

Internet & Network Services

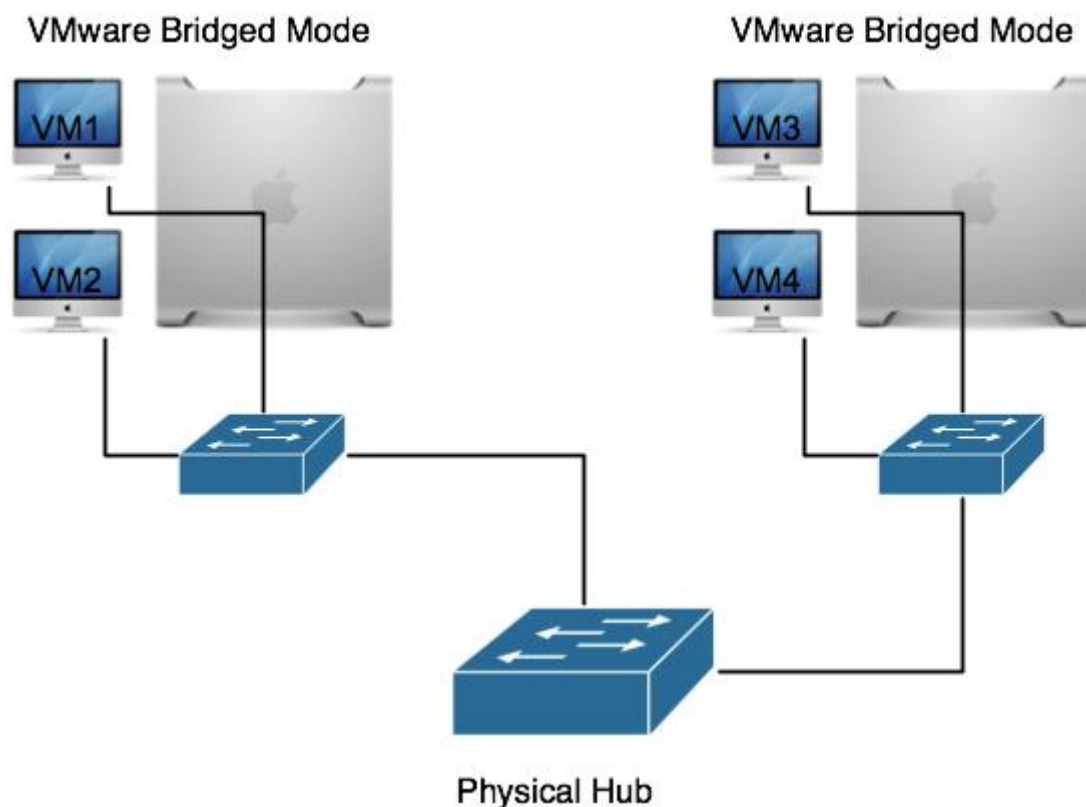
Assessment 2

Group Project

Students: Neil Bresnan, Cian O'Mahony

Introduction

As a systems administrator we have been asked to implement the following Internet & Network services using Ubuntu for a company called KhufuNet. Assignment 2 had to be done in groups of two.



Internet & Network Services

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)

Neil Bresnan will do:

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

Cian O'Mahony will do:

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

Neil

VM1: Ubuntu Desktop 10.10
10.0.0.12

VM2: Ubuntu Server 10.10
10.0.0.100

Cian

VM3: Ubuntu Desktop 10.10
10.0.0.14

VM4: Ubuntu Server 10.10
10.0.0.200

Root Privileges

All our installation and configuration is run with root access:

sudo su

Password required.

Network Configuration

VM1

To configure vm1 with dhcp I edited the /etc/network/interfaces file.

nano /etc/network/interfaces

Internet & Network Services

I added in:

auto eth0

iface eth0 inet dhcp

```
GNU nano 2.2.4      File: /etc/network/interfaces
auto lo
iface lo inet loopback
auto eth0
iface eth0 inet dhcp
```

VM2

VM2 must have a static IP address. To configure network IP address I modified the file `/ect/network/interfaces`.

nano /ect/network/interfaces

Comment out lines:

auto eth0

iface eth0 inet dhcp

Add the following lines with IP address of the server:

auto eth0

iface eth0 inet static

address 10.0.0.100

netmask 255.255.255.0

gateway 10.0.0.1

```
GNU nano 2.2.4      File: /etc/network/interfaces

# This file describes the network interfaces available on
# and how to activate them. For more information, see in

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
#auto eth0
#iface eth0 inet dhcp
auto eth0
iface eth0 inet static

address 10.0.0.100
netmask 255.255.255.0
gateway 10.0.0.1
```

To test the network configuration I pinged my VM1 – VM2 and VM2 - VM1

Installation and Configuration

VM2 – Neil Bresnan

LAMP / Apache Server

Apache server is the software that accepts HTTP requests from browsers and delivers web pages to the users of your site. Apache is the most used web server in the world. It's secure, extensible, fast, and easy to customize. I will use apache to host wordpress.

To get apache, I used the following command:

Taskset

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



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

To see if php is working I created the info.php file in the /var/www directory
/var/www/info.php

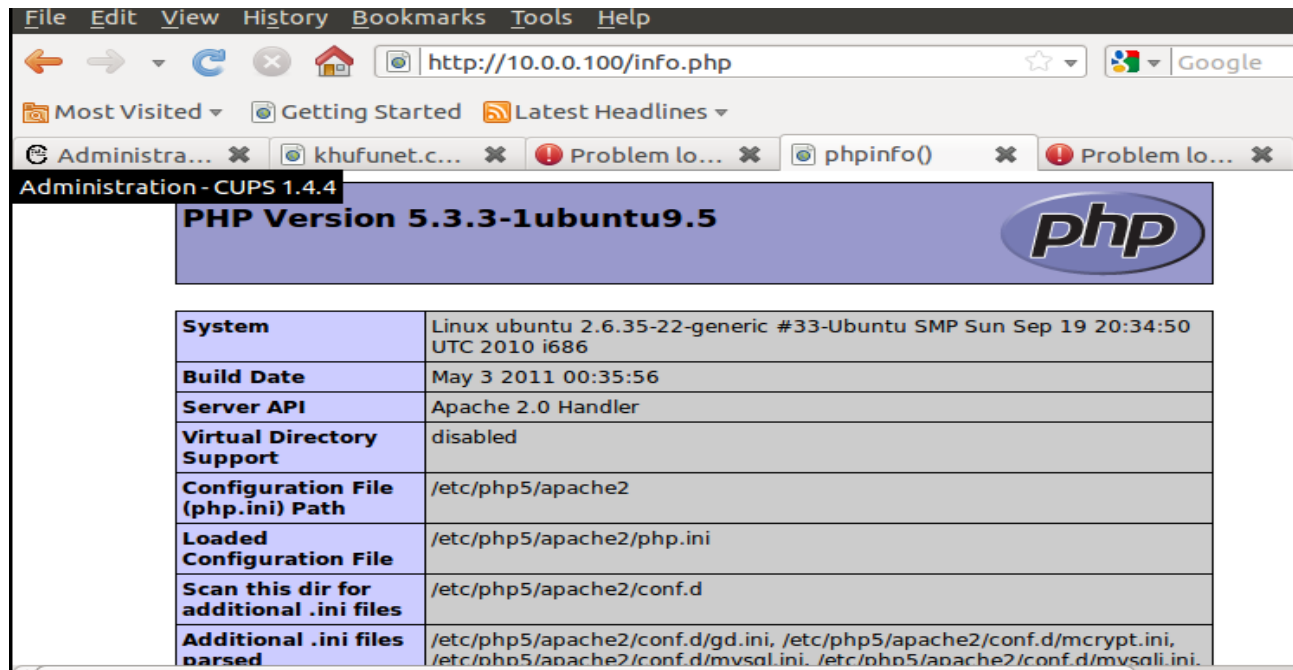
In the file I entered the following lines:

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

Internet & Network Services

```
GNU nano 2.2.4
<?php
phpinfo();
?>
```

To test this you need to go to the web browser on your client and type in this address: <http://10.0.0.100/info.php>



Next I installed phpmyadmin because I needed it for wordpress.

Apt-get install phpmyadmin

After that you must enter the passwords that you wish to use for phpmyadmin.

/etc/init.d/apache2 restart

restart apache

```
root@ubuntu:/home/neilbresnan#
root@ubuntu:/home/neilbresnan# /etc/init.d/apache2 restart
* Restarting web server apache2
... waiting
root@ubuntu:/home/neilbresnan# _
```

Wordpress

To install wordpress:

```
apt-get install wordpress  
mv /usr/share/wordpress /var/www
```

Create wordpress database

```
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

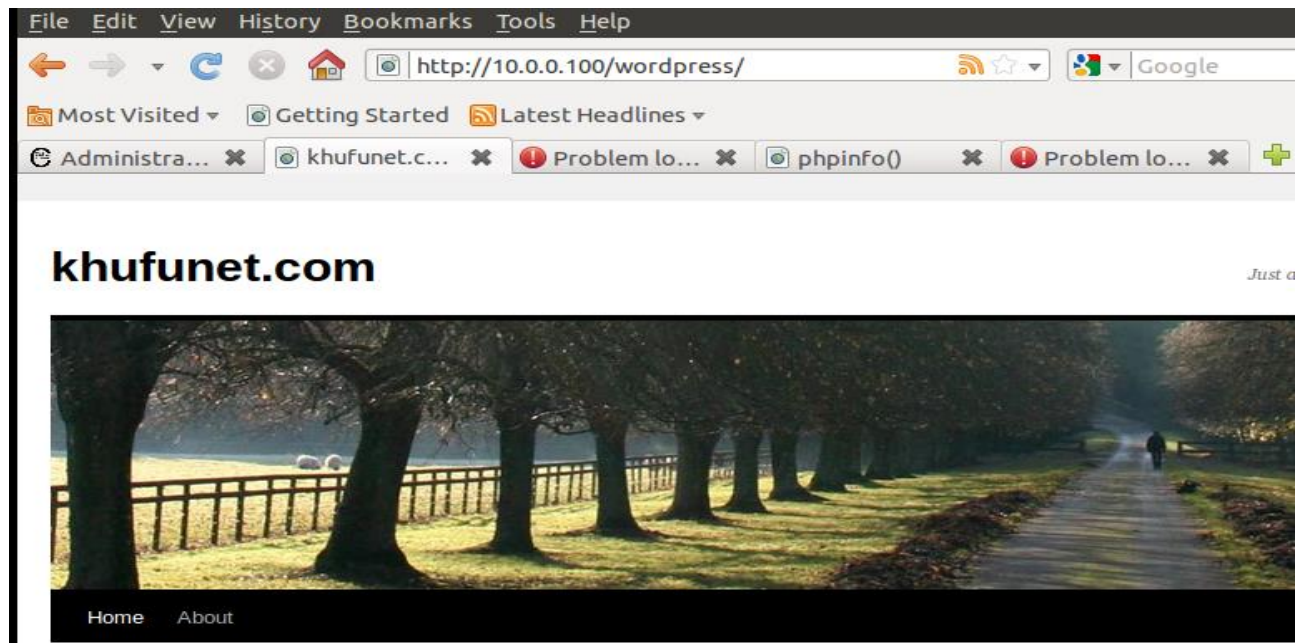
database name = wordpress

user = admin

password = Password that you chose when you entered the password earlier.

save as wp-config

Open up a web browser, and navigate to <http://10.0.0.100/wordpress>



Print Server – CUPS(2)

CUPS allow a computer to act as a print server. A computer running CUPS is a host that can accept print jobs from client computers, process them, and send them to the appropriate printer.

CUPS consist of a print spooler and scheduler, a filter system that converts the print data to a format that the printer will understand, and a backend system that sends this data to the print device. CUPS uses the Internet Printing Protocol (IPP) as the basis for managing print jobs and queues.

Installation:

In the command line of your ubuntu server, type:

apt-get install cups

```
root@ubuntu:/home/nbresnan# apt-get install cups
Reading package lists... Done
Building dependency tree
Reading state information... Done
cups is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 17 not upgraded.
root@ubuntu:/home/nbresnan# _
```

apt-get install cups cups-client

```
root@ubuntu:~# apt-get install cups cups-client
Reading package lists... Done
Building dependency tree
Reading state information... Done
cups is already the newest version.
cups-client is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 17 not upgraded.
root@ubuntu:~# _
```

Configuration:

Now I modify the /etc/cups/cupsd.conf file

Modify the ServerAdmin line

ServerAdmin neil.bresnan@mycit.ie

CUPS can be configured and monitored using a web interface, which by default is available at <http://localhost:631/admin>. The web interface can be used to perform all printer management tasks.

```
# Only listen for connections from the local machine.
Listen localhost:631
Listen /var/run/cups/cups.sock

# Show shared printers on the local network.
Browsing Off
BrowseOrder allow,deny
BrowseAllow all
BrowseLocalProtocols CUPS dnssd
BrowseAddress neil.bresnan@mycit.ie_
```

In order to perform administrative tasks via the web interface, you must either have the root account enabled on your server, or authenticate as a user in the lpadmin group.

I now add nbresnan to lpadmin

usermod -aG lpadmin nbresnan

```
root@ubuntu:~# usermod -aG lpadmin nbresnan
root@ubuntu:~# _
```

I edited the cupsd.conf file to allow 10.0.0* to access cups

```
GNU nano 2.2.4      File: /etc/cups/cupsd.conf

# Restrict access to the server...
<Location />
  Order allow,deny
  Allow localhost
  Allow 10.0.0.*
</Location>

# Restrict access to the admin pages...
<Location /admin>
  Order allow,deny
</Location>

# Restrict access to configuration files...
<Location /admin/conf>
  AuthType Default
  Require user @SYSTEM
  Order allow,deny
  Allow localhost
  Allow 10.0.0.100
</Location>
```

service cups restart

Internet & Network Services

```
root@ubuntu:/home/nbresnan# cp /etc/cups/cupsd.conf /etc/cups/cupsd.conf.original
root@ubuntu:/home/nbresnan# chmod a-w /etc/cups/cupsd.conf.original
root@ubuntu:/home/nbresnan# service cups restart
cups start/running, process 1299
root@ubuntu:/home/nbresnan# _
```



To access cups admin, enter <http://localhost:631/admin> into the browser:

SAMBA Server(3)

Samba is a free software re-implementation of SMB/CIFS networking protocol, originally developed by Australian Andrew Tridgell. As of version 3, Samba provides file and print services for various Microsoft Windows clients and can integrate with a Windows Server domain, either as a Primary Domain Controller (PDC) or as a domain member. It can also be part of an Active Directory domain. Samba runs on most Unix and Unix-like systems, such as Linux, Solaris, AIX and the BSD variants, including Apple's Mac OS X Server (which was added to the Mac OS X client in version 10.2). Samba is standard on nearly all distributions of Linux and is commonly included as a basic system service on other Unix-based operating systems as well. Samba is released under the GNU General Public License. The name *Samba* comes from SMB (Server Message Block), the name of the standard protocol used by the Microsoft Windows network file system. "

Installation:

To install samba in your ubuntu server, enter the following command:

apt-get install samba

```
* Stopping the Winbind daemon winbind [ OK ]
Unpacking replacement winbind ...
Preparing to replace samba-common 2:3.5.4~dfsg-1ubuntu8.3 (using .../samba-commo
n_2%3a3.5.4~dfsg-1ubuntu8.4_all.deb) ...
Unpacking replacement samba-common ...
Preparing to replace libwbclient0 2:3.5.4~dfsg-1ubuntu8.3 (using .../libwbclient
0_2%3a3.5.4~dfsg-1ubuntu8.4_i386.deb) ...
Unpacking replacement libwbclient0 ...
Processing triggers for man-db ...
Processing triggers for ufw ...
Processing triggers for ureadahead ...
Setting up samba-common (2:3.5.4~dfsg-1ubuntu8.4) ...
Setting up libwbclient0 (2:3.5.4~dfsg-1ubuntu8.4) ...
Setting up smbclient (2:3.5.4~dfsg-1ubuntu8.4) ...
Setting up samba (2:3.5.4~dfsg-1ubuntu8.4) ...
update-alternatives: using /usr/bin/smbstatus.samba3 to provide /usr/bin/smbstat
us (smbstatus) in auto mode.
smbd start/running, process 8630
start: Job failed to start
Setting up libpam-smbpass (2:3.5.4~dfsg-1ubuntu8.4) ...
Setting up winbind (2:3.5.4~dfsg-1ubuntu8.4) ...
* Starting the Winbind daemon winbind [ OK ]
Processing triggers for libc-bin ...
ldconfig deferred processing now taking place
root@ubuntu:/home/nbresnan# _
```

smbpasswd -a nbresnan

(nbresnan is the username of my server.)

```
root@ubuntu:~# smbpasswd -a nbresnan
New SMB password:
Retype new SMB password:
root@ubuntu:~# _
```

Configuration (4):

I got samba installed, now it needs to be accessed. Run the following command to open the configuration file:

nano /etc/samba/smb.conf

Find this section in the file:

```
##### Authentication #####
```

```
# "security = user" is always a good idea. This will require a Unix account
# in this server for every user accessing the server. See
# /usr/share/doc/samba-doc/htmldocs/Samba-HOWTO-
Collection/ServerType.html
# in the samba-doc package for details.
;security = user
```

Uncomment the security line, and add another line to make it look like this:

Internet & Network Services

security = user

```
GNU nano 2.2.4      File: /etc/samba/smb.conf      Modified
# through syslog you should set the following parameter to something higher.
#   syslog = 0
# Do something sensible when Samba crashes: mail the admin a backtrace
#   panic action = /usr/share/samba/panic-action %d
##### Authentication #####
# "security = user" is always a good idea. This will require a Unix account
# in this server for every user accessing the server. See
# /usr/share/doc/samba-doc/htmldocs/Samba3-HOWTO/ServerType.html
# in the samba-doc package for details.
security = user
username map = /etc/samba/smbusers_

# You may wish to use password encryption. See the section on
# 'encrypt passwords' in the smb.conf(5) manpage before enabling.
encrypt passwords = true
^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
username map = /etc/samba/smbusers
```

This will set Samba to use the smbusers file for looking up the user list.

I changed the workgroup:

workgroup = KHUFUNET

```
#===== Global Settings =====
[global]
## Browsing/Identification ###
# Change this to the workgroup/NT-domain name your Samba server
workgroup = KHUFUNET_
```

Create a Samba User

There are two steps to creating a user. First you run the smbpasswd utility to create a samba password for the user.

smbpasswd -a nbresnan PASSWORD= nbresnan

Next, add that username to the smbusers file.

nano /etc/samba/smbusers

I added in the following line,

<nbresnan> = "<nbresnan>"

```
GNU nano 2.2.4      File: /etc/samba/smbusers
<nbresnan> = "<nbresnan>"
```

Test Samba

I created a test folder. I did not do this in root because then the owning user and group will be set as 'root', which means I won't be able to access the folder using my Samba username and password.

mkdir /home/nbresnan/test

I then made a backup copy of the original smb.conf file
cp /etc/samba/smb.conf

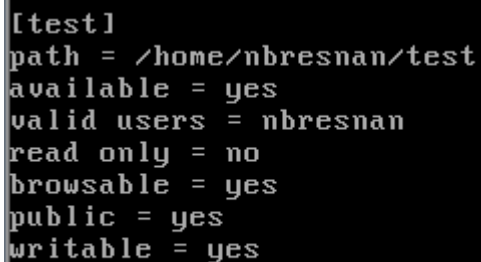
Now edit smb.conf:

nano /etc/samba/smb.conf

Add this to the very end of the file:

```
[test]
path = /home/vm/test
available = yes
valid users = nbresnan
read only = no
browsable = yes
public = yes
writable = yes
```

These settings will share the test folder I created earlier, and give the username permission to read and write to the folder.



```
[test]
path = /home/nbresnan/test
available = yes
valid users = nbresnan
read only = no
browsable = yes
public = yes
writable = yes
```

I restarted samba with this command: **restart smbd**

Once Samba restarted, I used this command to check smb.conf for any syntax errors:

sudo testparm

```
root@ubuntu:/home/nbresnan# restart smbd
smbd start/running, process 29392
root@ubuntu:/home/nbresnan# testparm
Load smb config files from /etc/samba/smb.conf
rlimit_max: rlimit_max (1024) below minimum Windows limit (16384)
Processing section "[printers]"
Processing section "[print$]"
Processing section "[test]"
Loaded services file OK.
Server role: ROLE_STANDALONE
Press enter to see a dump of your service definitions
-
```

Name Server – BIND9(1)

BIND9 is one of the most commonly used Domain Name System (DNS) server applications on the Internet. Originally written by four students at the University of Berkley, the name stands for Berkeley Internet Name Domain.

Installation:

In your ubuntu server type in the command to install bind9:

apt-get install bind9

```
1:9.7.1.dfsg.P2-2ubuntu0.2 [112kB]
Get:2 http://us.archive.ubuntu.com/ubuntu/ maverick-updates/main bind9 i386 1:9.
7.1.dfsg.P2-2ubuntu0.2 [321kB]
Fetched 433kB in 0s (842kB/s)
Preconfiguring packages ...
Selecting previously deselected package bind9utils.
(Reading database ... 28564 files and directories currently installed.)
Unpacking bind9utils (from .../bind9utils_1%3a9.7.1.dfsg.P2-2ubuntu0.2_i386.deb)
...
Selecting previously deselected package bind9.
Unpacking bind9 (from .../bind9_1%3a9.7.1.dfsg.P2-2ubuntu0.2_i386.deb) ...
Processing triggers for man-db ...
Processing triggers for ufw ...
Processing triggers for ureadahead ...
Setting up bind9utils (1:9.7.1.dfsg.P2-2ubuntu0.2) ...
Setting up bind9 (1:9.7.1.dfsg.P2-2ubuntu0.2) ...
Adding group `bind' (GID 113) ...
Done.
Adding system user `bind' (UID 103) ...
Adding new user `bind' (UID 103) with group `bind' ...
Not creating home directory `/var/cache/bind'.
wrote key file "/etc/bind/rndc.key"
#
* Starting domain name service... bind9
root@ubuntu:/home/nbresnan# _ [ OK ]
```

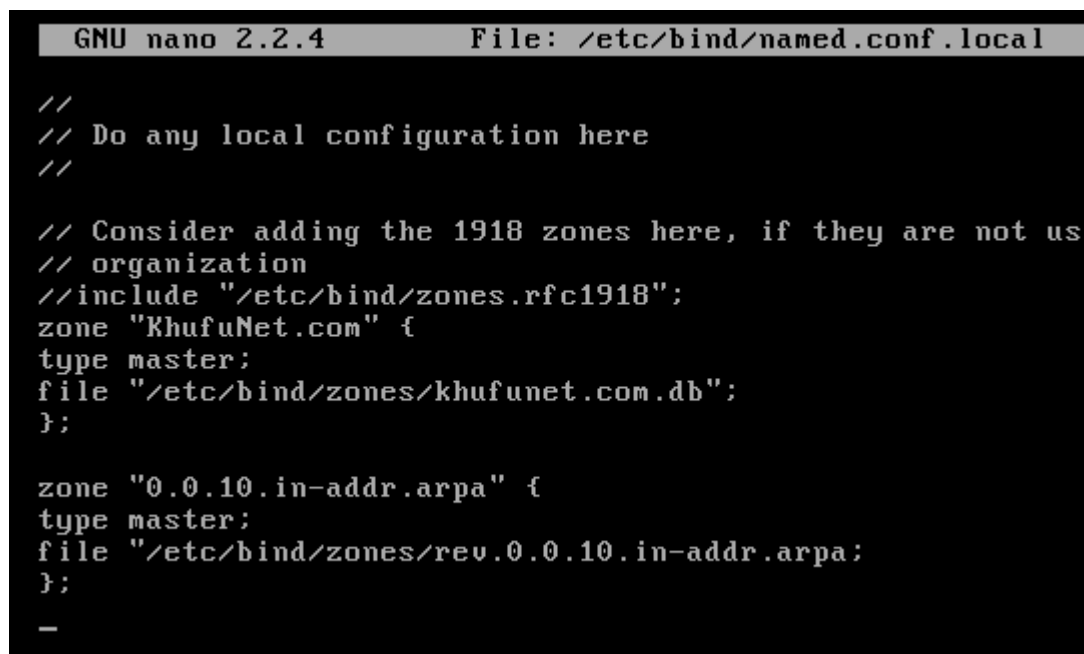
Configuration:

The main configuration file is `/etc/bind/named.conf.local`. This is the list of the domain that the server must use.

nano named.conf.local

Add this:

```
zone "khufunet.com" {  
    type master;  
    file "/etc/bind/zones/db.khufunet.com";  
    forwarders{};  
};
```



```
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 us  
// organization  
//include "/etc/bind/zones.rfc1918";  
zone "KhufuNet.com" {  
    type master;  
    file "/etc/bind/zones/khufunet.com.db";  
};  
  
zone "0.0.10.in-addr.arpa" {  
    type master;  
    file "/etc/bind/zones/rev.0.0.10.in-addr.arpa";  
};  
-
```

khufunet.com : name of the domain we want

type master : this is the master server of this domain

file `"/etc/bind/zones/db.khufunet.com"`; : This is the path of the file which contain the link between the IP and the name for this domain.

I need to copy the existent file `db.local` to `db.khufunet.com`

cp db.local db.khufunet.com

I then edited the options file with my ip address.

nano /etc/bind/named.conf.options

Internet & Network Services

```
forwarders {  
    10.0.0.100;  
};
```

I made the directory /etc/bind/zones/

Mkdir /etc/bind/zones

I created the file khufunet.com.db in the /etc/bind/zones directory

nano /etc/bind/zones/khufunet.com.db

I entered the following data:

```
GNU nano 2.2.4      File: /etc/bind/zones/khufunet.com.db      Mod  
;  
$TTL 604800  
KhufuNet.com. IN SOA nbresnan.KhufuNet.com. admin.KhufuNet.com. {  
2006081401  
28800  
3600  
604800  
38400  
}  
KhufuNet.com. IN NS      nbresnan.KhufuNet.com.  
KhufuNet.com. IN MX 10 cian.KhufuNet.com._  
  
nbresnan IN A 10.0.0.100  
cian     IN A 10.0.0.200
```

I then created the reverse DNS zone files:

nano /etc/bind/zones/rev.0.0.10.in-addr.arpa

I entered the following data:

```
GNU nano 2.2.4      File: /etc/bind/zones/rev.0.0.10.in-addr.arpa  
@IN SOA nbresnan.KhufuNet.com. admin.KhufuNet.com. {  
2011050101;  
28800;  
604800;  
604800;  
86400;  
}  
  
IN NS nbresnan.KhufuNet.com.  
1 IN PTR KhufuNet.com.
```

Next I restarted bind

/etc/init.d/bind9 restart

Internet & Network Services

Then I edited the resolv.conf file to look like the following.

nano /etc/resolv.conf

```
GNU nano 2.2.4 File: /etc/resolv.conf
nameserver 10.0.0.100
domain KhufuNet.com
search KhufuNet.com_
```

Next test the DNS by entering the following command

Dig khufunet.com

Results from dig khufunet.com:

```
[ Wrote 3 lines ]
root@ubuntu:~# dig khufunet.com

; <<>> DiG 9.7.1-P2 <<>> khufunet.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 722
;; flags: qr; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;khufunet.com.                IN      A

;; Query time: 308 msec
;; SERVER: 192.168.230.2#53(192.168.230.2)
;; WHEN: Sun May  8 06:11:19 2011
;; MSG SIZE rcvd: 30

root@ubuntu:~# _
```

VM4 – Cian O'Mahony

FTP Server(8)

#apt-get install vsftpd

#nano /etc/vsftpd

Edit the file

anonymous_enable=yes (allows anonymous users to download)

uncomment #write_enable=yes (users can upload)

uncomment #chroot_local_user=yes (limits users to their home directory)

SSH Server(6)

```
#apt-get install openssh-server
#cp /etc/ssh/sshd_config /etc/ssh/sshd_config.original (make a copy)
#chmod a-w /etc/ssh/sshd_config.original (protect the copy)
#ssh-keygen -t dsa (generate an ssh key)
```

Postfix Mailservice(7)

```
#apt-get install postfix (select ubuntu local domain in the setup)
#apt-get install mailutils
```

```
#telnet localhost 25
```

Input the following to into the postfix prompt

```
hello localhost
mail from: root@localhost
rcpt to: cian@localhost
data
```

```
hi,
are you there?
regards
admin
.
```

Now switch user to test if the mail was sent

```
#su cian
#mail
```

Mail should now be visible

Switch back to root

```
#apt-get install courier-pop
#apt-get install courier-imap
```

Adding the KhufuNet.com & localhost domains to postfix

```
#postconf -e "mydestination = localhost, KhufuNet.com"
```

Adding the local network to postfix

```
#postconf -e "mynetworks = 192.168.1.0/24"
```

Finally restart postfix

/etc/init.d/postfix restart

Nameserver(5)

#apt-get install bind9

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

Edit the file as follows

```
zone "KhufuNet.com" {  
    type slave;  
    file "KhufuNet.com";  
    masters { 192.168.1.5; };  
};
```

```
zone "KhufuNet.com" {  
    type slave;  
    file "KhufuNet.com";  
    masters { 192.168.1.5; };  
};
```

#/etc/init.d/bind9 restart

Configuring DHCP

#nano /etc/network/interfaces

comment out **#iface eth0 inet dhcp**
add in

```
iface eth0 inet static  
address 192.168.1.200  
netmask 255.255.255.0  
gateway 192.168.1.1
```

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

edit the file to contain the following

```
subnet 192.168.1.0 netmask 255.255.255.0 {  
    range 192.168.1.10 192.168.1.100;  
    option routers 192.168.1.1;  
    option domain-name-servers 192.168.1.5, 192.168.1.6;  
    default-lease-time 6000;
```

Internet & Network Services

```
max-lease-time 72000;  
}
```

```
#nano /etc/default/dhcp3-server
```

change INTERFACES=""

to

```
INTERFACES="eth0"
```

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

DHCP Configuration.

On the server VM 3

```
#apt-get - install dhcp3-server
```

```
# nano /etc/network/interfaces
```

edit the file with commenting out "iface eth0 inet dhcp" and replace it with

```
iface eth0 inet static  
address 10.0.0.200  
netmask 255.255.255.0  
gateway 10.0.0.1
```

then go to the following file (make a copy first before editing)

```
#nano /etc/dhcp3/dhcpd.conf
```

and edit the file accordingly in my case it was (ensure to be disconnected from your router or else you will keep pulling dhcp addresses off it)

```
subnet 10.0.0.0 netmask 255.255.255.0 {  
    range 10.0.0.10 10.0.0.225;  
    option domain-name-servers 10.0.0.5, 10.0.0.6;  
    option domain-name "www.KhufuNet.com";  
    option routers 10.0.0.1;  
    default-lease-time 6000;  
    max-lease-time 72000;  
}
```

Internet & Network Services

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

# This declaration allows BOOTP clients to get dynamic addresses,
# 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 10.0.0.0 netmask 255.255.255.0 {
  range 10.0.0.10 10.0.0.225;
  option domain-name-servers 10.0.0.5, 10.0.0.6;
  option domain-name "www.KhufuNet.com";
  option routers 10.0.0.1;
#  option broadcast-address 10.5.5.31;
  default-lease-time 6000;
  max-lease-time 72000;
}

[ Read 111 lines ]
^G Get Help  ^O WriteOut  ^R Read File ^Y Prev Page ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^V Next Page ^U UnCut Text^T To Spell
```

the next file when edited will tell your dhcp server to listen for dhcp requests from clients edit the part that says INTERFACES to

INTERFACES="eth0"

Save the file exit the text editor and restart your dhcp server for the changes to take effect.

```
GNU nano 2.2.4      File: /etc/default/dhcp3-server

# Defaults for dhcp initscript
# sourced by /etc/init.d/dhcp
# installed at /etc/default/dhcp3-server by the maintainer scripts

#
# This is a POSIX shell fragment

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
#   Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACES="eth0"

[ Read 11 lines ]
^G Get Help  ^O WriteOut  ^R Read File ^Y Prev Page ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^V Next Page ^U UnCut Text^T To Spell
```

Verifying DHCP

Now go to your desktop and ensure that it is ready to receive dhcp addresses adding to the following file

#nano /etc/network/interfaces

add the following

**auto eth0
iface eth0 inet dhcp**

save and exit the file and restart networking to ensure the changes have taken effect.

```
root@ubuntu:/home/cian# /etc/init.d/networking restart
* Reconfiguring network interfaces...
```

Open a terminal and type the following to release your current dhcp address

#dhclient -r

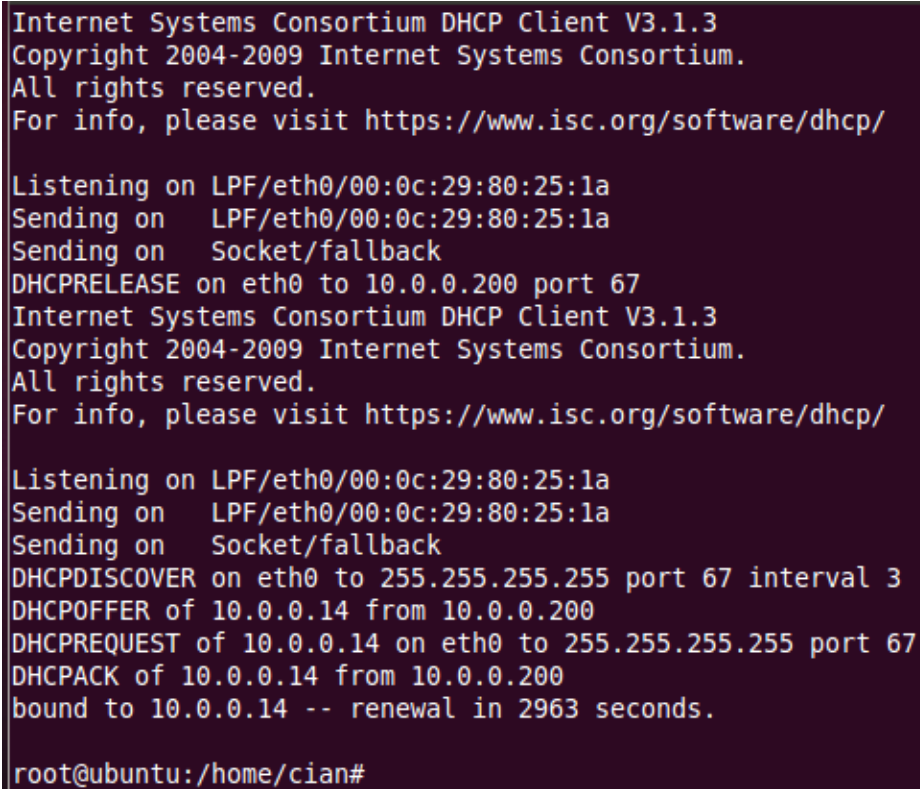
```
root@ubuntu:/home/cian# dhclient -r
Internet Systems Consortium DHCP Client V3.1.3
Copyright 2004-2009 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/eth0/00:0c:29:80:25:1a
Sending on   LPF/eth0/00:0c:29:80:25:1a
Sending on   Socket/fallback
DHCPRELEASE on eth0 to 10.0.0.200 port 67
root@ubuntu:/home/cian#
```

then type

#dhclient

Internet & Network Services

A screenshot of a terminal window with a dark purple background and light green text. The text shows the output of the Internet Systems Consortium DHCP Client V3.1.3. It displays the client's listening and sending attempts on the LPF/eth0 interface, followed by a DHCPRELEASE, then a DHCPDISCOVER, and finally a DHCPACK for the IP address 10.0.0.14. The terminal ends with a prompt for root@ubuntu:/home/cian#. A vertical scrollbar is visible on the right side of the terminal window.

```
Internet Systems Consortium DHCP Client V3.1.3
Copyright 2004-2009 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/eth0/00:0c:29:80:25:1a
Sending on   LPF/eth0/00:0c:29:80:25:1a
Sending on   Socket/fallback
DHCPRELEASE on eth0 to 10.0.0.200 port 67
Internet Systems Consortium DHCP Client V3.1.3
Copyright 2004-2009 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/eth0/00:0c:29:80:25:1a
Sending on   LPF/eth0/00:0c:29:80:25:1a
Sending on   Socket/fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 3
DHCPOFFER of 10.0.0.14 from 10.0.0.200
DHCPREQUEST of 10.0.0.14 on eth0 to 255.255.255.255 port 67
DHCPACK of 10.0.0.14 from 10.0.0.200
bound to 10.0.0.14 -- renewal in 2963 seconds.

[ OK ]

root@ubuntu:/home/cian#
```

to request a new address

References:

1. 'Bind9' retrieved, 23/04/11 from <http://en.wikipedia.org/wiki/BIND>
2. 'CUPS' retrieved, 25/04/11 from <http://en.wikipedia.org/wiki/CUPS>
3. 'SAMBA' retrieved, 24/04/11 from <http://en.wikipedia.org/wiki/Samba>
4. 'SAMBA Configuration' retrieved, 24/04/11 from <http://www.howtogeek.com/howto/ubuntu/install-samba-server-on-ubuntu/>
5. 'DNS Server' retrieved, 27/04/11 from <https://help.ubuntu.com/10.10/serverguide/C/dns-configuration.html>
6. 'SSH Server' retrieved, 29/04/11 from <https://help.ubuntu.com/10.10/serverguide/C/openssh-server.html>
7. 'Mail Server' retrieved, 21/04/11 from <https://help.ubuntu.com/10.10/serverguide/C/postfix.html#postfix-sasl>
8. 'FTP server' retrieved, 22/04/11 from <https://help.ubuntu.com/10.10/serverguide/C/ftp-server.html>