INS ASSIGNMENT 2

By Gary Tutundjian And Keith Buckley

Introduction

In this assignment we were assigned to groups of two to complete the following assignment.

As a systems administrator you have been asked to implement the following Internet & Network services using Ubuntu for a company called KhufuNet.

Web Server (Apache) with Virtual Hosting two sites.

DNS Server (BIND), Primary & Secondary

DHCP Server for Ubuntu clients

eMail Server (Postfix) & POP/IMAP Server (Dovecot)

FTP Server

SSH Server

File Server (Samba)

Network Printing (CUPS)

The domain name KhufuNet.com has already been registered. Apache will host www.KhufuNet.com and a WordPress instance; blog.KhufuNet.com

Other issue that you will need to address include but are not limited to:

User & Groups

Disk Quotas

Monitoring

Ease of administration

Lab Topology

The lab topology is made up of two PCs running VMware in “Bridged Mode” and connected via a hub. The virtual machines are specified as follows:

VM1 – Ubuntu desktop (DHCP client)

VM2 – Apache Server/Name Server 1/Print Server/Samba Server

VM3 – eMail Server/Name Server 2/DHCP Server/SSH Server/FTP Server

VM4 – Ubuntu desktop (DHCP client)

We had to split up into groups of two, in our group was Gary Tutundjian and Keith Buckley.

Tim made it easier to split up the work by assigning what each VM should have.

Gary will do:

- VM1 – Ubuntu desktop (DHCP client)
- VM2 – Apache Server/Name Server 1/Print Server/Samba Server

Keith will do:

- VM3 – eMail Server/Name Server 2/DHCP Server/SSH Server/FTP Server
- VM4 – Ubuntu desktop (DHCP client)

To get the project started we both did a fresh install of ubuntu desktop and ubuntu server.

The following is Gary's part of the report and he will show what he did.

Dhcp configuration (UBUNTU DESKTOP)

First I downloaded the service

Apt-get install dhcp3-server
nano /etc/network/interfaces (this is to set the interface to use dhcp)
comment out the following lines
auto lo
iface lo inet loopback
iface eth0 inet dhcp
Next I added the following lines
iface eth0 inet static

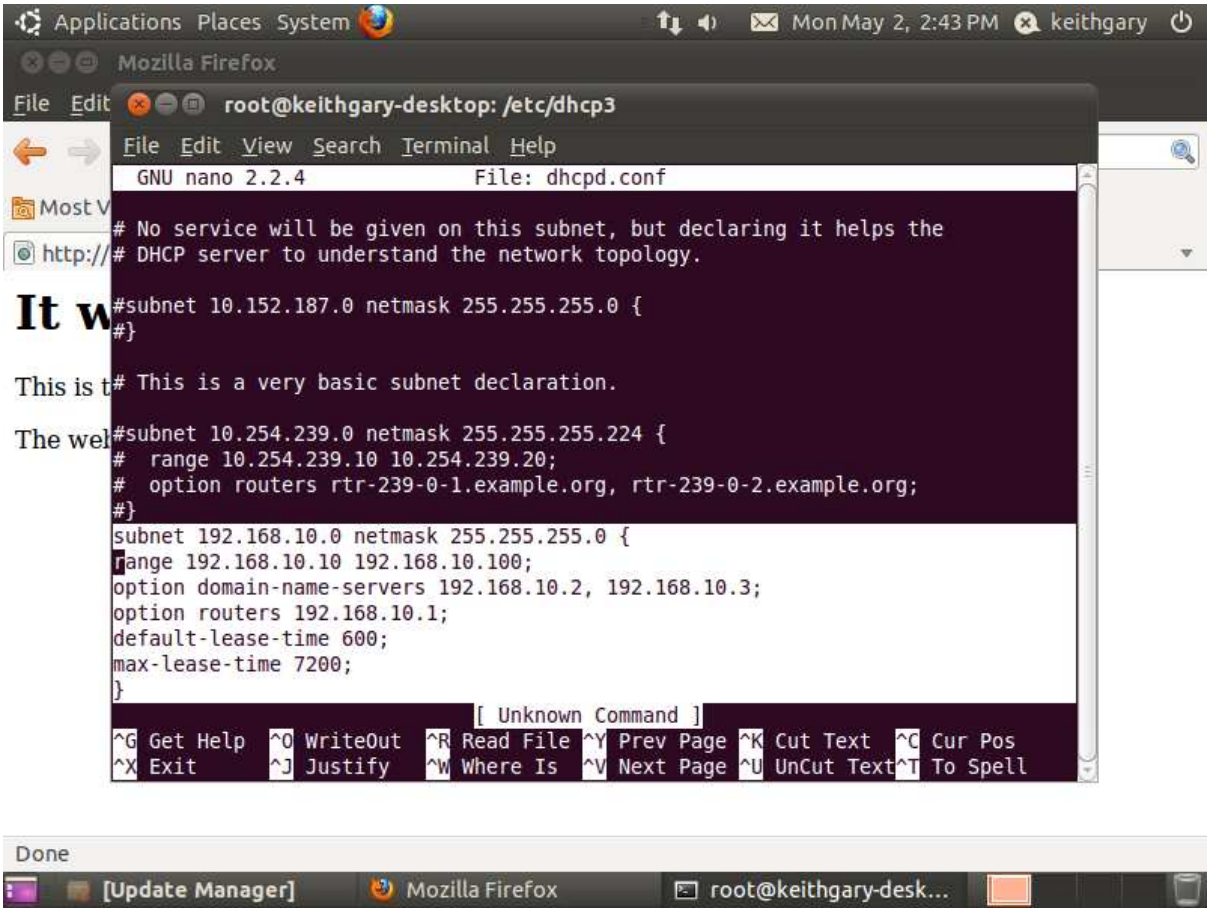
address 192.168.1.9

netmask 255.255.255.0

gateway 192.168.1.1

broadcast 192.168.1.255

network 192.168.1.0



After I changed the networking configurations it was necessary to then restart the networking interfaces

/etc/init.d/networking restart

It is a good idea at this time to backup the dhcp.conf file before changing anything so you have something to revert back to once you've edited it.

cp /etc/dhcp3/dhcpd.conf dhcpd.backup

Then edit the file

nano /etc/dhcp3/dhcpd.conf

I added the following lines to the file:

```
subnet 192.168.1.0 netmask 255.255.255.0 {
range 192.168.1.10 192.168.1.100;
option domain-name-servers 192.168.1.2, 192.168.1.3;
option routers 192.168.1.1;
default-lease-time 600;
max-lease-time 7200;
}
```

Also in the file /etc/default/dhcp3-server I changed INTERFACES="" to INTERFACES="eth0

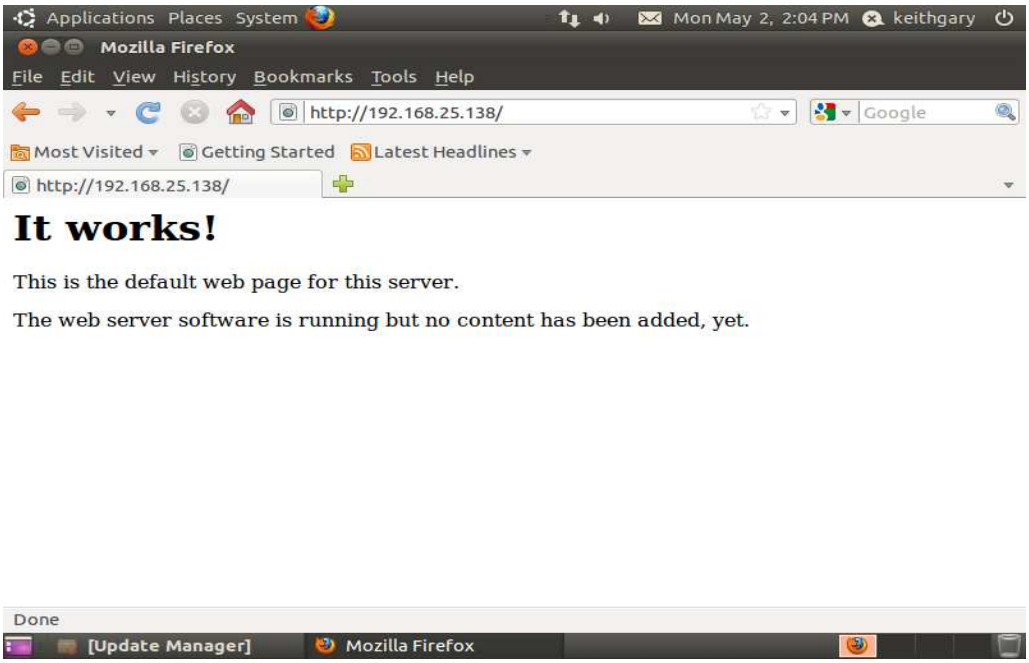
LAMP Server

To get apache i issued the following command:
Tasksel

Then i checked LAMP Server to install Apache Mysql and PHP all at once.

The screenshot below shows that apache is working.

Apache working



During the installation of LAMP you are required to enter passwords for Mysql as well

It is also a good idea to download and install phpmyadmin at this time as well because it is needed to use with wordpress.

To see of php is working we must create the info.php file in the /var/www directory

In the file enter the following lines

```
<?php
phpinfo();
?>
```

To test this you need to go to the web browser on your client and type in this address

http://ipaddressofserver/info.php

Apt-get install phpmyadmin

After that you must enter the passwords that you wish to use for phpmyadmin. The passwords that I used were ‘password’. I used this for everything in this project.

Wordpress

To install wordpress:

Apt-get install wordpress
mv /usr/share/wordpress /var/www
 # mysql -u root –p

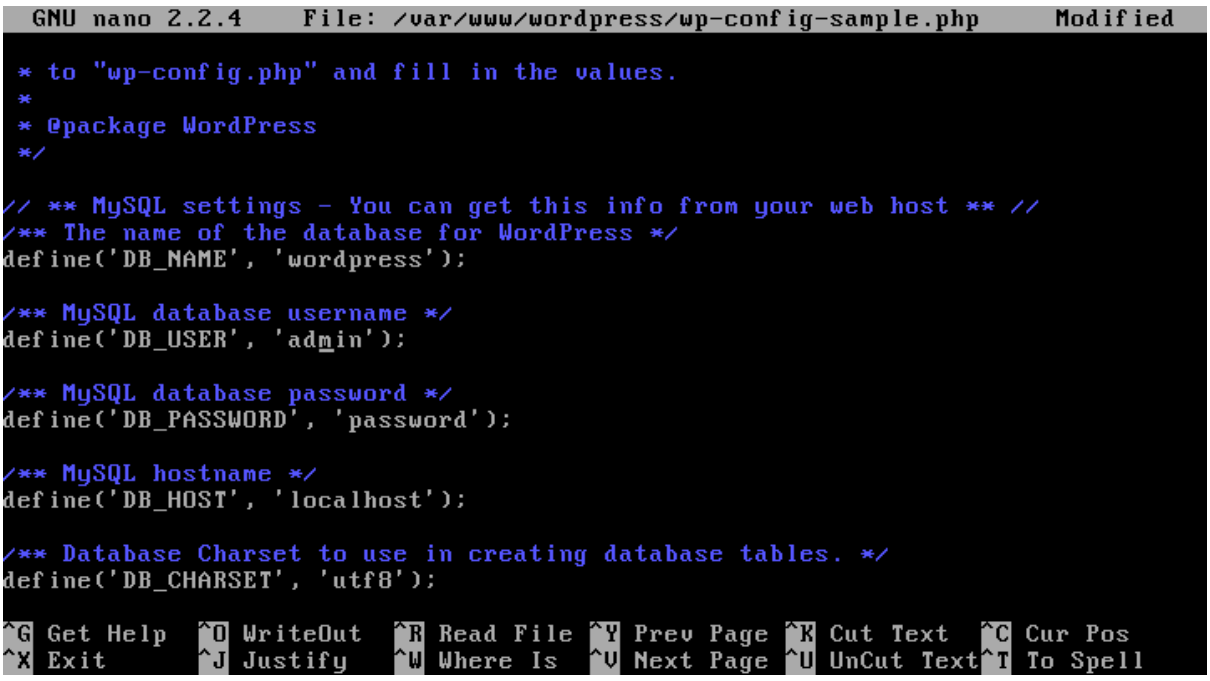
#create database wordpress;

 # create admin;

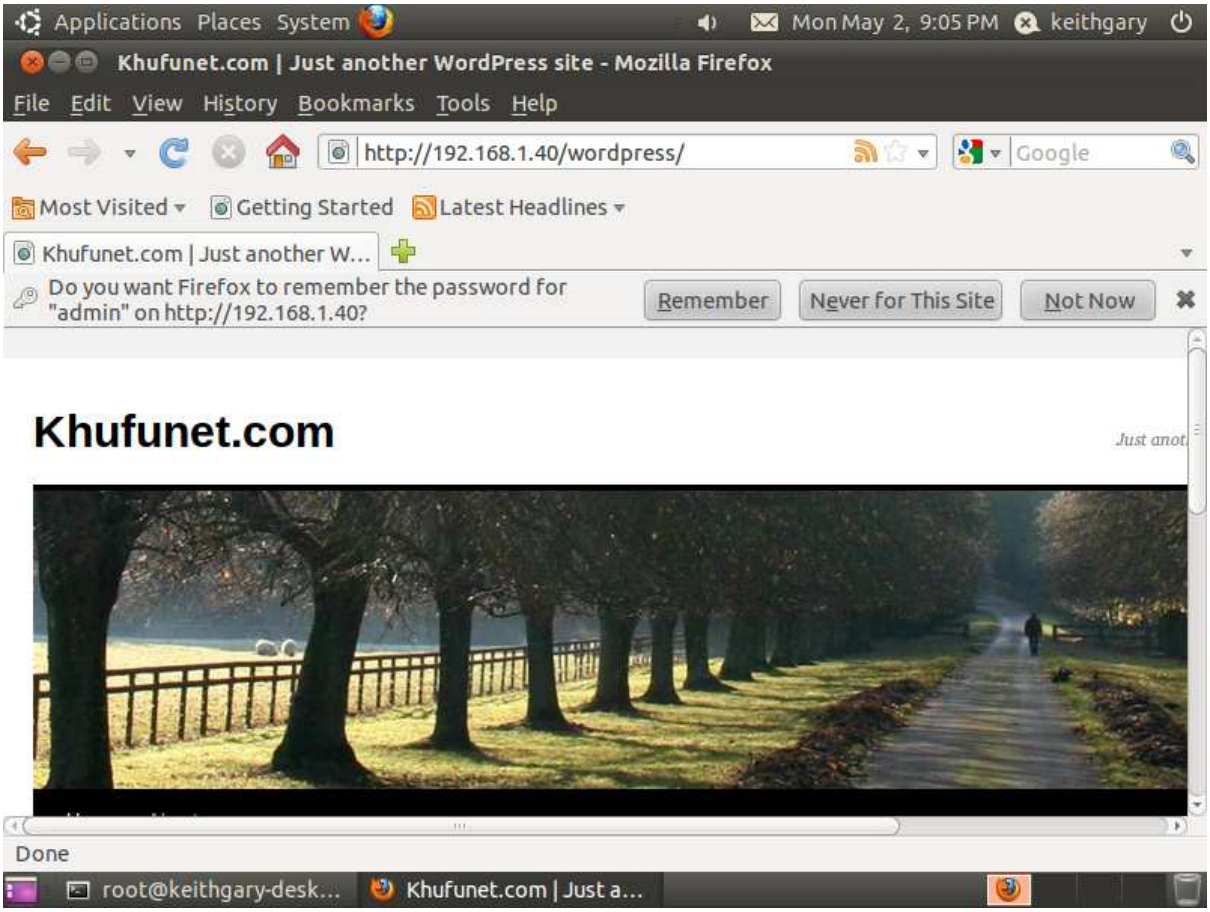
 # set password admin = PASSWORD(“password”);

 # grant all privileges on wordpress.* to admin@localhost identified by ‘password’;

Next I had to edit the sample config file
nano /var/www/wordpress/wp-config-sample.php
Change the lines to the following
database name = wordpress
user = admin
password = Password that you chose when you entered the GRANT ALL ON wordpress.* TO wordpressuser IDENTIFIED BY ‘**password**’; command.
save as wp-config



Khufunet.com Blog up and running

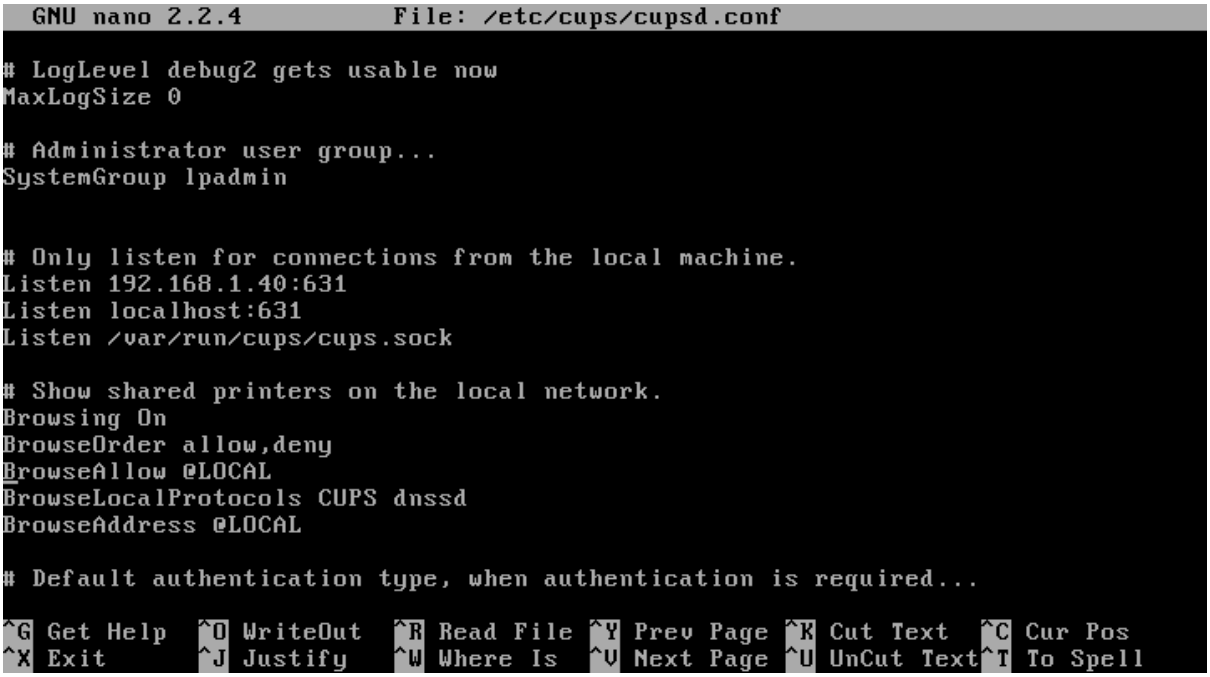


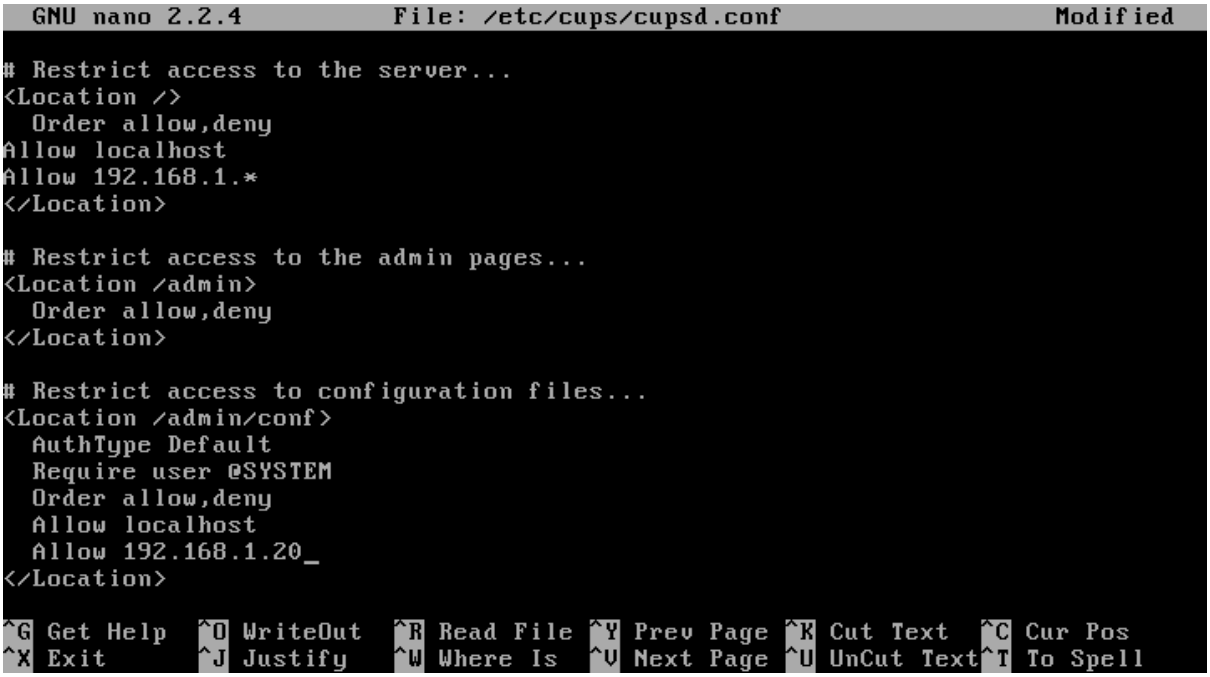
Cups Configuration

The installation of CUPS:

apt-get install cups

Next I edited the /etc/cups/cupsd.conf to look like the following.

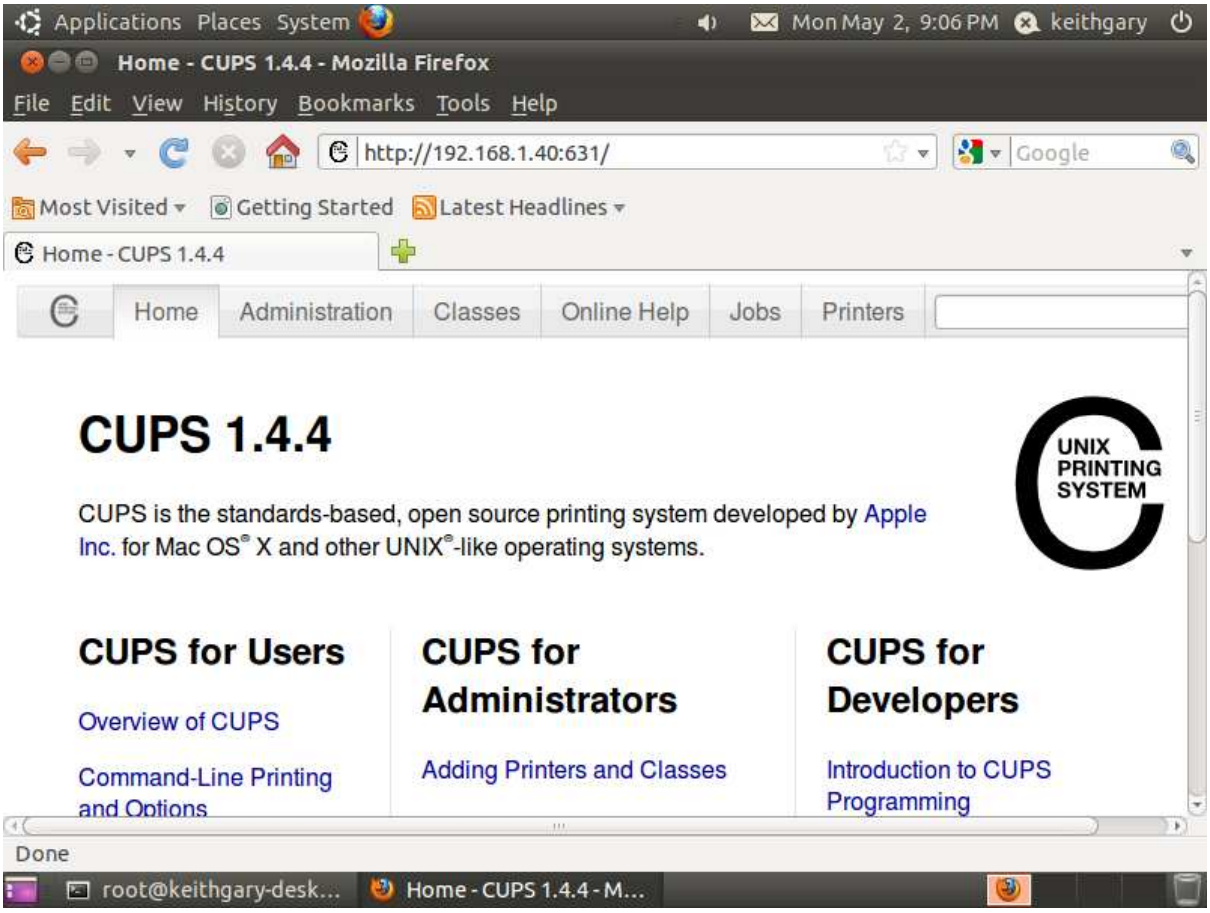




Next You need to restart the cups service by issuing the following command:

restart cups

Go to 192.168.1.40:631 which is the server that is running cups. Use a web browser on the ubuntu client to see if cups is working



As you can see from the screen shot above the cups service is up and running

Samba

To get samba issue the following command:
apt-get install samba
Then make a directory /share by using this command
mkdir –m 0777 /share

I added the following lines from where it says security = user:

Guest account = nobody
[Share]
comment = Guest access share
Path = /Share
browseable = yes
writeable = yes
quest ok = yes

public = yes

Next restart samba

Service smbd restart

Installing BIND

To get BIND initially we will enter this command:

apt-get install bind9

Next we will have to edit the /etc/bind/named.conf.local to look like the following

nano /etc/bind/name.conf.local

we are adding the last 8 lines that are in the following screenshot

```
 GNU nano 2.2.4        File: /etc/bind/named.conf.local

//
// Do any local configuration here
//

// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";
zone khufunet.com {
type master;
file "/etc/bind/zones/khufunet.com.db";
};

zone "0.168.192.in-addr.arpa" {
type master;
file "/etc/bind/zones/rev.0.168.192.in-addr.arpa";
};




                              [ Read 16 lines ]

root@keithgaryserver2:~# _
```

Next we will have to edit the /etc/bind/named.conf.options to look like the following
nano /etc/bind/name.conf.options

Edit the /etc/bind/named.conf.options file to look like the following
nano /etc/bind/named.conf.options

```
        directory "/var/cache/bind";

        // If there is a firewall between you and nameservers you want
        // to talk to, you may need to fix the firewall to allow multiple
        // ports to talk.  See http://www.kb.cert.org/vuls/id/800113

        // If your ISP provided one or more IP addresses for stable
        // nameservers, you probably want to use them as forwarders.
        // Uncomment the following block, and insert the addresses replacing
        // the all-0's placeholder.

         forwarders {
                91.142.110.5;
         };

        auth-nxdomain no;    # conform to RFC1035
        listen-on-v6 { any; };
};

                              [ Wrote 20 lines ]
^G Get Help  ^O WriteOut  ^R Read File ^Y Prev Page ^K Cut Text  ^C Cur Pos
Use "fg" to return to nano.^W Where Is  ^V Next Page ^U UnCut Text^T To Spell

[2]+  Stopped                 nano /etc/bind/named.conf.options
root@keithgaryserver2:~# _
```

Configuring BIND9

Make the directory /etc/bind/zones/

Mkdir /etc/bind/zones

Create the file khufunet.com.db in the /etc/bind/zones directory
nano /etc/bind/zones/khufunet.com.db

And enter the same data that I have entered

Also make the reverse Reverse DNS Zone file called rev.0.168.192.in-addr.arpa and put it in the /etc/bind/zones dir. Enter the following data into this file

Next you should restart bind
/etc/init.d/bind9 restart

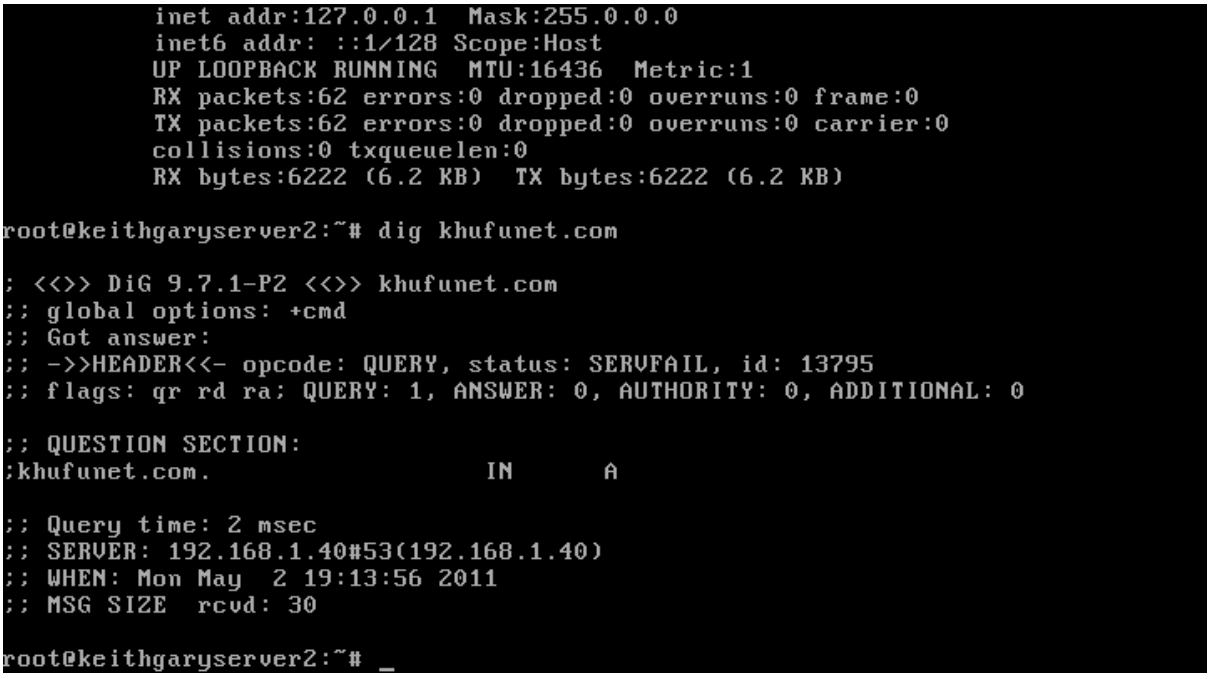
Then we should edit the resolv.conf file to look like the following

Changing /etc/resolv.conf

The next thing to do is to test the DNS by entering the following command

Dig khufunet.com

Result from dig khufunet.com



The following is the actions taken by Keith Buckley and recorded below:

Installing DHCP on client server:

COMMANDS USED:

#apt-get install dhcp3-server

Make sure it is in bridged mode.

#Nano /etc/network/interfaces

Comment out (#) :

Auto eth0

Iface lo inet loopback

Then enter the following:

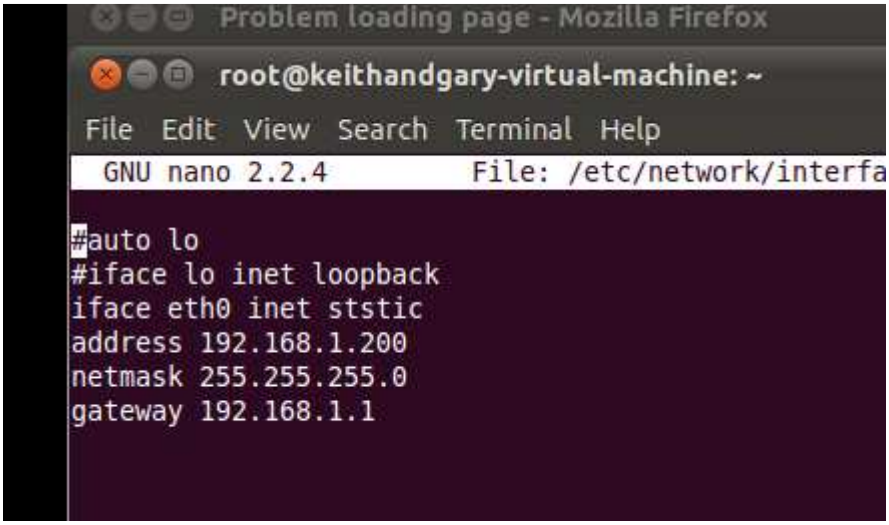
Iface eth0 inet static

Address 192.168.1.30

Netmask 255.255.255.0

Gateway 192.168.1.1

save and exit



/etc/dhcp3/dhcp.conf

#cp /etc/dhcp3/dhcp.conf dhcpd.backup

#ls

#Nano /etc/dhcp3/dhcpd.conf

Uncomment and change the following:

```
  GNU nano 2.2.4          File: /etc/dhcp3/dhcpd.conf

# which we don't really recommend.

#subnet 10.254.239.32 netmask 255.255.255.224 {
#  range dynamic-bootp 10.254.239.40 10.254.239.60;
#  option broadcast-address 10.254.239.31;
#  option routers rtr-239-32-1.example.org;
#}

# A slightly different configuration for an internal subnet.
  subnet 192.168.1.0 netmask 255.255.255.0 {
  range 192.168.1.10 192.168.1.100;
  option domain-name-servers 192.168.1.2,192.168.1.3;
  option domain-name "keithandgary.localhost";
  option routers 192.168.1.1;
#  option broadcast-address 10.5.5.31;
  default-lease-time 6000;
  max-lease-time 72000;
}
```

Subnet <ip add> netmask 255.255.255.0 {

Range(ip add> 192.168.1.100;

Option routers 192.168.1.1;

Option domain-name-servers 192.168.1.2, 192.168.1.3;

Default-lease-time 6000;

Max-lease-time 72000;

}

```
# BOOTP or DHCP.   Hosts for which no fixed address is specified can only
# be booted with DHCP, unless there is an address range on the subnet
# to which a BOOTP client is connected which has the dynamic-bootp flag
# set.
host keithandgary {
  hardware ethernet 00:0c:29:5d:d6:19;
option host-name "keithandgary";
 fixed-address 192.168.1.40;
}
```

Host keithandgary {

Hardware Ethernet 00:0c:29:5d:d6:19;

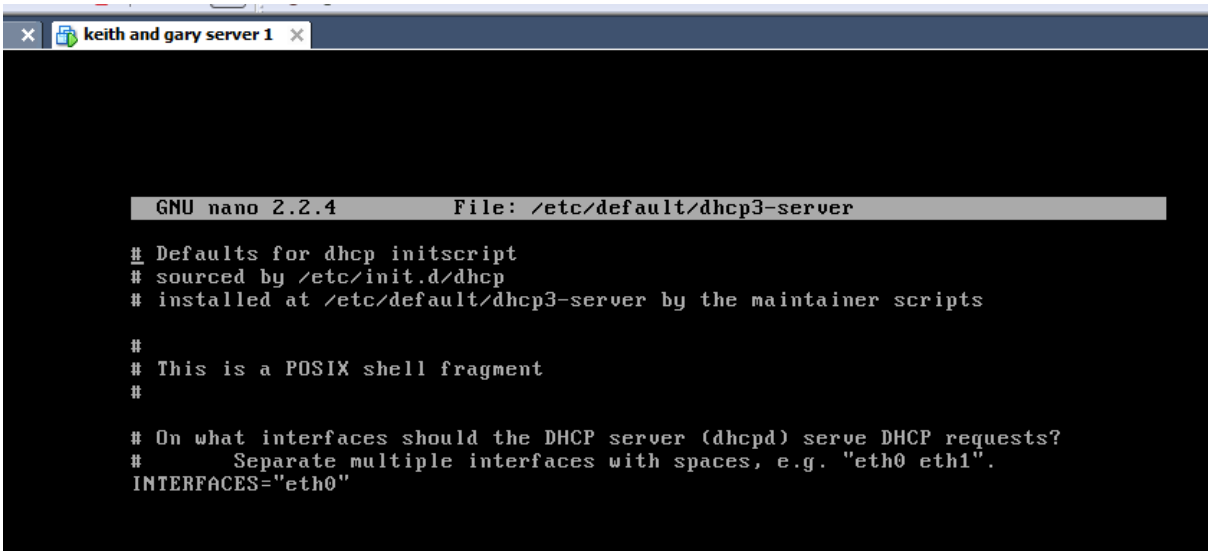
Option host-name “keithandgary”;

Fixed-address 192.168.1.20;

}

Save and exit

#nano /etc/default/dhcp3-server



Interfaces = “eth0”

Restart systems:

/etc/init.d/dhcp3-server start

Installing FTP on the server

Change to NAT mode

#aptitude install vsftpd

#Nano /etc/vsftpd.conf

Anonymous_enable= YES

```
  GNU nano 2.2.4            File: /etc/vsftpd.conf

# Run standalone?  vsftpd can run either from an inetd or as a standalone
# daemon started from an initscript.
listen=YES
#
# Run standalone with IPv6?
# Like the listen parameter, except vsftpd will listen on an IPv6 socket
# instead of an IPv4 one. This parameter and the listen parameter are mutually
# exclusive.
#listen_ipv6=YES
#
# Allow anonymous FTP? (Disabled by default)
anonymous_enable=YES
#
```

#Mkdir /srv/files/ftp

#usermod –d /srv/files/ftp ftp

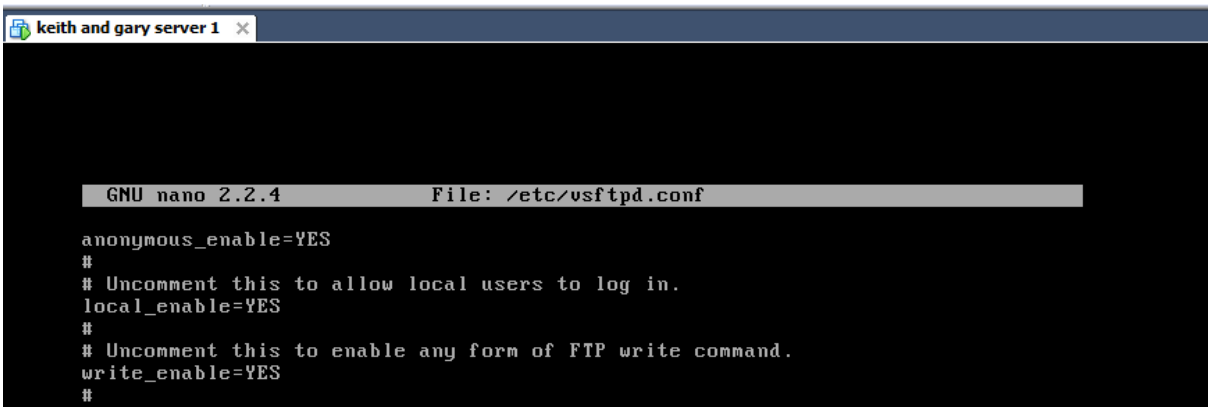
#restart vsftpd

Copy files to /srv/files/ftp

Use to upload files:

#Nano /etc/vsftpd.conf

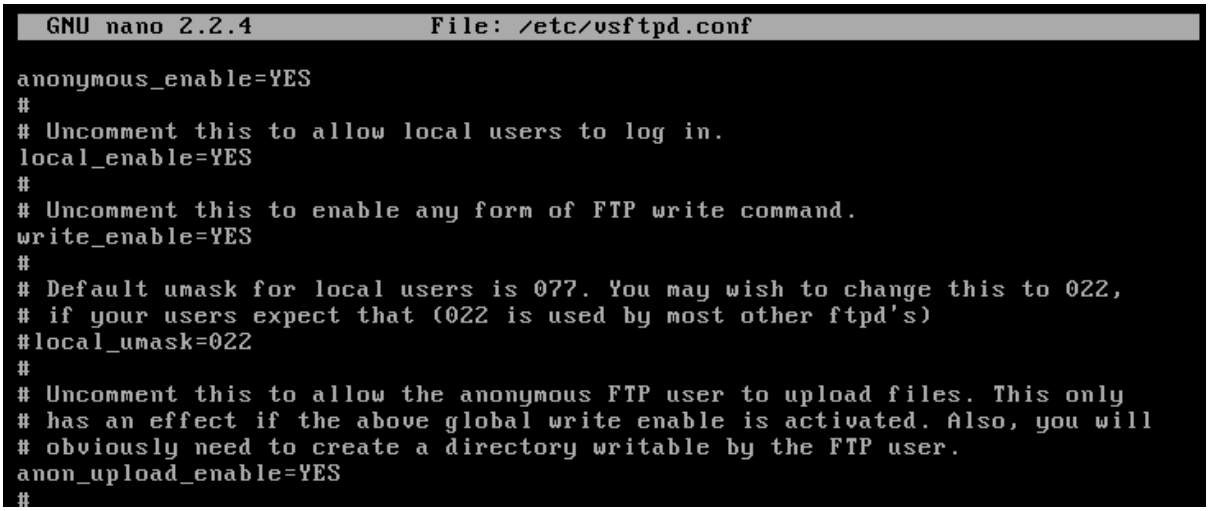
Write_enable = yes



#Restart vsftpd

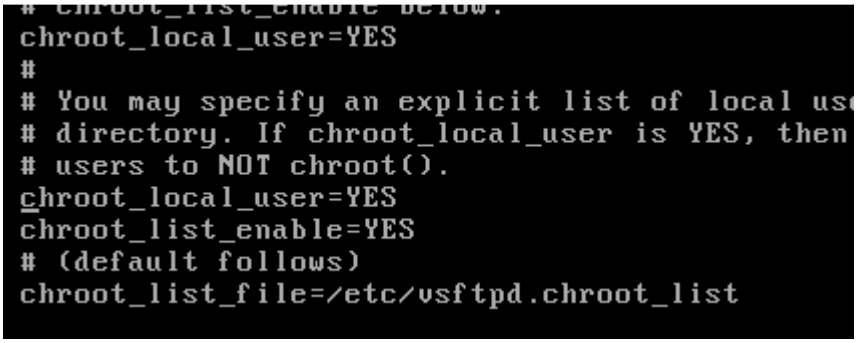
Uncomment out

Anon_upload_enable= YES



SECURING FTP:

Nano /etc/vsftpd.conf



Uncomment out

Chroot_local_user=yes

Chroot_list_user_= YES

Chroot_list_enable =TES

Chroot_list_file = /etc/vsftpd.chroot_list

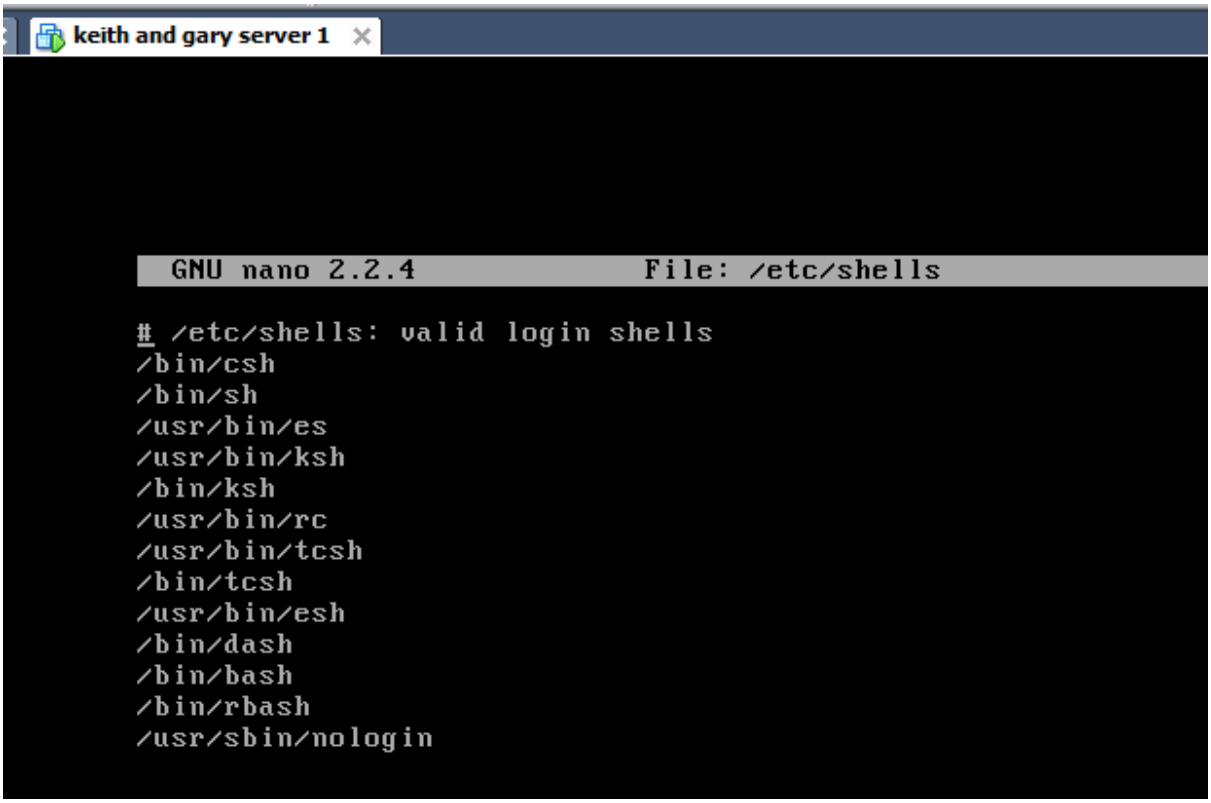
Ssl_enable = YES

Save and exit

#restart vsftpd

#nano /etc/shells

Add /usr/sbin/nologin



Installing SSH

Opening ssh:

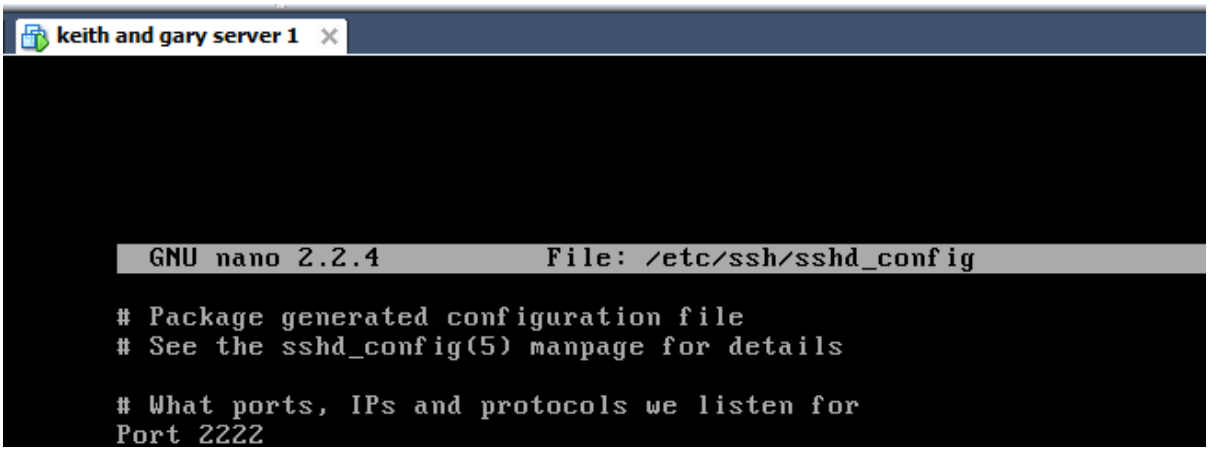
#Apt-get install openssh-client

#Apt-get install openssh-server

#Cp /etc/ssh/sshd_config /etc/ssh/sshd_config.original

#Chmod a-w /etc/ssh/sshd_config.original

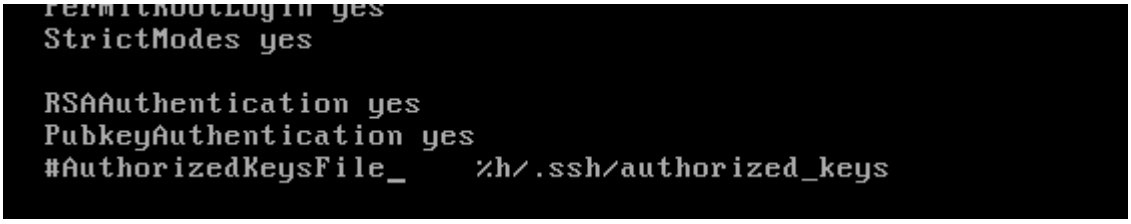
Nano /etc/ssh/sshd_config



Change port to 2222

And add pubkeyAuthentication yes

Make sure they are both commented out.



#Nano /etc/issue.net

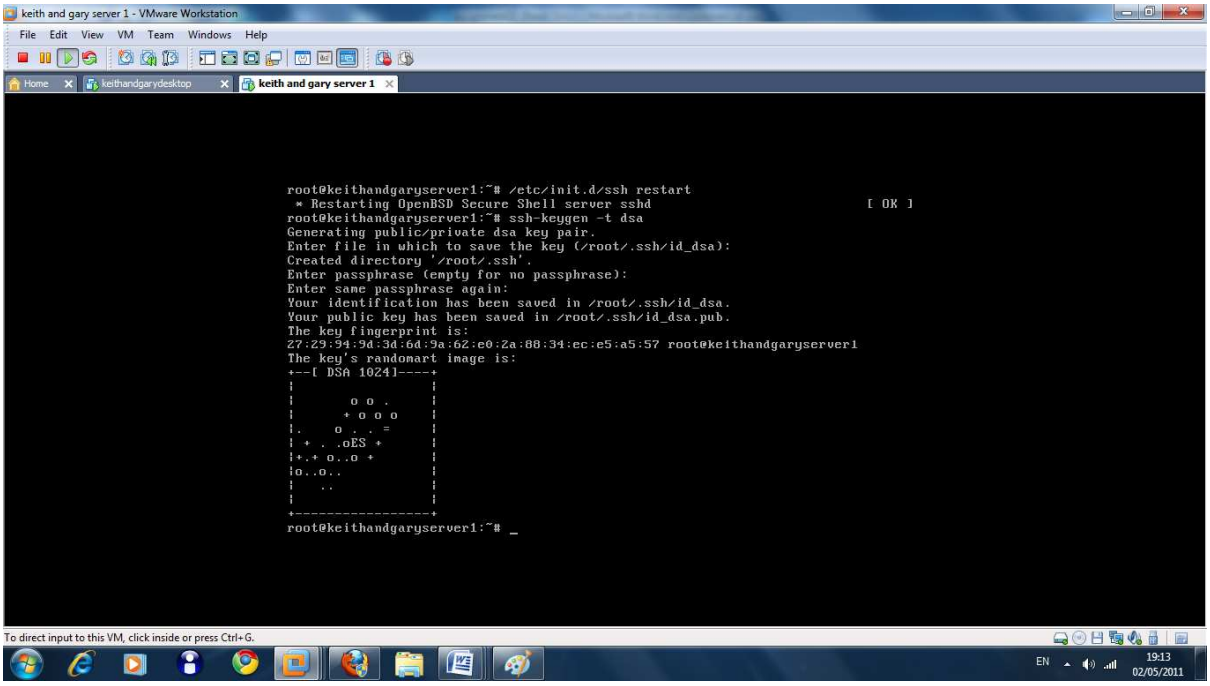
Edit the banner the enable it by uncommenting it in the file below:

#Nano /etc/ssh/sshd_config

/etc/init.d/ssh restart

SSH KEYS

#Ssh-keygen –t dsa



#Ssh-copy-id <username>@remotehost

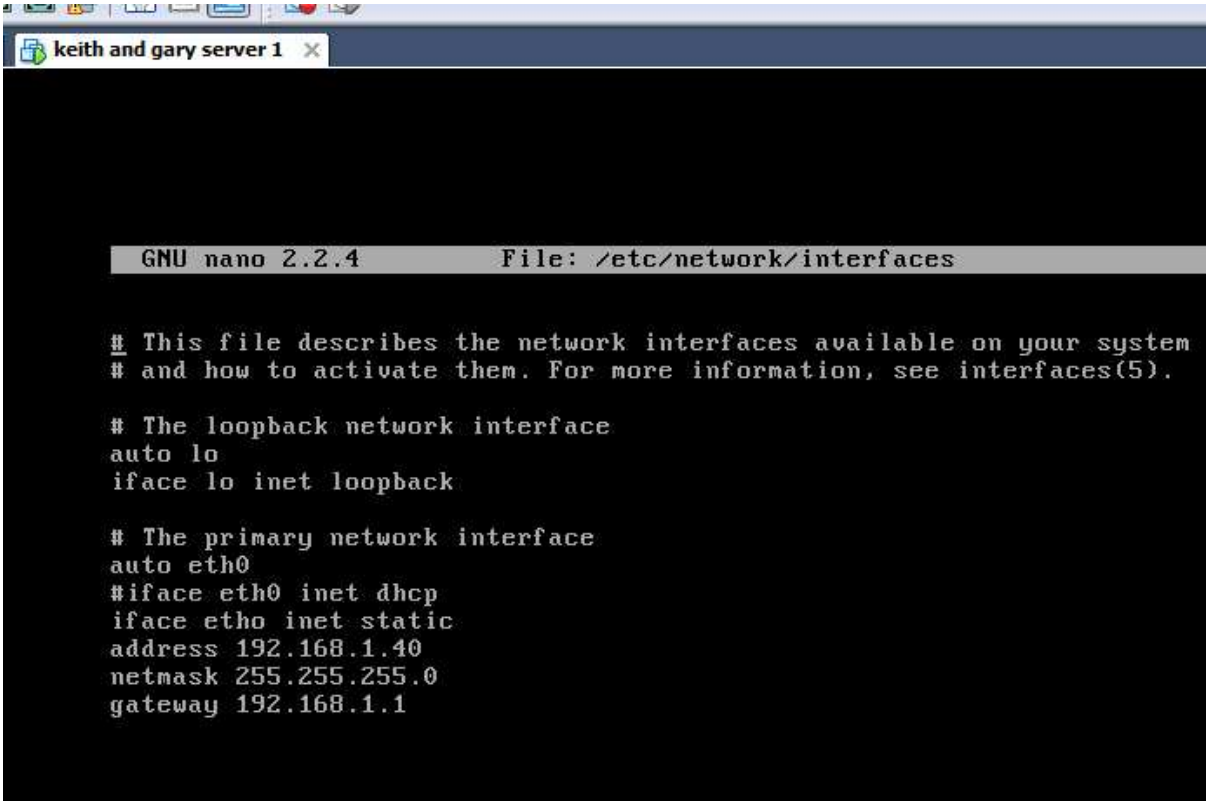
#Chmod 600 .ssh/authorized_keys

DHCP for server:
#apt-get install dhcp3-server

Bridged mode

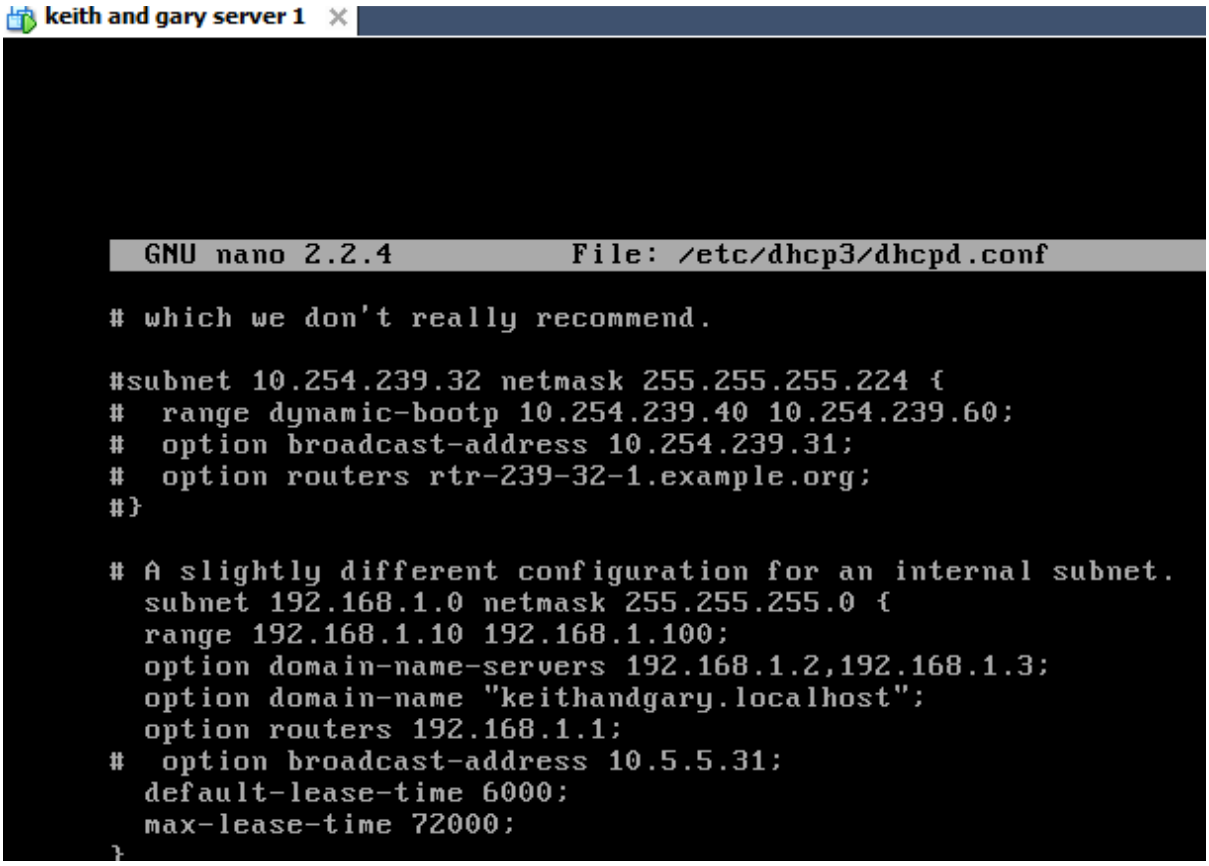
#nano /etc/network/interfaces

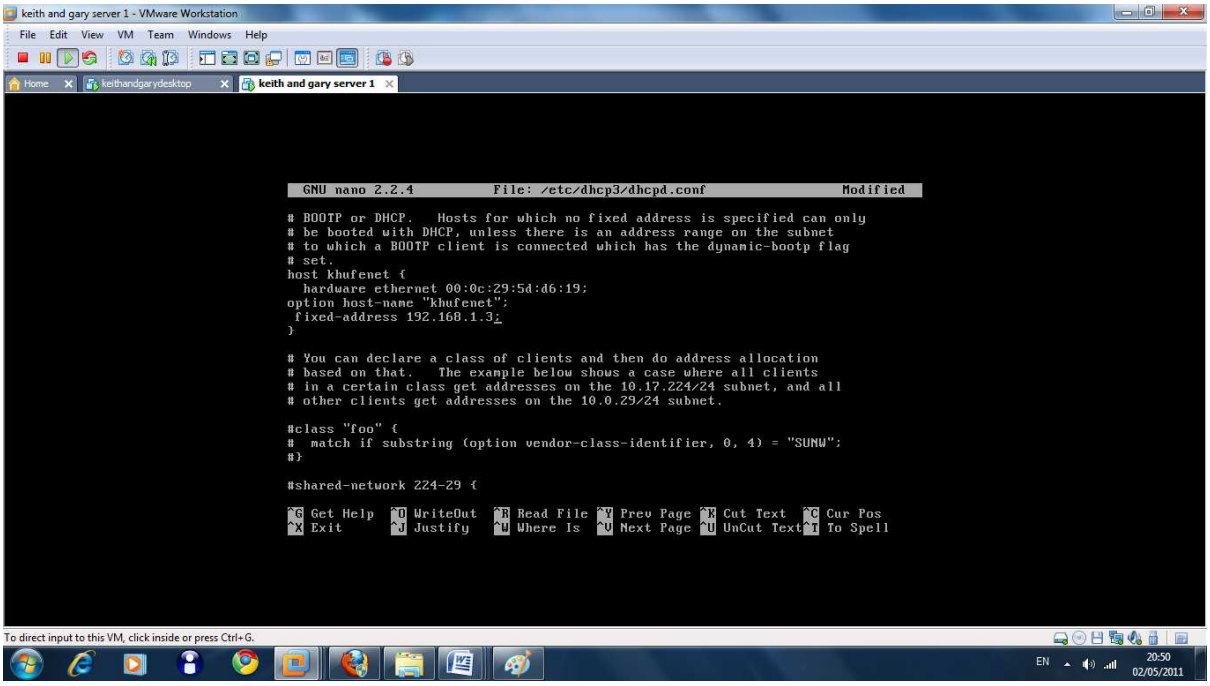
Change to the following:



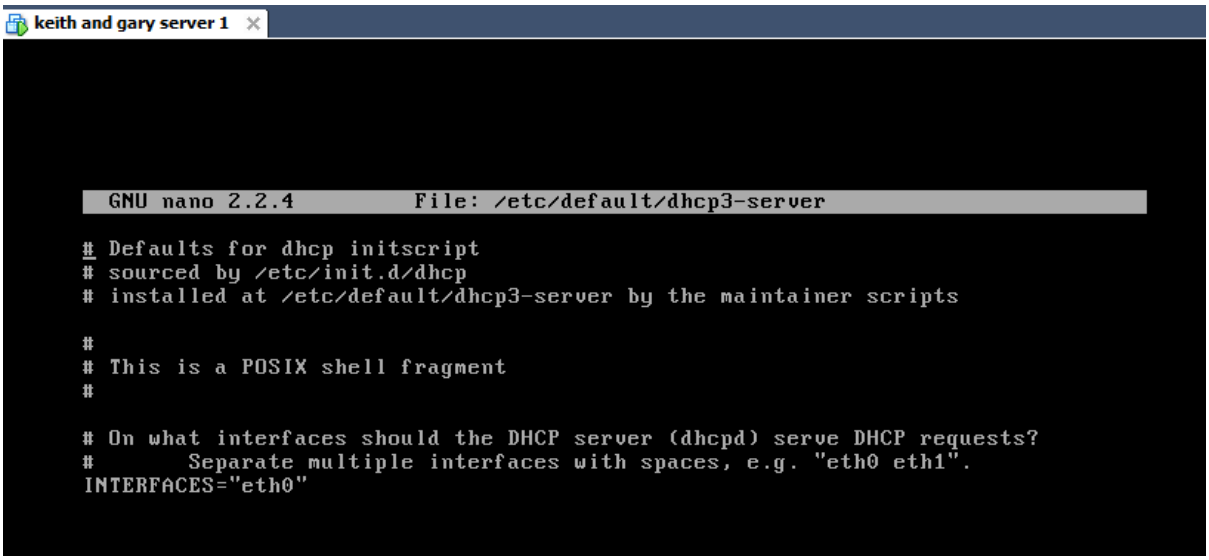
#cp /etc/dhcp3/dhcp.conf dhcpd.backup

#nano /etc/dhcp3/dhcpd.conf





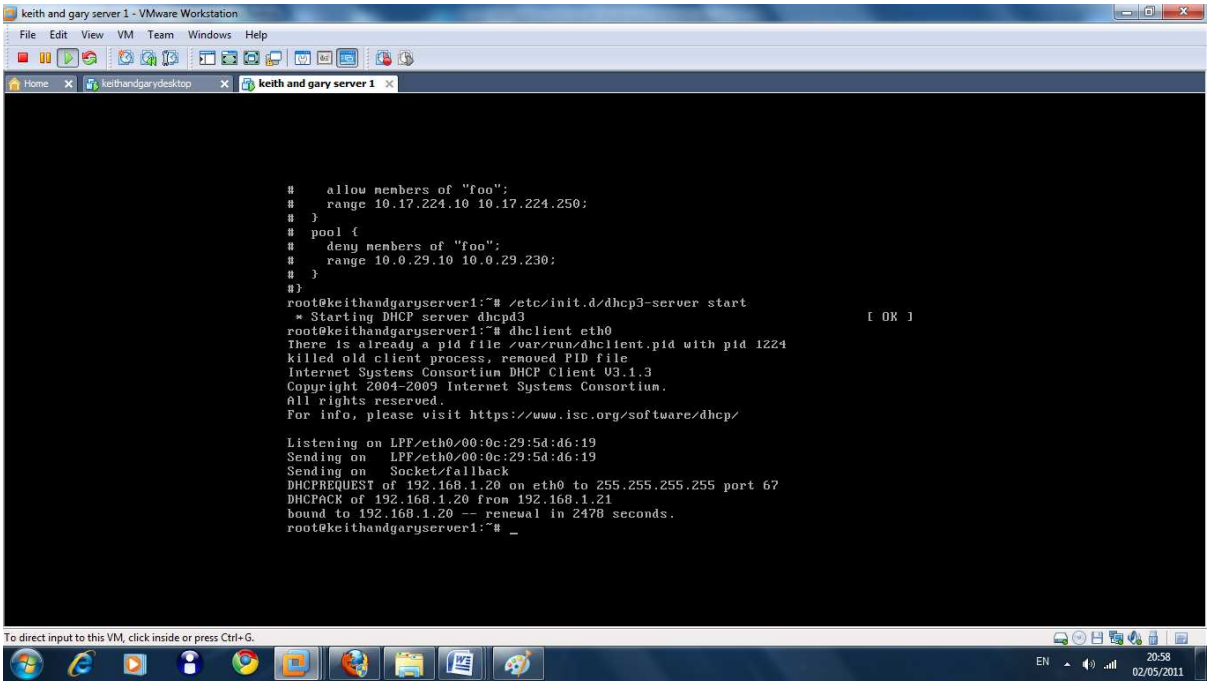
#nano /etc/default/dhcp3-server



#/etc/init.d/dhcp3-server start

Test –

#dhclient eth0

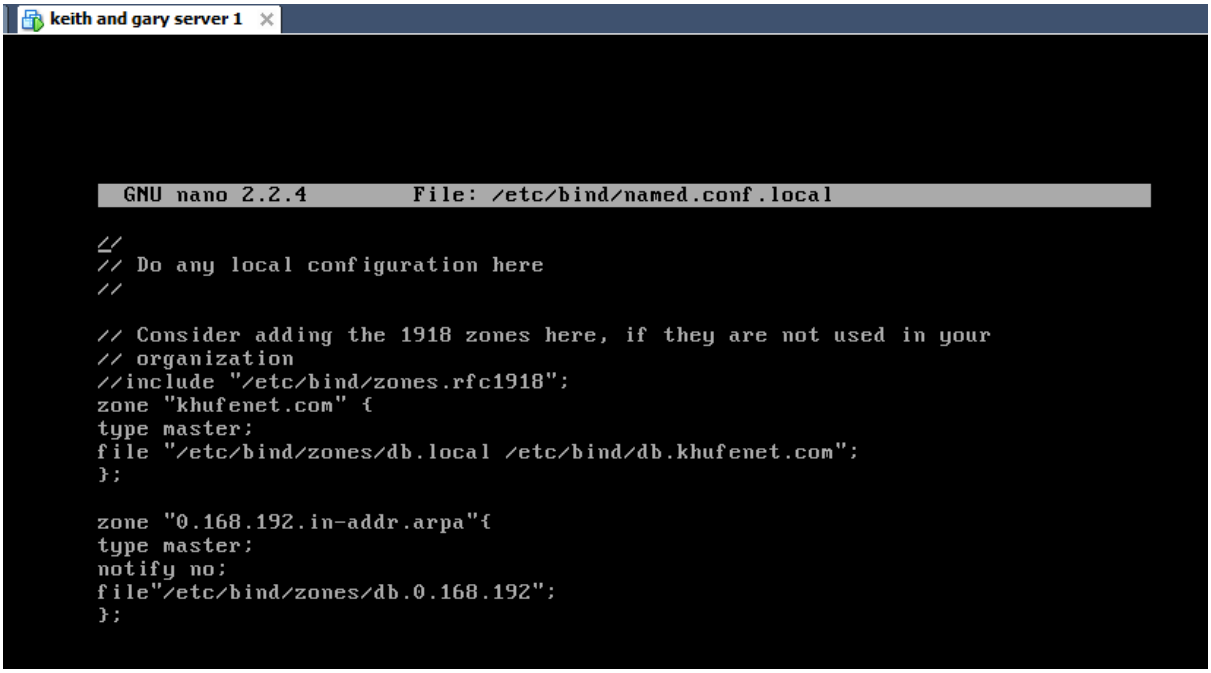


DNS SERVER-BIND

In bridged mode

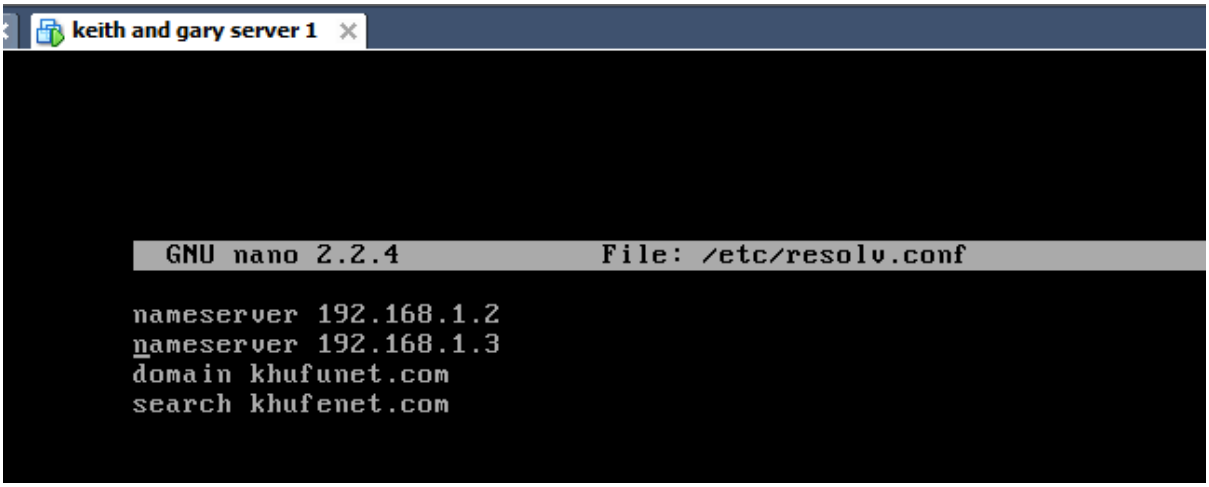
#apt-get install bind9

#nano /etc/bind/named.conf.local

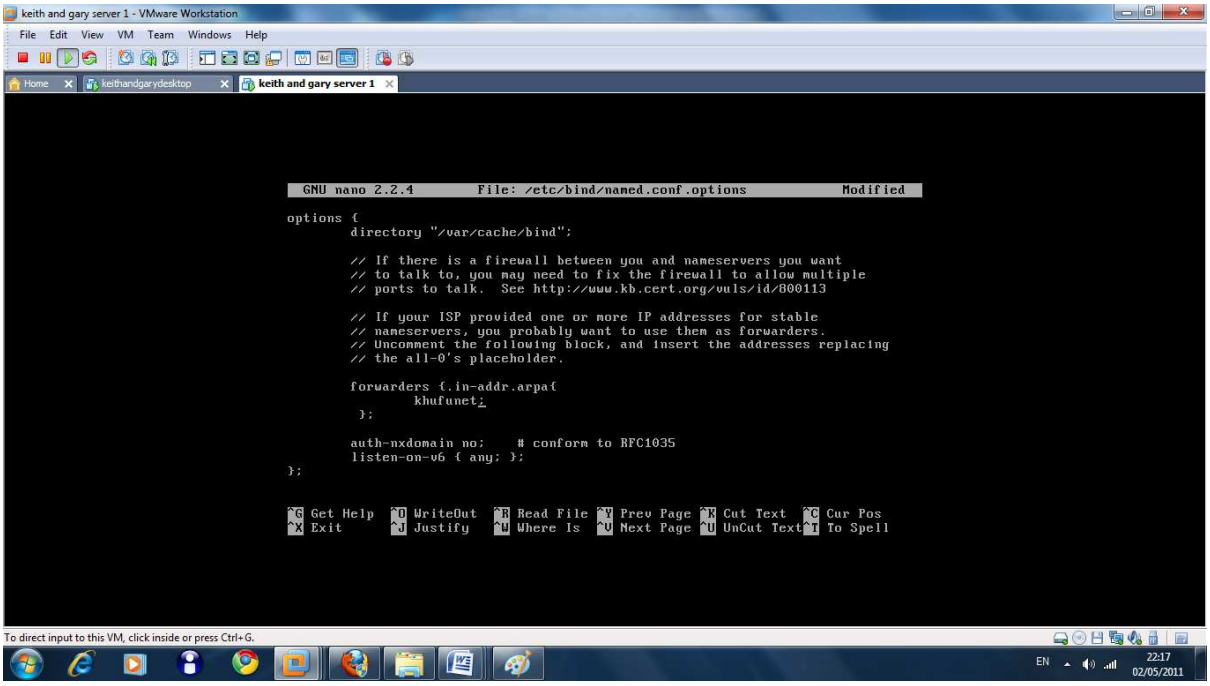


Enter the above details

#nano /etc/rersolv.conf



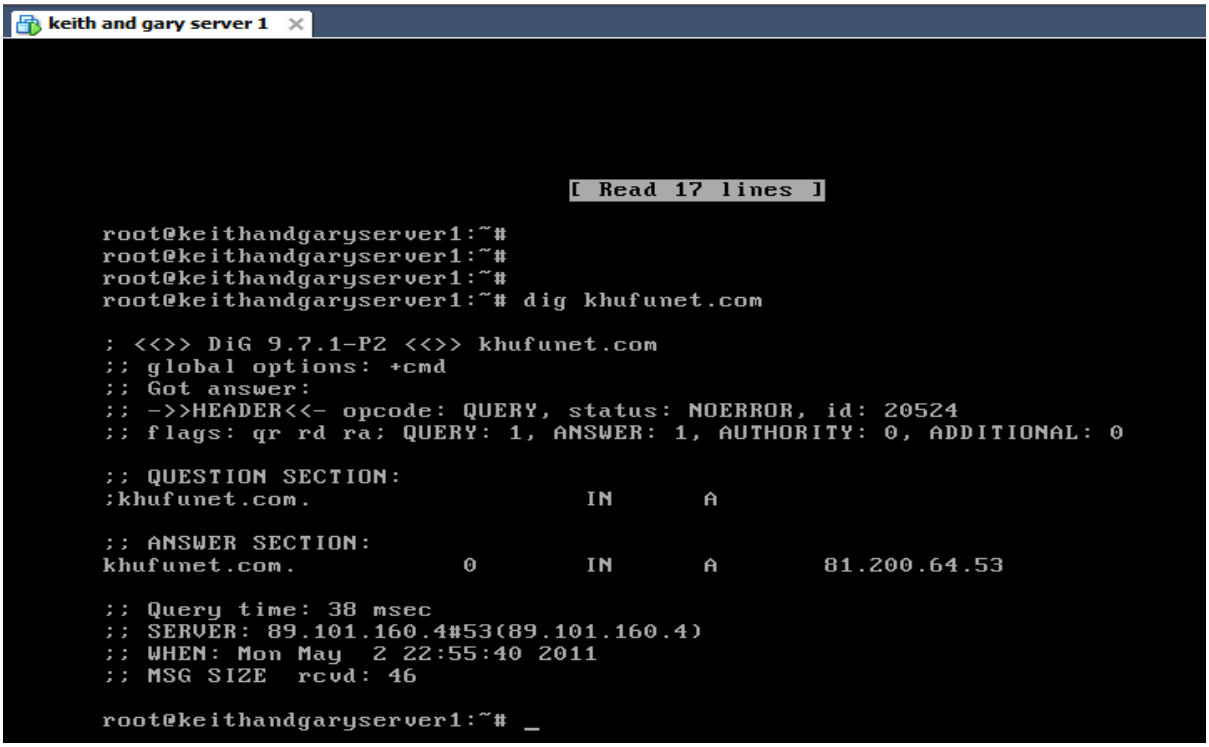
#nano /etc/bind/named.conf.options



#service bind9 restart

Test:

Dig khufunet.com

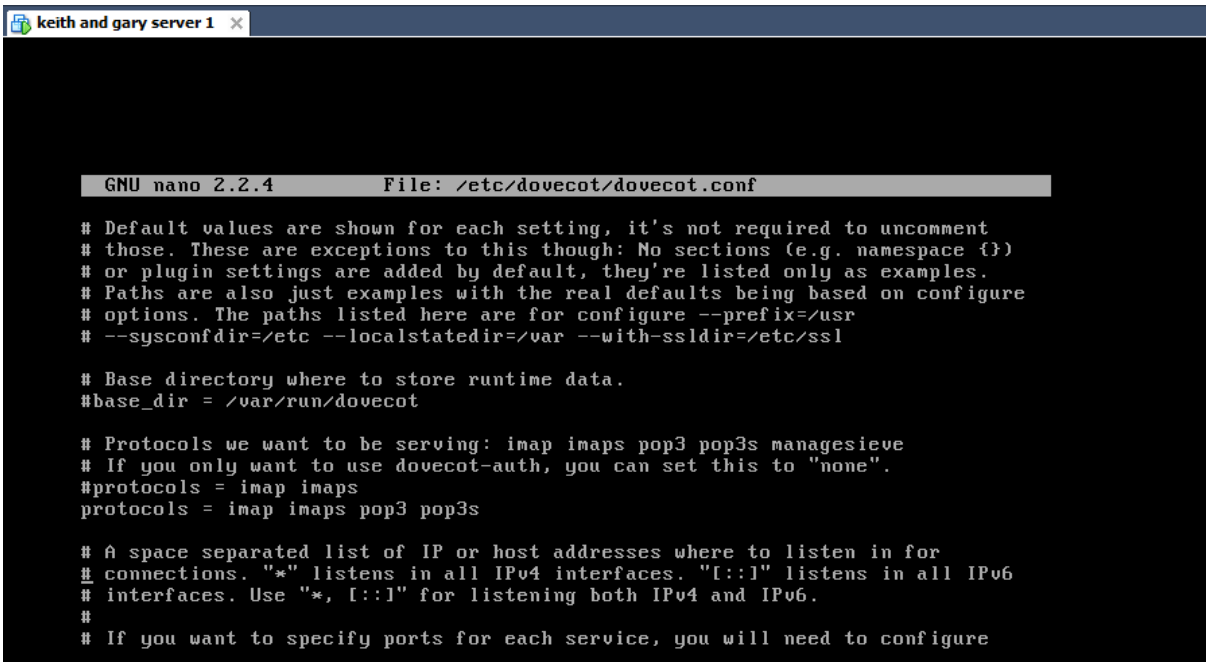


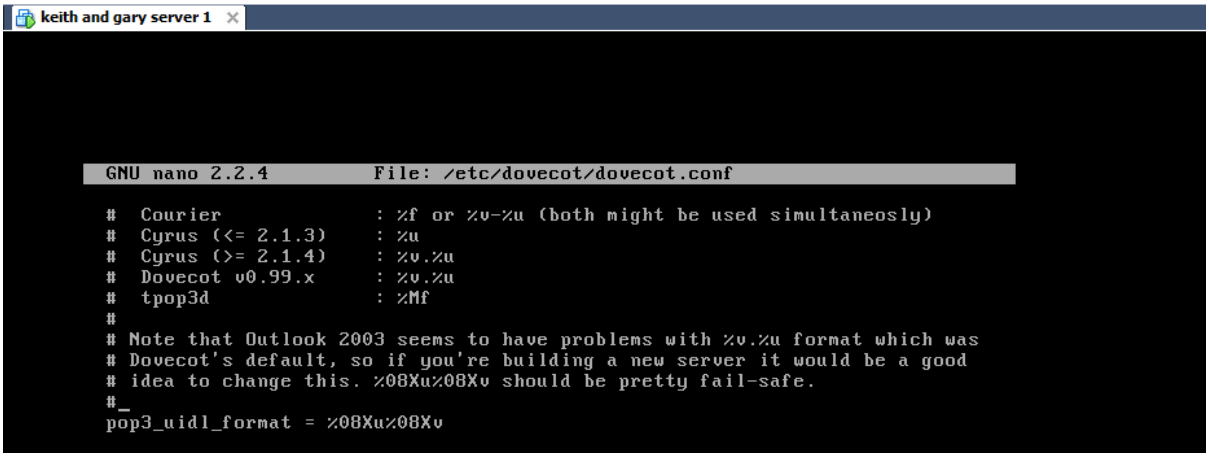
Email server-dovecot

#apt –get install dovecot-imapd dovecot-pop3d

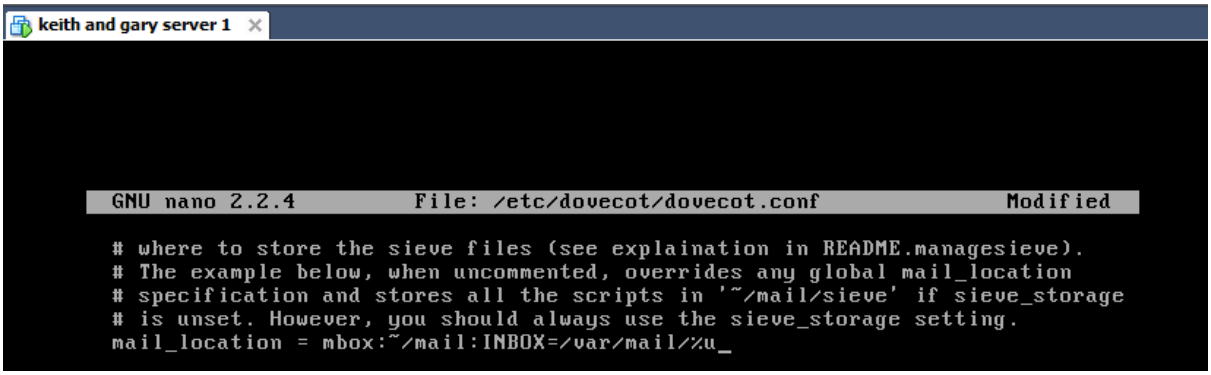
#nano /etc/dovecot/dovecot.conf

Protocols = pop3 pop3s imap imaps





In same file change mail_location=mbox:-/mail:INBOX=/var/mail/%u



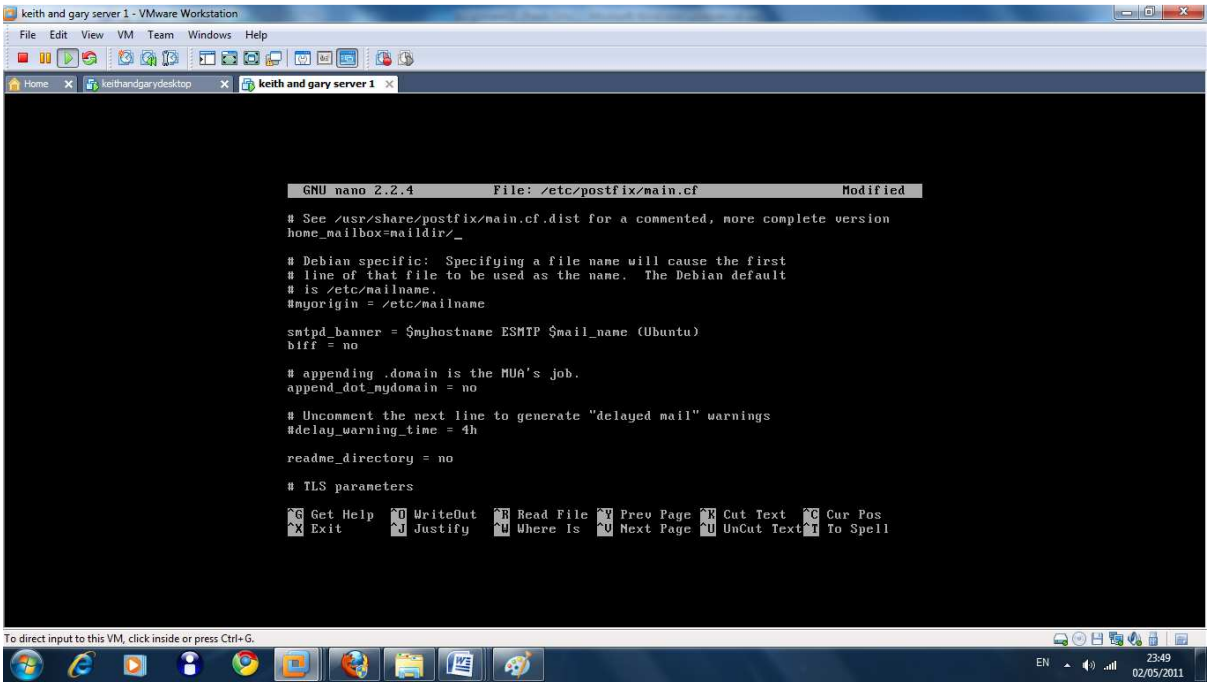
And

Main_location=maildir:-/maildir

#nano /etc/postfix/main.cf

Enter line:

Home_mailbox=maildir/



#nano /etc/dovecot/dovecot.conf

mail_location=maildir:/home/%u/maildir

```
 mail_location = maildir:~/Maildir
   mail_location = mbox:~/mail:INBOX=/var/mail/%u
mail_location=maildir:/home/%u/maildir_
```

#maildirmake.dovecot /etc/skel/maildir

#maildirmake.dovecot /etc/skel/maildir/.drafts

#maildirmake.dovecot /etc/skel/maildir/.sent

#maildirmake.dovecot /etc/skel/maildir/.trash

#maildirmake.dovecot /etc/skel/maildir/.templates

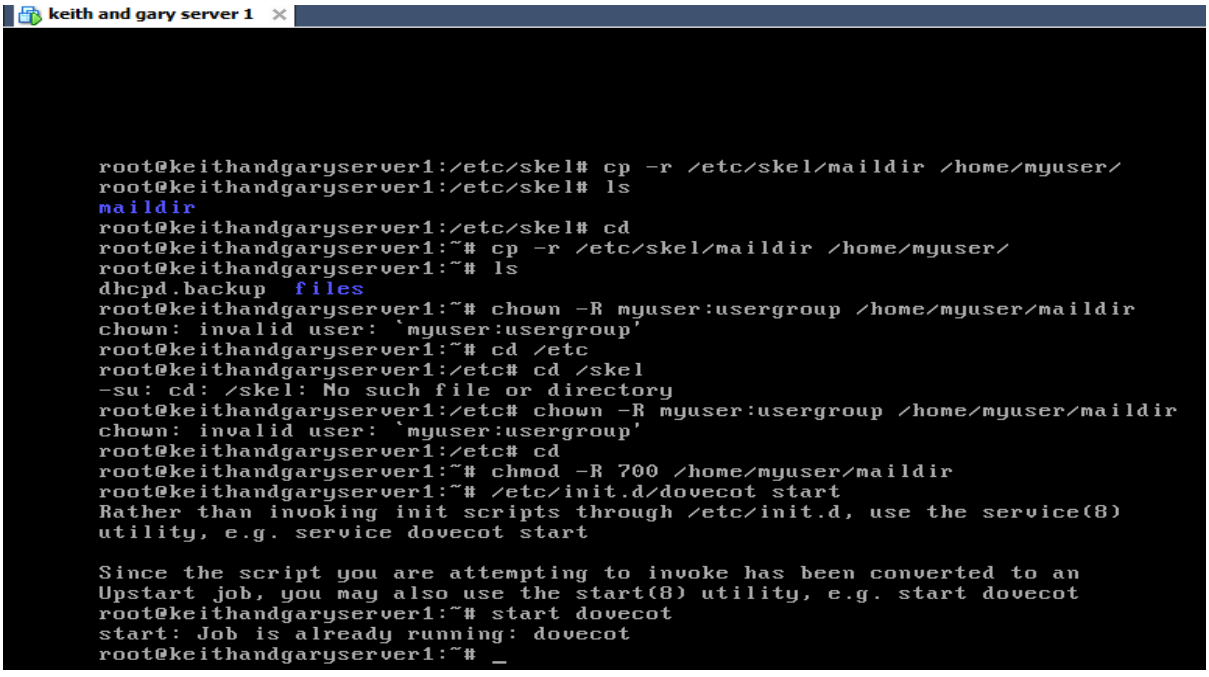
#Cp –r /etc/skel/maildir /home/myuser/

#chown –R myuser:usergroup /home/myuser/maildir

#chmod –R 700 /home/myuser/maildir

TEST:

#start dovecot



Check:

#Ps –A | grep dovecot

#telnet localhost pop3

```
Connection closed by foreign host.
root@keithandgaryserver1:~#
root@keithandgaryserver1:~#
root@keithandgaryserver1:~#
root@keithandgaryserver1:~# telnet localhost pop3
Trying ::1...
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
+OK Dovecot ready.
```

Authentication:

#nano /etc/dovecot/dovecot.conf

Enter

Disable_plaintext_auth = no

```
    #separator = /
 disable_plaintext_auth = no_
```

SSL:

#nano /etc/dovecot/dovecot.conf

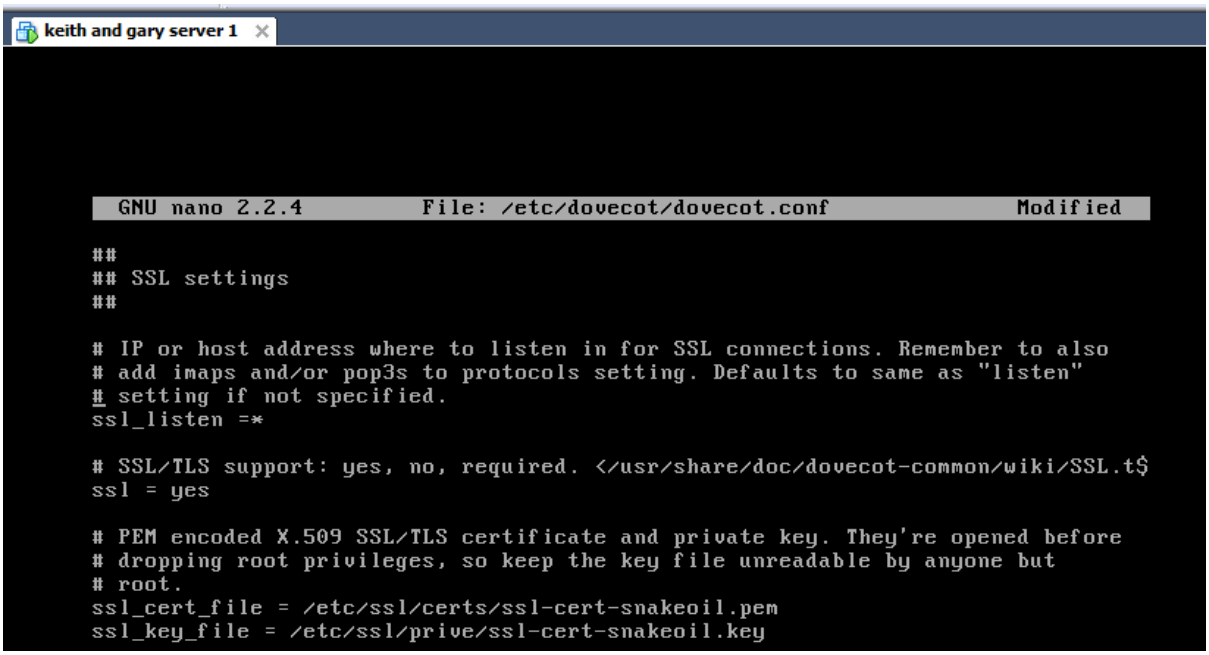
Uncomment out

Ssl=yes

Ssl_cert_file=/etc/ssl/certs/ssl-cert-snakeoil.pem

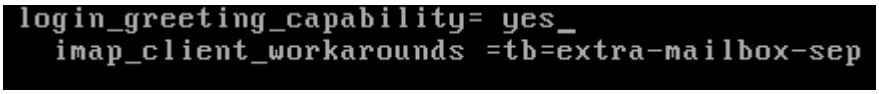
Ssl_key_file=/etc/ssl/private/ssl-cert-snakeoil.key

Listen = *



#nano /etc/dovecot/dovecot.conf

These two lines is what I changed or entered (note maybe can be uncommented)



Installing postfix

#Apt-get install postfix

#dpkg-recofigure postfix

#postconf –e ‘home_mailbox=maildir/’

sudo postconf -e 'smtpd_sasl_local_domain ='

sudo postconf -e 'smtpd_sasl_auth_enable = yes'

sudo postconf -e 'smtpd_sasl_security_options = noanonymous'

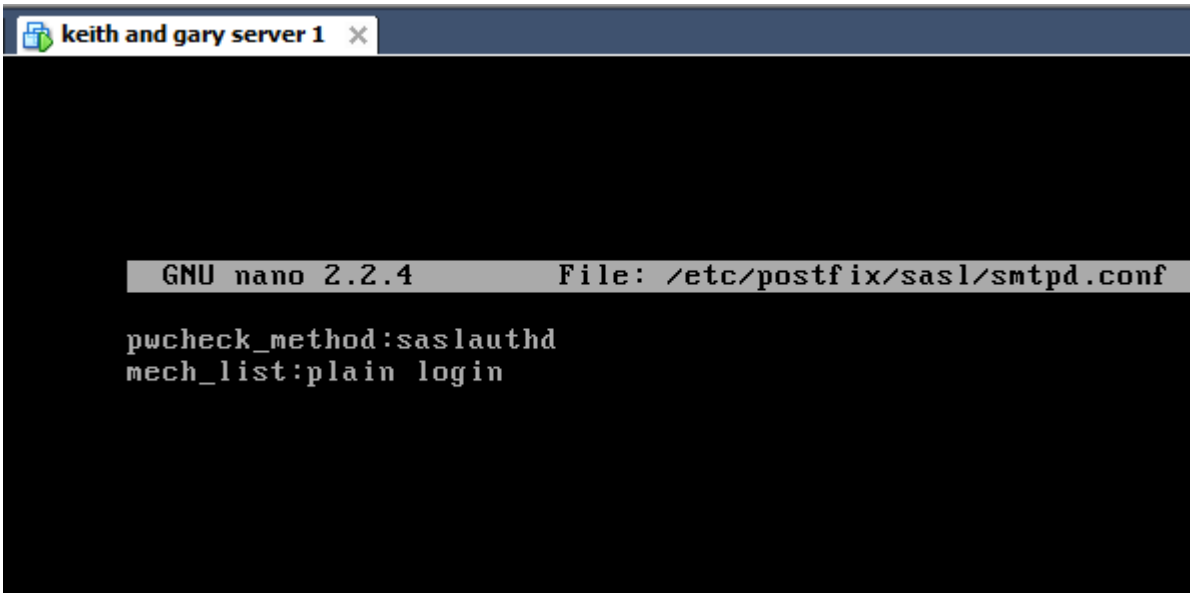
sudo postconf -e 'broken_sasl_auth_clients = yes'

#sudo postconf -e 'smtpd_recipient_restrictions = permit_sasl_authenticated,permit_mynetworks,reject_unauth_destination'

sudo postconf -e 'inet_interfaces = all'

#nano /etc/postfix/sasl/smtpd.conf

add



 # touch smtpd.key

 # chmod 600 smtpd.key

openssl genrsa 1024 > smtpd.key

openssl req -new -key smtpd.key -x509 -days 3650 -out smtpd.crt # has prompts

```
# openssl req -new -x509 -extensions v3_ca -keyout cakey.pem -out cacert.pem -days 3650
# has prompts

# sudo mv smtpd.key /etc/ssl/private/

# sudo mv smtpd.crt /etc/ssl/certs/

# sudo mv cakey.pem /etc/ssl/private/

# Sudo mv cacert.pem /etc/ssl/certs/

# sudo postconf -e 'smtp_tls_security_level = may'
# sudo postconf -e 'smtpd_tls_security_level = may'
# sudo postconf -e 'smtpd_tls_auth_only = no'
# sudo postconf -e 'smtp_tls_note_starttls_offer = yes'
# sudo postconf -e 'smtpd_tls_key_file = /etc/ssl/private/smtpd.key'
# sudo postconf -e 'smtpd_tls_cert_file = /etc/ssl/certs/smtpd.crt'
# sudo postconf -e 'smtpd_tls_CAfile = /etc/ssl/certs/cacert.pem'
# sudo postconf -e 'smtpd_tls_loglevel = 1'
# sudo postconf -e 'smtpd_tls_received_header = yes'
# sudo postconf -e 'smtpd_tls_s
# ession_cache_timeout = 3600s'
# sudo postconf -e 'tls_random_source = dev:/dev/urandom'
# sudo postconf -e 'cisco = cisco.Khufunet.com'
```

Summary and Conclusion

Analysis of Project

We both found this project to be much more challenging for us both than the previous project that we had to complete. There were a lot of new pieces of software that we had not come across yet so we would have to get accustomed to these and do the research to learn how to use them. We appreciated that Tim split the work up for us in an even way because we might not have agreed on what to do.

What you have learned?

We have learned how to install the required software and configure it so that it can be used in a practical situation. Another good thing that we have both taken from this project is team work. This project really relied heavily on teamwork as almost everything had to be done with both people present. And we had to help each other out a lot and educate each other on our different parts of the project.

What are the major problems you encountered?

A big problem we had was understanding how to apply the information on the software that we found on the internet to our project. Sometimes it is hard to know what applies to you when you are looking for information on the internet. Another problem we had was connectivity we found it hard to solve this problem and up to the very end we have had this problem.

What would you do differently?

We would have documented the steps that we took to complete the project better so that we would have had an easier time writing the report and not have to repeat the same processes twice. We would have planned out our time better so that it would have been more productive to get better use of the lab facilities.

Conclusion

In conclusion we felt that this project was very beneficial to us and it gave us a great insight into what it takes to work well as a team. It also helped us in learning how to get the proper information from the internet and to do the proper research to get the information. Also it gave us all the information we learned about the different services that we were required to install for this project. We found through the course of this assignment that it was very enduring and it came with great reward and frustration at times. We felt that there was good help on the internet in regard to some of the packages that we had to install but also felt confused with some parts of the installations. Particularly with postfix and BIND we found these to be the most challenging installs. Overall we both felt we did all we could do with this project and we did enjoy doing most of the tasks besides getting a bit frustrated when trying to get things to work. We had a bit of trouble as we ran into problems when altering configurations to install other packages but we feel like we corrected this.