

LINUX SYSTEM AND NETWORK ADMINISTRATION

BY

MD.ABDUL AZIZ

ID: 142-15-4142

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

Supervised By

Dr. Fernaz Narin Nur
Assistant Professor
Department of CSE
Daffodil International University

Co-Supervised By

Ms. Nazmun Nessa Moon
Assistant Professor
Department of CSE
Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Internship titled “**Linux System and Network Administration**”, submitted by Md.Abdul Aziz ID: 142-15-4142 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 Bachelor of Science in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 6th May 2018.

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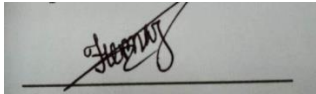
External Examiner

DECLARATION

I hereby declare that, this internship report is prepared by me, Md. Abdul Aziz to the department of Computer Science and Engineering, Daffodil International University. Under the supervision of **Dr. Fernaz Narin Nur, Assistant Professor, Department of CSE**, Daffodil International University.

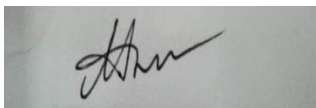
I also declare that neither this internship report nor any part of this internship report has been submitted elsewhere for award of any Degree or Diploma. I also declare that, I collect information from Daffodil Online Limited (DOL), Data Center and Internet Service Provider (ISP) Based Company, Books and Internet.

Supervised by:



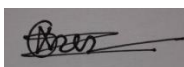
Dr. Fernaz Narin Nur
Assistant Professor
Department of CSE
Daffodil International University

Co-Supervised By:



Ms. Nazmun Nessa Moon
Assistant Professor
Department of CSE
Daffodil International University

Submitted by:



Md. Abdul Aziz
ID: -142-15-4142
Department of CSE
Daffodil International University

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I would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

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

ABSTRACT

Linux is, in simplest terms, an operating system. It is the software on a computer that enables applications and the computer operator to access the devices on the computer to perform desired functions. The operating system (OS) relays instructions from an application to, for instance, the computer's processor. The processor performs the instructed task then sends the results back to the application via the operating system. The medium or large size organizations need a server system to maintain their complex IT infrastructure. Peer-to-peer networks make problematic in the way of security and resource sharing for medium or large size organization. As the server is little expensive, here I try to design a cost effective server system of this type of organization. This system provides almost all the service need by an organization to maintain their infrastructure. This system increases reliability and network security for their network. The organization which wants to adopt this system can easily use this system for its reliability rather than other systems present in the market. This design is implemented using VMware Workstation 10.0 and CentOS 6.5. After implementation of all service, this system is tested in different stages and it works successfully as a prototype. In the future I need to improve centralize login system to get better performance for windows users.

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CHAPTER 1

Introduction

1.1 Introduction

The Daffodil international university has a nice opportunity that was the internship system. We get it on the last semester. I want to say that on this internship system I get a large amount of practical experience. It is my big challenge to prove me, in any time anywhere in any place. The full system support given by daffodil online ltd. 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

I am currently pursuing my Bachelors in Computer Science Engineering at Daffodil International University, I understand the importance of gaining practical knowledge which will complement the textbook knowledge and help a student gain a wider perspective of the subjects. The IT enabled organizations are highly needed server to better manager business-critical information, sharing file, protect data by making backup for employee and clients. When an organization has 9 to 10 users in his networks then he need really consider investing a network server. Using windows it is really expensive to setup this type of system. So I use a free Operating System CentOS to setup this system to make this cost effective. Moreover Linux has own secured Kernel to protect it from Virus so we not need to buy antivirus to protect our system. For this reason I am using Linux to implement this system.

1.3 Internship Objectives

Ultimate objective of my internship program is to prepare myself as an eligible one in the competitive job market. So this is very effective of skill development. I would like to gather some extraordinary quality to provide myself as skilled one.

The internship in computer science is designed to provide work experience while students are still in school, to coordinate job experience with academic training, and to help student to make the transition from classroom to job. Self motivated and self-directed a desire to work.

1.4 Introduction to the Company

Daffodil Online Ltd. prides itself as one of the leading nationwide Internet Service Provider (ISP) in Bangladesh. They are the most experienced and oldest company in the ICT field where they are basic business ethics is Long Term Relationship with they are customers. As we look at the growth over the decade since our inception, they are extremely proud of what they have achieved, and even more excited about they are outlook for an equally promising future.

It may please you to know that they started they are operation in the year **2002**. During the past years, they extended they are operation and service portfolio according to the customer's recommendation and considering demands of time. They worked with many national projects and international organizations and achieved the reputation. They are using the latest technologies and upgrading the services wherever it is required. They are Corporate Network Solution department is capable to provide state-of-art network and telecommunication solutions with a highly efficient technical expertise group.

1.5 Report Layout

In the chapter (1) I have described objective of internship, Motivation of internship and Introduction to the company.

In the chapter (2) I have described the methodology of my internship. And this chapter gives the information about where the internship has been attached to undertake this program. Also included about how did perform the internship works, about the company, what are the IT service offered in DOL and what are the roles of in jobs market of Linux.

In the chapter (3) I have described about daily task and activities, Events and Activities and Challenges.

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

In the chapter (5) I have described is Conclusion and Future Scope. I discuss Future Scopes of Linux and write conclusion.

CHAPTER 2

Organization

2.1 Introduction

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

The centers Corporate Network Solution department is capable of providing state-of-art network and telecommunication solutions with a group of highly efficient technical experts. DOL has a very strong professional engineering and management team certified and associated with SUN, Cisco, Microsoft, Linux, and Oracle and actively involved with world leading computing associations including IEEE, ACM, ACS, BCS, and PMI. Its Corporate Social Responsibility ethos strengthens the sense of responsibility on Community, Workstation, Location and Market place. As a Group concern, DOL promotes 3 major platforms e.g., education, nation-building and environment, through its programs and services [1].

2.2 Product and Market Situation

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 the are customers. As they look at the growth over the decade since our inception, they are extremely proud of what we have achieved, and even more excited about our outlook for an equally promising future. Daffodil Online Ltd also provides different IT Services and Professional Training services. These are given below.

➤ IT Services

- Corporate Internet Solution
- Security solution.
- Domain registration and web hosting.
- Website development.
- Open source application solution.

- Internet Service Provider
- State of the Art Data Centers.
- Hi speed Wi-Fi Zone.
- Data Connectivity, Data center& Co-Location.
- Bulk SMS Service.
- Proxy & DNS Server solution, Mail Server Solution.
- And All computer accessories
- Professional course and trainings:

➤ **Professional Training Services**

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

2.3 Target Group

The company's customer base includes all consumers and all small- to medium-sized businesses, including start-ups. The company plans to concentrate on SOHO clients, as these are perfect targets for our new high-speed offerings, and hold the greatest growth potential for the company. Web Solutions feels that these market segments have special pricing and service needs, and make more dedicated, reliable customers.

2.4 SWOT Analysis

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

➤ **Strengths:**

- ✓ Communication between people separated by distance (at home and within the workplace)
- ✓ Working from home with ease
- ✓ Setting up an online business
- ✓ Gathering information (valuable asset in business)

➤ **Weaknesses:**

- ✓ New entrants underestimate levels of expertise needed to survive the market
- ✓ Large sums of money required to set up businesses
- ✓ Competition for small resellers
- ✓ Numerous pricing tariffs and service options

➤ **Opportunities:**

- ✓ Age structure of the population changing
- ✓ Number of households in the UK increasing
- ✓ Introduction of simpler tariffs
- ✓ Revision of regulatory framework

➤ **Threats:**

- ✓ The Economic Crisis - Householders less likely to increase their Broadband subscriptions Stock Market's lack of confidence in the digital-communications market.
- ✓ It remains to be seen how far consumers can be persuaded to embrace Internet access.

2.5 Organizational Structure

Organizational Structure of Daffodil Online Ltd. Shown below in fig 2.5:



Figure 2.5: Organizational structure of Daffodil Online Limited

CHAPTER 3

Tasks, Projects and Activities

3.1 Daily Task and Activities

- Month - 1: In the first month of internship on daffodil online limited I have learned and performed the following tasks:
 - Learning & understanding About Network Components.
 - Learning & understanding Basics of Linux.
 - Understanding Linux HDD Partitions.
 - Learning & understanding Linux Run Level.
 - Linux Installation.
- Month - 2: In the second month of internship on daffodil online limited I have learned and performed the following tasks:
 - Basic Centos Commands.
 - Linux User and Password Management.
 - Know About logged in users.
 - File and Directory Accessing.
 - To Copy and Move File and Directories.
 - Compressed and Decompressed File and Directories.
 - Mount Unmount Drive.
- Month – 3: In the third month of internship on daffodil online limited I have learned and performed the following tasks:
 - File and Directory Permissions.
 - Install, Update and Remove Package Using YUM.
 - Concept of IP Addressing.
 - Configuring IP Address in Centos.
- Month – 4: The last month of internship on daffodil online limited I have learned and performed the following tasks:
 - Learning, understanding and configuring FTP Server.
 - Learning, understanding and configuring WEB Server.
 - Learning, understanding and configuring SAMBA Server.

3.2 Events and Activities

- Monitor and Maintain Computer Systems and Network.
- Setting up user accounts, permissions and passwords.
- Troubleshooting servers and routers.
- Troubleshooting local area networks and switches.
- Fixing network faults.
- Technical support for people using the network.
- Day to day admin and monitoring of network use.
- Suggesting IT solutions to business problems.
- Client Support over the phone or Physical move to client Ends.

3.3 Project Task and Activities

Centos Install

➤ 3.4 Creating Linux Partition

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

- **Root Partition: /**

A Root Partition there is where “/” The root directory is located all files (except in /boot) are on the root partition. Minimum 5 GB HDD Space Required.

- **Boot Partition: /boot**

The partition boot (100 MB): the partition mounted on /boot/ contains the operating system kernel (which allows your system to boot Linux), along with files used during the bootstrap process. Due to limitations, creating a native ext3 partition to hold these files is required. For most users, a 100 MB boot partition is sufficient.

- **Swap Partition: swap**

The partitions swap is used to support virtual memory. In other words, data is written to a swap partition when there is not enough RAM to store the data your system is processing. Partition Swap should equal 2x physical RAM for up to 2 GB of physical RAM, and then an additional 1x physical RAM for any amount above 2 GB, but it cannot less than 32 MB [2].

3.5 Linux Run-Level Used by Centos

init 0 = Shut Down.

init 1 = Single User Mode.

init 2 = Multi User Mode.

init 3 = Full Multi User Mode.

init 4 = Unused.

init 5 = X-Window (GUI Mode)

init 6 = Reboot.

3.6 The Basic Command of Linux Centos

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

Reboot = reboot or init 6.

Logout = log the current user off the system.

Display a calendar = Cal, cal 2017, cal 28 1993

Display or change date or time = date.

Present Working Directory = pwd.

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

Create a directory = mkdir rimon1 (directory name).

List information about file = ls rimon

Change Working Directory = cd /root/Desktop (directory path).

3.7 User Create and Password Management

Adding a user = useraddrimon(username).

Set a Password to New User = passwdrimon(username).

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

Delete a user = userdelrimon(username).

Delete a user with home directory = userdel -r helal(username).

3.8 To Know About the Logged In User

w

who

who am i

3.9 To Copy or Move a File

Copy = cp filename destination example: cp -r /daffodil/root/desktop

Move = mv filename destination example: mv /root/desktop/class1

3.10 Vi Editor

To Edit A File = vi filename(file name)

To insert Text = press i

To delete the character = press dd

To copy line = press esc key and type 5yy to copy 5 line.

To paste = press p for paste.

To set line number = :set nu

To delete 3line number = 3dd

Search something = /abc for search abc

For Go top of the lines = :0

For Go bottom of the lines = :\$

For Go Specific Line = :50 to go 50 no line.

To save the document = :wq! {save the current changes and exits vi editor}

= :w! {save the current changes but does not exist vi editor}

= :q! {exits vi editor without saving any changes}

3.11 Install/Update/Remove Packages in Centos

- Install a package using yum install

Yum install (package name)

e.g. yum install vim -y

- Uninstall a package using yum

yum remove (package name)

e.g yum remove samba-y

- Update a package using yum

yum update (package name)

e.g yum update firefox

- Search a package using yum

yum search (package name)

e.g yum search firefox

- Display Additional Information about a Package

yum info (package name)

e.g yum info firefox

- View All Available Package

yum list | less

- View Already Installed Package

yum list installed

- List of all available software group

yum grouplist

- Install a specific soft group

yum groupinstalldnsserver

3.12 How to Add/Change/Delete and Display IP Address In Centos

To see ip address: ifconfig or ifconfig eth0 figure 3.1 shown below in ip address

```

[root@RimanulIslam ~]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:91:3E:11
          inet addr:192.168.0.225  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe91:3e11/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:46 errors:0 dropped:0 overruns:0 frame:0
          TX packets:55 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:6038 (5.8 KiB)  TX bytes:7193 (7.0 KiB)
          Interrupt:19 Base address:0x2000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)

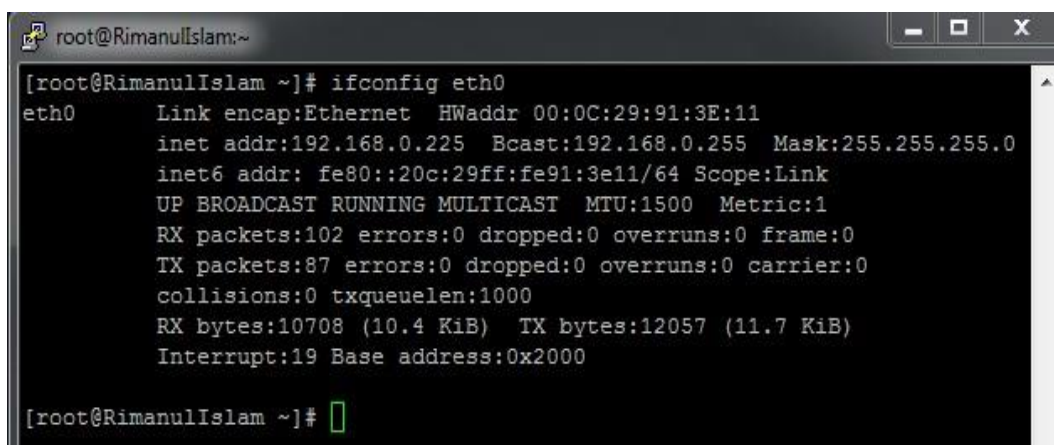
[root@RimanulIslam ~]#

```

Figure3.1: IP address in centos

- permanently change the ip-address?
- ifconfig eth0 192.168.0.255/24

IP address and Mac address in command ifconfig eth0 by shown below figure 3.2

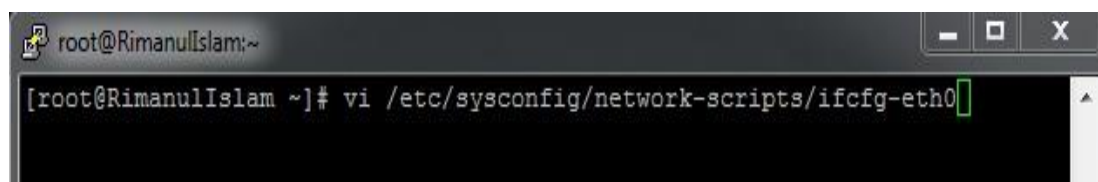


```
root@RimanulIslam:~  
[root@RimanulIslam ~]# ifconfig eth0  
eth0      Link encap:Ethernet  HWaddr 00:0C:29:91:3E:11  
          inet addr:192.168.0.225  Bcast:192.168.0.255  Mask:255.255.255.0  
          inet6 addr: fe80::20c:29ff:fe91:3e11/64 Scope:Link  
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1  
          RX packets:102 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:87 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:10708 (10.4 KiB)  TX bytes:12057 (11.7 KiB)  
          Interrupt:19 Base address:0x2000  
  
[root@RimanulIslam ~]#
```

Figure3.2: Address in eth0 port

```
DEVICE=eth0  
BOOTPROTO=static  
IPADDR=your_IP  
NETMASK=your_network_mask  
HWADDR=NIC_MAC_address  
NM_CONTROLLED=no  
ONBOOT=yes  
TYPE=Ethernet  
IPV6INIT=no
```

Setup IP Address permanently shown below by figure 3.3



```
root@RimanulIslam:~  
[root@RimanulIslam ~]# vi /etc/sysconfig/network-scripts/ifcfg-eth0
```

Figure3.3: Setup ip address in eth0 permanently

Edit IP address: vi/etc/sysconfig/network-scripts/ifctg-eth0 Shown below figure3.4

FTP Server

FTP (File Transfer Protocol)

The File Transfer Protocol (FTP) is a standard network protocol used for the transfer of computer files between a client and server on a computer network. FTP is built on client-server model architecture and uses separate control and data connections between the client and the server. Many casual Internet users expect to download directly from their web browser with https. FTP is still used to support legacy applications and workflows with very specific needs. If you have a choice of what protocol to use, consider exploring the more modern options. When you do need FTP, however, vsftpd (very secure FTP daemon) is an excellent choice. Optimized for security, performance, and stability, vsftpd offers strong protection against many security problems found in other FTP servers and is the default for many Linux distributions. We'll show you how to configure vsftpd to allow a user to upload files to his home directory using FTP with login identify secured by SSL/TLS [3].

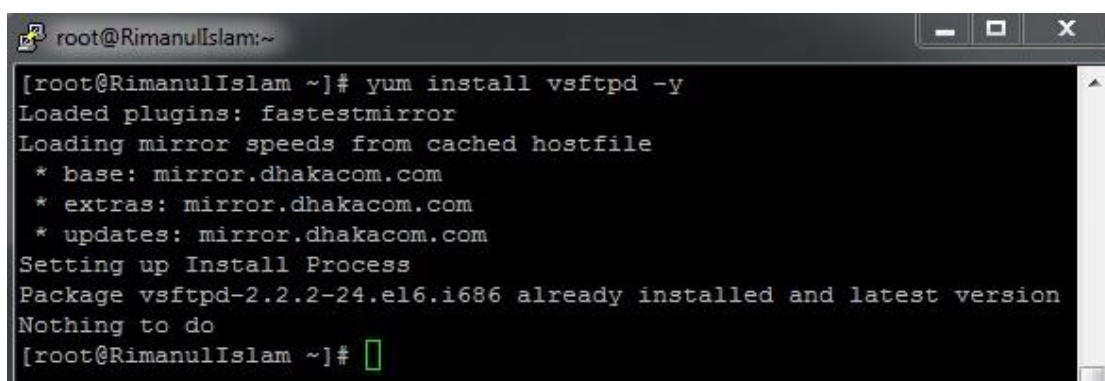
Configuring FTP Server Step by Step

Package Name: VSFTPD

Default Port: 20 (To transfer the data),

21 (To make control connection).

Step 1: Install the package vsftpd by using `#yum install vsftpd -y`

A terminal window screenshot showing the command `yum install vsftpd -y` being executed. The output shows that the package is already installed and the latest version is present. The terminal text is as follows:

```
root@RimanulIslam:~  
[root@RimanulIslam ~]# yum install vsftpd -y  
Loaded plugins: fastestmirror  
Loading mirror speeds from cached hostfile  
* base: mirror.dhakacom.com  
* extras: mirror.dhakacom.com  
* updates: mirror.dhakacom.com  
Setting up Install Process  
Package vsftpd-2.2.2-24.el6.i686 already installed and latest version  
Nothing to do  
[root@RimanulIslam ~]#
```

Figure3.5: Installing the package vsftpd

```
$ cat <<EOF | sudo tee /etc/vsftpd/vsftpd.conf
```



```
listen=YES
local_enable=YES
xferlog_enable=YES
connect_from_port_20=YES
pam_service_name=vsftpd

# Enable upload by local user.
write_enable=YES

# Enable read by anonymous user (without username and password).
anonymous_enable=YES
anon_root=/var/ftp
no_anon_password=YES
EOF
```

Step 2: Now Edit the Configuration file by using `#vim /etc/vsftpd/vsftpd.conf`

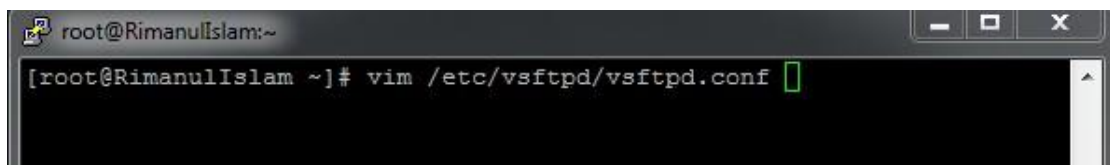
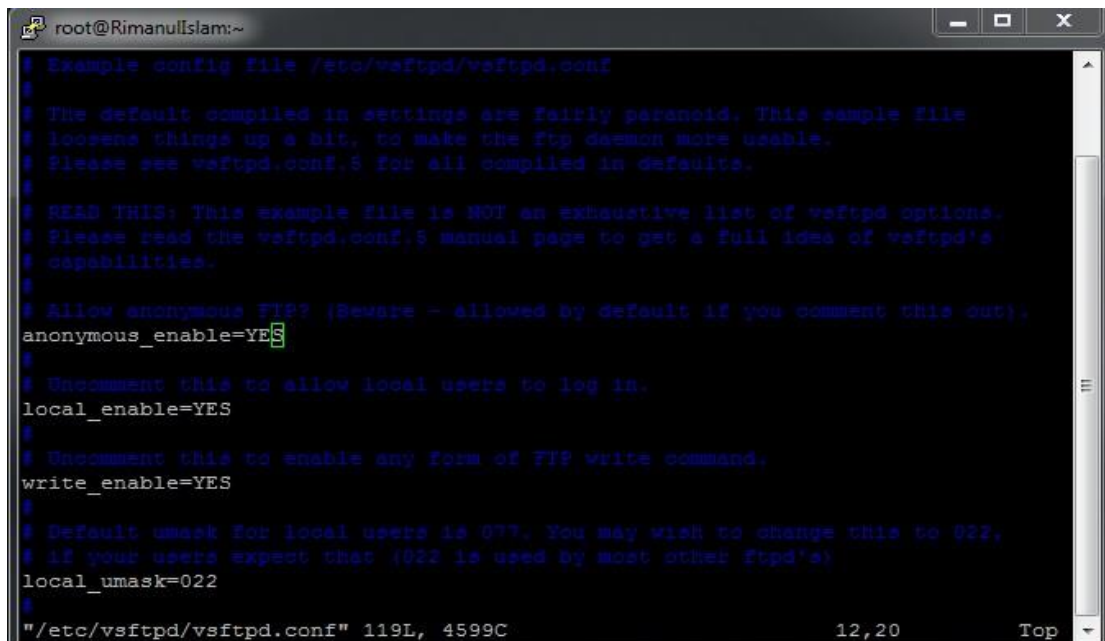


Figure3.6: Configuration file location

How to Show Configuration File Location

Vim /etc/vsftpd/vsftpd.conf

Step 3: Go the line 12 and change the line anonymous Enable=Yes to No



```
root@RimanulIslam:~  
# Example config file /etc/vsftpd/vsftpd.conf  
#  
# The default compiled in settings are fairly paranoid. This sample file  
# loosens things up a bit, to make the ftp daemon more usable.  
# Please see vsftpd.conf.5 for all compiled in defaults.  
#  
# READ THIS: This example file is NOT an exhaustive list of vsftpd options.  
# Please read the vsftpd.conf.5 manual page to get a full idea of vsftpd's  
# capabilities.  
#  
# Allow anonymous FTP? (Beware - allowed by default if you comment this out):  
anonymous_enable=YES  
#  
# Uncomment this to allow local users to log in.  
local_enable=YES  
#  
# Uncomment this to enable any form of FTP write command.  
write_enable=YES  
#  
# Default umask for local users is 077. You may wish to change this to 022,  
# if your users expect that (022 is used by most other ftpd's)  
local_umask=022  
#  
"/etc/vsftpd/vsftpd.conf" 119L, 4599C 12,20 Top
```

Figure3.7: Change the line anonymous Enable

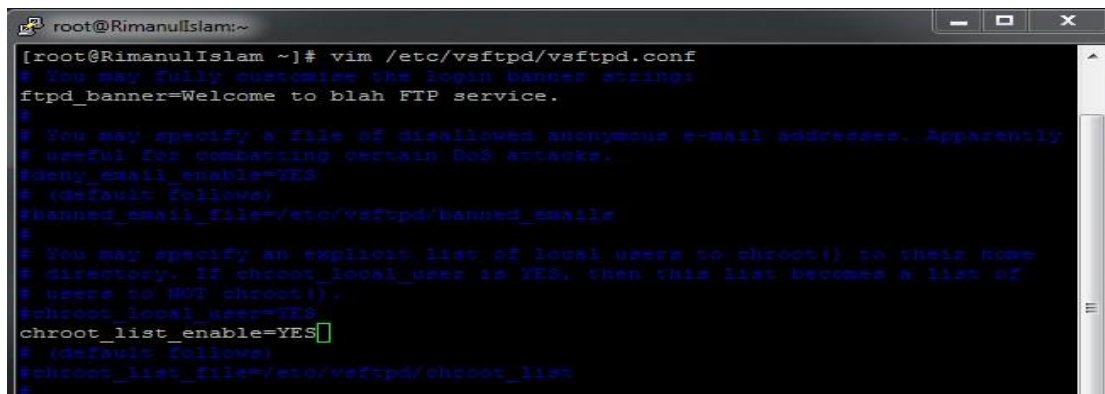
I want to set up a FTP server on Centos OS 14.04 I have full access to the server and any tutorial I find online doesn't tell me exactly how to access it.

I am using VSFTPD because of many suggestions.

However it still doesn't quite answer the question of using an FTP for server access, as in it should allow anonymous people to download from it.

Any help would be appreciated

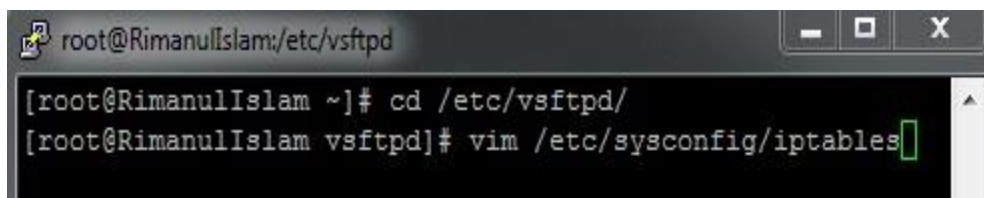
Step 4: Go to line 85 and 96 active the line by deleting #



```
root@RimanulIslam:~  
[root@RimanulIslam ~]# vim /etc/vsftpd/vsftpd.conf  
# You may fully customize the login banner strings:  
ftpd_banner=Welcome to blah FTP service.  
#  
# You may specify a file of disallowed anonymous e-mail addresses. Apparently  
# useful for combatting certain DoS attacks.  
#deny_email_enable=YES  
# (default follows)  
#banned_email_file=/etc/vsftpd/banned_emails  
#  
# You may specify an explicit list of local users to chroot() to their home  
# directory. If chroot_local_user is YES, then this list becomes a list of  
# users to NOT chroot().  
#chroot_local_user=YES  
chroot_list_enable=YES  
# (default follows)  
#chroot_list_file=/etc/vsftpd/chroot_list
```

Figure3.8: Activating the line 85 and 96.

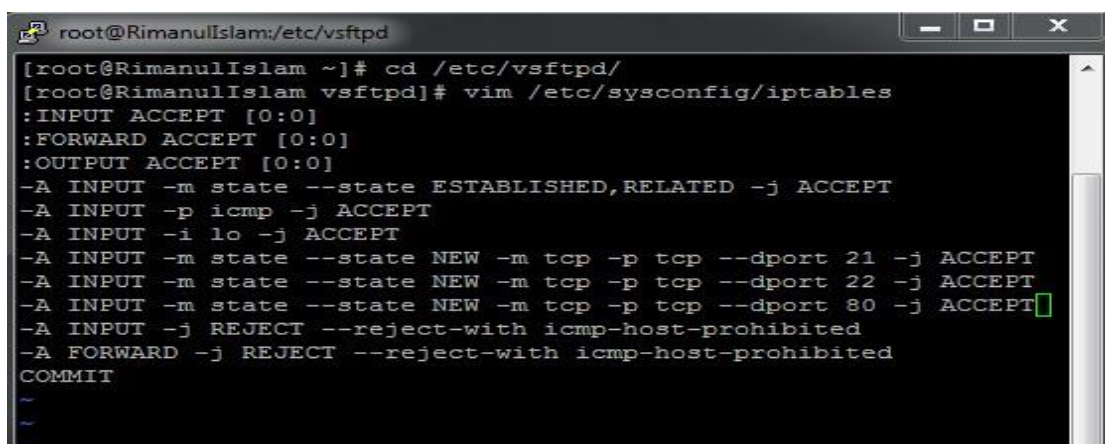
Step 5: Now Edit the Configuration file by using #vim /etc/sysconfig/iptables



```
root@RimanulIslam:/etc/vsftpd  
[root@RimanulIslam ~]# cd /etc/vsftpd/  
[root@RimanulIslam vsftpd]# vim /etc/sysconfig/iptables
```

Figure3.9: Configuration file location.

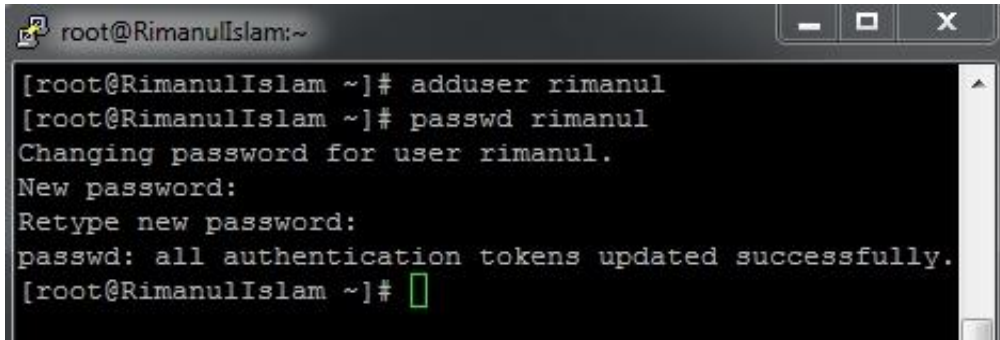
Step 6: Now the Configuration and write those things.



```
root@RimanulIslam:/etc/vsftpd  
[root@RimanulIslam ~]# cd /etc/vsftpd/  
[root@RimanulIslam vsftpd]# vim /etc/sysconfig/iptables  
:INPUT ACCEPT [0:0]  
:FORWARD ACCEPT [0:0]  
:OUTPUT ACCEPT [0:0]  
-A INPUT -m state --state ESTABLISHED,RELATED -j ACCEPT  
-A INPUT -p icmp -j ACCEPT  
-A INPUT -i lo -j ACCEPT  
-A INPUT -m state --state NEW -m tcp -p tcp --dport 21 -j ACCEPT  
-A INPUT -m state --state NEW -m tcp -p tcp --dport 22 -j ACCEPT  
-A INPUT -m state --state NEW -m tcp -p tcp --dport 80 -j ACCEPT  
-A INPUT -j REJECT --reject-with icmp-host-prohibited  
-A FORWARD -j REJECT --reject-with icmp-host-prohibited  
COMMIT  
~  
~  
~
```

Figure3.10: Editing the Configuration.

Step 7: Now I have to write **#adduser** for FTP user and **#passwd** for password.



```
root@RimanulIslam:~  
[root@RimanulIslam ~]# adduser rimanul  
[root@RimanulIslam ~]# passwd rimanul  
Changing password for user rimanul.  
New password:  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[root@RimanulIslam ~]#
```

Figure3.11: Creating Ftp User and Password.

Step 8: Now I have to open browser and given **ftp://192.168.0.225** and show this page. Here I have write user name and password.

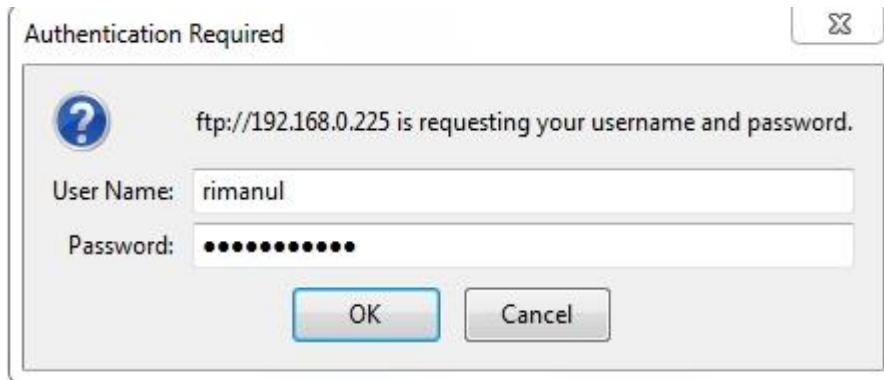


Figure3.12: Screen print of a Name and Password.

Step 9: At last I have to press ok and show this result.



Figure3.13: Screen print of a result.

WEB SERVER

The Apache HTTP server is a most popular web server across the entire World Wide Web. Apache server support Perl, Python, Tcl and PHP. Most popular authentication module like: cryptography (mod_ssl), proxy/gateway server (mod_proxy), URL rewriting mod_rewrite, filtering support (mod_include and mod_ext_filter) etc are supported by Apache HTTP server.

Virtual Hosts

Virtual hosts can serve more than one domain from on same Apache server. There are mainly two type of Apache Virtual host configuration-

1. IP based virtual host
2. Name based virtual host

IP Based Virtual Host-

In this type of configuration two websites (with different IP address) on the server have configured with two different IP address. The disadvantages of this technique that server needs a different IP address for every web sites. This increase administrative overhead.

Name Based Virtual Host-

Enables the virtual server to respond one or more alternate host names when used with name based virtual host. This allows a web-server hosting multiple sites using only one IP address to deliver the requested website [4].

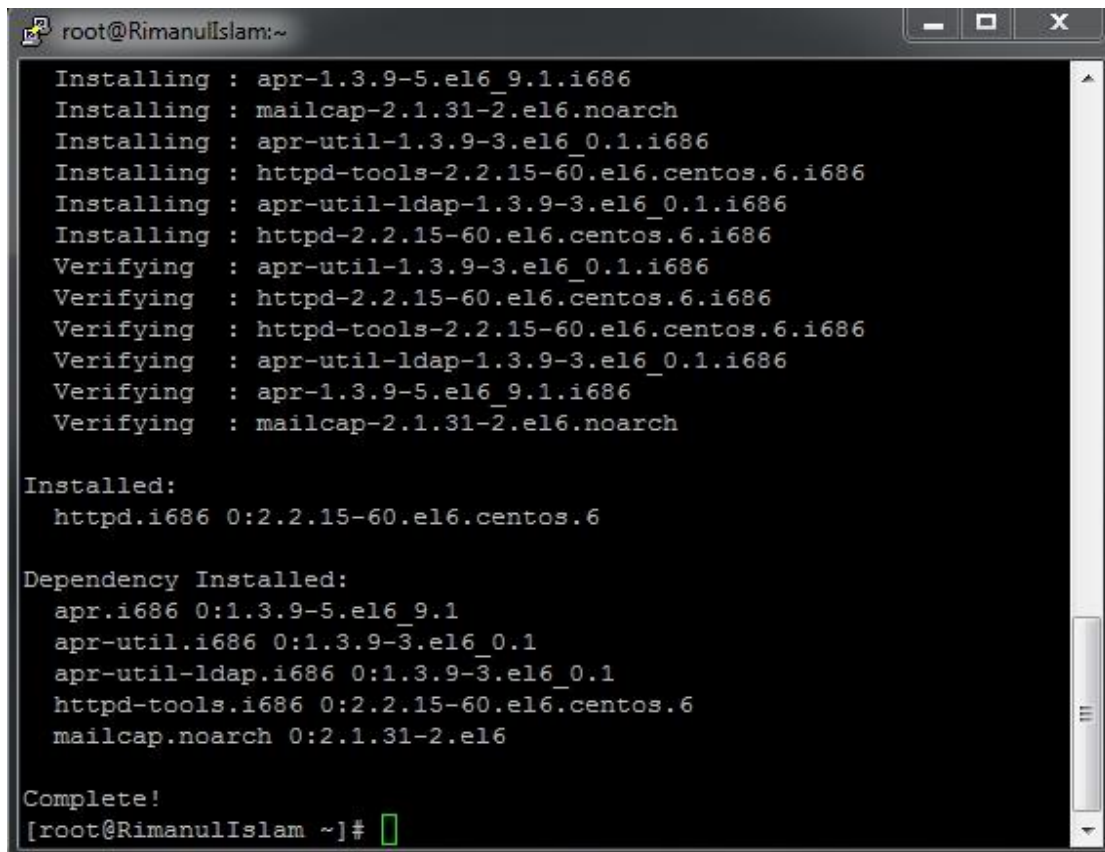
Configuring Web Server Step By Step

Package Name: **httpd**

Default http port: 80

Default https port: 443

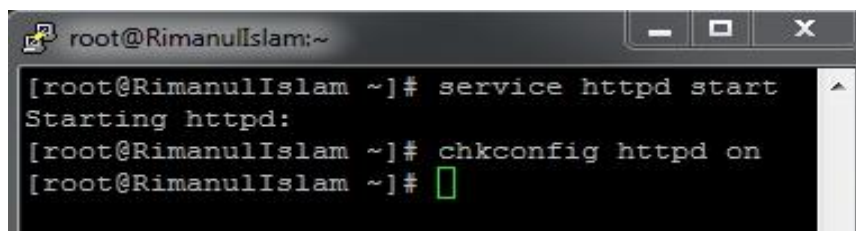
Step 1: At first install a httpd package by yum install- `#yum install httpd -y`



```
root@RimanulIslam:~  
Installing : apr-1.3.9-5.el6_9.1.i686  
Installing : mailcap-2.1.31-2.el6.noarch  
Installing : apr-util-1.3.9-3.el6_0.1.i686  
Installing : httpd-tools-2.2.15-60.el6.centos.6.i686  
Installing : apr-util-ldap-1.3.9-3.el6_0.1.i686  
Installing : httpd-2.2.15-60.el6.centos.6.i686  
Verifying  : apr-util-1.3.9-3.el6_0.1.i686  
Verifying  : httpd-2.2.15-60.el6.centos.6.i686  
Verifying  : httpd-tools-2.2.15-60.el6.centos.6.i686  
Verifying  : apr-util-ldap-1.3.9-3.el6_0.1.i686  
Verifying  : apr-1.3.9-5.el6_9.1.i686  
Verifying  : mailcap-2.1.31-2.el6.noarch  
  
Installed:  
  httpd.i686 0:2.2.15-60.el6.centos.6  
  
Dependency Installed:  
  apr.i686 0:1.3.9-5.el6_9.1  
  apr-util.i686 0:1.3.9-3.el6_0.1  
  apr-util-ldap.i686 0:1.3.9-3.el6_0.1  
  httpd-tools.i686 0:2.2.15-60.el6.centos.6  
  mailcap.noarch 0:2.1.31-2.el6  
  
Complete!  
[root@RimanulIslam ~]#
```

Figure3.14: Screen print of a yum installation

Step 2: Now command of `#service httpd start` Then `#chkconfig httpd on`



```
root@RimanulIslam:~  
[root@RimanulIslam ~]# service httpd start  
Starting httpd:  
[root@RimanulIslam ~]# chkconfig httpd on  
[root@RimanulIslam ~]#
```

Figure3.15: Shown a command.

Step 3: Now default location and this command is `#cd /var/www/html` then creating a Static Site command is `#vim index.html`

Figure3.16: Static Site Creating.

Step 4: Now use file location this command is `#cd /etc/httpd/conf`

Then vim configures file location and this command is `#vim httpd.conf`.

Figure3.17: Screen Print of a vim configuration.

Step 5: At last open browser and write **http://192.168.0.225** and show my web page.

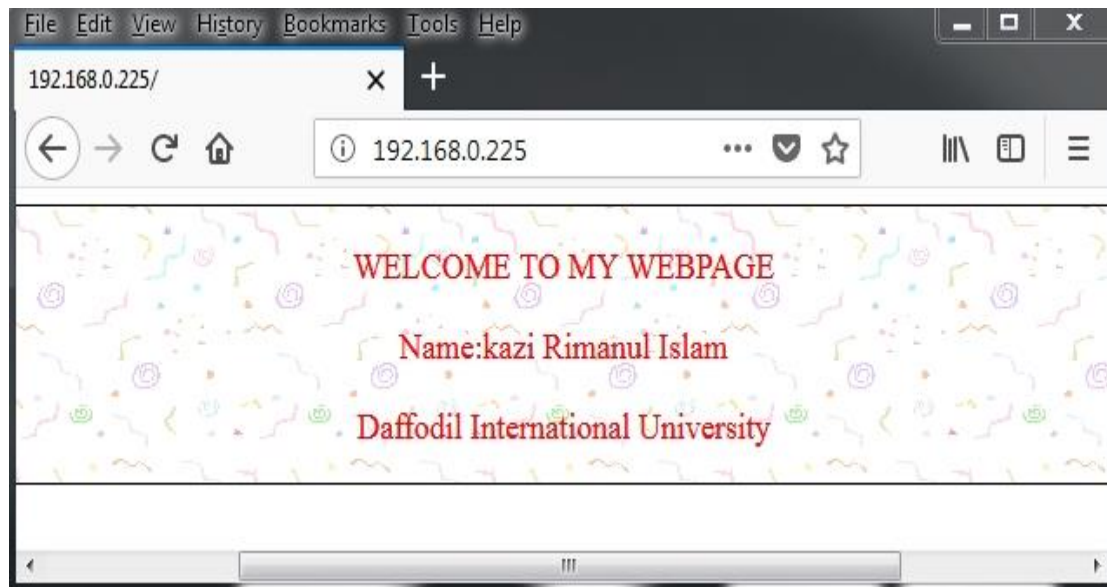


Figure3.18: Web page result

SAMBA SERVER

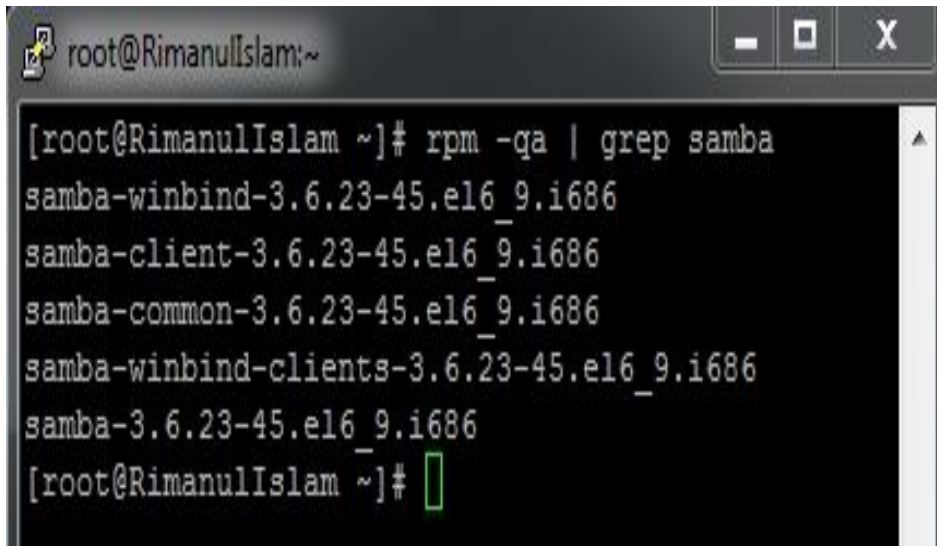
Samba is the standard windows interoperability suite of programs for Linux and UNIX. Provides file and print sharing for windows clients from Linux servers. By supporting this protocol, Samba enables computers running UNIX to get in on the action, communicating with the same networking protocol as Microsoft Windows and appearing as another Windows system on the network from the perspective of a Windows client [5].

Why SAMBA?

In this system I implement SAMABA server to share printer and other important files to all clients like Windows, Linux& UNIX. I share a directory using SAMBA and add samba password to it. Using this directory any authorized user can share their data or print to other authorized users.

Configuring Samba Server Step By Step

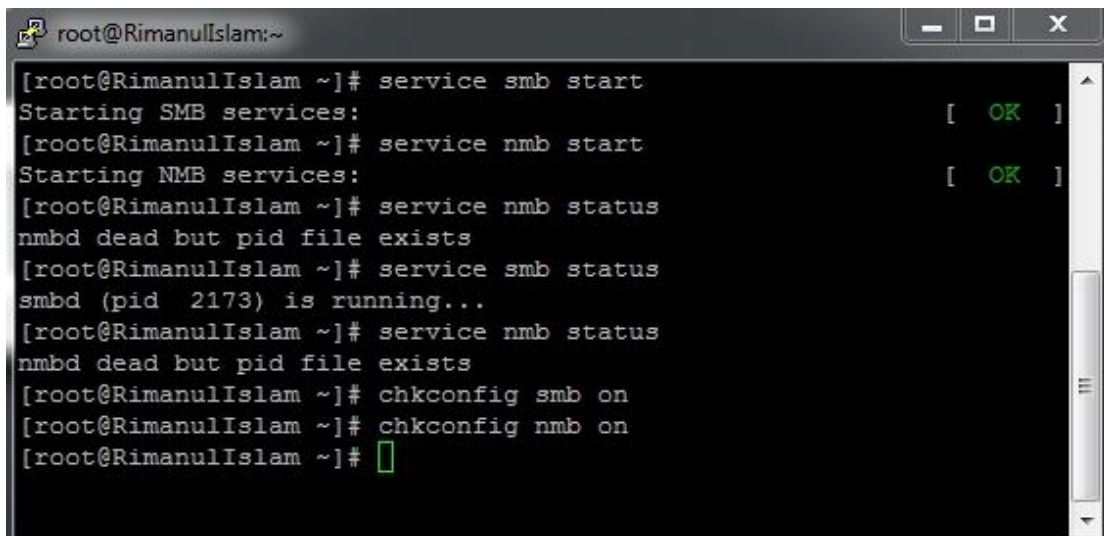
Step 1: At first check ping google.com then installing package `#yum insall samba Samba client`. Now package check this command `#rpm -qa | grep samba`.



```
root@RimanulIslam:~  
[root@RimanulIslam ~]# rpm -qa | grep samba  
samba-winbind-3.6.23-45.el6_9.i686  
samba-client-3.6.23-45.el6_9.i686  
samba-common-3.6.23-45.el6_9.i686  
samba-winbind-clients-3.6.23-45.el6_9.i686  
samba-3.6.23-45.el6_9.i686  
[root@RimanulIslam ~]#
```

Figure3.19: Installing samba package.

Step 2: Now packsge start `#service smb start #service nmb start` then status check `#service smb status #service nmb status` then permanently on `#chkconfig smb on #chkconfig nmb on`.

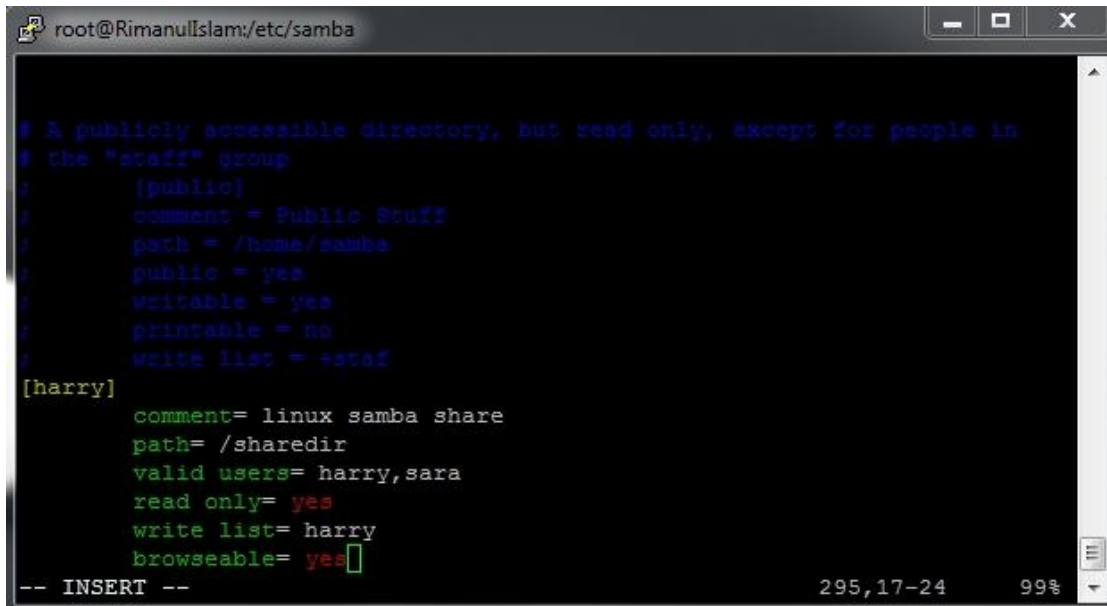


```
root@RimanulIslam:~  
[root@RimanulIslam ~]# service smb start  
Starting SMB services: [ OK ]  
[root@RimanulIslam ~]# service nmb start  
Starting NMB services: [ OK ]  
[root@RimanulIslam ~]# service nmb status  
nmbd dead but pid file exists  
[root@RimanulIslam ~]# service smb status  
smbd (pid 2173) is running..  
[root@RimanulIslam ~]# service nmb status  
nmbd dead but pid file exists  
[root@RimanulIslam ~]# chkconfig smb on  
[root@RimanulIslam ~]# chkconfig nmb on  
[root@RimanulIslam ~]#
```

Figure3.20: Screen print of configuration result.

Then Shift+G go to last line write the following command:

[RIMON] then path= /sharedir then valid users=harry,sara then read only=yes



```
root@RimanulIslam:/etc/samba

# A publicly accessible directory, but read only, except for people in
# the "staff" group
#
#   [public]
#   comment = Public Stuff
#   path = /home/samba
#   public = yes
#   writable = yes
#   printable = no
#   write list = +staff
[harry]
comment= linux samba share
path= /sharedir
valid users= harry,sara
read only= yes
write list= harry
browseable= yes
```

Figure3.23: Edit the smb.conf.

Step 5: Now **#service smb restart** then **#service nmb restart** and then go to my Computer clicks Map Network Drive. Then IP address then click to finish.

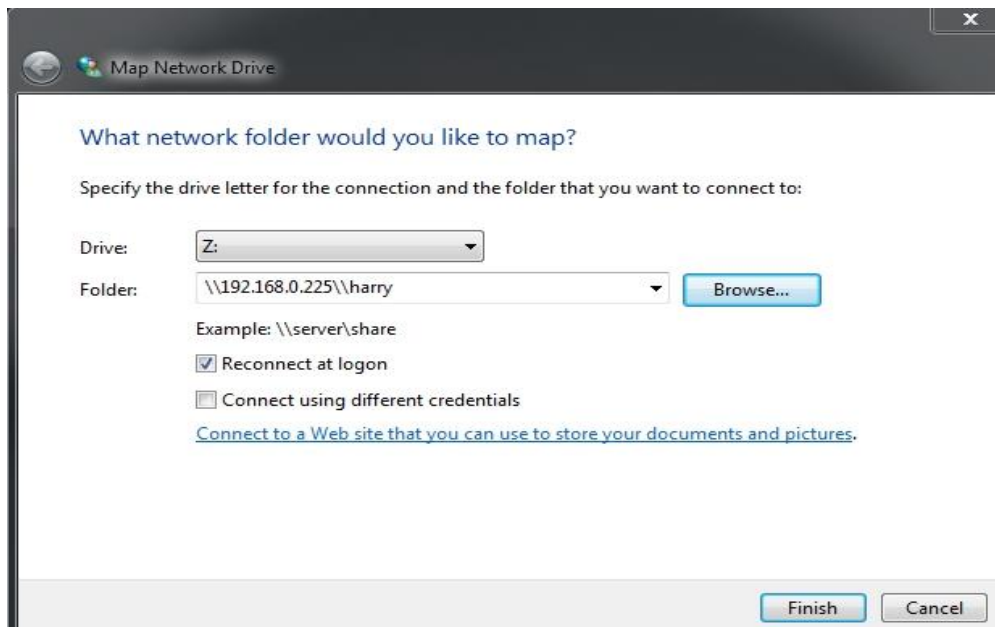


Figure3.24: Screen print of Map Network Drive.

Then show this windows security then write user name and password.

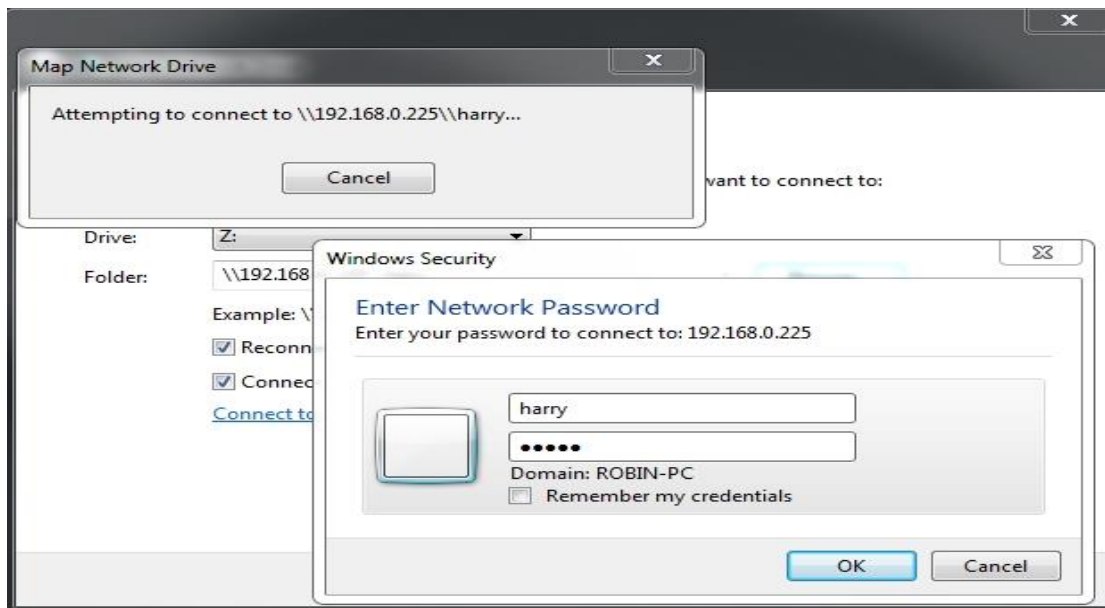


Figure3.25: Screen print of windows security.

Step 6: Finally completed this step and show the samba driver

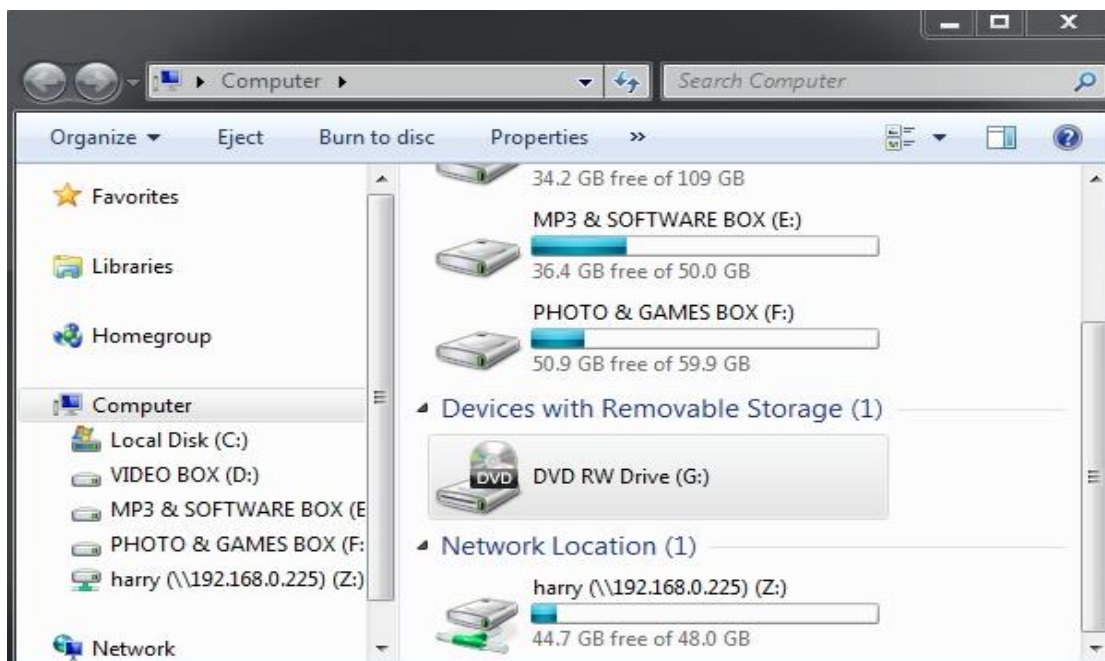


Figure3.26: Screen print of samba Drive.

Nagios Server

Nagios is a free and open source computer software application that monitors system networks and entire IT infrastructure. Nagios monitors entire infrastructure to ensure systems servers, switches, applications, services and business processes are functioning properly.

Configuring Nagios server Step by Step

Step 1: At first check ping google.com then install the package #yum install httpd php gcc glibc glibc-common gd gd-devel make net-snmp -y

```
[root@nagios ~]# yum install httpd php gcc glibc glibc-common gd gd-devel make net-snmp -y
Loaded plugins: fastestmirror
Setting up Install Process
Loading mirror speeds from cached hostfile
 * base: centos.excellmedia.net
 * extras: centos.excellmedia.net
 * updates: centos.excellmedia.net
base                                                    | 3.7 kB    00:00
extras                                                  | 3.4 kB    00:00
updates                                                 | 3.4 kB    00:00
Package httpd-2.2.15-60.el6.centos.6.x86_64 already installed and latest version
Package php-5.3.3-49.el6.x86_64 already installed and latest version
Package gcc-4.4.7-18.el6.x86_64 already installed and latest version
Package glibc-2.12-1.209.el6_9.2.x86_64 already installed and latest version
Package glibc-common-2.12-1.209.el6_9.2.x86_64 already installed and latest version
Package gd-2.0.35-11.el6.x86_64 already installed and latest version
Package gd-devel-2.0.35-11.el6.x86_64 already installed and latest version
Package 1:make-3.81-23.el6.x86_64 already installed and latest version
Package 1:net-snmp-5.5-60.el6.x86_64 already installed and latest version
Nothing to do
[root@nagios ~]#
```

Figure3.27: Installing nagios package.

Step 2: Then add a user #useradd nagios and passwd nagios.Then groupadd nagcmd

```
[root@nagios ~]# useradd nagios
useradd: user 'nagios' already exists
[root@nagios ~]# passwd nagios
Changing password for user nagios.
New password:
BAD PASSWORD: it is based on a dictionary word
BAD PASSWORD: is too simple
Retype new password:
passwd: all authentication tokens updated successfully.
[root@nagios ~]#
```

Figure3.28: Add a user and group.

Step 3: Then `#usermod -G nagcmd nagios` and `usermod -G nagcmd apache`.this configure is by default nagios and apache under the group.then check the configure `#tail -2 /etc/group`.

Step 4: Then `yum install wget -y` and `#tar -xvf nagios-4.2.0.tar.gz` then `cd nagios-4.2.0` then `#!/configure --with-command-group=nagcmd` then `make all` then `yum install unzip -y` then `make install`.

```

- Read the documentation on the Nagios Library at:
  https://library.nagios.com

before you post a question to one of the mailing lists.
Also make sure to include pertinent information that could
help others help you.  This might include:

- What version of Nagios you are using
- What version of the plugins you are using
- Relevant snippets from your config files
- Relevant error messages from the Nagios log file

For more information on obtaining support for Nagios, visit:

  https://support.nagios.com

*****

Enjoy.

[root@nagios nagios-4.2.0]# make install █

```

Figure 3.29: Install wget and tar nagios-4.2.0

Step 5: Then `make install-init`, `make install-commandmode`, `make install-config`, `make install-webconf` then `server` for password create `#htpasswd -s -c /usr/local/nagios/etc/htpasswd.users nagiosadmin`.then `#service httpd restart`.

```

*** Nagios/Apache conf file installed ***

[root@nagios nagios-4.2.0]# htpasswd -s -c /usr/local/nagios/etc/htpasswd
New password:
Re-type new password:
htpasswd: password verification error
[root@nagios nagios-4.2.0]# htpasswd -s -c /usr/local/nagios/etc/htpasswd
New password:
Re-type new password:
Adding password for user nagiosadmin
[root@nagios nagios-4.2.0]# service httpd restart
Stopping httpd:                               [ OK ]
Starting httpd:                               [ OK ]

```

Figure3.30: Restart apache for the setting.

Step 6: Then wget link and tar -xvf nagios-plugins-2.1.2.tar.gz then cd nagios-plugins-2.1.2 then #./configure --with-nagios-user=nagios --with-nagios-group=nagios then make then make install then cd.

Step 7: Then /usr/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg then service nagios restart then service httpd restart then service iptables stop. Then open a browser to access the nagios server.



Figure3.31: Access the nagios server.

3.14 Challenges

No work has not challenges, but four months of my internship experience and to share friends after hearing about the happy hour, I've found that there is some common challenges intern. I think it is that interns three things: unpaid / under, temporary, and they are in a race to gain experience. Sometimes Not enough work: There's not enough work assigned to me. I'm bored, underutilized, strumming my fingers at my

desk and tempted to peruse Facebook. Too much work: Because interns are just glad to get a foot in the door, some work places may take advantage of young workers by giving them very long hours of dull repetitive work. Afraid to ask questions: All of a sudden there's an influx of work, and I finally have the chance to prove myself! But I'm not sure about x, y, z...I may feel the pressure to be an independent and self-sufficient worker, but it's so much better to clarify uncertainties! Compete with other Intern: Luckily I was an intern; we ask questions of each other and can easily team up with projects that have worked in teams where there was such a collaborative relationship. Interns in a future job opening, or a recommendation for a good letter will be competing in other office environments, may not be so friendly.

CHAPTER 4

Competencies and Smart Plan

4.1 Competencies Earned

Competencies Earned or learning outcome is a statement of what a learner is expected to know, understand or be able to do as a result of a learning process. Install and decommission of both network and server machines at two datacenters. Lead role in advanced Linux software implementations, for example LDAP HA, aligned to program learning outcomes, field and internship evaluations. The Student Association office funds many student Intern Learning Outcomes: Gathering and organizing information into a Internship Project Description: Participate in the redesign of the Linux Lab web site. Learning Outcomes. Install & Configure software and upgrades; Install, configure & test network Employer Services • Furthermore, consistent with the learning outcomes, the Internship On-Site Supervisor will provide an orientation concerning organizational policies and procedures.

4.2 Smart Plan

Every company should have a smart plan to gain the success. Basically some common things of combination create a smart plan.

4.3 Reflections

Daffodil Online Ltd. started they are operation in the year **2002**. During the past years, they extended they are operation and service portfolio according to the customer's recommendation and considering demands of time. They worked with many national projects and international organizations and achieved the reputation. They are using the latest technologies and upgrading the services wherever it is required. They are Corporate Network Solution department is capable to provide state-of-art network and telecommunication solutions with a highly efficient technical expertise group.

CHAPTER 5

Conclusion and Future Career

5.1 Discussion and Conclusion

Review this internship has been a wonderful and rewarding experience. I have seen the future and I will be able to help me with the opportunity to network with a lot of people have been able to confirm that. Through this internship, I have learned that one of the main issues and time management skills as well as self-motivation. When I first started I was eight hours a day, six days a week is going to be able to sit in an office and did not think that. Once I realized what I had to do my hours of overlapping is not broken, so I organize my day job. Organized and it was the right time, when I get a response prepared for questions that need to be learned. This internship and time management of the office for many hours, I had to learn how to motivate myself through. I'm still looking for using the company came up with the various proposals and ideas. I'm still keeping my options open to new opportunities, however, are continuing to work for the University of Bangladesh in the world. I'm enjoying this line of work. I continue to work hard for my position and hope to continue to learn about the industry and meet new people will. It was a wonderful experience, and I hope the other intern got a lot out of it.

5.2 Scope for Further Career

Career opportunities are available in different areas under Linux. The career opportunities in Linux's mentioning not only the Linux platform, it covers lot of different areas like: Desktop Application Development, Kernel & Device Drivers Development Today their huge demand open source software's and open source software's developers and network engineers. There many company today migrated to Linux and open source software's. The company like Google, Yahoo, Boeing, Lufthansa, wiki.org, many companies migrated to cost effective open source solution. There is a huge demand for the skilled professionals in LINUX.

References

[1] Get idea about Daffodil online limited (DOL), Available at:

http://www.daffodilnet.com/index.php?option=com_content&view=article&id=54&Itemid=112, last accessed on 11September 2017, 11.30pm.

[2] About Recommended Partitioning Scheme, Available at:

www.centos.org/docs/5/html/5.2/Installation_Guide/s2-diskpartrecommen-ppc.html, last accessed on 18September 2017, 4.00pm.

[3] Get Concept about FTP server, Available at:

<http://opensourecsoftwareandme.blogspot.com/2016/08/sharing-ftp-server-between-un.html>, last accessed on 27September 2017, 10.45pm.

[4] Get Concept about Web Server, Available at:

http://www.webopedia.com/term/w/web_server.html, last accessed on 11October 2017, 9.50am.

[5] Get Concept About Samba Server, Available at:

https://www.samba.org/samba/docs/using_samba/ch01.html, last accessed on 23October 2017, 6am.

Appendices

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.

Appendix B: Company Detail



Head Office

Name	Daffodil Online Limited
Address	102, Shukrabad (3rd floor), Mirpur Road, Dhanmondi, Dhaka - 1207, Bangladesh
Telephone	02-9143258-60
Fax	880-2-8116103
E-mail	info@daffodilnet.com
Website	www.daffodilnet.com
Type of Organization	Nationwide Internet Service Provider (ISP)
Employees	12

Plagiarism

The screenshot shows a web browser window with the URL `my.plagamme.com/files`. The page features a dark blue sidebar on the left with the 'plagamme' logo and navigation options: 'Upload', 'Papers', 'Payments', 'Free', and 'Earn money'. Below these are 'RATE US' (5 stars) and 'CONTACT US' (speech bubble icon). The main content area displays a search bar and a file upload result for 'Final Internship Report.docx' (uploaded 1 hour ago). A donut chart shows a 30% similarity score. Below the chart, three categories are listed: Paraphrase (3%), Improper Citations (0%), and Matches (45). A red warning banner indicates 'HIGHEST PLAGIARISM RISK' with three stars. A pink button at the bottom says 'View detailed report'.

Category	Percentage/Count
Paraphrase	3%
Improper Citations	0%
Matches	45