

LINUX SYSTEM AND NETWORK ADMINISTRATION

SUBMITTED

BY

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

Supervised By

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DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

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APPROVAL

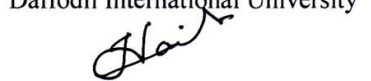
This Internship titled “Linux System and Network Administration”, submitted by Md. Monir Hossain to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 19/20/22 August 2015.

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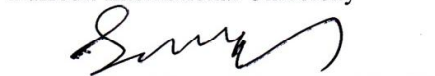
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DECLARATION

I hereby declare that, this internship report is prepared by me, Md. MonirHossain, ID No: 122-15-1883 to the department of Computer Science and Engineering, Daffodil International University. Under the supervision of **SadekurRahman, Lecturer, 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 Knit Cotton Composite Mills Ltd (KCCML), Books and Internet.

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I really grateful and wish our profound our indebtedness to **SadekurRahman, Lecturer**, Department of CSE, Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of "**Linux System and Network Administration**" to carry out this internship. His endless patience ,scholarly guidance ,continual encouragement , constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this internship.

I would like to express our heartiest gratitude to **Dr. Syed AkhterHossain, Professor and Head, Department of CSE**, for his kind help to finish my internship and also to other faculty member and the staff of CSE department of Daffodil International University.

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 internship involved setting up of an ISP server Administration along with the various services offered. The title of the internship is “Server Setup and Administration using Linux Server Operating System”. The aim of the internship was to learn how to setup a Linux server and configure the different services usually provided by ISPs.

The first part of the internship report gives an overview of Linux Operating System and server details. Second part discusses about the basic commands, the vi editor, network configuration and Red hat Package Manager. Subsequently, how to configure various service like FTP, DNS, Proxy, Web server are discussed. In this part the testing details are given. As the entire work was done practically, a lot was learned regarding set up and testing of the individual ISP services.

TABLE OF CONTENTS

CONTENTS	PAGE
Approval	I
Declaration	II
Acknowledgement	III
Abstract	IV
Table of contents	V,VI
List of Figure	VI,VII
CHAPTER	
CHAPTER 1: INTRODUCTION	1-2
1.1 Objectives	1
1.2 Motivations	1
1.3 Internship Goals	1
1.4 Report Layout	2
CHAPTER 2: INTERNSHIP ENTERPRISE	3-4
2.1 About The Company	3
2.2 IT Services Offered	4
2.3 Roles In Job Market	4
CHAPTER 3:INTERNSHIP ROLES AND RESPONSIBILITIES	5-40
3.1 Training Attendant	5,6
3.2 Assigned Responsibilities	6
3.3 Work Environment	6
3.4 Performed Task	7
3.4.1 Creating Linux Partition	7
3.4.2 Linux Run-Level Used by Centos	7
3.4.3 The Basic Command of Linux Centos	8
3.4.4 User Create and Password Management	8
3.4.5 To Know About the Logged In User	8
3.4.6 To Copy or Move a File	8

3.4.7 Vi Editor	9
3.4.8 Install/Update/Remove Packages in Centos	9
3.4.9 Compress and Decompress A Directory Using Tar And Untar	10
3.4.10 Server Configuration (Web Server, Domain Name System (DNS),Proxy Server, FTP Server, Mail Server)	11-38
3.4.11. Remote Access for system maintenance	39-40
CHAPTER 4: INTERNSHIP OUTCOME	41-42
4.1 Problems and Solutions	41
4.2 Learning Outcome	41
4.3 Challenges	42
CHAPTER 5: CONCLUSION AND FUTURE SCOPE	43
5.1 Discussion and Conclusion	43
5.2 Future Scope	43
REFERENCES	VIII

LIST OF FIGURES

FIGURES	PAGE NO
Figure 3.1: Shows in tar and untar	10
Figure 3.2: Simple Network of web server	12
Figure 3.3: Screen Print of verify the web server in web browser	14
Figure 3.4: Screen Print of virtual web configuration file	15
Figure 3.5: Screen Print of Virtual web server in web browser	16
Figure 3.6: Simple Network of DNS Server	17
Figure 3.7: Screen Print of caching only DNS Configuration file	18
Figure 3.8: Screen Print of zone file	19
Figure 3.9: Screen Print of forward zone file	20
Figure 3.10: Shows Screen Print installs squid	22
Figure 3.11: Shows Screen Print install squid continue	22
Figure 3.12: Shows Screen Print edit squid conf file	22
Figure 3.13: Shows Screen Print Search the line : /http_port 3128	23
Figure 3.14: Shows Screen Print Allow the clients who is able to browse internet	23
Figure 3.15: Simple network of ftp server	25
Figure 3.16: Screen print to verify ftp server in web browser	27
Figure 3.17: Simple network of mail server	29
Figure 3.18: Screen print of postfix configuration in command mode	31
Figure 3.19: Screen print to enable protocol of dovecot configuration file	33
Figure 3.20: Screen print of squirrel mail configuration file	36
Figure 3.21: Screen print of squirrel mail configuration file, assign domain name	36
Figure 3.22: Screen print of verify a mail server in web browser	38
Figure 3.23: Shows Screen Print install ssh	39
Figure 3.24: Shows Screen Print sshConnect Remote PC	39
Figure 3.25: Shows Screen Print sshConnect Remote PC continue	40
Figure 3.26: Shows Screen Print Enter Remote Pc Password	40
Figure 3.27: Shows Screen Print sshSuccessfully Connected	40

CHAPTER 1

Introduction

1.1 Objectives

The main objective of education is to acquire knowledge. I choose an internship because I wanted to benefit from the experience. I wanted a new challenge and to learn, improve and develop new sets of skills. Working as a Network Support Engineer performing duties and activities and analyzing them from different perspectives. I tried my level best to present my practical knowledge as well as:

- To fulfill the requirement of the internship program under CSE program.
- To gain details knowledge about Red hat Enterprise Linux.
- Create and maintain Linux file system.

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.

Total Server Solutions is looking for a highly motivated, experienced, knowledgeable Linux/UNIX systems administrator to round our tech team. For example, we could create a new stack with four Arch Linux servers using. Install Linux hosts one might ask why one should bother with having 2 pxe servers on one network, if one can do the trick. A sound server is software that manages the use of and access to audio devices. Understanding of Linux operating systems; Candidate must be self-motivated with a strong desire to continually grow technical expertise. Scripting languages such as Perl, Python, Linux Shell. Experience on Linux operating system. Self-motivated and self-directed A desire to work.

1.3 Internship Goals

My goal is to ensure every intern has an excellent goals are to provide a safe work environment, professional development. Familiarity with UNIX shell and a Linux server environment. The goal was to engage students in open source projects. My goals are to provide a safe work environment. Know everything about Linux administration, from servers to institute we'll discuss the exact learning goals of the internship, and make a plan.

Today, most organization use Linux operation system .Linux operating system is one open source operating system. Actually Linux operating system used for server configuration. Conceptually, Linux is considered the world most powerful, flexible and robust server based operating system.

1.4 Report Layout

All reports are broadly organized in three sections:

1. Preliminary matter
2. Text
3. Back matter

PRELIMINARY MATTER REQUIREMENTS

The preliminary matter consists of the title page, approval page, abstract/ executive summary,

Acknowledgments (optional), table of contents, list of tables, list of figures, other lists (such anomenclature), and the preface (optional). Preliminary pages are paginated separately from the rest of the text. Proper order of Preliminary Pages:

1. Title page
2. Approval page
3. Acknowledgments (optional)
4. Table of contents
5. List of tables (if tables appear in document)
6. List of figures (if figures appear in document)

System activity data collection, which records the data regarding system activity in a binary format Configure your server individually.

CHAPTER 2

Internship Enterprise

2.1 About the Company

Head Office	
Name	Knit Cotton Composite Mills Limited
Address	45, S. M. Maleh Road, Tanbazar, Narayanganj-1400.
Telephone	02-7643471-3
Fax	02-7643473
E-mail	kccml@dhaka.net , info@kccml.net
Type of Organization	Export oriented Spinning Mills
Employees	16

Knit Cotton Composite Mills Ltd. (KCCML) is proud to be one of the trailblazers and oldest textile spinning mills in Bangladesh. 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 uses the latest technologies and upgrading the services wherever it is required. The center's Corporate Network Solution department is capable of providing state-of-art network and telecommunication solutions with a group of highly efficient technical experts. Knit Cotton has a very strong professional engineering and management team certified and associated 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 our responsibility on Community, Workstation, Location and Market place. As a Group concern [1]

2.2 IT Services Offered

- (1) Corporate Internet Solution.^[1]
- (2) Security solution.
- (3) Domain registration and web hosting.
- (4) Open source application solution.
- (5) State of the Art Data Centers.
- (6) Hi speed Wi-Fi Zone.
- (7) Data Connectivity, Data center & Co-Location.
- (8) Proxy & DNS Server solution, Mail Server Solution.
- (9) And All computer accessories
- (10) Professional course and trainings:
 - (a) ISP Setup and administration using Linux.
 - (b) Training Course on Certified Ethical Hacking (CEH).
 - (c) PHP and MYSQL for Website Development.
 - (d) Red Hat Certified Security Specialist (RHCSS).
 - (e) Red Hat Certified Engineer (RHCE).

2.3 Roles In Job Market

- Linux Administration.
- Networking Administration.
- Linux System Developer.
- System Administration.
- Security Engineers.
- Technical Support.
- Kernel Developers.
- Senior Network Engineer.
- Broadband Network Manager (ISP).
- Line Network Support Engineer (TCP/IP).
- Support Engineer - (Windows/Linux/ VMware/ Network).
- Network Engineer - CISCO / Juniper / Ethernet / Networks.
- Marketing and Communications Manager.^[2]

CHAPTER 3

Internship Roles and Responsibilities

3.1 Training Attendant

Month - 1: In the first month of internship on Knit Cotton Composite Mills 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 Knit Cotton Composite Mills Limited. I have learned and performed the following tasks:

- Basic Commands of Linux.
- 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.
- Crontab.
- 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 Linux.

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

- Learning, understanding and configuring NFS Server.
- Learning, understanding and configuring WEB Server.
- Learning, understanding and configuring FTP Server.
- Learning, understanding and configuring DNS Server.
- Learning, understanding and configuring DNS Server.
- Learning, understanding and configuring MAIL Server.
- Learning, understanding and configuring PROXY Server.
- Firewall.
- Backup and Monitoring.

3.2 Assigned Responsibilities

In an education sector, skilled & experienced teachers are the most important issues to provide quality education. KCCML never compromise in this regard. In order to have the best teachers, Knit Cotton Composite Mills maintain a systematic approach. First the Candidate have to site for a written test, then an interview has to give 2/3 demonstration class from which we take the feedback from the students. And finally, the candidate is selected or rejected. We always give emphasis on the candidate.

3.3 Work Environment

Worked in comfortable, well-lit offices. As networking technology capabilities expand, I am able to carry out their work remotely, reducing travel to client sites. Most employees absolutely love working for the company. Work analysis, work documentation, and work scheduling is very friendly. This is the best practices place for students and employers. Knit Cotton Composite Mills Limited chose a great role model to help students create the special culture that has supported their success. KCCML is a great company and I am very proud to be a part of it. This is the most unique working environment I have ever been in. The products, ideas, creative minds that we have continue to amaze and inspire me.

3.4 Performed Task

Red Hat Enterprise Linux Install

3.4.1 Creating Linux Partition

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

Root Partition: /

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.^[4]

3.4.2 Linux Run-Level Used by Red Hat

init 0 = Shut Down.

init 1 = Single User Mode.

init 2 = Multi User Mode.

init 3 = Full Multi User Mode.

init 4 = Unused.

init 5 = X-Window (GUI Mode)

init 6 = Reboot.

See current run-level = who -r

3.4.3 The Basic Command of Linux Red Hat

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 2014, cal 10 1989

Display or change date or time = date .

Present Working Directory = pwd .

Create a blank file = touchmonir1(File name).

Create a directory = mkdirmonir(directory name).

List information about file = ls .

Chang Working Directory = cd /root/Desktop(directorypath)

3.4.4 User Create and Password Management

Adding a user = addusermonir(username).

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

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

Verify user information = finger monir(username).

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

Unlock an account = passwd -u monir(username).

Delete a user = userdelmonir(username).

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

3.4.5 To Know About the Logged In User

w

who

who am i

3.4.6 To Copy or Move a File

Copy = cp filename destination example: cp file1 /home/imran/imran

Move = mv filename destination example: cp file1 /home/kaman/imran

3.4.7 Vi Editor

To Edit A File = vi imran(file name)

To insert Text = press a or i

To delete the character = press x or dd

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

To paste = press p for paste.

To set line number = :set nu

To delete line number = set nonu

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}

3.4.8 Install/Update/Remove Packages in Centos

Install a package using yum install

Yum install (package name)

e.g. yum installmysql

Uninstall a package using yum

yum remove (package name)

e.g yum remove mysql

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 groupinstalldnsnameserver
```

3.4.9 Compress and Decompress A Directory Using Tar AndUntar

Compressing a directory :

```
tar cvf archive_name.tar dir_name/
```

e.g : tar cvf backup.tar cls

or , tar cvzf mytarfile.tar.gz /home

Extract A Compressed Directory:

```
Tar xvfbbackup.tar
```

Or, tar xvzf mytarfile.tar.gz

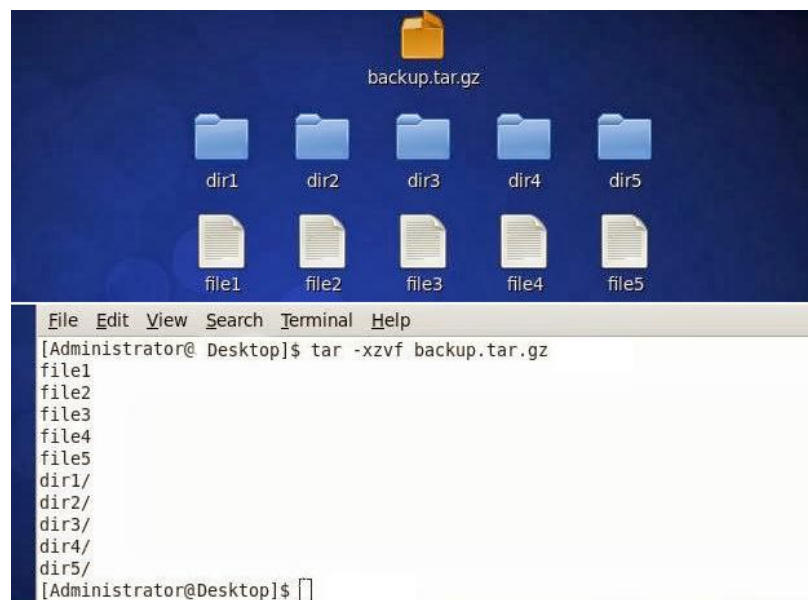


Figure 3.1: Shows in tar and untar

3.4.10 Server Configuration

In Internet Service Provider [ISP] the Server Configuration is very important purpose. Server Selection is important for each server services. Many servers contains in Linux Operating System. Within Those Servers DNS server, DHCP server, FTP server, NFS server, PROXY server, MAIL server, WEB server, can be configured.

Web Server

Web servers are computers that deliver Web pages. Every Web server has an IP address and possibly a domain name. For example, if you enter the URL `http://facebook.com` in your browser, this sends a request to the Web server whose domain name is `facebook.com`. The server then fetches the page named `index.html` and sends it to your browser.^[8]

Web Server Configuration Requirements

To set up your own web site is a computer, an operating system, a web server, a domain name, an IP address of a name server is required.

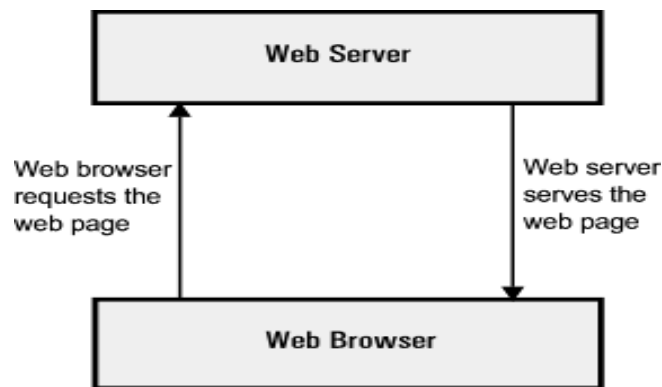
The computer is capable of running Linux can be used on any system. The language of the operating system, we, of course, you would assume using Red Hat Enterprise Linux. Linux operating system up and running once the previously mentioned can be easily installed the Apache Web server supports. A domain name can be registered with a domain name registration services.

Your ISP provides static IP address, and then you will need to add your domain with static IP addresses. This is achieved by using a name server. Most domain registration services will provide this service for you.

If you configure your domain name and your name server, the next step is to install and configure your web server.

Configuring Web Server

A Web server is a computer system that hosts website. It runs Web server software, such as Apache or Microsoft IIS, which provides access to hosted webpage over the Internet. Most Web servers are connected to the internet via a high-speed connection, offering or faster data transmission rates. A fast Internet connection allows Web servers to support multiple connections at one time without slowing down. Any computer can be used as a Web server, as long as it is connected to the Internet and has the appropriate software installed.



[Figure 3.2: Simple network of web server]

STEP BY STEP INSTALL PROCESS

Managing Apache's httpd daemon is easy to do, but the procedure differs between Linux distributions. Here are some things to keep in mind.

1. Firstly, different Linux distributions use different daemon management systems. Each system has its own set of commands to do similar operations.
2. Secondly, the daemon name needs to be known. In this case the name of the daemon is httpd.

Armed with this information you can know how to:

1. Start your daemons automatically on booting
2. Stop, start and restart them later on during troubleshooting or when a configuration file change needs to be applied [5].

Step-01: Install the http package.

Most Red Hat and Fedora Linux software products are available in the RPM format. When searching for the file, remember that the Apache RPM's filename usually starts with the word httpd followed by a version number, as in httpd.....rpm. It is best to use the latest version of Apache. Configuring web server is simple in Red Hat Enterprise Linux 6. The Apache Web Server package is available in official Red Hat repository and easy to install. The configuration is made mostly on command line interface rather than graphical user interface [6]. Most options are available in command mode and it is good to stick using it

```
[root@server ~]# yum install httpd* -y
```

Edit the web server configuration file.

The Apache HTTP Server configuration file is /etc/httpd/conf/httpd.conf. The httpd.conf file is well-commented and mostly self-explanatory.

Here we give our web server name www.rhce.com.

```
[root@server ~]# vi /etc/httpd/conf/httpd.conf
```

```
ServerName www.rhce.com:80
```

Create a index.html file in the web server document root.

```
[root@server ~]# touch /var/www/html/index.html
```

```
[root@server ~]# vi /var/www/html/index.html
```

```
“Welcome to All”
```

Restart the httpd service & configured to start automatically during the system startup.

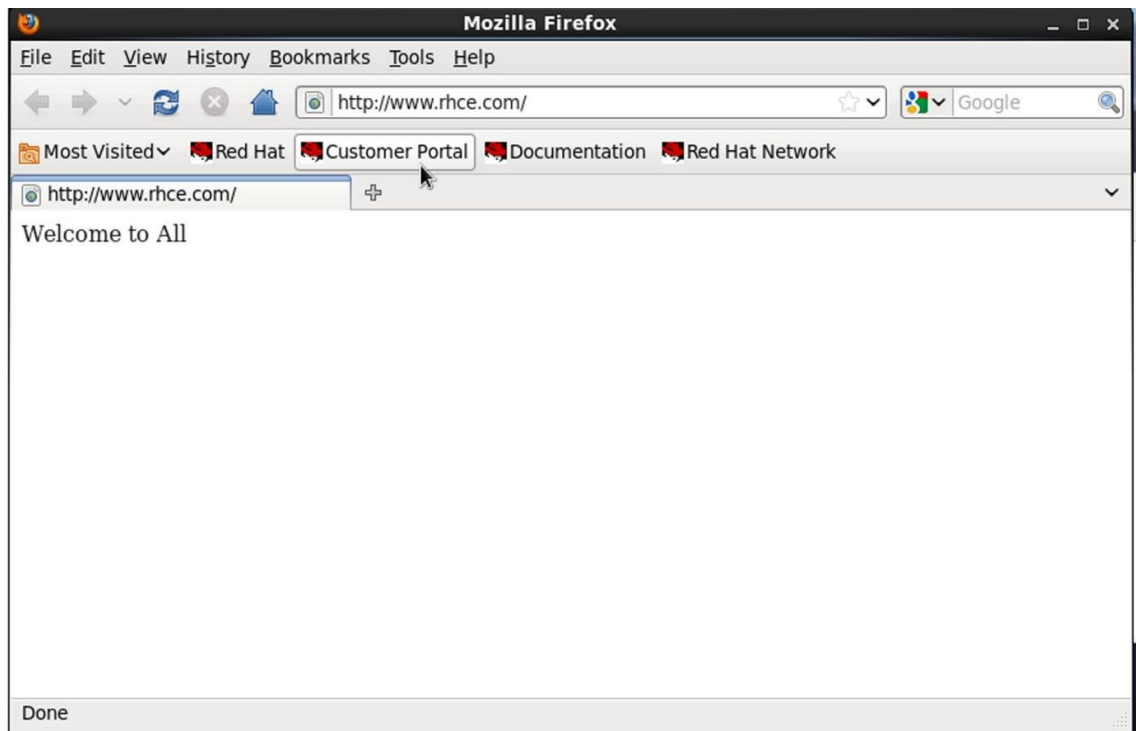
```
[root@server ~]# /etc/init.d/httpd restart
```

```
Stopping httpd: [ OK ]
```

```
Starting httpd: [ OK ]
```

```
[root@server ~]# chkconfig httpd on
```

Verify the rhce Server



[Figure 3.3: Screen print of verify the web server in web browser]

Virtual Web Server

Virtual webhosting is a method for hosting multiple domain names on a computer using a single IP address. This allows one machine to share its resources, such as memory and processor cycles, to use its resources more efficiently [4].

Edit the web server configuration file, enable the NameVirtualHost.

ServerName: The fully qualified domain name under which the host should be addressed.

DocumentRoot: Path to the directory from which Apache should server files for this host. For security reasons, access to the entire file system is forbidden by default, so you must explicitly unlock this directory within a Directory container.

The opening VirtualHost tag takes the IP address (or fully qualified domain name) previously declared with the NameVirtualHost as an argument in a name-based virtual host configuration. A port number previously declared with the NameVirtualHost directive is optional. The wild card * is also allowed as a substitute for the IP address. This syntax is only valid in combination with the wild card usage in NameVirtualHost. When using IPv6 addresses, the address must be included in square brackets.

Here we must include the original web server information into the namevirtualhost and document root /var/www/html). Now create a new VirtualHost container, here we put the information of new web server name and his document root (mail.rhce.com & document root /var/www/html/mail) [7, 9].

```
[root@server~]#vi/etc/httpd/conf/httpd.conf
```



```
root@server:~
File Edit View Search Terminal Help
NameVirtualHost *:80
#
# NOTE: NameVirtualHost cannot be used without a port specifier
# (e.g. :80) if mod_ssl is being used, due to the nature of the
# SSL protocol.
#
#
# VirtualHost example:
# Almost any Apache directive may go into a VirtualHost container.
# The first VirtualHost section is used for requests without a known
# server name.
#
#<VirtualHost *:80>
#   ServerAdmin webmaster@dummy-host.example.com
#   DocumentRoot /www/docs/dummy-host.example.com
#   ServerName dummy-host.example.com
#   ErrorLog logs/dummy-host.example.com-error_log
#   CustomLog logs/dummy-host.example.com-access_log common
#</VirtualHost>
<VirtualHost *:80>
    DocumentRoot /var/www/html
    ServerName www.rhce.com
</VirtualHost>
<VirtualHost *:80>
    DocumentRoot /var/www/html/mail
    ServerName mail.rhce.com
</VirtualHost>
1019,1 Bot
```

[Figure 3.4: Screen print of virtual web configuration file.]

Restart the httpd service & configured to start automatically during the system startup.

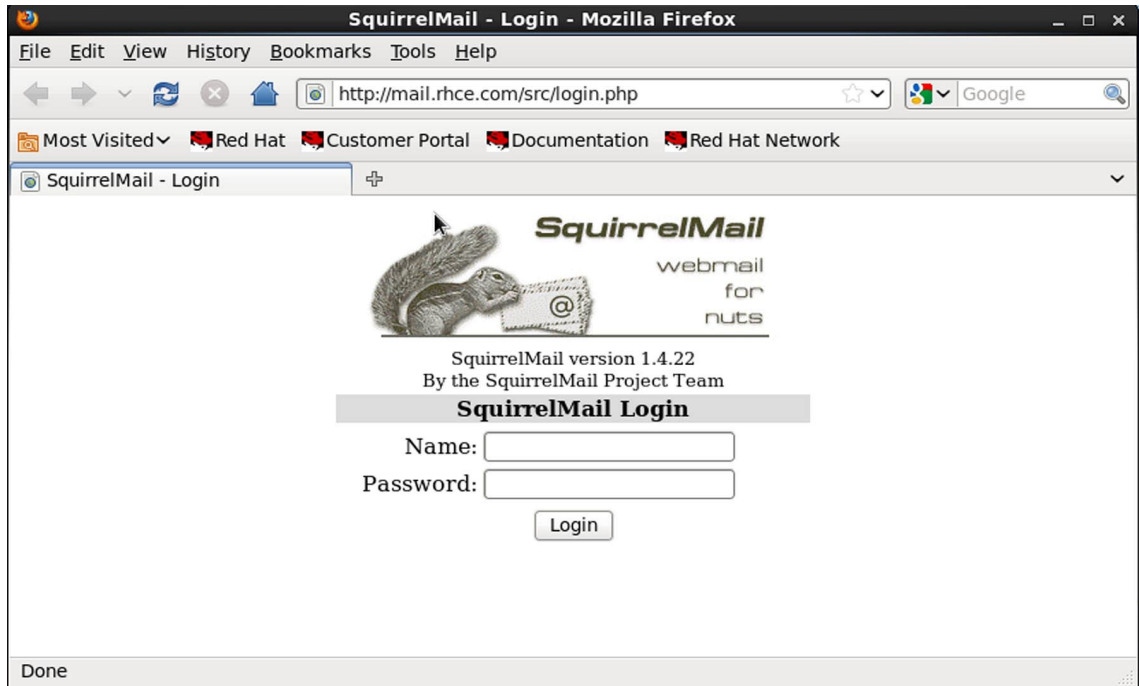
```
[root@server ~]# /etc/init.d/httpd restart
```

```
Stopping httpd: [OK]
```

```
Starting httpd: [OK]
```

```
[root@server ~]# chkconfighttpd on
```

Verify Mail Web Browser

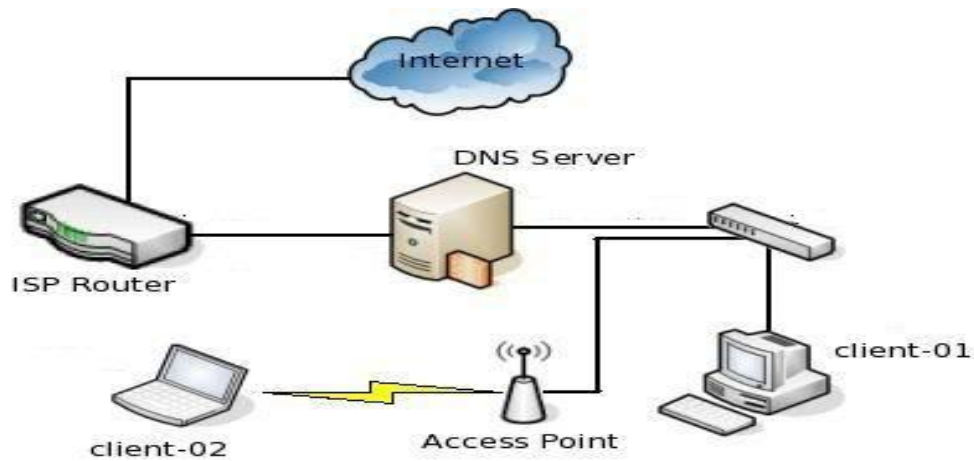


[Figure 3.5: Screen print of virtual web server in web browser.]

Domain Name System (DNS)

The Domain Name System (DNS) is a standard technology for managing the names of Web sites and other Internet domains. DNS technology allows you to type names into your Web browser like `compnetworking.about.com` and your computer to automatically find that address on the Internet. A key element of the DNS is a worldwide collection of DNS server's fig [5.1].

A DNS client doesn't store DNS information; it must always refer to a DNS server to get it. The only DNS configuration file for a DNS client is the `/etc/resolv.conf` file, which defines the IP address of the DNS server it should use. You shouldn't need to configure any other files. You'll become well acquainted with the `/etc/resolv.conf` file soon.



[Figure 3.6: Simple network of DNS server]

Step By Step Install Process

There are two types of configuration files in DNS.

One is main DNS configuration files named “named.conf”. Another type of configuration file are called zone file. Which is individually created for all domains namedconf keeps an entry for all zone files [5].

Install the bind Package

This chapter covers BIND (Berkeley Internet Name Domain), the DNS server included in Red Hat Enterprise Linux. It focuses on the structure of its configuration files, and describes how to administer it both locally and remotely. Bind packages are available under default yum repositories. To install packages simple execute below command [8].

```
[root@server ~]# Yum install bind* -y
```

Configure the caching only name server.

A caching-only name server is used for looking up zone data and caching (storing) the result which is returned. Then it can return the answers to subsequent queries by using the cached information. In the caching-only name server we give the information of listen-on port & IP address and any for the allow query. The /etc/named.conf file is the main configuration file for bind. It should be owned by the named user because the named service is run by this user. The file permissions for named.conf should only

Create a forward zone file.

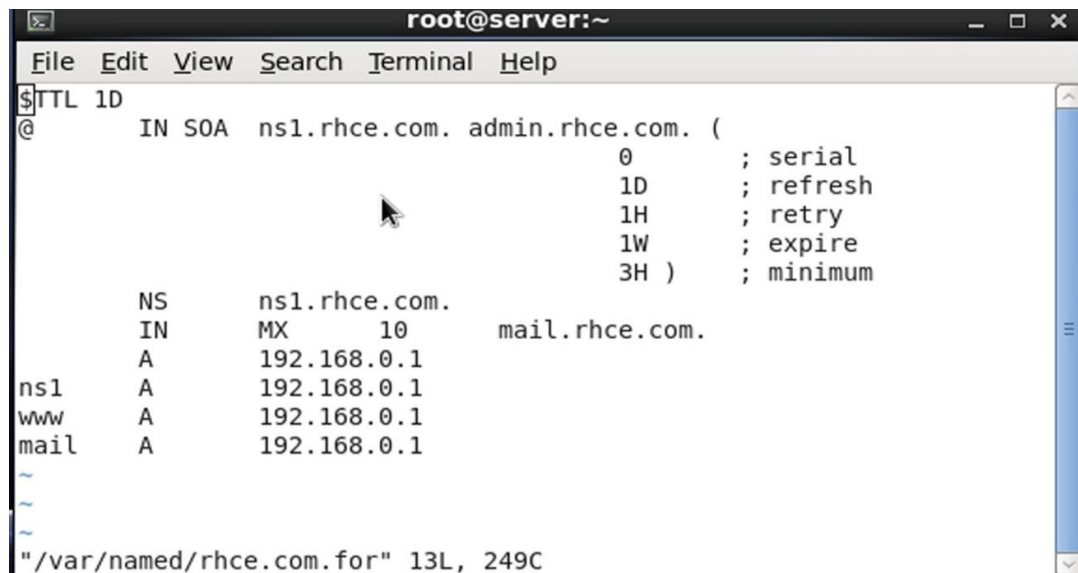
```
[root@server ~]# cd /var/named/  
[root@server named]# cpnamed.localhostrhce.com.for
```

Edit the forward zone file.

SOA is short for Start of Authority, which is the preamble necessary for all zone files. The serial number lets the server keep track of updates. As long as this number increases incrementally from the last time the daemon started, it will reread the information into its database. For instance, you could start at 0 and add a digit after every modification, or you could use a date entry (as in the example) like 200101111. This is helpful because it lets you see when the last update was made and whether it was updated more than once in a single day. The next four lines deal with refresh and time-out periods in seconds. If no manual or server-wide refresh of the BIND database occurs, the server will automatically attempt to reread the information. Changing from the values listed here is not usually necessary. Only domains that for one reason or another change their information extremely often will need to make modifications. The nameservers are then listed so BIND will know who has control over this domain [8].

Here we give the SOA record ns1.rhce.com and name server is ns1.rhce.com. A record is the domain IP address (192.168.0.1).

```
[root@server named]# virhce.com.for
```



```
root@server:~  
File Edit View Search Terminal Help  
$TTL 1D  
@      IN SOA  ns1.rhce.com. admin.rhce.com. (  
                                0      ; serial  
                                1D     ; refresh  
                                1H     ; retry  
                                1W     ; expire  
                                3H )   ; minimum  
      NS   ns1.rhce.com.  
      IN   MX    10    mail.rhce.com.  
      A    192.168.0.1  
ns1     A    192.168.0.1  
www     A    192.168.0.1  
mail    A    192.168.0.1  
~  
~  
~  
"/var/named/rhce.com.for" 13L, 249C
```

[Figure 3.9: Screen print of forward zone file]

Change the group offoward file.

```
[root@server ~]# chgrp named /var/named/rhce.com.for
```

Restart the named service& configured to start automatically during the system startup.

```
[root@server ~]# /etc/init.d/named restart
Stopping named:          [ OK ]
Starting named:         [ OK ]
[root@server ~]# chkconfig named on
```

Finally Verify and Testing

A DNS client doesn't store DNS information; it must always refer to a DNS server to get it. The only DNS configuration file for a DNS client is the `/etc/resolv.conf` file, which defines the IP address of the DNS server it should use. You shouldn't need to configure any other files. You'll become well acquainted with the `/etc/resolv.conf` file soon [7].

```
[root@server ~]# nslookup www.rhce.com
```

```
Server:          192.168.0.1
Address:         192.168.0.1#53
Name:   www.rhce.com
Address: 192.168.0.1
```

Proxy Server

Computer networks, a proxy server for requests from clients seeking resources from other servers act as an intermediary to a server (a computer system or an application) is. Some of the services requested by a client connect to the proxy server, such as a file, connection, web page, or other resource available from a different server, and proxy servers as a way to facilitate and control the complexity of the request is evaluated. Proxy's delivery systems have been invented to add structure and encapsulation. Today, most of the proxy access to the World Wide Web content, and the secret is to provide a web proxy. [7] A proxy server is used for Obscure client IP:

- Block Malicious traffic,
- Block sites.

- Log Activity,
- Improve Performance(Caching),

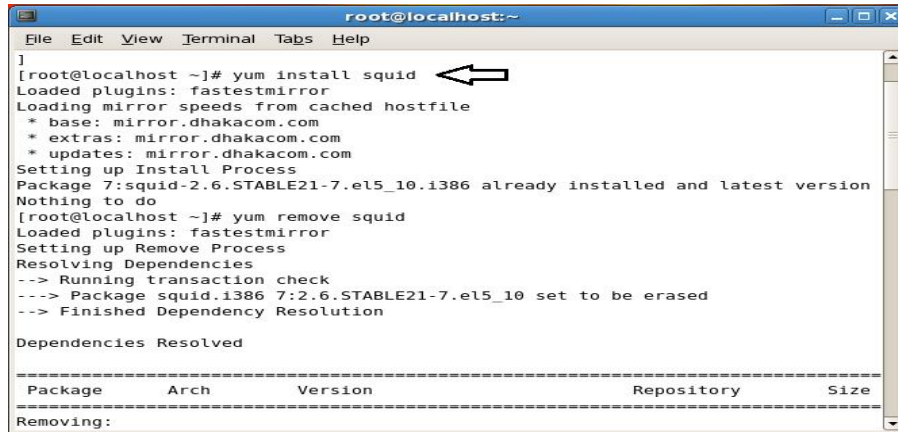
CONFIGURE PROXY SERVER:

PACKAGE NAME: SQUID

DEFAULT PORT: 3128

CONFIGURATIONS FILE LOCATION: /etc/squid/squid.conf

Step 1:



```

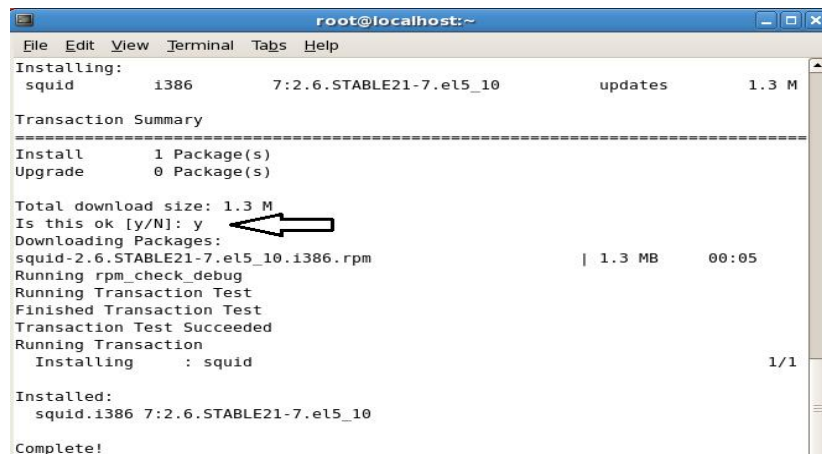
root@localhost:~
File Edit View Terminal Tabs Help
]
[root@localhost ~]# yum install squid
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.dhakacom.com
 * extras: mirror.dhakacom.com
 * updates: mirror.dhakacom.com
Setting up Install Process
Package 7:squid-2.6.STABLE21-7.el5_10.i386 already installed and latest version
Nothing to do
[root@localhost ~]# yum remove squid
Loaded plugins: fastestmirror
Setting up Remove Process
Resolving Dependencies
--> Running transaction check
--> Package squid.i386 7:2.6.STABLE21-7.el5_10 set to be erased
--> Finished Dependency Resolution

Dependencies Resolved

-----
Package Arch Version Repository Size
-----
Removing:

```

[Figure 3.10: Shows Screen Print installs squid]



```

root@localhost:~
File Edit View Terminal Tabs Help
Installing:
 squid      i386      7:2.6.STABLE21-7.el5_10      updates      1.3 M

Transaction Summary
-----
Install      1 Package(s)
Upgrade      0 Package(s)

Total download size: 1.3 M
Is this ok [y/N]: y
Downloading Packages:
 squid-2.6.STABLE21-7.el5_10.i386.rpm      | 1.3 MB      00:05
Running rpm_check debug
Running Transaction Test
Finished Transaction Test
Transaction Test Succeeded
Running Transaction
  Installing      : squid      1/1

Installed:
 squid.i386 7:2.6.STABLE21-7.el5_10

Complete!

```

[Figure 3.11: Shows Screen Print install squid continue]

Step 2:

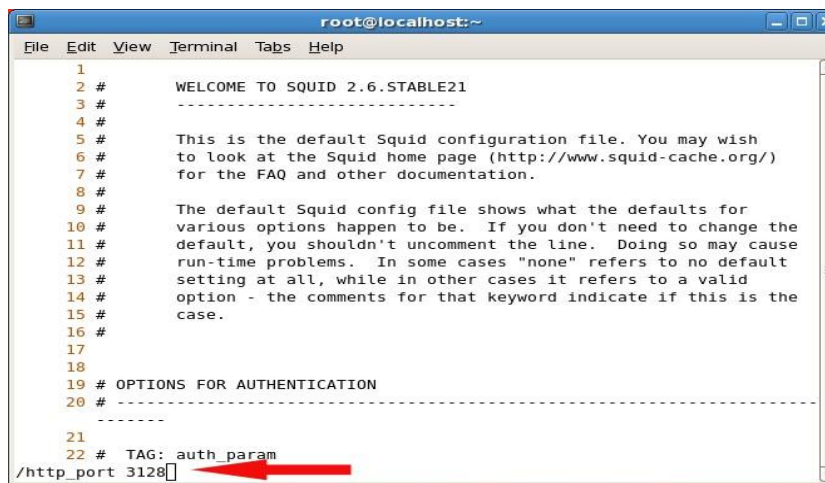
After Completing installation. Edit the configuration file: vi/etc/squid/squid.conf



[Figure 3.12: Shows Screen Print edit squid conf file.]

Step 2:

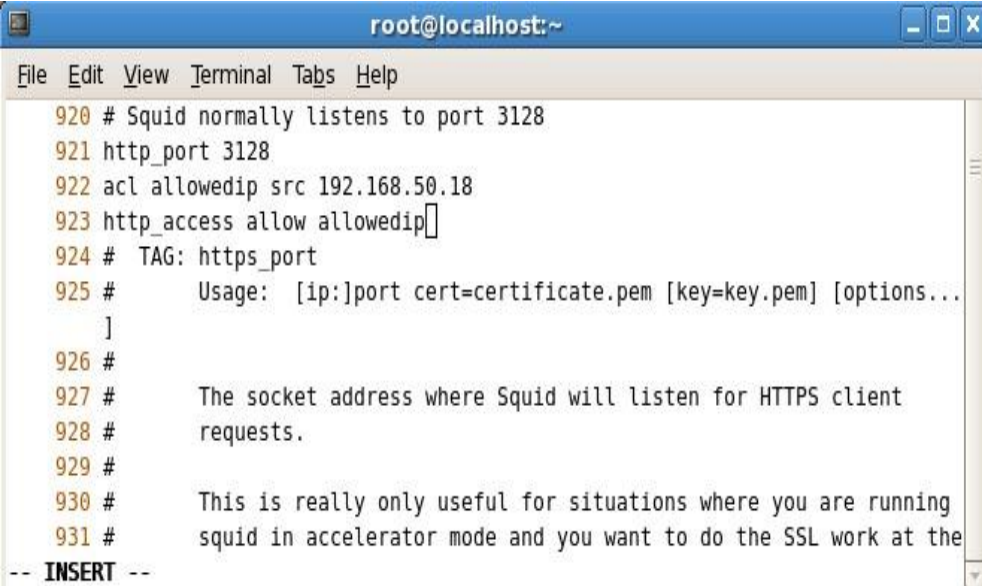
Search the line : /http_port 3128



[Figure 3.13: Shows Screen Print Search the line : /http_port 3128]

Step 3:

Allow the clients who is able to browse internet



```
root@localhost:~  
File Edit View Terminal Tabs Help  
920 # Squid normally listens to port 3128  
921 http_port 3128  
922 acl allowedip src 192.168.50.18  
923 http_access allow allowedip  
924 # TAG: https_port  
925 # Usage: [ip:]port cert=certificate.pem [key=key.pem] [options...  
926 # ]  
927 # The socket address where Squid will listen for HTTPS client  
928 # requests.  
929 #  
930 # This is really only useful for situations where you are running  
931 # squid in accelerator mode and you want to do the SSL work at the  
-- INSERT --
```

[Figure 3.14: Shows Screen Print Allow the clients who is able to browse internet]

Step 4:

Save the configuration

Step 5:

Now Active this line: by Removing #

http_access deny all

Step 6:

service squid restart [for restart squid].

Now only 192.168.50.18 can connect to the internet.

Block Web Sites by using PROXY SERVER:

Step 1:

Edit the configuration file : vi/etc/squid/squid.conf and write the following code:

http_port 3128

Acl block url_regex -i bdjobs.com

http_access deny block

```
aclallowedipsrc 192.168.50.10
```

```
http_access allow allowedip
```

Step 2: Save the configuration

Step 3: `service squid restart` [for restart squid].

Now clients cannot browse `bdjobs.com`.^[7]

To Monitoring Clients Browse History:

We can see the information about what site the clients visit. by write the following code to see the clients log file.

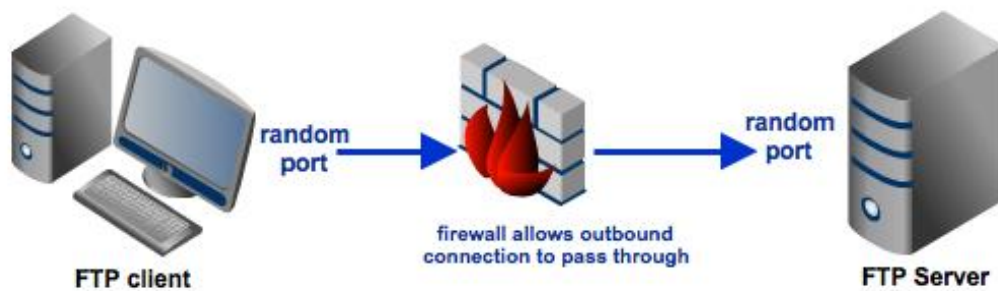
```
tail -f /var/log/squid/access.log
```

FTP Server

FTP Server is used to transfer files between server and clients. All major operating system supports ftp. Ftp is the most used protocol over internet to transfer files. Like most Internet operations, FTP works on a client/ server model. FTP client programs can enable users to transfer files to and from a remote system running an FTP server program shown fig [3].

Any Linux system can operate as an FTP server. It has to run only the server softwarean FTP daemon with the appropriate configuration. Transfers are made between user accounts on client and server systems. A user on the remote system has to log in to an account on a server and can then transfer files to and from that account's directories only.

A special kind of user account, named FTP, allows any user to log in to it with the username “**anonymous.**” This account has its own set of directories and files that are considered public, available to anyone on the network who wants to download them [7].



[Figure 3.15: Simple network of ftp server.]

Install Process step by step

The vsftpd FTP daemon runs confined by default. SELinux policy defines how vsftpd interacts with files, processes, and with the system in general. For example, when an authenticated user logs in via FTP, they cannot read from or write to files in their home directories: SELinux prevents vsftpd from accessing user home directories by default. Also, by default, vsftpd does not have access to NFS or CIFS volumes, and anonymous users do not have write access, even if such write access is configured in `/etc/vsftpd/vsftpd.conf`. Booleans can be enabled to allow the previously mentioned access.

The following example demonstrates an authenticated user logging in, and an SELinux denial when trying to view files in their home directory.

1. Run the `rpm -q ftp` command to see if the ftp package is installed. If it is not, run the `yum install ftp` command as the root user to install it.
2. Run the `rpm -q vsftpd` command to see if the vsftpd package is installed. If it is not, run the `yum install vsftpd` command as the root user to install it.
3. In Red Hat Enterprise Linux, vsftpd only allows anonymous users to log in by default. To allow authenticated users to log in, edit `/etc/vsftpd/vsftpd.conf` as the root user

Install the vsftpd package.

vsftpd is a GPL licensed FTP server for UNIX systems, including Linux. It is secure and extremely fast. It is stable. Don't take my word for it, though. Below, we will see evidence supporting all three assertions. We will also see a list of a few important sites which are happily using vsftpd. This demonstrates vsftpd is a mature and trusted solution.

To initiate the installation of the vsftpd package, simply open your CLI prompt and use the yum command (you need root privileges) as shown below.

```
[root@localhost ~]# yum install vsftpd* -y
```

3.2.2 Enable the ftp server home directory.

SELinux is an acronym for Security-enhanced Linux. It is a security feature of the Linux kernel. In ftp server ftp_home_dir are not allow for any user. We can enable the ftp server home directory by using getsebool&setsebool command.

Access to home directories has been denied by SELinux. This can be fixed by activating the ftp_home_dir Boolean. Enable this ftp_home_dir Boolean by running the following command as the root user.

```
[root@localhost ~]# setsebool -P ftp_home_dir on
```

Restart the vsftpd service& configured to start automatically during the system Startup.

Run the service vsftpd start command as the root user to start vsftpd. If the service was running before editing vsftpd.conf, run the service vsftpd restart command as the root user to apply the configuration changes:

```
[root@localhost ~]# /etc/init.d/vsftpd restart
```

```
Shutting down vsftpd: [FAILED]
```

```
Starting vsftpd for vsftpd: [ OK ]
```

```
[root@localhost ~]# chkconfigvsftpd on
```

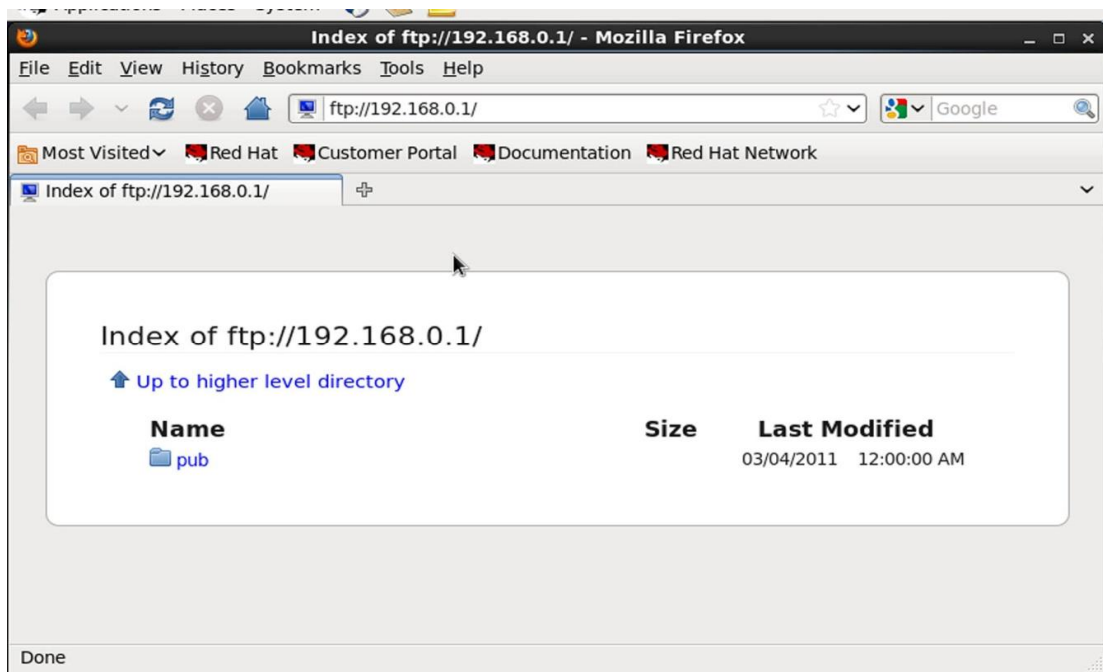
```
[root@localhost ~]#
```

Install the FTP package for ftp client.

FTP is a file transfer protocol for exchanging files over any TCP/IP based network to manipulate files on another computer on that network regardless of which operating systems are involved (if the computers permit FTP access). All major operating system supports ftp. ftp is the most used protocol over internet to transfer files. Like most Internet operations, FTP works on a client/ server model. FTP client programs can enable users to transfer files to and from a remote system running an FTP server program there are many existing FTP client and server programs. FTP servers can be setup anywhere between game servers, voice servers, internet hosts, and other physical servers [6].

```
[root@localhost ~]# Yum install ftp -y
```

Finally Verify and Testing



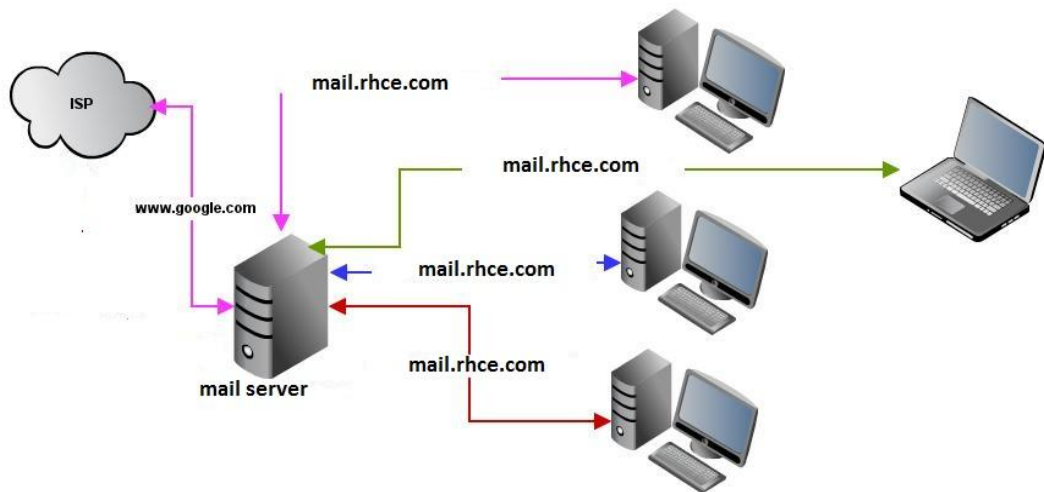
[Figure 3.16: Screen print to verify ftp server in web browser.]

Verify in the command mode

```
[root@localhost ~]# ftp 192.168.0.1
Connected to 192.168.0.1 (192.168.0.1)
220 (vsFTPD 2.2.2)
Name (192.168.0.1: root): monir
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp>pwd
257 "/home/somir"
ftp> bye
221 Goodbye.
[root@localhost ~]#
```

Mail Server Configuration:

A mail server (also known as a mail transfer agent or MTA, a mail transport agent, a mail router or an Internet mailer) is an application that receives incoming e-mail from local users (people within the same domain) and remote senders and forwards outgoing e-mail for delivery. A computer dedicated to running such applications is also called a mail server fig [7.1]. Microsoft Exchange, qmail, Exim and sendmail are among the more common mail server programs. The system uses SMTP (Simple Mail Transfer Protocol) or ESMTP (extended SMTP) for sending e-mail, and either POP3 (Post Office Protocol 3) or IMAP (Internet Message Access Protocol) for receiving e-mail.



[Figure 3.17: Simple network of mail server]

POSTFIX

Postfix is a Mail Transport Agent (MTA), supporting LDAP, SMTP AUTH (SASL), TLS and running in a chroot environment. Postfix is WietseVenema's mailer that started life as an alternative to the widely-used Sendmail program. Postfix attempts to be fast, easy to administer, and secure, while at the same time being sendmail compatible enough to not upset existing.

STEP BY STEP INSTALL PROCESS

In the mail server configuration first we configure the postfix for SMTP protocol then install dovecot for enable the POP3 & IMAP protocol and enable mbox for mail directory, at last we configure squirrelmail, here we give our server name & create mail to send via squirrelmail.

MX record in the DNS forward zone files (mail.rhce.com).

AN MX is short form for Mail exchanger record. The Domain Name System (DNS) stores and associates many types of information with domain names including IP address, Host aliases, email server address etc. DNS server is a general-purpose distributed, replicated, data query service chiefly used on Internet for translating

hostnames into Internet addresses such as www.yahoo.com into 66.94.234.13 or vice-versa [8].

```
[root@server ~]# vi /var/named/rhce.com.for
$TTL 1D
@      IN SOA      ns1.rhce.com. admin.rhce.com. (
                                0      ; serial
                                1D     ; refresh
                                1H     ; retry
                                1W     ; expire
                                3H )   ; minimum

      NS      ns1.rhce.com.
      IN      MX      7      mail.rhce.com.
      A      192.168.0.1
ns1    A      192.168.0.1
www    A      192.168.0.1
mail   A      192.168.0.1
```

```
[root@server ~]# /etc/init.d/named restart
```

```
Stopping named: .[ OK ]
```

```
Starting named: [ OK ]
```

```
[root@server ~]#
```

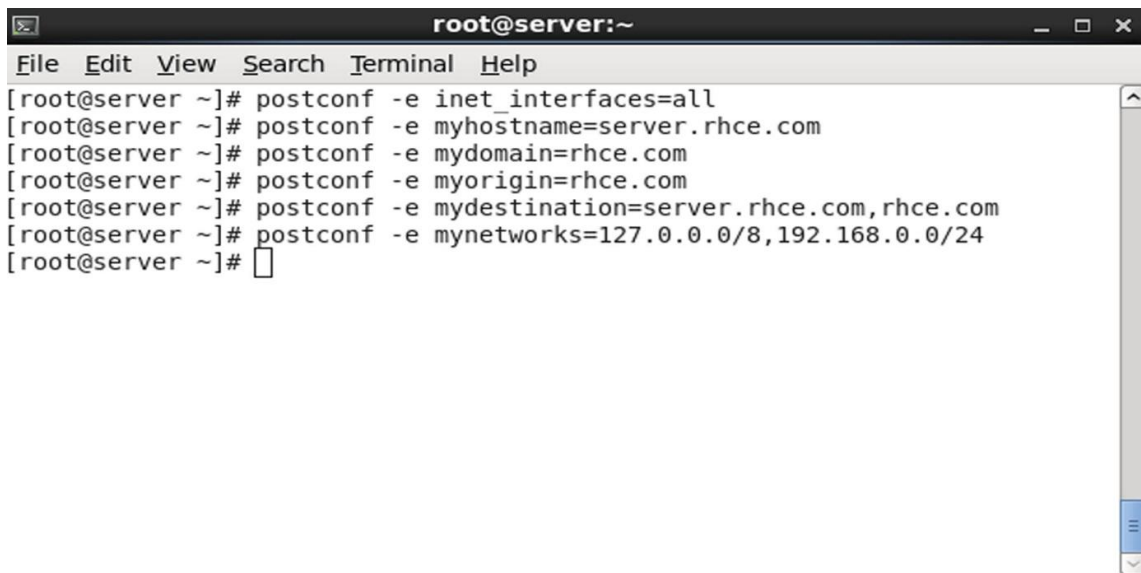
Install the postfix package.

Postfix RPM packages configured with enough options to support all the Postfix features described on this website. These packages are provided to save you time from building your own. The Postfix features enabled in these builds are LDAP, TLS, MySQL, SASL 2 and VDA [9].

```
[root@server ~]# yum install postfix* -y
```

Postfix Configuration in command line interfaces.

The primary configuration file for Postfix (the working equivalent to `/etc/sendmail.cf`) is `main.cf`. The `install.cf` file contains the initial settings for Postfix which were set up during the RPM installation. The file `master.cf` is Postfix' master process configuration file. Each line in the master file describes how a mailer component program should be run. In the debugging section we will talk some more about this file. The `postfix-script` is a wrapper used by Postfix to execute Postfix commands safely for the Linux environment. Let's take a closer look at the `install.cf` file as this file contains some data which we will need when we start to configure Postfix with `main.cf` [5, 7].

A terminal window titled 'root@server:~' with a menu bar containing 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The terminal shows a series of 'postconf' commands being executed to configure Postfix. The commands and their outputs are: 'postconf -e inet_interfaces=all', 'postconf -e myhostname=server.rhce.com', 'postconf -e mydomain=rhce.com', 'postconf -e myorigin=rhce.com', 'postconf -e mydestination=server.rhce.com,rhce.com', and 'postconf -e mynetworks=127.0.0.0/8,192.168.0.0/24'. The prompt returns to the root user after each command.

```
root@server:~  
File Edit View Search Terminal Help  
[root@server ~]# postconf -e inet_interfaces=all  
[root@server ~]# postconf -e myhostname=server.rhce.com  
[root@server ~]# postconf -e mydomain=rhce.com  
[root@server ~]# postconf -e myorigin=rhce.com  
[root@server ~]# postconf -e mydestination=server.rhce.com,rhce.com  
[root@server ~]# postconf -e mynetworks=127.0.0.0/8,192.168.0.0/24  
[root@server ~]#
```

[Figure 3.18: Screen print of postfix configuration in command mode.]

Restart the postfix service & configured to start automatically during the system startup.

```
[root@server ~]# /etc/init.d/postfix restart  
Shutting down postfix: [FAILED]  
Starting postfix: [ OK ]  
[root@server ~]# chkconfig postfix on  
[root@server ~]#
```

DOVECOT

Dovecot is an open source IMAP and POP3 mail server for Linux systems. Dovecot is an open source IMAP and POP3 email server for Linux/UNIX-like systems, written with security primarily in mind. Dovecot is an excellent choice for both small and large installations. It's fast, simple to set up, requires no special administration and it uses very little memory. Dovecot is among the **highestperforming** IMAP servers while still supporting the **standardmbox** and Maildir formats. The mailboxes are transparently indexed, which gives Dovecot its good performance while still providing full compatibility with existing mailbox handling tools [6].

Install the dovecot package.

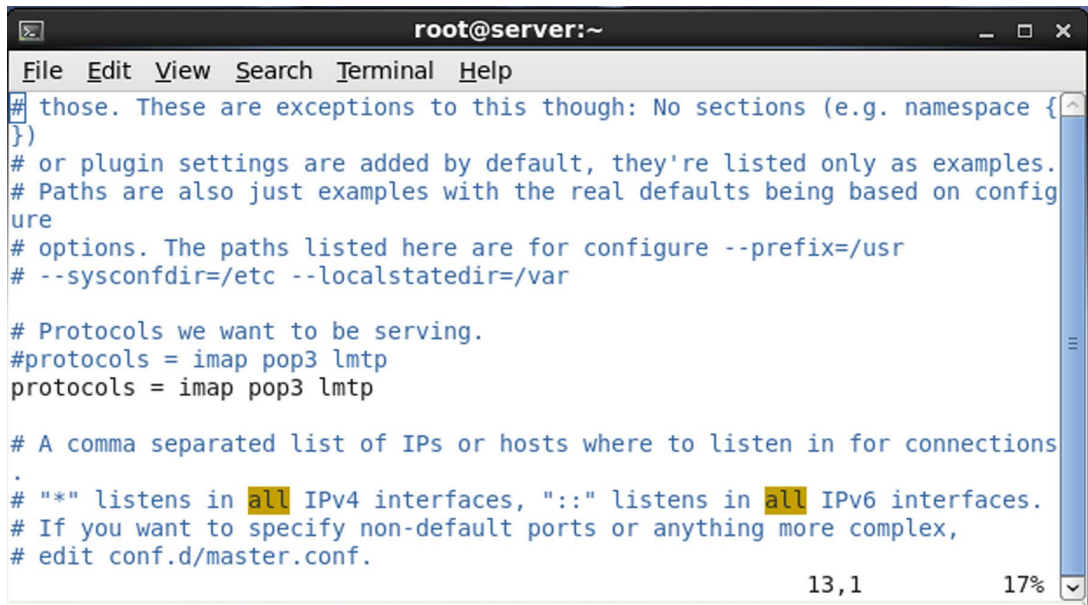
The imap-login and pop3-login processes which implement the IMAP and POP3 protocols are spawned by the master dovecot daemon included in the dovecot package. The use of IMAP and POP is configured through the `/etc/dovecot/dovecot.conf` configuration file; by default dovecot runs IMAP and POP3 together with their secure versions using SSL [7].

```
[root@server ~]# yum install dovecot* -y
```

Enable the imap, pop3 & lmtp protocol.

Edit the `/etc/dovecot/dovecot.conf` configuration file to make sure the protocols variable is uncommented (remove the hash sign (#) at the beginning of the line) and contains the pop3 argument [9]

```
[root@server ~]# vi /etc/dovecot/dovecot.conf
```


A terminal window titled 'root@server:~' showing the content of a Dovecot configuration file. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The text in the terminal is as follows:

```
# those. These are exceptions to this though: No sections (e.g. namespace {  
})  
# or plugin settings are added by default, they're listed only as examples.  
# Paths are also just examples with the real defaults being based on config  
ure  
# options. The paths listed here are for configure --prefix=/usr  
# --sysconfdir=/etc --localstatedir=/var  
  
# Protocols we want to be serving.  
#protocols = imap pop3 lmtp  
protocols = imap pop3 lmtp  
  
# A comma separated list of IPs or hosts where to listen in for connections  
.  
# "*" listens in all IPv4 interfaces, ":::" listens in all IPv6 interfaces.  
# If you want to specify non-default ports or anything more complex,  
# edit conf.d/master.conf.
```

The bottom right corner of the terminal shows '13,1' and '17%'.

[Figure 3.19: Screen print to enable protocol of dovecot configuration file.]

Enable the mail box.

```
[root@server ~]# vi /etc/dovecot/conf.d/10-mail.conf
```

```
mail_location = mbox:~/mail:INBOX=/var/mail/%u
```

```
[root@server ~]#
```

Restart the dovecot service & configured to start automatically during the system startup.

```
[root@server ~]# /etc/init.d/dovecot restart
```

```
Stopping Dovecot Imap: [FAILED]
```

```
Starting Dovecot Imap: [ OK ]
```

```
[root@server ~]# chkconfig dovecot on
```

```
[root@server ~]#
```

SQUIRRELMAIL CONFIGURATION

SquirrelMail is a standards-based webmail package written in PHP. It includes built-in pure PHP support for the IMAP and SMTP protocols, and all pages render in pure HTML 4.0 (with no JavaScript required) for maximum compatibility across browsers. It has very few requirements and is very easy to configure and install. SquirrelMail has all the functionality you would want from an email client, including strong MIME support, address books, and folder manipulation.

SquirrelMail is an Open Source project that provides both a web-based email application and an IMAP proxy server. SquirrelMail webmail outputs valid HTML 4.0 for its presentation, making it compatible with a majority of current web browsers. SquirrelMail webmail uses a plugin architecture to accommodate additional features around the core application, and over 200 plugins are available on the SquirrelMail website [11].

NOTE: Please make sure you have a working SMTP server and IMAP server because there are chances if your IMAP server is not up and running properly you will receive error [11].

Install the httpd and php package.

- A web server with PHP installed. PHP needs to be at least 4.1.0. PHP 4, PHP 5 and PHP 6 are all supported.
 - Access to an IMAP server which supports IMAP 4 rev 1.
 - PHP gettext extension for better performance
 - The PHP mbstring extension is required for translations that use multibyte or character sets but ISO-8859-1. Without the PHP mbstring extension the interface will remain usable, but some internationalization features and fixes won't be enabled.
 - The PHP XML extension is required if the DIGEST-MD5 authentication is used
- [11].

```
[root@server ~]# yum install httpd -y
```

```
[root@server ~]# yum install php -y
```

Download the squirrelmail and move into virtual web server document root.

To install squirrel mail you will need to download the tar file. You can get the latest squirrelmail package from <http://www.squirrelmail.org/> the latest stable version when I am writing this article is 1.4.22 [11]

```
[root@server Downloads]# tar -zxvf squirrelmail-webmail-1.4.22.tar.gz
```

```
[root@server Downloads]# mv squirrelmail-webmail-1.4.22 /var/www/html/mail
```

Run the squirrelmail configuration file.

SquirrelMail configuration is file based. If you've installed SquirrelMail directly from source you'll find the configuration file in config/config.php, but if you're using a SquirrelMail package from your OS distribution the actual configuration file may be located somewhere else (such as /etc/) - usually with a symbolic link from config/config.php. Read the documentation that came with the distribution package to find out more about OS distribution specific details. The rest of these instructions assumes that you've installed SquirrelMail from source [11].

```
[root@server mail]# ./configure
```



[Figure 3.20: Screen print of squirrelmail configuration file]

```
root@server:/var/www/html/mail
File Edit View Search Terminal Help
SquirrelMail Configuration : Read: config.php (1.4.0)
-----
Server Settings

General
-----
1. Domain           : rhce.com
2. Invert Time      : false
3. Sendmail or SMTP : SMTP

A. Update IMAP Settings : localhost:143 (other)
B. Update SMTP Settings : localhost:25

R Return to Main Menu
C Turn color on
S Save data
Q Quit

Command >> 1

The domain name is the suffix at the end of all email addresses.  If
for example, your email address is jdoe@example.com, then your domain
would be example.com.

[rhce.com]: rhce.com
```

[figure3.21: Screen print of squirrelmail configuration file, assign domain name.]

Command >> s

Data saved in config.php

Press enter to continue...

Command >> q

You have not saved your data.

Save? [Y/n]: y

Data saved in config.php

Exiting conf.pl.

Happy SquirrelMailing!

Create two directories data & attach.

SquirrelMail uses two directories to store the user configuration and the attachments that are about to be sent. The data directory is used for storing user preferences, like their signature, theme, address book (by default), and other information specific to each user. The attachments directory is used for temporarily storing attachments which needs to be cached at the server before being sent. It's preferred, for security reasons, to have these directories outside the web tree [11].

Directory is create into the /var/local/squirrelmail directory and change the ownership.
The ownership must be apache:apache.

```
[root@server mail]# mkdir -p /var/local/squirrelmail/data  
[root@server mail]# mkdir -p /var/local/squirrelmail/attach  
[root@server mail]# chown -R apache:apache /var/local/squirrelmail/*
```

Restart the httpd service & configured to start automatically during the system startup.

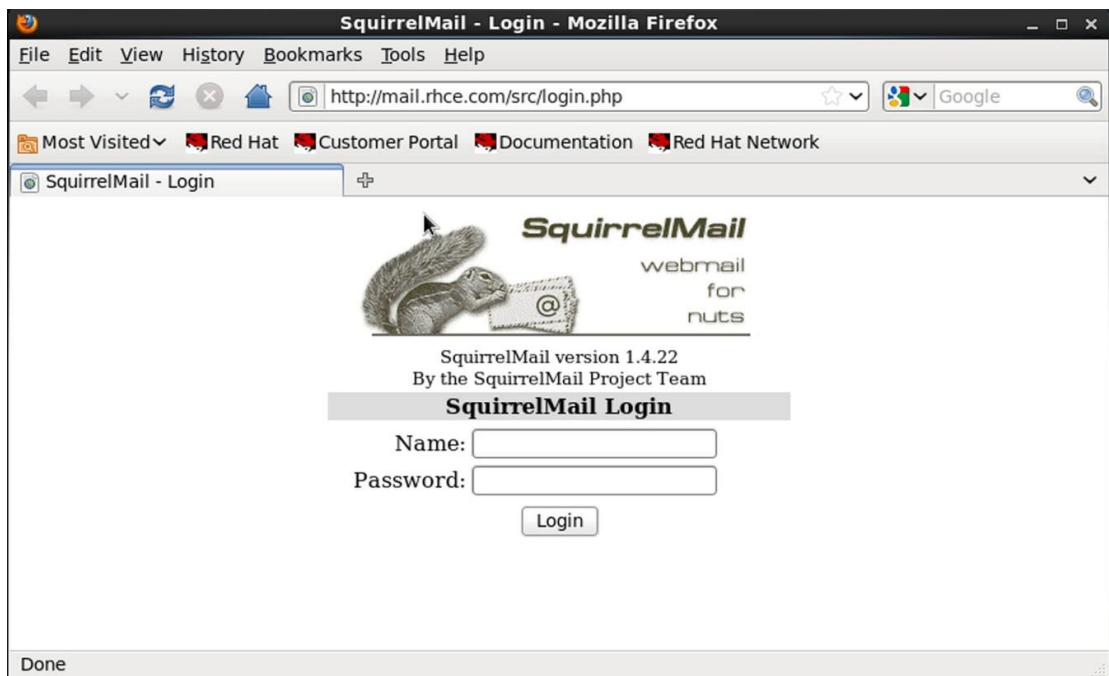
```
[root@server mail]# /etc/init.d/httpd restart
```

Stopping httpd: [FAILED]

Starting httpd: [OK]

```
[root@server mail]# chkconfig httpd on
```

Finally verify the squirrel mail in web browser mail.rhce.com



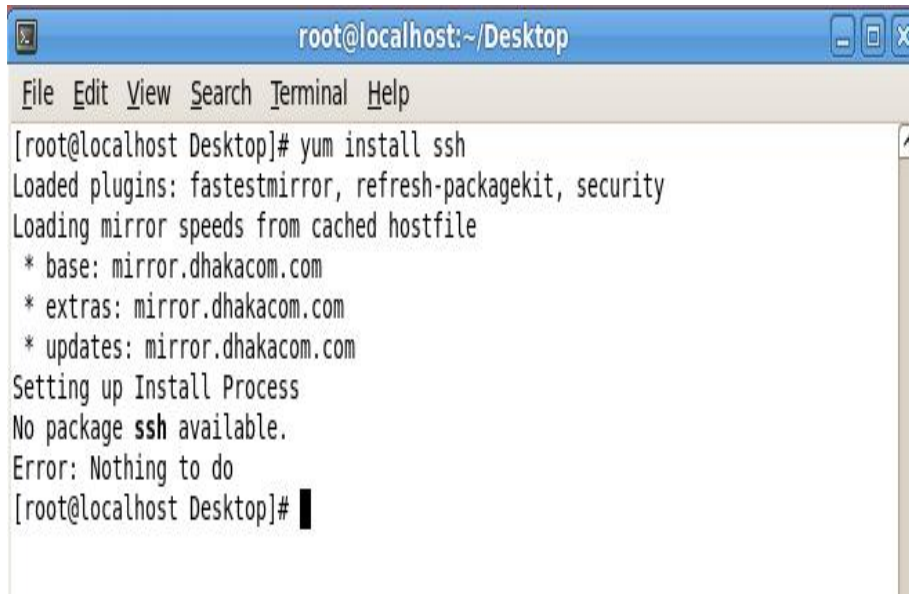
[Figure 3.22: Screen print of verify a mail server in web browser.]

3.4.11 Remote Access for System Maintenance

SSH

SSH Means secure shell human readable. A more secure method for remote logins would be via secure shell (SSH).^[12]

STEP 1: Installing SSH



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
[root@localhost Desktop]# yum install ssh
Loaded plugins: fastestmirror, refresh-packagekit, security
Loading mirror speeds from cached hostfile
* base: mirror.dhakacom.com
* extras: mirror.dhakacom.com
* updates: mirror.dhakacom.com
Setting up Install Process
No package ssh available.
Error: Nothing to do
[root@localhost Desktop]#
```

[Figure 3.23: Shows Screen Print install ssh]

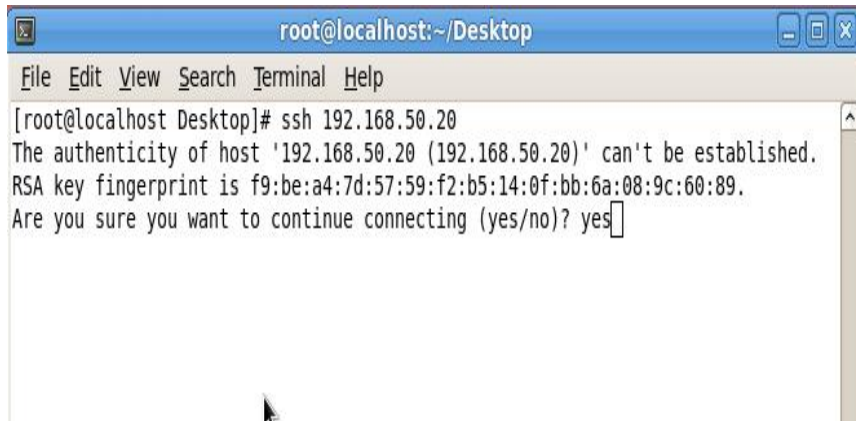
STEP 2 :Connect Remote PC



```
root@localhost:~/Desktop
File Edit View Search Terminal Help
[root@localhost Desktop]# ssh 192.168.50.20
```

[Figure 3.24: Shows Screen Print sshConnect Remote PC]

STEP 3: Type Yes



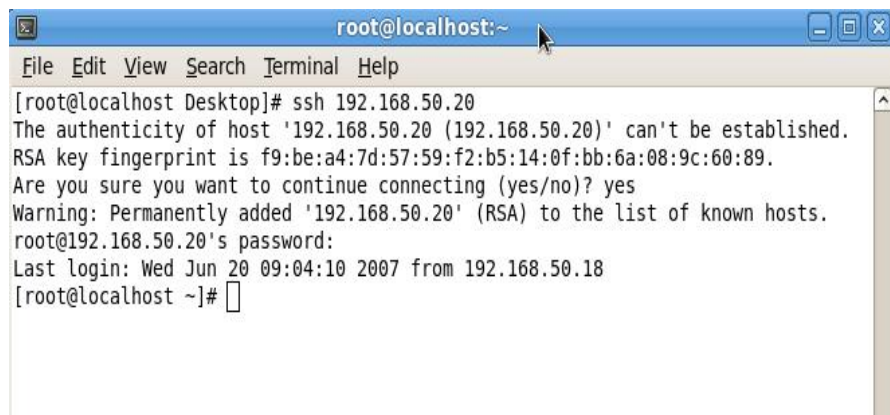
[Figure 3.25: Shows Screen Print sshConnect Remote PC continue]

STEP 4: Enter Remote Pc Password



[Figure 3.26: Shows Screen Print Enter Remote Pc Password]

STEP 5: Successfully Connected



[Figure 3.27: Shows Screen Print sshSuccessfully Connected]

CHAPTER 4

Internship Outcome

4.1 Problems and Solution

Problem Determination for Linux on System specific products or solutions, while getting hands-on experience with leading-edge. Due to problems concerning environment model we could only present some new errors. I believe that providing Linux operating system models will lead to a solution that resembles or even extends besides helpful discussions. A manufacturer of premium carbide end mills and special application rotary cutting tools. ... Description: Designs state-of-the-art, high quality Linux clusters, servers, and RAID storage solutions for universities, life sciences, Laboratory applies science, by means of advanced technology, to critical problems of national security. Solution: In dual booting operating system red hat cannot support primary partitions. An secondary HDD partition space is select for centos than I able to create root/boot and swap partitions and continue setup Linux. But when any HDD fall to bad sector its cannot load red hat.

4.2 Learning Outcome

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. I am a professional in the field exposure with clients and professional etiquette and professional supervisors and other employees to learn from watching an understanding of the behavior, as well as to gain through interaction. 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.

4.3 Challenges

As rewarding your internship can be, there are challenges to be aware of when joining a public relations firm as an intern. Internships are opportunities to gain relevant experience in the workplace but sometimes they can be challenging and you'll want to learn how to navigate the process. Internships are not without their own bumps in the road! I'm going to cover some concerns that many interns struggle with. However, keep in mind that all. An Intern can face different challenges these are given below:

- To adopt with the work environment.
- Achieve some organizing capability.
- Adjust with the official decorum and norms.
- Established interpersonal relations with the officials.
- Make himself capable with the competitive job market.
- Achieve some reward from the organization
- Use simple language with the officials for communication.
- Develop Corresponding capacity with different level of customers.
- Be helpful and keep patient at the time of customer service
- At last an intern has to face many other challenges including all above.

Ultimately, we can say that if there is no challenge, there is no success. So, we have to take every challenge positively in the way of your success.

CHAPTER 5

Conclusion and Future Scope

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 yourself 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]

5.2 Future Scopes

During the short period of this internship project, I implemented a SoC Linux using Peta Linux on the FPGA itself providing future scope for developing autopilot. Scope assigned project/tasks and provide accurate time estimates. Linux is a great and vast operating system that you can only learn it by practice, it seems that your new with Linux and for a freshman I suggest you to start working . I can fix this and maybe there could be something done in the future, to make this simpler. There's nothing wrong with specializing in one particular programming language, but don't let it define you. What is the career scope of a Linux kernel hacker/developer? What are the best ways to get an internship at a startup?

Linux is being installed on the system BIOS of laptop and notebook computers, which will enable users to turn their devices on in a matter of seconds, bringing up a streamlined Linux environment. This environment will have Internet connectivity tools such as a web browser and an e-mail client, allowing users to work on the Internet without having to boot all the way into their device's primary operating system--even if that operating system is Windows.

At the same time, Linux is showing up on mobile Internet devices (MIDs). This includes embedded devices such as smartphones and PDAs, as well as netbook devices--small laptop-type machines that feature the core functionality of their larger counterparts in a smaller, more energy-efficient package.

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