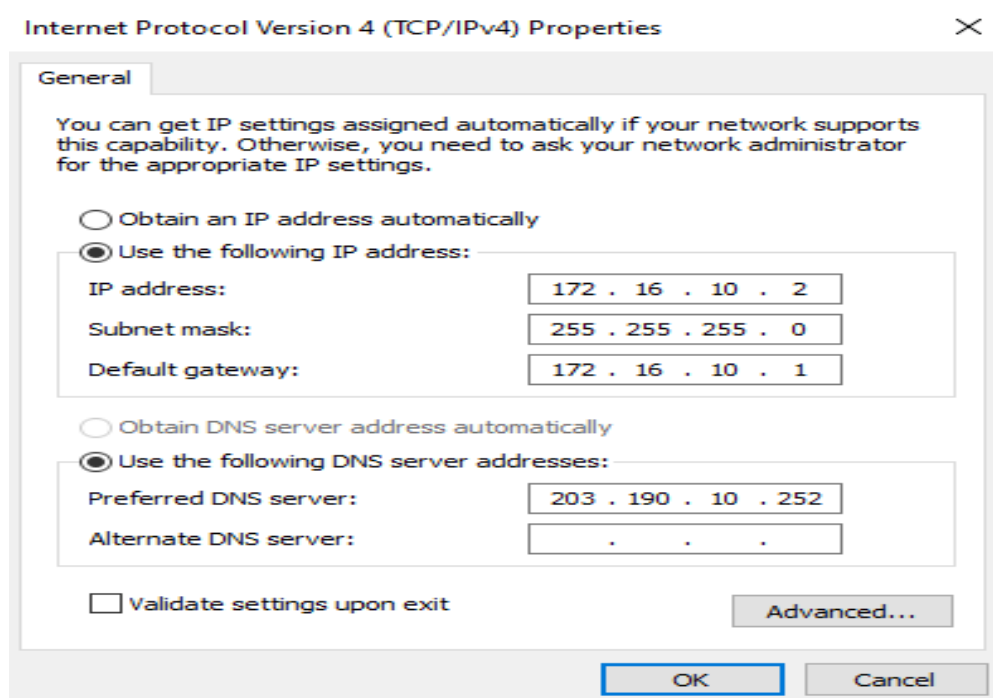
Step-5: PC static IP set.

Figure 3.3.37: PC IP set.

Set-6: Check the Internet use to ping command: > ping google.com

```

Terminal
MMM MMM MMM III KKK KKK RRRRRR 000000 TTT III KKK KKK
MMM MM MMM III KKKKK RRR RRR 000 000 TTT III KKKKK
MMM MMM III KKK KKK RRRRRR 000 000 TTT III KKK KKK
MMM MMM III KKK KKK RRR RRR 000000 TTT III KKK KKK

MikroTik RouterOS 6.42.11 (c) 1999-2018 http://www.mikrotik.com/

[?] Gives the list of available commands
command [?] Gives help on the command and list of arguments

[Tab] Completes the command/word. If the input is ambiguous,
a second [Tab] gives possible options

/ Move up to base level
.. Move up one level
/command Use command at the base level
[admin@MikroTik] > ping google.com
  SEQ HOST                SIZE TTL TIME  STATUS
  0 172.217.194.113        56  46 54ms
  1 172.217.194.113        56  46 53ms
  2 172.217.194.113        56  46 53ms
  3 172.217.194.113        56  46 54ms
  4 172.217.194.113        56  46 54ms

```

Figure 3.3.38 : Check the internet

3.3.18 DHCP Configuration:

Step: Ip > DHCP > Server > DHCP Setup

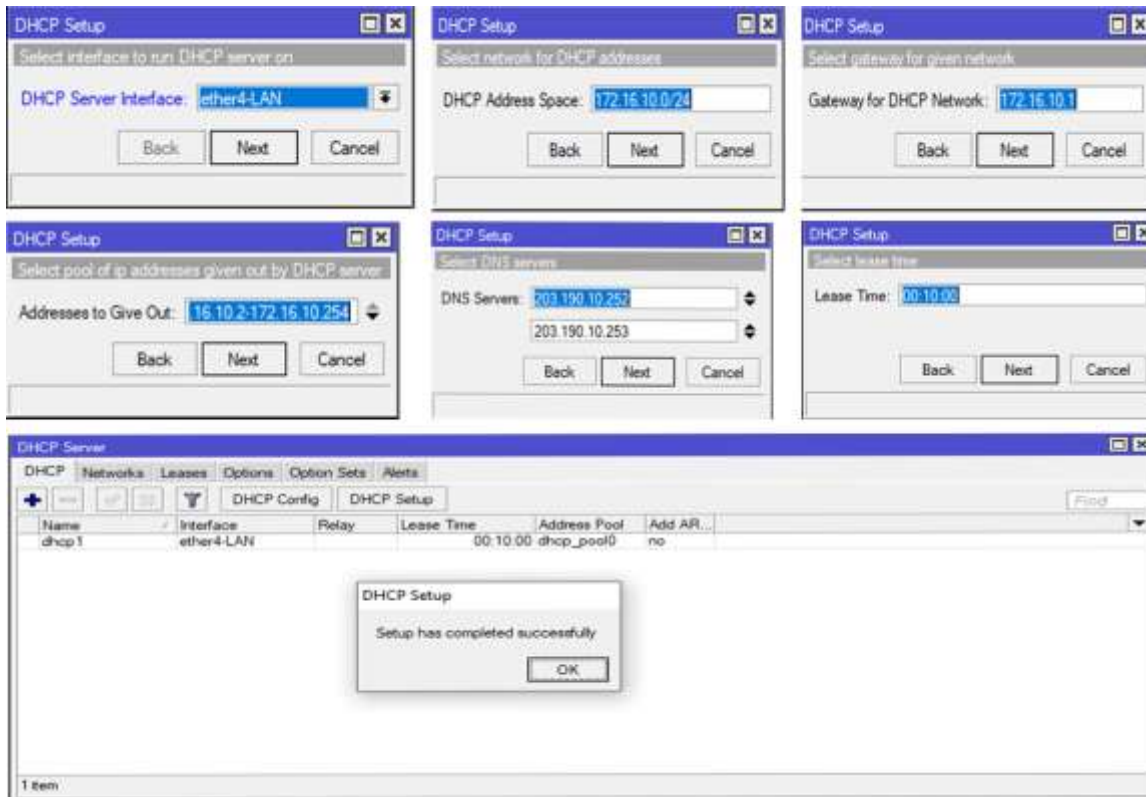


Figure : 3.3.39: DHCP setup.

3.3.19 : VLAN Configuration

Step-1: Interface > VLAN

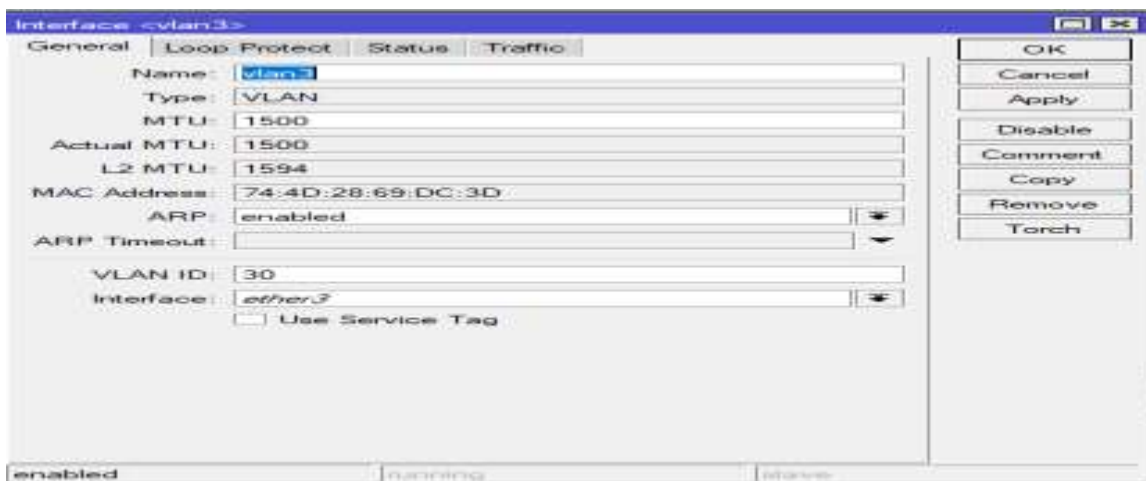
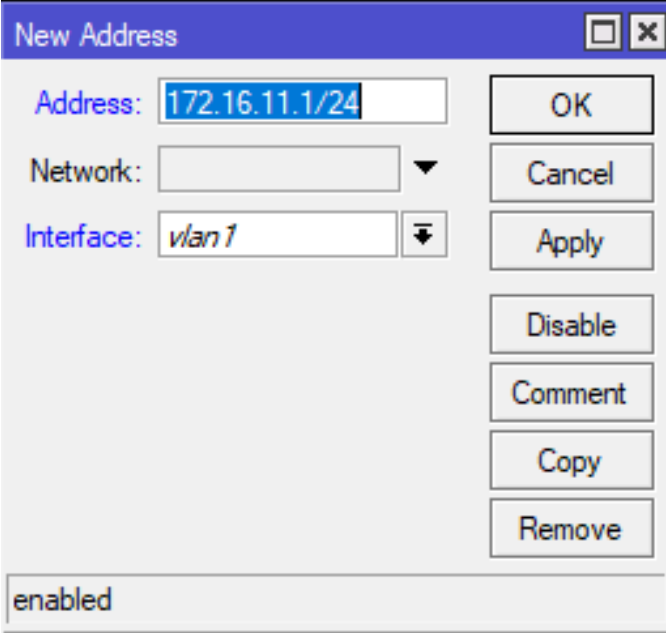


Figure : 3.3.40: VLAN setup.

Step-2: IP > address > + > set IP



The image shows a 'New Address' configuration window. It has a blue title bar with the text 'New Address' and standard window controls. The main area contains three input fields: 'Address' with the value '172.16.11.1/24', 'Network' which is empty, and 'Interface' with a dropdown menu showing 'vlan 1'. To the right of these fields is a vertical stack of buttons: 'OK', 'Cancel', 'Apply', 'Disable', 'Comment', 'Copy', and 'Remove'. At the bottom left of the window, the text 'enabled' is displayed.

Figure : 3.3.41: Set new IP

3.4 Challenges

No work has not been challenged, however, four months where my expertise and friends to share when I heard about an hour, I have found that there are some challenges common apprenticeship. I believe that the internship 3 things: paid / down, temporarily, and that their unit area in the very race to achieve expertise.

Sometimes not quite work: There are not enough jobs allocated to the ME. I'm bored, underused, finger picking me at my table and was tempted to look up.

Too much work: as a result of the unit area just happy for urgent apprentice is going on inside the door, some workplaces may benefit from young employees to give very long hours of repetitive work lifeless.

Afraid to question a raise: Suddenly there was a flow of labor associations, and that I finally have the possibility to prove yourself! However, I was hesitant about the x, y, zI may feel pressure to become a freelance associate and employee self-sufficing, however, it was higher in order to clarify the uncertainty!

Compete with different Intern: by chance I used to be an associate intern; we have a tendency to increase in every different questions and perhaps the only team to come who has worked in any group there is such a cooperative relationship. Internships in the gap very future job or recommendation for an honest letter will be a competitor in a different working environment, may not be so friendly.

An interior may be going through the unique difficulties given below:

- ✚ Adopt the work environment.
- ✚ Some organized power to attain
- ✚ Official rules and decorations adjusting.
- ✚ Archive some rewards from institution
- ✚ Develop equal skill completely different level
- ✚ Highest challenges are going to be faced
- ✚ Social relations with the officers.

CHAPTER 4

COMPETENCIES AND SMART PLAN

4.1 Competencies Earned:

After completion of my internship at Daffodil programmable on-line Ltd (DOL). I actually have a downside very attentive to collect data or problems. Facing various operations sensible practicality. In the internship period I have pointed out some competency obtained. Those obtained I used to be trying to do with success. They acquired competence given the size of the square below:

- Hardware and software system problems, each on a workstation and shopper finish.
- Management Router, to watch and problem solving.
- Perform general system maintenance and support.
- Find a solution to the problem of secondary level.
- Develop data that makes sense to face the downside.
- Research the company web site gives us a weekly report.
- Improve my social temperament together.
- Real expertise in the operation.

4.2 Smart Plan:

During my internship period, the overall look is, Daffodil on-line Ltd (DOL) does not provide a satisfactory level of service. The general opinion of the Client does not emulate a high level of satisfaction. Overall service standards have to improve a lot to reduce the dissatisfaction of clients who obviously did not get the pleasure of the bad service. I have some recommendation or reasonable arrange a satisfactory level of service provided to clients. Some tips for the higher service or a smart plan are given below:

- Each router switch servers and users should backup documentation. As a result, users will be served as a moment that could be done.
- Increase the speed of the web.
- Reduction in value.
- Pointing skilled in IT or Business Management.
- Enrichment of human resources.
- Further research.
- Centralization and the installment plan accordingly.
- Understanding downside clients and steps are needed to unravel the problem.
- Customers should unbroken enlightened progress.

- Adds a new option for the service.
- Strong user security and avoiding false.
- New promotional advertising activities.
- Fast technical services to buyers.
- Door to door assortment bill by the organization.
- Meeting with the buyers for feedback.

4.3 Reflection:

Daffodil on-line Ltd (DOL) beginning its journey in the year 2002. During this period, they extended their portfolio of operations and improvements in step with customer recommendation and consider the demands of your time. They are working with several national organizations to come and internationally and achieve name. They make use of the technology of the most recent and improve services where necessary.

Reflection or consider our meeting, is that thanks to learning. Reflection gives the countries of North America to see our experience, change talks in light of our mistakes, continue to do what is productive, and develop or modify past learning from the perspective of recent knowledge. Reflection also gives us to make connections between courses or between works. In this way, we will try to expand some of our plans.

- Identify and interact with the network of UN agencies share your concerns.
- Decide where and understand your area.
- Creating a structure of government.
- Beta organize the task force.
- Discover / desire to uncover priority.
- Identifying simple channel through which you can reach people in your targeted audience.
- UN line agencies who charge for any organization.
- Identify the strengths and weaknesses of your organization.
- Determining the value to conclude the set up.
- Make association analysis system to assess the performance of workers.

CHAPTER 5

CONCLUSION AND FUTURE SCOPE

5.1 Discussion and Conclusions

An internship is a great opportunity for me to gain real experience of what I learned in my academic life. Working as an intern in surgery Daffodil Online Limited I have learned to dedicate to the job. Dedicated and mindset is the most important thing to work in a sophisticated environment. It is beyond mere formal matter. Or technical engineering company for most, the engineers have to get attached to the performance monitoring service process. 24x7 work has taught me how to deal with the technical staff and working holes in an efficient manner. Because there are limited opportunities for online services in many ways. I have accumulated a lot of experience in (Daffodil Online Limited) ISP during the whole internship period. I have learned many significant procedure from my supervisors and peers and perform several tasks at regular intervals throughout the entire period of my internship and finally get the confidence to handle the task themselves. This is a great opportunity to use the knowledge and skills I have acquired. I also learned how to handle critical errors and have new ideas. Doing this kind of work is really helpful for my career and I want to do this kind of work anymore.

5.2 Scope for Further Career

Career opportunities square size was obtained in some areas under the Linux system. The career opportunities in the Linux system square size mentioned is not solely platform Linux system, however, collectively covers many different fields such as Desktop Application Development, Kernel & Device Drivers Development currently supply open source software developers huge demand they open supply software and network engineer. Some companies are now migrating to Linux and open supply computer code. Corporations such as Google, Yahoo, Boeing, Lufthansa, wiki.org, some companies migrate to cost-effective open supply answers. There is a huge demand for professional networking in Linux, Mikrotik, etc.

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Intern Mamun

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