Final Report

Internet and Networking Services

Assignment 2

Group Project

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10th May 2011

Report Index

Introduction

On Tuesday March 29th we were given our second class assignment which is a group project. For this assignmnet, Diarmuid McCarthy and David McCarthy formed a working group. The project was worked on by the group during lab sessions at CIT and remotley via email and file exchanges over the course project.

Project Brief

As a systems administrator you have been asked to implement the following Internet & Network services using Ubuntu for a company called KhufuNet (or available domain name of your choice).

- ✓ 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

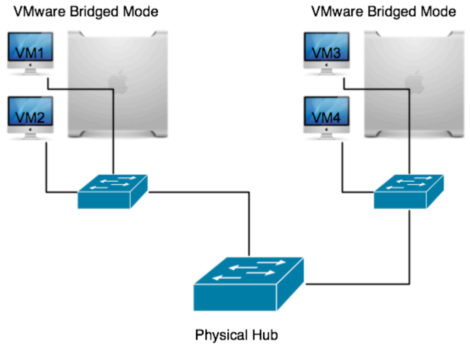
Other issues that you will need to address include but are not limited to:

- ✓ User & Groups
- ✓ Disk Quotas
- ✓ Monitoring
- ✓ Ease of administration

Network 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)



Reference:

http://timhorgan.wordpress.com/2011/03/27/assignment-2/

Scope of Project

From the project brief and lab topology, we identified that we are going to install two virtual servers and two virtual clients, running on Ubuntu Linux (VM1 – VM4), spread over two laptops and physically connected using a crossover cable to create a network between the two physical latops buing used in the project. Both latops are running Vmware.

The Ubuntu distribution used for the servers is 64 bit Ubuntu 10:10, later upgraded to version11:04, the latest version (released 28/04/11). Likewise, the desktop client utilised is version 11:04.

After discussing the project brief, we moved on to agree the assignment of work between the two of us and the grouping of services on the relevant servers. By means of flipping a virtual coin, we decided who was to be assigned which server. http://www.random.org/coins/

Project Planning

From the outset, we decided on the division and assignment of the workload involved in the project as follows:

Assignment of Work:

Diarmuid McCarthy
Student number: R000

VM1: Ubuntu desktop (DHCP client)

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

David McCarthy
Student number: R00036828

VM3: Email server/Name Server 2/DHCP Server/SSH Server/FTP Server

VM4: Ubuntu desktop (DHCP client)

Domain Name:

For this assignment, we have chosen the domain name **mccarthy.eu.com**
We made thorough checks that the domain name has not been registered before selecting.

IP Addressing Table:

Network 192.168.2/24 (255.255.255.0)

VM1
Ubuntu desktop (DHCP client)

VM2 192.168.2.20
Apache Server/Name Server 1/Print Server/Samba Server

VM3 192.168.2.100
Email server/Name Server 2/DHCP Server/SSH Server/FTP Server

VM4
Ubuntu desktop (DHCP client)

Project Planning

Working with root privileges.

Throughout the assignment, we will be generally working as administrator or 'super user', in order to have the required access. In order to prevent having to prefix all admin commands with 'sudo', we log on as below. I am now logged on as root and have the required access and privileges.

Linux text-editor.

There are many text editors available, but we preferred and have selected to use nano, as it is very simple to use and gets the job done.

Technical Detail

Virtual Machines

Both DHCP clients were configured with ease and the Ubuntu desktops were setup quickly. Likewise, both servers were installed without issue and we would go on to configure as per the brief and network-topology.

It helped that the basic configuration of the clients was similar to that of what we had done in assignment 1. Also, because we had already configured Word press on an Apache server in one of the labs, we decided to start with this.

VM2 - Apache Server

Apache server is one of the most powerful and widely used HTTP servers in modern times. One of its main advantages, apart from being open source is that it supports a number of various web platforms and such as UNIX, Windows, Linux, Solaris, Novell NetWare, FreeBSD, Mac OS X, Microsoft Windows, OS/2, etc.

I installed Apache through the LAMP software bundle along with MySQL and PHP. Apache will be used to host my installation of Word press. I will also use Apache to host two virtual servers, which will be used as subdomains **www.mccarthy.eu.com** and **blog.mccarthy.eu.com**. The LAMP server was installed using **tasksel**.

Once LAMP was installed I then proceeded to install Word press. This is accomplished using the lab notes which can be found here. All went OK, Word press is now hosted on the Apache server.

It has been pretty straightforward up until now. However, I now need to host my blog at the following address **blog.mccarthy.eu.com**. I will use virtual hosts in Apache to accomplish this. In addition to creating virtual hosts I will also need to define the blog sub domain in DNS, more on that later.

By using virtual hosts this will enable me to host two sites, namely **www.mccarthy.eu.com** and **blog.mccarthy.eu.com** on the one IP address. We will be concentrating on the following apache directory **/etc/apache2**

First off, to enable me to use multiple sites I need to create a file called virtual.conf and place it in the directory **/etc/apache2/conf.d.** From here I needed to create this single setting

```
$ NameVirtualHost *          # the astrix defining that more than one site will be used
```

The next step involved creating two new IP addresses that will be used for the two virtual servers.

```
/sbin/ifconfig eth0:1 192.168.2.30

/sbin/ifconfig eth0:2 192.168.2.40
```

Both are fine on interface eth0.

Sine I am using virtual hosts my main server will now also become virtual in the eyes of Apache. So I will need to add three lines to the apache2.conf file.

```
NameVirtualHost 192.168.2.20:80      # My main server

NameVirtualHost 192.168.2.30:80      # My blog server

NameVirtualHost 192.168.2.40:80      # My www server
```

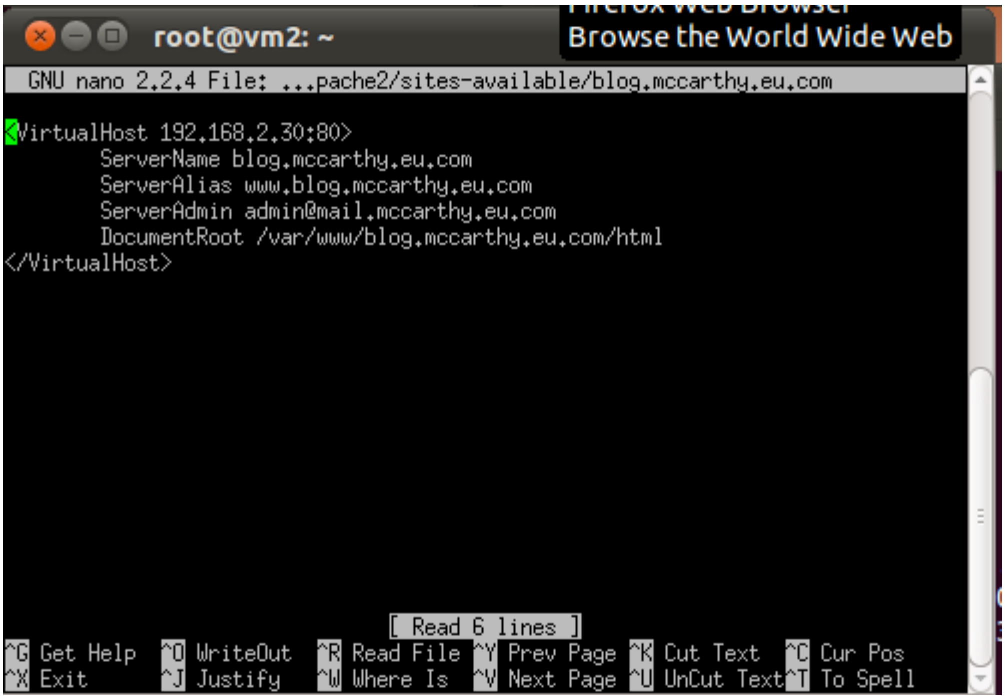
VM2 - Apache Server

Once that was completed I then needed to configure my individual host configuration files. In Ubuntu, two directories are used to manage the multiple sites **/etc/apache2/sites-available** (all sites that are available but not necessarily enabled) and **/etc/apache2/sites-enabled** (all files for sites that are currently enabled).

When configuring my configuration files I first create the file in the sites-available directory. I will then use a debian package command called a2ensite which will sym link the files to the sites-enabled directory.

The following screen shot shows the config I am going to use. As you can see I am going to use **blog.mccarthy.eu.com** as the ServerName. So when **blog.mccarthy.eu.com** is entered on my client I will be redirected to the index.php file located in the wordpress directory.

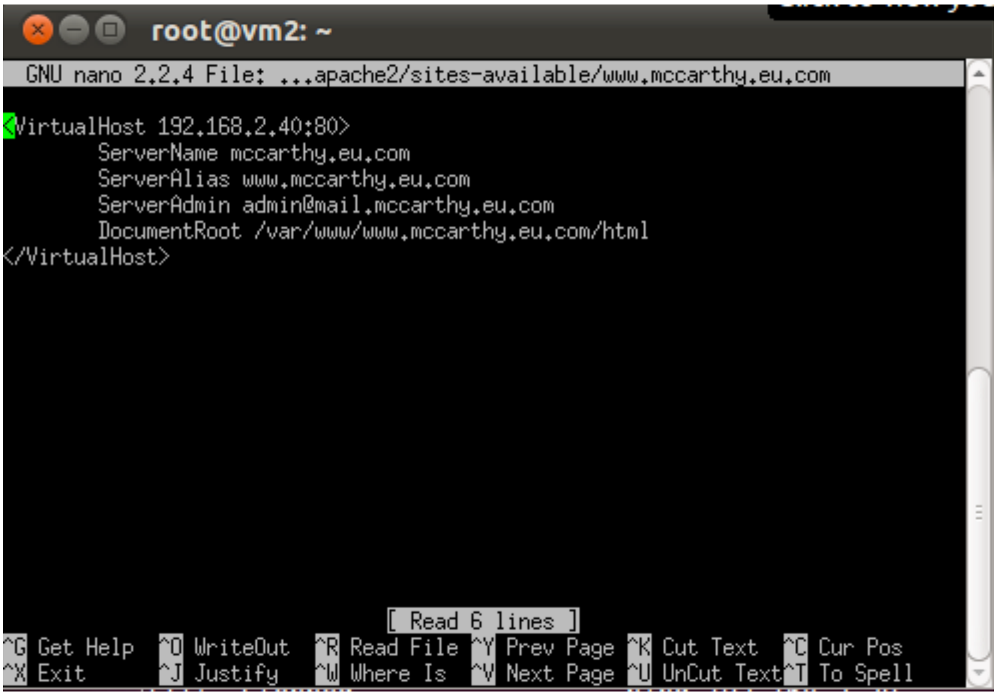
The following screen shot shows the config I am going to use. As you can see I am going to use **blog.mccarthy.eu.com** as the ServerName. So when blog.mccarthy.eu.com is entered on my client I will be redirected to the index.php file located in the wordpress directory.



```
  GNU nano 2.2.4 File: ...pache2/sites-available/blog.mccarthy.eu.com

<VirtualHost 192.168.2.30:80>
        ServerName blog.mccarthy.eu.com
        ServerAlias www.blog.mccarthy.eu.com
        ServerAdmin admin@mail.mccarthy.eu.com
        DocumentRoot /var/www/blog.mccarthy.eu.com/html
</VirtualHost>

                                [ Read 6 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
```

VM2 - Apache Server

As I also want to redirect **www.mccarthy.eu.com** so I need to create a second VirtualHost file. The config is as follows



```
GNU nano 2.2.4 File: ...apache2/sites-available/www.mccarthy.eu.com

<VirtualHost 192.168.2.40:80>
        ServerName mccarthy.eu.com
        ServerAlias www.mccarthy.eu.com
        ServerAdmin admin@mail.mccarthy.eu.com
        DocumentRoot /var/www/www.mccarthy.eu.com/html
</VirtualHost>

                                [ Read 6 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
```

blog.mccarthy.eu.com – IP address 192.168.2.30:80
www.mccarthy.eu.com – IP address 192.168.2.40:80

Finally, as mentioned previously, I then need to sym link the file to the sites-enabled. The following useful command will do it automatically.

```
$ a2ensite blog.mccarthy.eu.com
$ a2ensite www.mccarthy.eu.com
```

All correct settings will be automatically transferred over to the sites-enabled directory (this is the directory that Apache checks when the daemon is started).

Once the site is enabled we then reload apache using

```
$ /etc/init.d/apache2 restart.
```

So we now have Apache running on our server, hosting an instance of Word press and also running two virtual hosts. That's Apache configured, onto the next service, the name server.

VM2 and VM3 - DNS Server

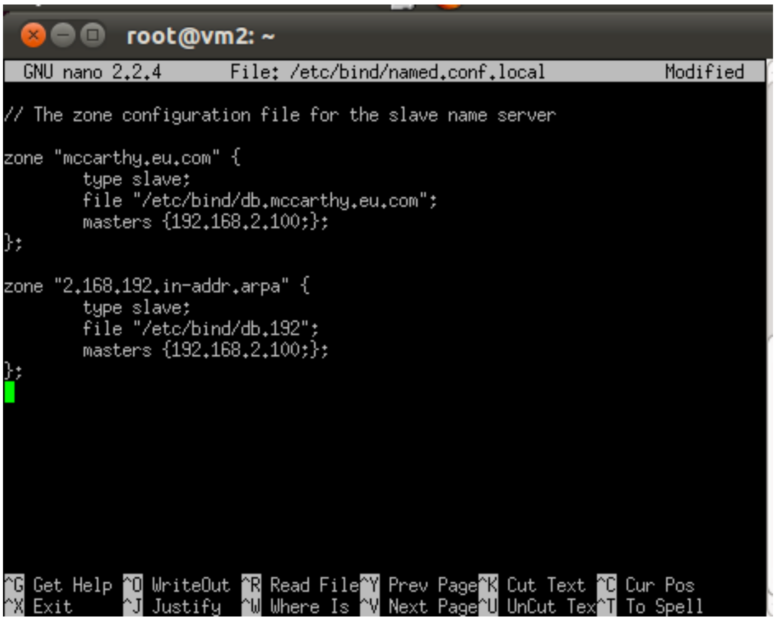
DNS is primarily used to map IP domain names to IP addresses as well as listing other info like mail servers that accept email for a given domain. For this assignment I am going to use BIND as my DNS service.

BIND (Berkeley Internet Name Domain). BIND consists of a name server, a resolver library (to map IP to domain name), as well as troubleshooting utilities such as dig and nslookup.

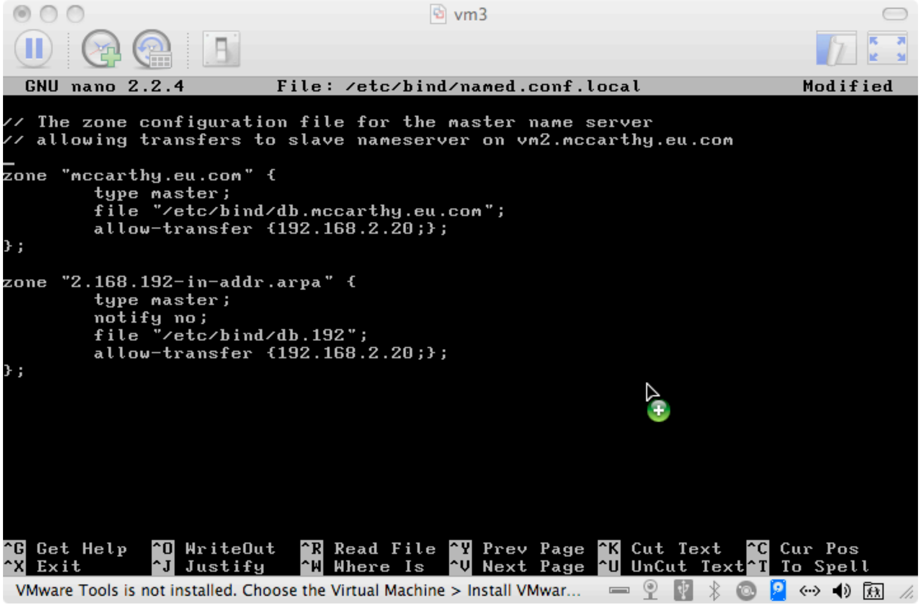
The directory used for BIND is **/etc/bind/.** Within this directory I have my configuration file called named.conf.local. This is the file that I will be placing my zones in.

We decided that the primary master name server will be running on vm3, and the secondary slave name server on vm2. Therefore our configuration files will differ:

As you can see from the screenshots, we have also have defined zone definition for reverse DNS.



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

// The zone configuration file for the slave name server

zone "mccarthy.eu.com" {
        type slave;
        file "/etc/bind/db.mccarthy.eu.com";
        masters {192.168.2.100;};
};

zone "2.168.192.in-addr.arpa" {
        type slave;
        file "/etc/bind/db.192";
        masters {192.168.2.100;};
};

^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 Tex^T To Spell
```

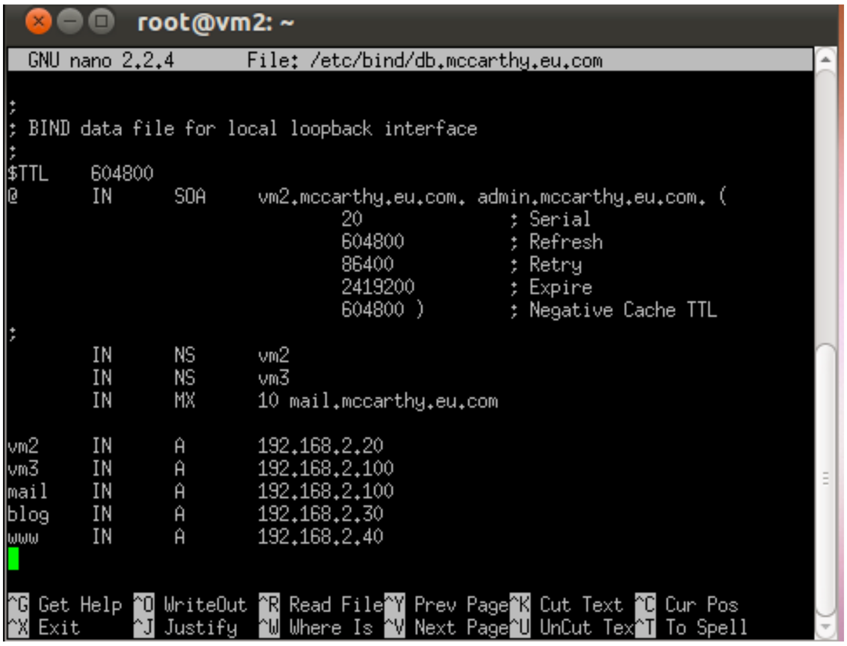


```
 GNU nano 2.2.4          File: /etc/bind/named.conf.local              Modified

// The zone configuration file for the master name server
// allowing transfers to slave nameserver on vm2.mccarthy.eu.com

zone "mccarthy.eu.com" {
         type master;
         file "/etc/bind/db.mccarthy.eu.com";
         allow-transfer {192.168.2.20;};
};

zone "2.168.192-in-addr.arpa" {
         type master;
         notify no;
         file "/etc/bind/db.192";
         allow-transfer {192.168.2.20;};
};

^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
```

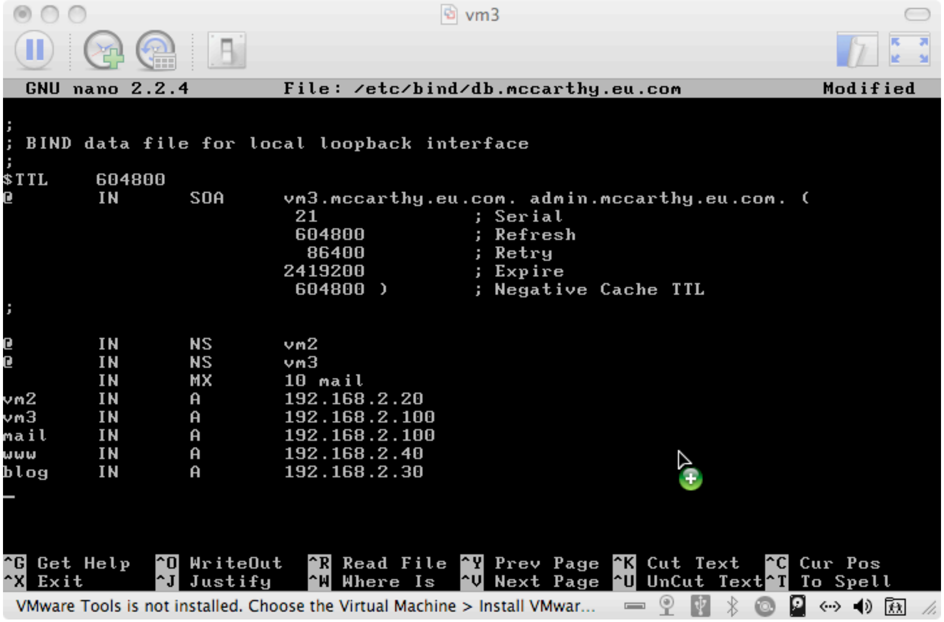
VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

VM2 and VM3 - DNS Server

The next step is to configure the zone definition files, the file that will record all the known addresses for the domain.



```
  GNU nano 2.2.4         File: /etc/bind/db.mccarthy.eu.com

;
; BIND data file for local loopback interface
;
$TTL    604800
@       IN      SOA     vm2.mccarthy.eu.com. admin.mccarthy.eu.com. (
                         20             ; Serial
                         604800         ; Refresh
                         86400          ; Retry
                         2419200        ; Expire
                         604800 )       ; Negative Cache TTL
;
        IN      NS      vm2
        IN      NS      vm3
        IN      MX      10 mail.mccarthy.eu.com

vm2     IN      A       192.168.2.20
vm3     IN      A       192.168.2.100
mail    IN      A       192.168.2.100
blog    IN      A       192.168.2.30
www     IN      A       192.168.2.40


^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 Tex^T To Spell
```



```
  GNU nano 2.2.4            File: /etc/bind/db.mccarthy.eu.com            Modified

;
; BIND data file for local loopback interface
;
$TTL    604800
@       IN      SOA     vm3.mccarthy.eu.com. admin.mccarthy.eu.com. (
                         21             ; Serial
                         604800         ; Refresh
                          86400         ; Retry
                        2419200         ; Expire
                         604800 )       ; Negative Cache TTL
;

@       IN      NS      vm2
@       IN      NS      vm3
        IN      MX      10 mail
vm2     IN      A       192.168.2.20
vm3     IN      A       192.168.2.100
mail    IN      A       192.168.2.100
www     IN      A       192.168.2.40
blog    IN      A       192.168.2.30
_


^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
```

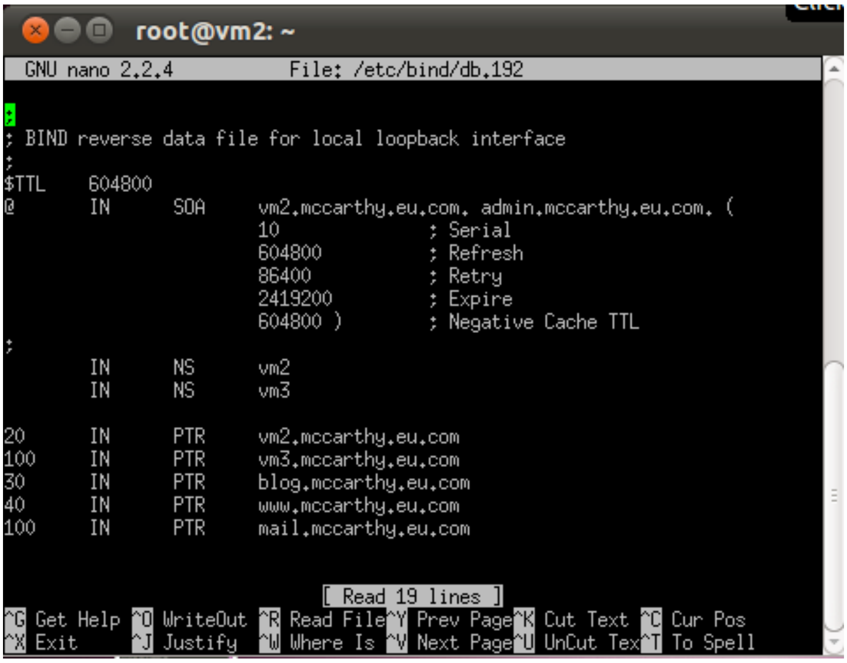
VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

From the above screenshots, we can see that the fully qualified domain name is vm2.mccarthy.eu.com. and vm3.mccarthy.eu.com. on the relevant nameservers and the email for the admin of the zone is admin@mail.mccarthy.eu.com. As well as this we have also defined addresses for both nameservers, the IP address for wordpress blog .30, the IP address for www site .40, and also the IP address for the mail server .100. The MX record defines the mail server, the NS record defines the name server and the A records, Address Records, are used to define the addresses that will be mapped.

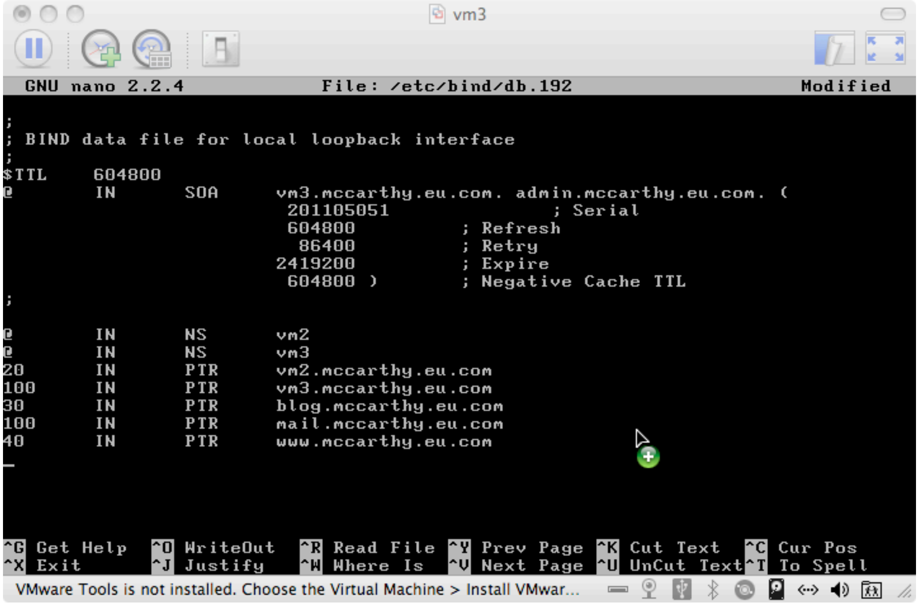
VM2 and VM3 - DNS Server

The next step is to configure the Reverse DNS Zone file. This will be used when we need to find out the host name for a given IP address. This is most commonly used for security reasons to track a spammer or a hacker.

This reverse domain name is called IN-ADDR.ARPA. The file is located at **/etc/bind/db.192**



```
  GNU nano 2.2.4             File: /etc/bind/db.192

;
; BIND reverse data file for local loopback interface
;
$TTL    604800
@       IN      SOA     vm2.mccarthy.eu.com. admin.mccarthy.eu.com. (
                        10              ; Serial
                        604800          ; Refresh
                        86400           ; Retry
                        2419200         ; Expire
                        604800 )        ; Negative Cache TTL
;
        IN      NS      vm2
        IN      NS      vm3

20      IN      PTR     vm2.mccarthy.eu.com
100     IN      PTR     vm3.mccarthy.eu.com
30      IN      PTR     blog.mccarthy.eu.com
40      IN      PTR     www.mccarthy.eu.com
100     IN      PTR     mail.mccarthy.eu.com

                              [ Read 19 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 Tex^T To Spell
```



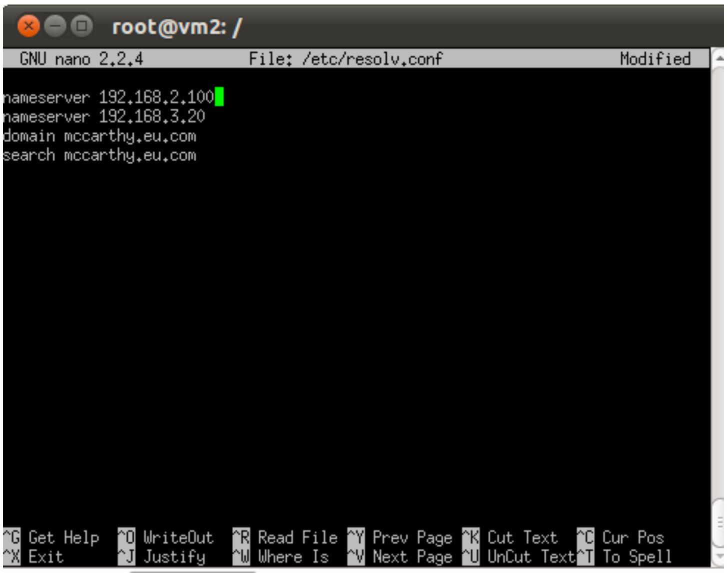
```
  GNU nano 2.2.4               File: /etc/bind/db.192                  Modified

;
; BIND data file for local loopback interface
;
$TTL    604800
@       IN      SOA     vm3.mccarthy.eu.com. admin.mccarthy.eu.com. (
                         201105051        ; Serial
                         604800         ; Refresh
                          86400         ; Retry
                        2419200         ; Expire
                         604800 )       ; Negative Cache TTL
;

@       IN      NS      vm2
@       IN      NS      vm3
20      IN      PTR     vm2.mccarthy.eu.com
100     IN      PTR     vm3.mccarthy.eu.com
30      IN      PTR     blog.mccarthy.eu.com
100     IN      PTR     mail.mccarthy.eu.com
40      IN      PTR     www.mccarthy.eu.com
_




^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
```

VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

This reverses all of the addresses defined in the zone definition file. Instead of A records PTR, Pointer records, are used to map the IP to a hostname.

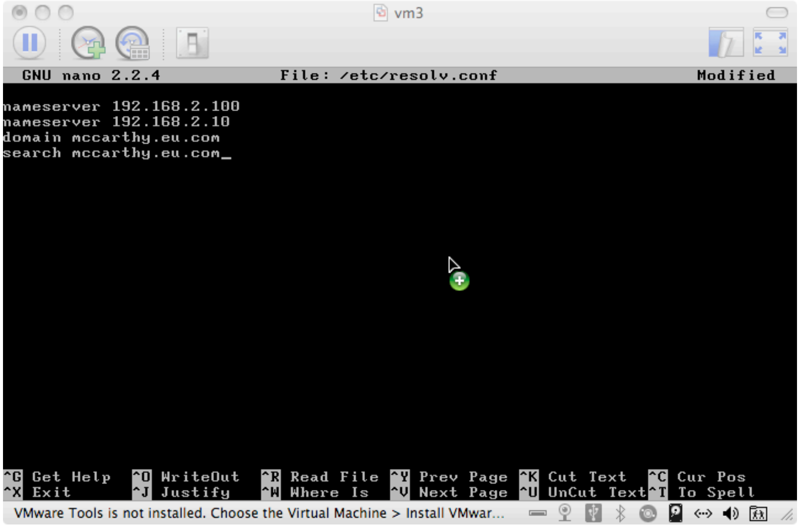
VM2 and VM3 - DNS Server

Before testing to see if we get a response from the zone, we need to edit the resolv.conf file to define my name server.



```
  GNU nano 2.2.4              File: /etc/resolv.conf                 Modified

nameserver 192.168.2.100
nameserver 192.168.3.20
domain mccarthy.eu.com
search mccarthy.eu.com
```

```
^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
```



```
  GNU nano 2.2.4              File: /etc/resolv.conf                 Modified

nameserver 192.168.2.100
nameserver 192.168.2.10
domain mccarthy.eu.com
search mccarthy.eu.com_
```

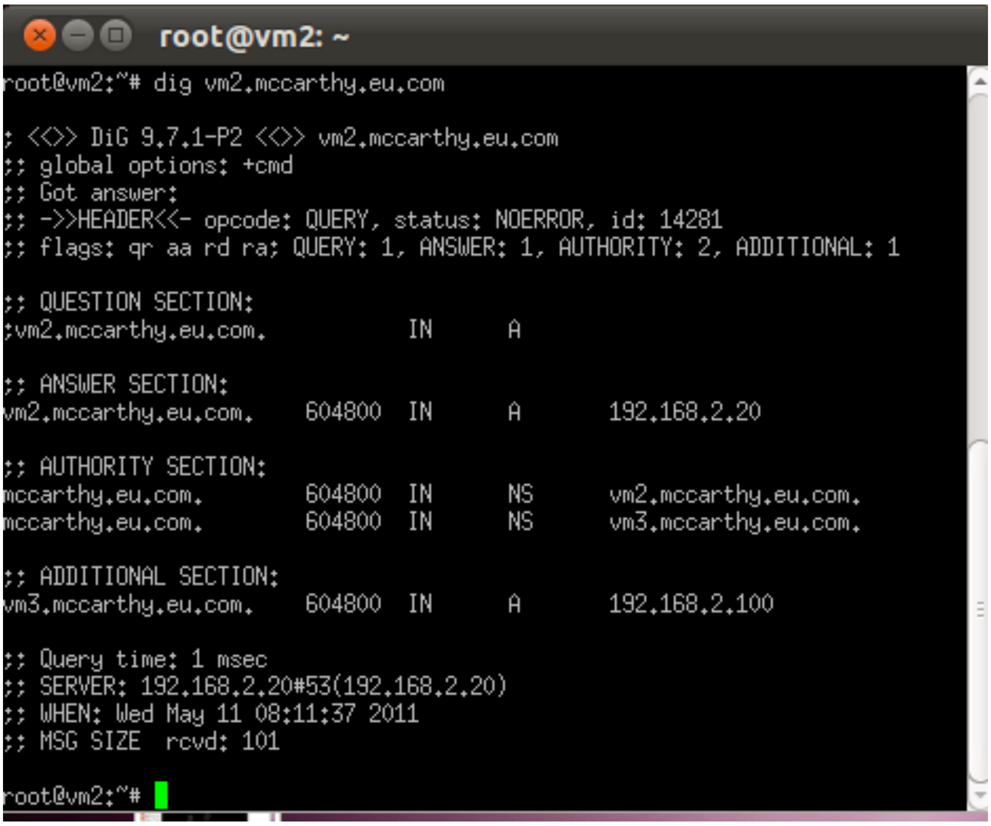
```
^G Get Help  ^O WriteOut  ^R Read File ^Y Prev Page ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^V Next Page ^U UnCut Text^T To Spell
```

VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

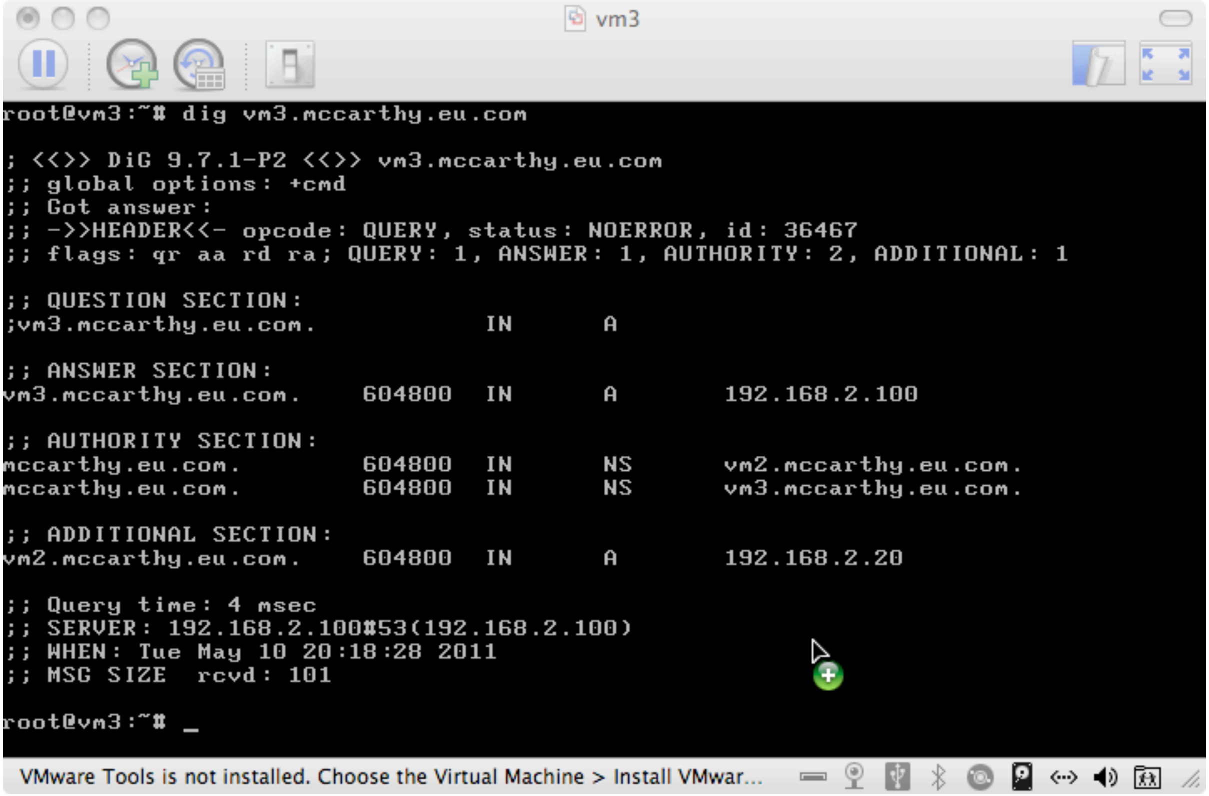
We have defined two name servers, primary and my slave. The domain name is also defined.

VM2 and VM3 - DNS Server

We can then test by using the dig command.



```
oot@vm2:~# dig vm2.mccarthy.eu.com

; <<>> DiG 9.7.1-P2 <<>> vm2.mccarthy.eu.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 14281
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 1

;; QUESTION SECTION:
;vm2.mccarthy.eu.com.           IN      A

;; ANSWER SECTION:
vm2.mccarthy.eu.com.    604800  IN      A       192.168.2.20

;; AUTHORITY SECTION:
mccarthy.eu.com.        604800  IN      NS      vm2.mccarthy.eu.com.
mccarthy.eu.com.        604800  IN      NS      vm3.mccarthy.eu.com.

;; ADDITIONAL SECTION:
vm3.mccarthy.eu.com.    604800  IN      A       192.168.2.100

;; Query time: 1 msec
;; SERVER: 192.168.2.20#53(192.168.2.20)
;; WHEN: Wed May 11 08:11:37 2011
;; MSG SIZE  rcvd: 101

oot@vm2:~#
```

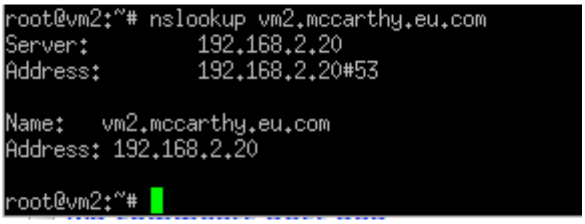


```
root@vm3:~# dig vm3.mccarthy.eu.com

; <<>> DiG 9.7.1-P2 <<>> vm3.mccarthy.eu.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 36467
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 1

;; QUESTION SECTION:
;vm3.mccarthy.eu.com.           IN      A

;; ANSWER SECTION:
vm3.mccarthy.eu.com.    604800  IN      A       192.168.2.100

;; AUTHORITY SECTION:
mccarthy.eu.com.        604800  IN      NS      vm2.mccarthy.eu.com.
mccarthy.eu.com.        604800  IN      NS      vm3.mccarthy.eu.com.

;; ADDITIONAL SECTION:
vm2.mccarthy.eu.com.    604800  IN      A       192.168.2.20

;; Query time: 4 msec
;; SERVER: 192.168.2.100#53(192.168.2.100)
;; WHEN: Tue May 10 20:18:28 2011
;; MSG SIZE  rcvd: 101

root@vm3:~# _
```

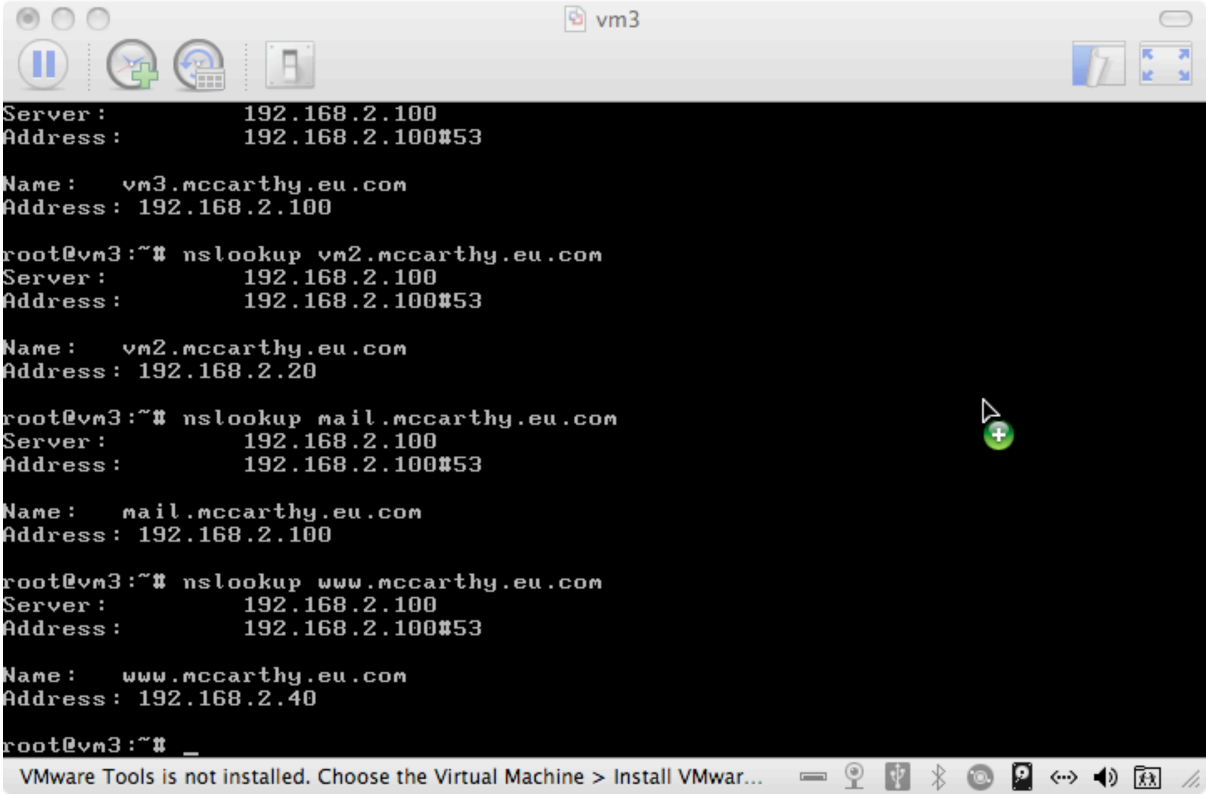
VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

VM2 and VM3 - DNS Server

Another tool included used to test the name server in the BIND package is NSLOOKUP. It is basically a "name server lookup" tool which queries a DNS server for machine name and address information.



```
root@vm2:~# nslookup vm2.mccarthy.eu.com
Server:         192.168.2.20
Address:        192.168.2.20#53

Name:   vm2.mccarthy.eu.com
Address: 192.168.2.20

root@vm2:~# 
```



```
Server:         192.168.2.100
Address:        192.168.2.100#53

Name:   vm3.mccarthy.eu.com
Address: 192.168.2.100

root@vm3:~# nslookup vm2.mccarthy.eu.com
Server:         192.168.2.100
Address:        192.168.2.100#53

Name:   vm2.mccarthy.eu.com
Address: 192.168.2.20

root@vm3:~# nslookup mail.mccarthy.eu.com
Server:         192.168.2.100
Address:        192.168.2.100#53

Name:   mail.mccarthy.eu.com
Address: 192.168.2.100

root@vm3:~# nslookup www.mccarthy.eu.com
Server:         192.168.2.100
Address:        192.168.2.100#53

Name:   www.mccarthy.eu.com
Address: 192.168.2.40

root@vm3:~# _
```

VMware Tools is not installed. Choose the Virtual Machine > Install VMwar…

VM2 – Samba Server

The next part of the project required me to build a Samba server. Samba is basically a service that enables Windows to communicate with UNIX / Linux machines. It provides both file and print functionality and gets its name from Server Message Block (SMB) – the standard protocol used by the Windows file system.

The Samba configuration files are located in **the /etc/samba/** directory. The main focus will be editing the smb.conf file stored at this location. There are a lot of different configuration options available in the smb.conf file. I am only interested in editing a few with them with the aim of letting myself and Dave access files from a shared location.

To create a samba user you need to first add it with the

```
$ smbpasswd -a <username>
```

command. I then need to edit the Samba user file **/etc/samba/smbusers** and add the user I just created. The syntax for the smbusers file is **<username> = "<username>".** Two users will be created:

```
<username> = "<mccard1>"      # My account

<username> = "<mccard2>"      # Dave's account
```

I then defined my share definition with the following detail:

```
[global]

Workgroup = WORKGROUP


[homes]

Guest ok = Yes

Read only = No


[wordpress]

Comment = My Wordpress Configuration Files
```

VM2 – Samba Server

Guest ok = Yes

Read only = No

Path = /var/www/wordpress

Note: the above configuration leaves the Wordpress folder open and doesn't require a username and password. I felt that it would be easier for the demonstration to just leave it out. If we wanted to lock down the samba share we would omit the **Guest ok = yes** line.

I then needed to restart samba using

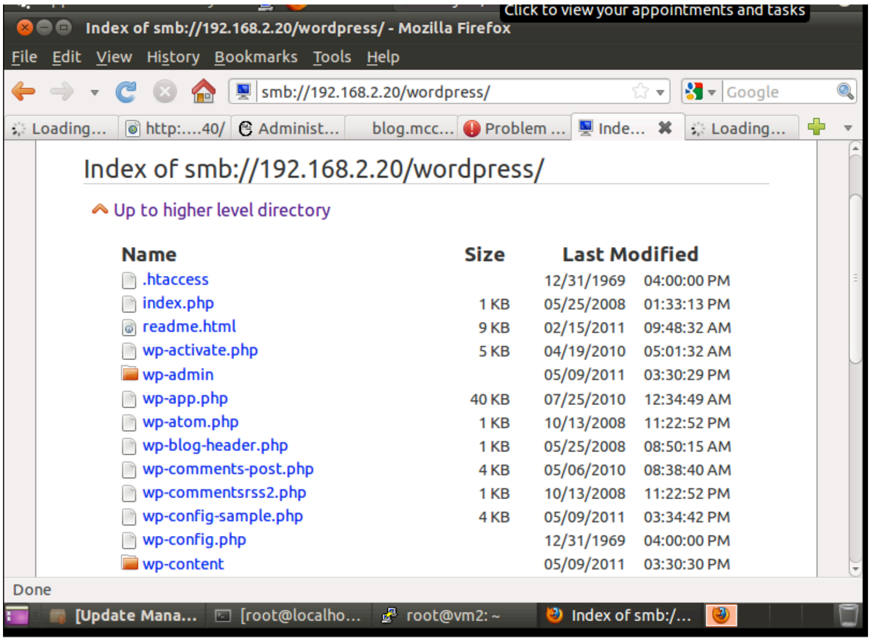
```
$ service smbd restart
```

and the share was visible on my Ubuntu client. To access the Samba share on my Ubuntu client I will use

```
$ smbclient  //vm2/My Share
```

Or you can access it via a web browser using

smb://192.168.2.20


Click to view your appointments and tasks
Index of smb://192.168.2.20/wordpress/ - Mozilla Firefox
File Edit View History Bookmarks Tools Help
smb://192.168.2.20/wordpress/
Google
Loading…
http:….40/
Administ…
blog.mcc…
Problem …
Inde…
Loading…
Done
[Update Mana…
[root@localho…
root@vm2: ~
Index of smb:/…

Index of smb://192.168.2.20/wordpress/

Up to higher level directory

Name	Size	Last Modified	
.htaccess		12/31/1969	04:00:00 PM
index.php	1 KB	05/25/2008	01:33:13 PM
readme.html	9 KB	02/15/2011	09:48:32 AM
wp-activate.php	5 KB	04/19/2010	05:01:32 AM
wp-admin		05/09/2011	03:30:29 PM
wp-app.php	40 KB	07/25/2010	12:34:49 AM
wp-atom.php	1 KB	10/13/2008	11:22:52 PM
wp-blog-header.php	1 KB	05/25/2008	08:50:15 AM
wp-comments-post.php	4 KB	05/06/2010	08:38:40 AM
wp-commentsrss2.php	1 KB	10/13/2008	11:22:52 PM
wp-config-sample.php	4 KB	05/09/2011	03:34:42 PM
wp-config.php		12/31/1969	04:00:00 PM
wp-content		05/09/2011	03:30:30 PM

VM2 - Network Printing (CUPS)

The final part of the setup required me to install CUPS (Common UNIX Printing System) which will be used to manage prints jobs and queues on our network. CUPS uses the IPP protocol and supports a wide range of print drivers making it very flexible.

After downloading and installing CUPS we need to find the cups.conf file. A backup is made using the copy command

```
$ cp /etc/cups/cupsd.conf /etc/cups/cupsd.conf.original
```

Again there are a lot of different configuration options available in the conf file. I will only be concentrating on a few of them.

As CUPS only listens on the loopback interface, by default, we need to add a line to the file to make it listen on the address of our server

```
Listen 192.168.2.20:631       #Cups uses the 631 port
```

I don't necessarily need CUPS listening on the loopback interface so I have commented that line out.

```
# Listen 127.0.0.1:631        # existing loopback Listen
Listen /var/run/cups/cups.sock # socket Listen
Listen 192.168.2.20:631     # My LAN interface
```

We will be administering the print environment through a web interface. You access this page through http://192.168.2.20:631/admin . Before users can access the web interface they need to be added to **lpadmin** group. I used the following command to achieve this

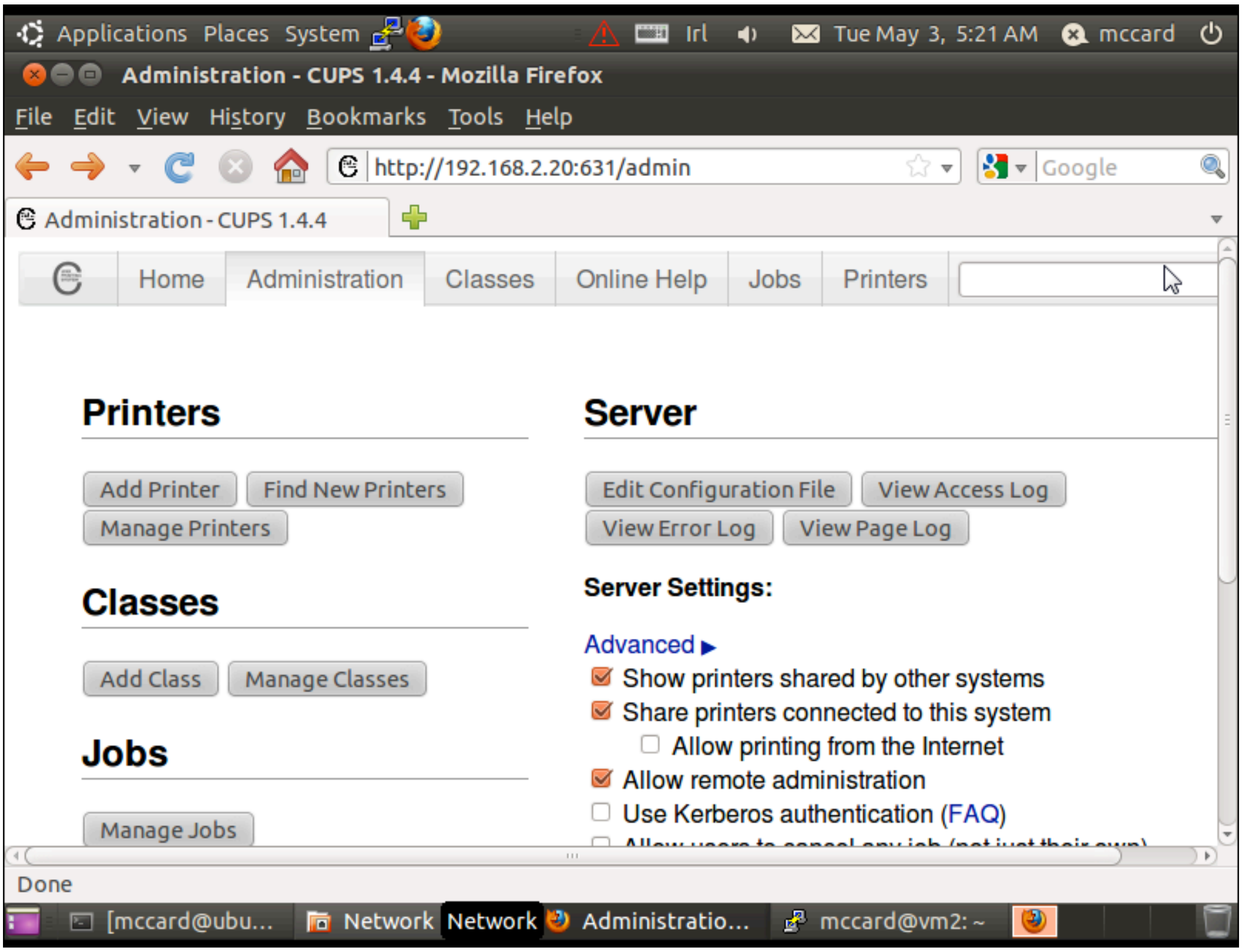
```
$ usermod -aG lpadmin mccard                  #where mccard is my username
```

VM2 - Network Printing (CUPS)

All that is needed then is for CUPS to be restarted

```
$ /etc/init.d/cups restart
```

You can then access the web interface, as shown below.



Server Settings:

Advanced ▶

☑ Show printers shared by other systems

☑ Share printers connected to this system

□ Allow printing from the Internet

☑ Allow remote administration

□ Use Kerberos authentication (FAQ)

□ Allow users to cancel any job (not just their own)

VM3 - SSH Server

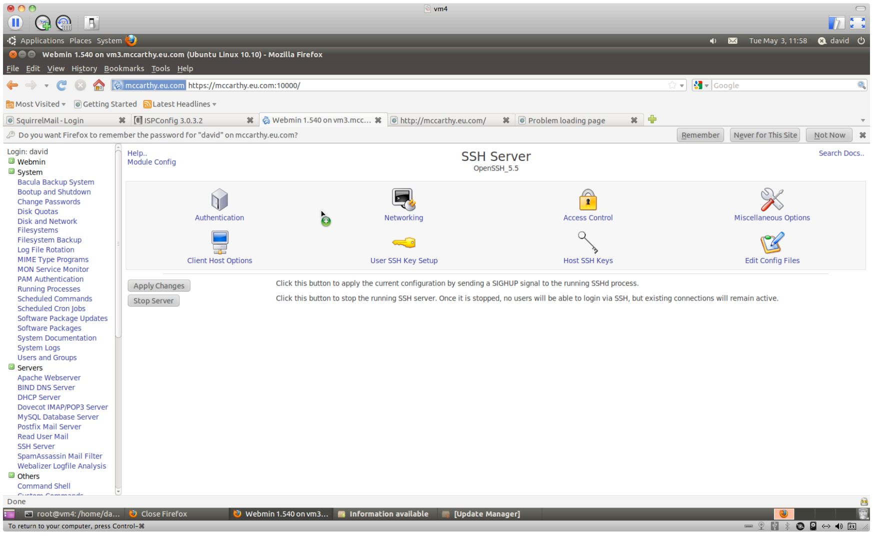
I have chosen to use OpenSSH Server application as the SSH choice for server vm3. More information on OpenSSH can be found here

Installation of the OpenSSH client and server applications is simple. To install the client, whilst logged in as root, we use command ‘*apt-get install openssh-client*’.

To install OpenSSH server and associated support files, again whilst logged in a root, we use command ‘ *apt-get install openssh-server*’.

There is no real configuration required for the SSH Server, however, additional security features can be added such as SSH keys. More on this configuration process can be read here https://help.ubuntu.com/10.10/serverguide/C/openssh-server.html.

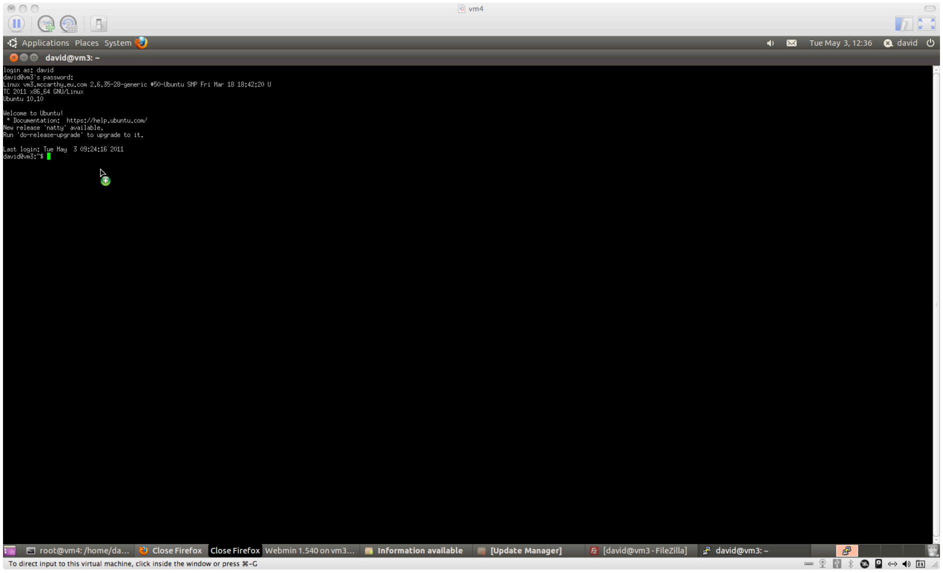
For ease of administration, our SSH server can also be accessed and configured through webmin as in the screenshot below:



Click this button to apply the current configuration by sending a SIGHUP signal to the running SSHd process.

Click this button to stop the running SSH server. Once it is stopped, no users will be able to login via SSH, but existing connections will remain active.

After installing Putty on client vm4, I tested okay using my local account details.



```
login as: david
david@vm3's password:
Linux vm3.mccarthy.eu.com 2.6.35-28-generic #50-Ubuntu SMP Fri Mar 18 18:42:20 U
TC 2011 x86_64 GNU/Linux
Ubuntu 10.10

Welcome to Ubuntu!
 * Documentation:  https://help.ubuntu.com/
New release 'natty' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Tue May  3 09:24:16 2011
david@vm3:~$
```

VM3 - FTP Server

I have chosen to install **vsftpd** FTP application on server vm3 as I find it very simple to install and configure.

I refered to details here to install the service https://help.ubuntu.com/6.06/ubuntu/serverguide/C/ftp-server.html

> One of the things I liked most about this package is that it creates a user account for local system users by default and there is no requirement to setup and configure new accounts.

Also, there is only one config file which is clearly layed out and easy to config.

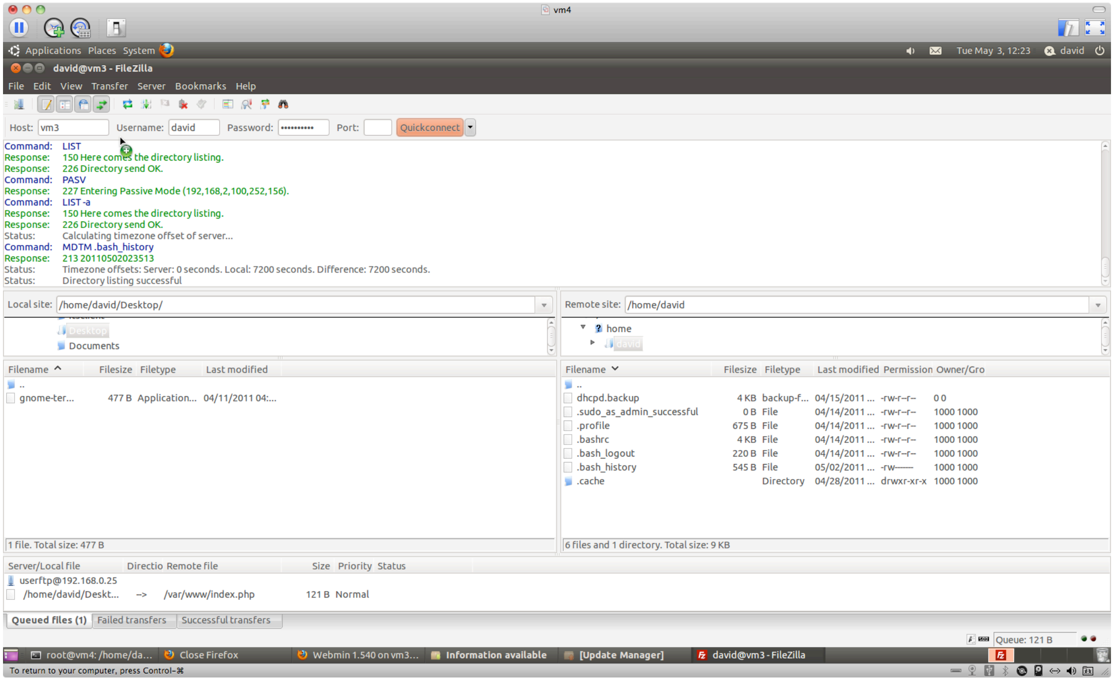
Access to that file is from /etc/vsftpd.conf and the above link gives details on available configurations.

However, the package runs just fine as it comes without any configuration required.

To test the FTP server, I installed Filezilla on client vm3 and connected using the following settings:

Host:	vm3
Username:	david
Password:	Interface2

Note – the username and password are my local account details.



vm4
Applications Places System
Tue May 3, 12:23
david
david@vm3 - FileZilla
File Edit View Transfer Server Bookmarks Help
Quickconnect

Host: vm3 Username: david Password: •••••••••• Port:

```
Command:   LIST
Response:  150 Here comes the directory listing.
Response:  226 Directory send OK.
Command:   PASV
Response:  227 Entering Passive Mode (192,168,2,100,252,156).
Command:   LIST -a
Response:  150 Here comes the directory listing.
Response:  226 Directory send OK.
Status:    Calculating timezone offset of server...
Command:   MDTM .bash_history
Response:  213 20110502023513
Status:    Timezone offsets: Server: 0 seconds. Local: 7200 seconds. Difference: 7200 seconds.
Status:    Directory listing successful
```

Local site: /home/david/Desktop/

Desktop
Documents

Filename	Filesize	Filetype	Last modified
..			
gnome-ter...	477 B	Application...	04/11/2011 04:...

1 file. Total size: 477 B

Remote site: /home/david

home
david

Filename	Filesize	Filetype	Last modified	Permission	Owner/Gro
..					
dhcpd.backup	4 KB	backup-f...	04/15/2011 ...	-rw-r--r--	0 0
.sudo_as_admin_successful	0 B	File	04/14/2011 ...	-rw-r--r--	1000 1000
.profile	675 B	File	04/14/2011 ...	-rw-r--r--	1000 1000
.bashrc	4 KB	File	04/14/2011 ...	-rw-r--r--	1000 1000
.bash_logout	220 B	File	04/14/2011 ...	-rw-r--r--	1000 1000
.bash_history	545 B	File	05/02/2011 ...	-rw-------	1000 1000
.cache		Directory	04/28/2011 ...	drwxr-xr-x	1000 1000

6 files and 1 directory. Total size: 9 KB

Server/Local file	Directio	Remote file	Size	Priority	Status
userftp@192.168.0.25					
/home/david/Deskt...	-->	/var/www/index.php	121 B	Normal	

VM3 - DHCP Server

Dynamic Host Control Protocol server is to be installed on our server vm3.mccarthy.eu.com and will provide clients on our domain with IP addresses from the DHCP pool, which is defined below.

To install and configure the DHCP server, I followed the procedure as detailed in class labs and the steps as listed here.

Before we configure the assigned static IP address of 192.168.2.100 and with vm3 still running on NAT, the following command is run to download and install dhcp3-server

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

After installation, I contined to configure the network interface and assigned static IP 192.168.2.100 to eth0.

The next step is to make a backup-copy of the configuration file /etc/dhcp3/dhcpd.conf as in the lab tutorial (link above).

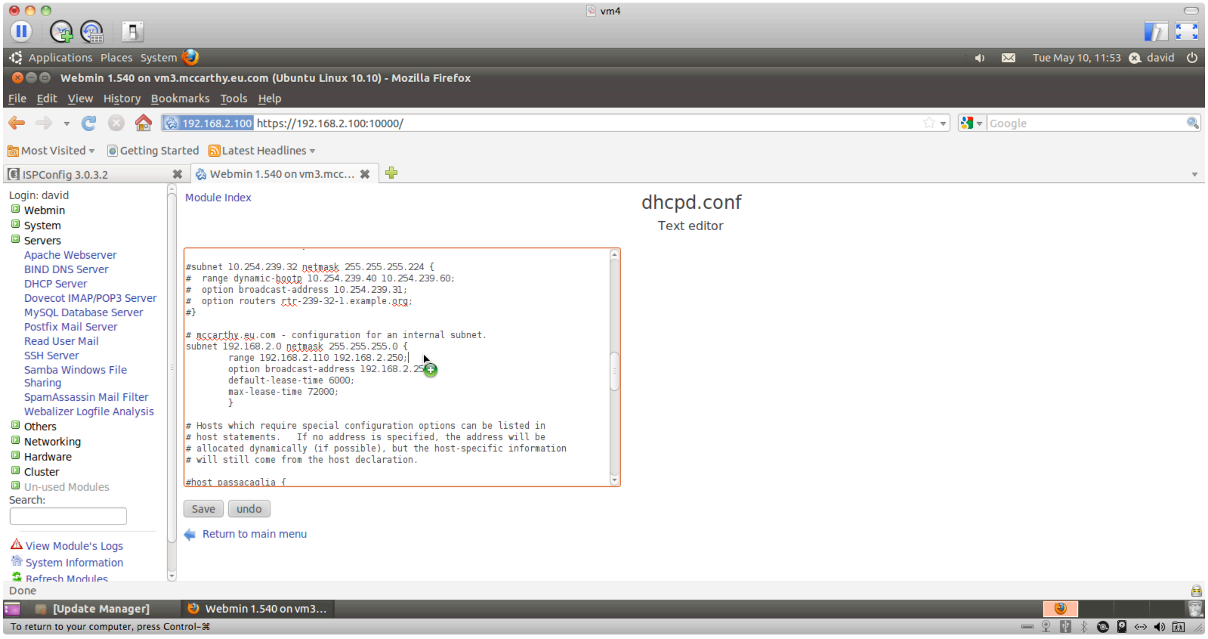
Based on our network topology, we allocated the following IP range for the DHCP pool:

DHCP pool IP address range :   192.168.2.110 – 192.168.2.210

To assign this range of addresses, we edit the */etc/dhcp3/dhcpd.conf* file as in the lab tutorial

This conf file can be edited using nano form terminal, or by using Wemin GUI as in the next shot.

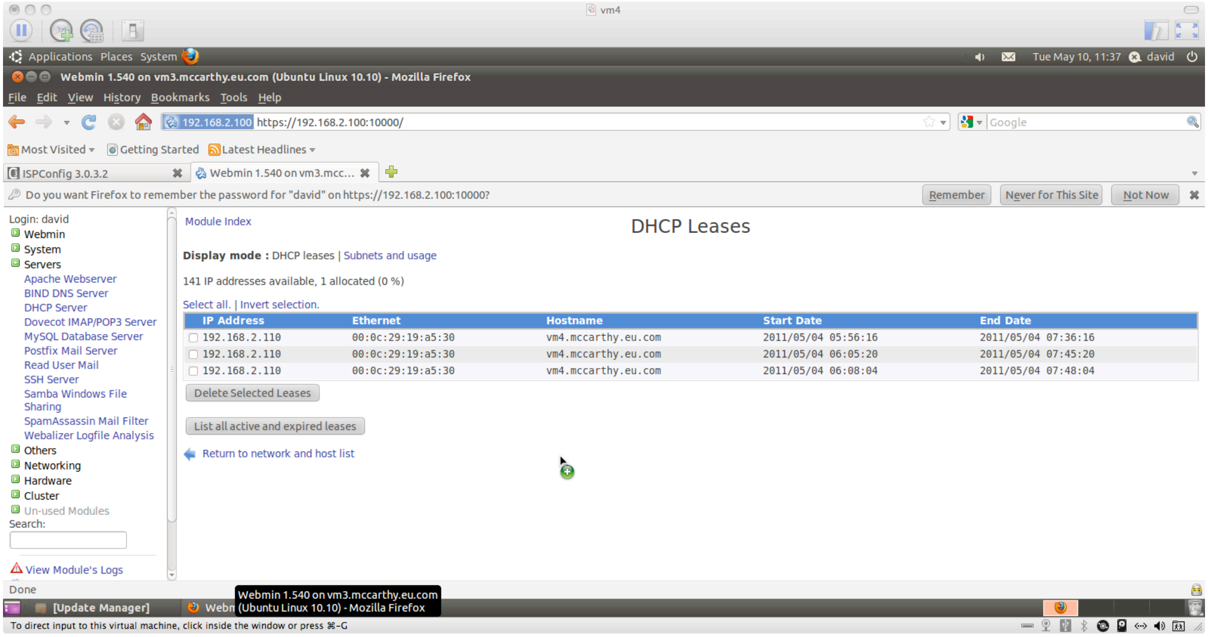
Here we can see where the range, subnet and broadcast addresses are entered in the config file.



```
#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;
#}

# mccarthy.eu.com - configuration for an internal subnet.
subnet 192.168.2.0 netmask 255.255.255.0 {
        range 192.168.2.110 192.168.2.250;
        option broadcast-address 192.168.2.25
        default-lease-time 6000;
        max-lease-time 72000;
        }

# Hosts which require special configuration options can be listed in
# host statements.   If no address is specified, the address will be
# allocated dynamically (if possible), but the host-specific information
# will still come from the host declaration.

#host passacaglia {
```

VM3 - DHCP Server

Using Webmin to administer functionality on the server, I can check and confirm active DHCP leases as below whilst testing the DHCP server install and configuration. Here I can see that my vm4 DHCP client has obtained IP address 192.168.2.110 from the DHCP pool.



vm4
Applications Places System
Tue May 10, 11:37 david
Webmin 1.540 on vm3.mccarthy.eu.com (Ubuntu Linux 10.10) - Mozilla Firefox
File Edit View History Bookmarks Tools Help
192.168.2.100 https://192.168.2.100:10000/
Most Visited Getting Started Latest Headlines
ISPConfig 3.0.3.2
Webmin 1.540 on vm3.mcc...
Remember
Never for This Site
Not Now
Login: david
Webmin
System
Servers
Apache Webserver
BIND DNS Server
DHCP Server
Dovecot IMAP/POP3 Server
MySQL Database Server
Postfix Mail Server
Read User Mail
SSH Server
Samba Windows File Sharing
SpamAssassin Mail Filter
Webalizer Logfile Analysis
Others
Networking
Hardware
Cluster
Un-used Modules
Search:
View Module's Logs
Done
[Update Manager]
Webmin 1.540 on vm3.mccarthy.eu.com (Ubuntu Linux 10.10) - Mozilla Firefox
To direct input to this virtual machine, click inside the window or press ⌘-G

Do you want Firefox to remember the password for "david" on https://192.168.2.100:10000?

Module Index

DHCP Leases

Display mode : DHCP leases | Subnets and usage

141 IP addresses available, 1 allocated (0 %)

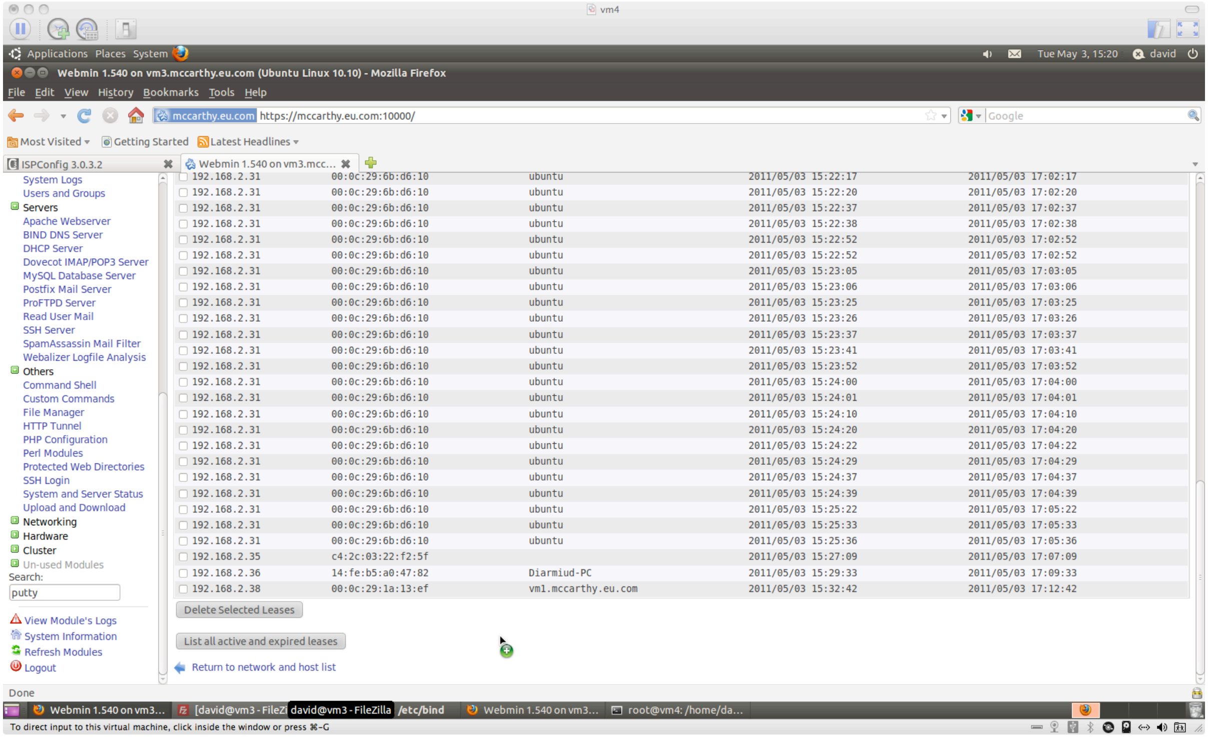
Select all. | Invert selection.

IP Address	Ethernet	Hostname	Start Date	End Date
□ 192.168.2.110	00:0c:29:19:a5:30	vm4.mccarthy.eu.com	2011/05/04 05:56:16	2011/05/04 07:36:16
□ 192.168.2.110	00:0c:29:19:a5:30	vm4.mccarthy.eu.com	2011/05/04 06:05:20	2011/05/04 07:45:20
□ 192.168.2.110	00:0c:29:19:a5:30	vm4.mccarthy.eu.com	2011/05/04 06:08:04	2011/05/04 07:48:04

Delete Selected Leases

List all active and expired leases

Return to network and host list



□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:22:17	2011/05/03 17:02:17
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:22:20	2011/05/03 17:02:20
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:22:37	2011/05/03 17:02:37
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:22:38	2011/05/03 17:02:38
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:22:52	2011/05/03 17:02:52
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:22:52	2011/05/03 17:02:52
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:23:05	2011/05/03 17:03:05
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:23:06	2011/05/03 17:03:06
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:23:25	2011/05/03 17:03:25
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:23:26	2011/05/03 17:03:26
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:23:37	2011/05/03 17:03:37
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:23:41	2011/05/03 17:03:41
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:23:52	2011/05/03 17:03:52
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:00	2011/05/03 17:04:00
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:01	2011/05/03 17:04:01
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:10	2011/05/03 17:04:10
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:20	2011/05/03 17:04:20
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:22	2011/05/03 17:04:22
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:29	2011/05/03 17:04:29
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:37	2011/05/03 17:04:37
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:24:39	2011/05/03 17:04:39
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:25:22	2011/05/03 17:05:22
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:25:33	2011/05/03 17:05:33
□ 192.168.2.31	00:0c:29:6b:d6:10	ubuntu	2011/05/03 15:25:36	2011/05/03 17:05:36
□ 192.168.2.35	c4:2c:03:22:f2:5f		2011/05/03 15:27:09	2011/05/03 17:07:09
□ 192.168.2.36	14:fe:b5:a0:47:82	Diarmiud-PC	2011/05/03 15:29:33	2011/05/03 17:09:33
□ 192.168.2.38	00:0c:29:1a:13:ef	vm1.mccarthy.eu.com	2011/05/03 15:32:42	2011/05/03 17:12:42

Delete Selected Leases

List all active and expired leases

Return to network and host list

VM3 - Postfix Mail Server

Postfix is the defaut Mail Transfer Agent (**MTA**) in Ubuntu. It's strengths and popularity are due to the fact that it is easy to administer and secure. It is also compatible with the MTA **sendmail**.

I installed postfix by running the following command :

```
#       apt-get install postfix
```

To carry out the basic configuration I then proceeded to run the following command:

```
#       dpkg-reconfigure postfix
```

A usser interface is then displayed, and I proceeded with the following selection

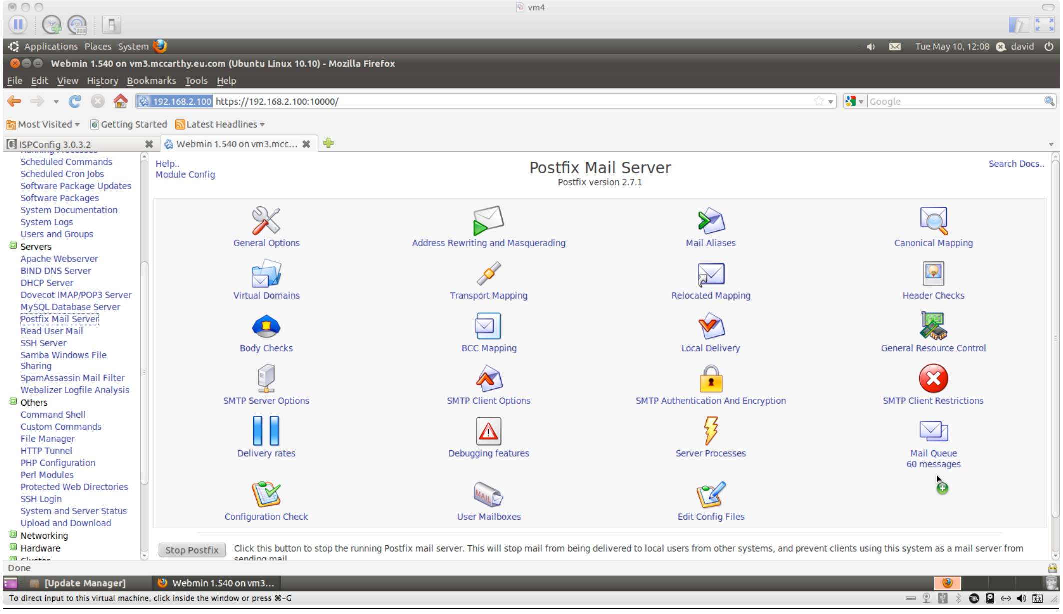
- General type of mail configuration: **Internet Site**
- System mail name: **mail.mccarthy.eu.com**
- Root and postmaster mail recipient: **<root_david>**
- Other destinations for mail: **mail.example.com, mccarthy.eu.com, localhost.mccarthy.eu.com, localhost**
- Force synchronous updates on mail queue?: **No**
- Local networks: **127.0.0.0/8, 192.168.2.0/24**
- Mailbox size limit (bytes): **0**
- Local address extension character: **+**
- Internet protocols to use: **all**
-

After this, I configured postfix to use Maildir as follows:

```
#       postconf –e 'home_mailbox = Maildir/'
```

```
#       postconf –e 'mailbox_command ='
```

We can also have full administration access to Postfix from Webmin.
Here we can also see and manage the mail as required.

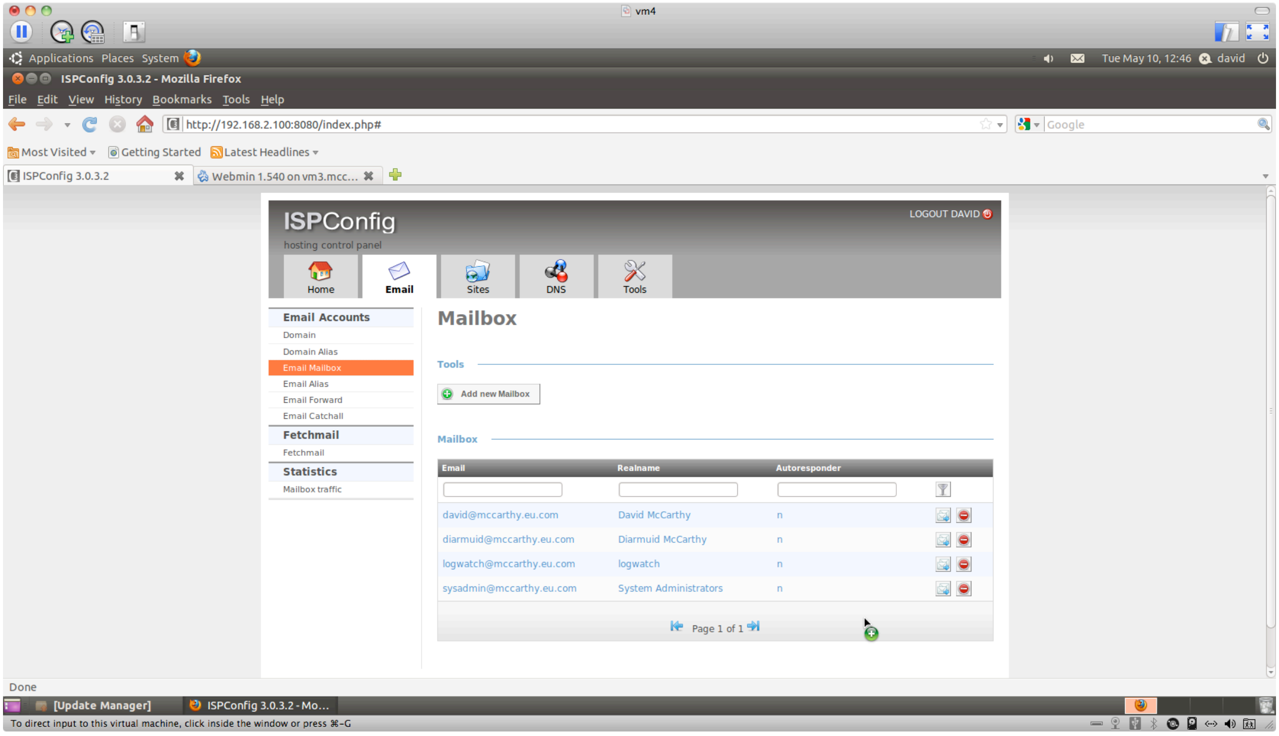


Click this button to stop the running Postfix mail server. This will stop mail from being delivered to local users from other systems, and prevent clients using this system as a mail server from sending mail.

To direct input to this virtual machine, click inside the window or press ⌘-G

VM3 - Postfix Mail Server

Now that the configuration is completed, I setup some additional email address for the domain using ISPCONFIG which is also installed and running on vm3.



Mailbox

Mailbox

Email	Realname	Autoresponder
david@mccarthy.eu.com	David McCarthy	n
diarmuid@mccarthy.eu.com	Diarmuid McCarthy	n
logwatch@mccarthy.eu.com	logwatch	n
sysadmin@mccarthy.eu.com	System Administrators	n

Page 1 of 1

To fully test the email functionality, I installed SquirrellMail on server vm3 to let me then test this from the clients vm1 and vm 4.

VM3 – Dovecot IMAP/POP3 Server

The installation of Dovecot was quite simple. We just needed to install the following packages:

# apt-get install dovecot-imapd dovecot-pop3d

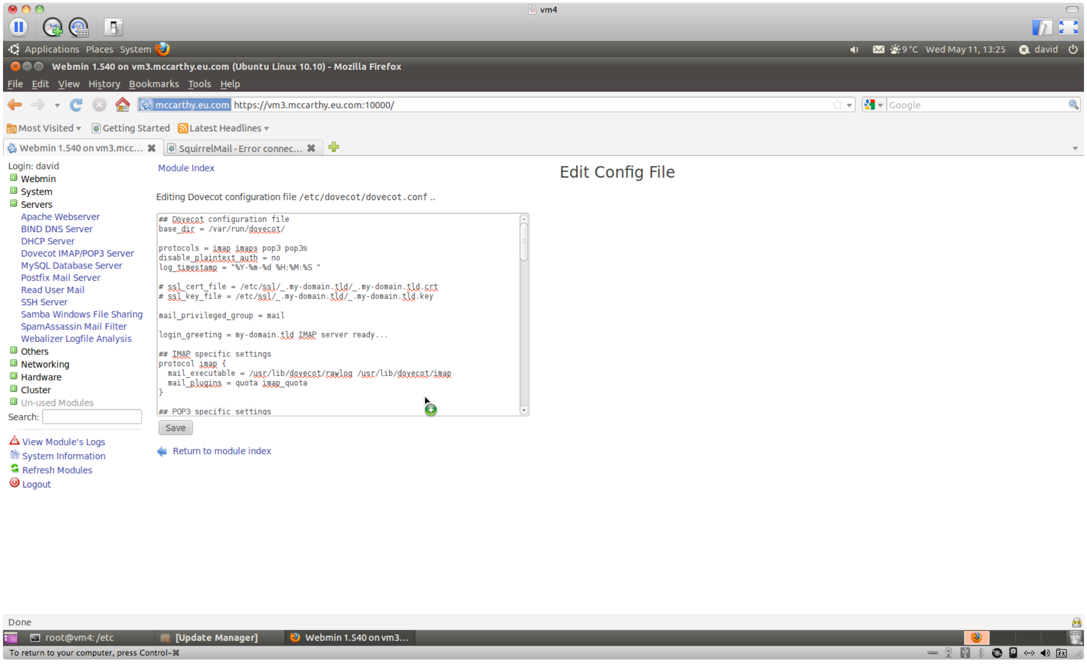
Once installed, we configured the following file:

/etc/dovecot/dovecot.conf

I used Webmin again to edit this file as in the next screen:

Dovecot supports maildir and mbox formats. We selected maildir and edited the config file accordingly.

# mail_location = maildir:~/Maildir



Edit Config File

Editing Dovecot configuration file /etc/dovecot/dovecot.conf ..

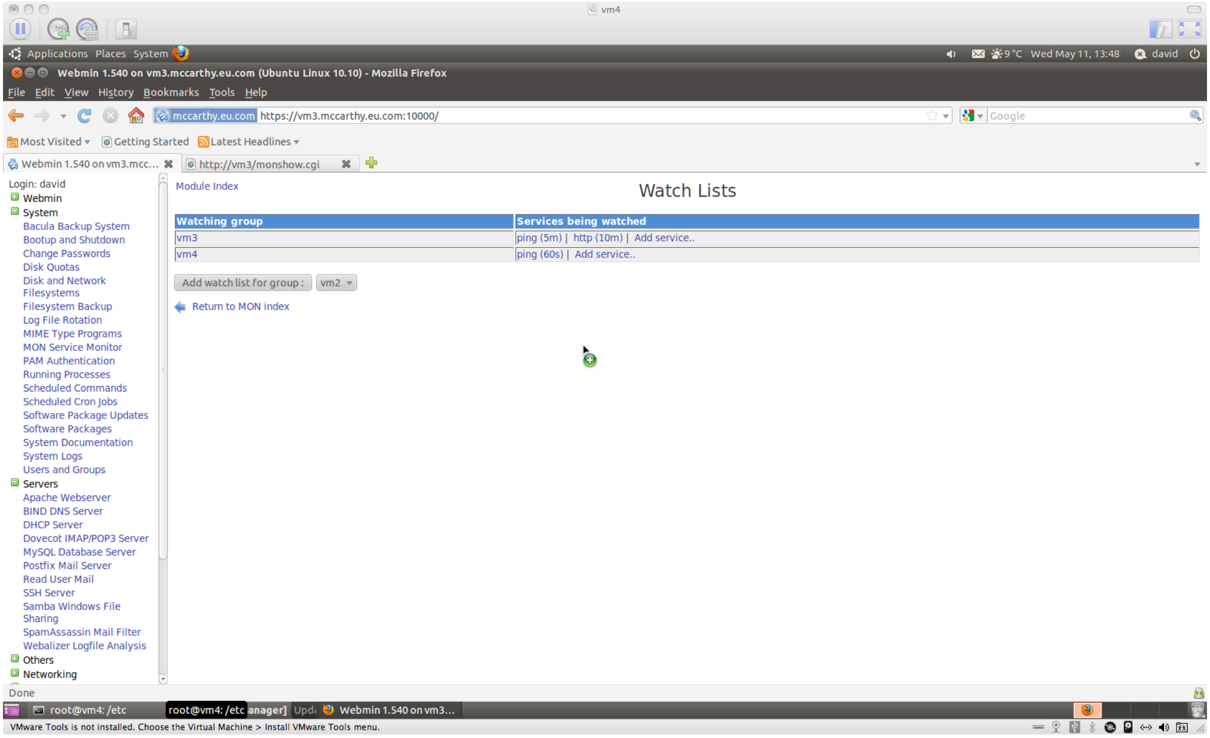
```
## Dovecot configuration file
base_dir = /var/run/dovecot/

protocols = imap imaps pop3 pop3s
disable_plaintext_auth = no
log_timestamp = "%Y-%m-%d %H:%M:%S "

# ssl_cert_file = /etc/ssl/_.my-domain.tld/_.my-domain.tld.crt
# ssl_key_file = /etc/ssl/_.my-domain.tld/_.my-domain.tld.key

mail_privileged_group = mail

login_greeting = my-domain.tld IMAP server ready...

## IMAP specific settings
protocol imap {
  mail_executable = /usr/lib/dovecot/rawlog /usr/lib/dovecot/imap
  mail_plugins = quota imap_quota
}

## POP3 specific settings
```

The mail server was fully tested and mails sent and received from both DHCP clients.

Monitoring

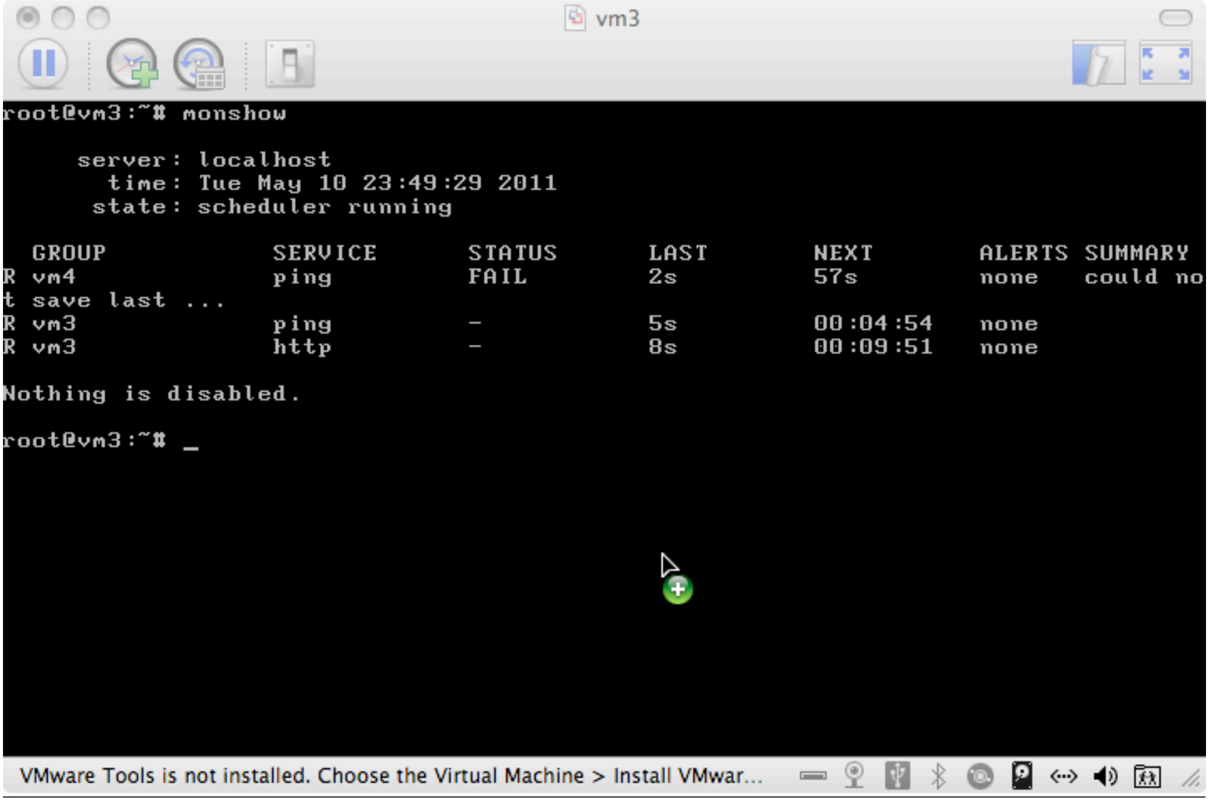
Mon Service Monitor

I installed Mon Service Monitor on vm3 and set up watch lists to monitor ping and other services running on vm3 and vm4. This is administered through the GUI in Webmin as below:



Watch Lists

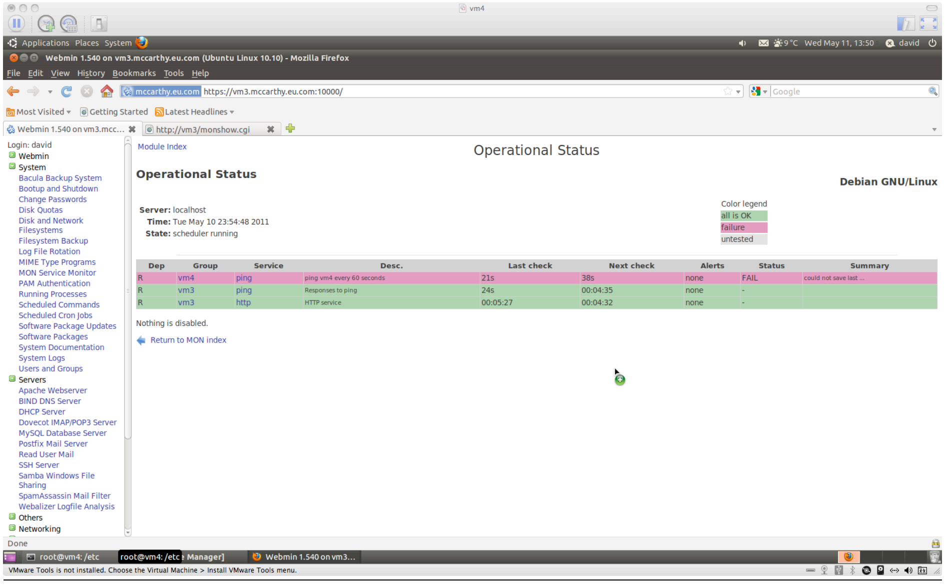
Watching group	Services being watched
vm3	ping (5m) | http (10m) | Add service..
vm4	ping (60s) | Add service..


vm3
VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

```
root@vm3:~# monshow

     server: localhost
       time: Tue May 10 23:49:29 2011
      state: scheduler running

  GROUP            SERVICE      STATUS      LAST       NEXT       ALERTS  SUMMARY
R vm4              ping         FAIL        2s         57s        none    could no
t save last ...
R vm3              ping         -           5s         00:04:54   none
R vm3              http         -           8s         00:09:51   none

Nothing is disabled.

root@vm3:~# _
```

Monitoring

Mon Service Monitor



Module Index

Operational Status

Operational Status

Debian GNU/Linux

Server: localhost
Time: Tue May 10 23:54:48 2011
State: scheduler running

Color legend
all is OK
failure
untested

Dep	Group	Service	Desc.	Last check	Next check	Alerts	Status	Summary
R	vm4	ping	ping vm4 every 60 seconds	21s	38s	none	FAIL	could not save last ...
R	vm3	ping	Responses to ping	24s	00:04:35	none	-	
R	vm3	http	HTTP service	00:05:27	00:04:32	none	-	

Nothing is disabled.

Return to MON index

BMON (bandwidth) Monitor

bmon is a portable bandwidth monitor and rate estimator that supports various input methods for different architectures.

It is very simpe to install by running the following command:

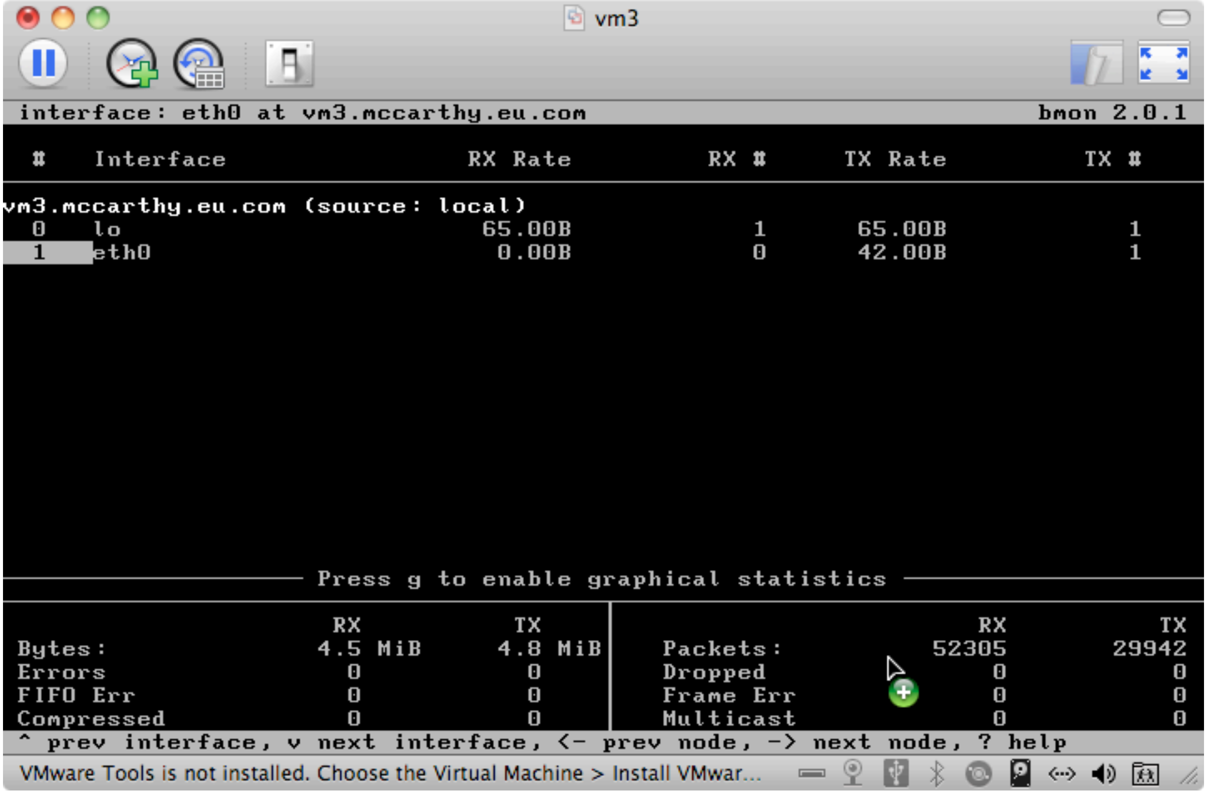
# apt-get install bmon

The service can then be launched from comand line and gives a simple but usefull terminal output as in next screens: To launch use the following command:

# bmon

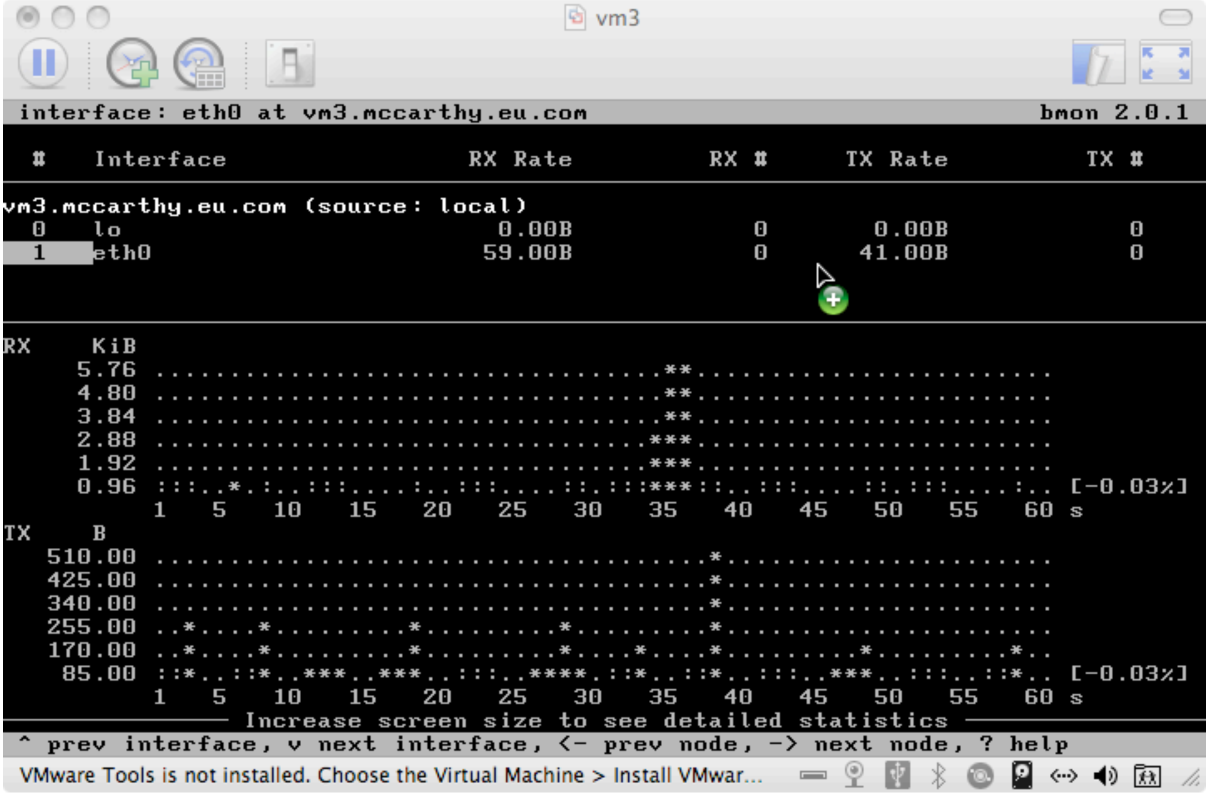
Monitoring

BMON (bandwidth) Monitor



```
interface: eth0 at vm3.mccarthy.eu.com                                bmon 2.0.1

  #   Interface                   RX Rate         RX #      TX Rate         TX #

vm3.mccarthy.eu.com (source: local)
  0   lo                           65.00B            1       65.00B            1
  1   eth0                          0.00B            0       42.00B            1






──────────────── Press g to enable graphical statistics ────────────────
                              RX          TX │
 Bytes:                  4.5 MiB     4.8 MiB │   Packets:            52305        29942
 Errors                        0           0 │   Dropped                 0            0
 FIFO Err                      0           0 │   Frame Err               0            0
 Compressed                    0           0 │   Multicast               0            0
 ^ prev interface, v next interface, <- prev node, -> next node, ? help
```

VMware Tools is not installed. Choose the Virtual Machine > Install VMwar…



```
interface: eth0 at vm3.mccarthy.eu.com                                bmon 2.0.1

  #   Interface                   RX Rate         RX #      TX Rate         TX #

vm3.mccarthy.eu.com (source: local)
  0   lo                            0.00B            0        0.00B            0
  1   eth0                         59.00B            0       41.00B            0


RX    KiB
    5.76 ..................................**........................
    4.80 ..................................**........................
    3.84 ..................................**........................
    2.88 .................................***........................
    1.92 .................................***........................
    0.96 :::..*.:..:::....:..:::....::.:::***::..:::....::.:::....:.. [-0.03%]
         1   5    10   15   20   25   30   35   40   45   50   55   60 s
TX    B
  510.00 .....................................*......................
  425.00 .....................................*......................
  340.00 .....................................*......................
  255.00 ..*....*.........*.........*.........*......................
  170.00 ..*....*.........*.........*....*....*.........*.........*..
   85.00 ::*..::*..***..***..:::..****.::*..::*..:::..***..:::..::*.. [-0.03%]
         1   5    10   15   20   25   30   35   40   45   50   55   60 s
────────── Increase screen size to see detailed statistics ──────────
 ^ prev interface, v next interface, <- prev node, -> next node, ? help
```

VMware Tools is not installed. Choose the Virtual Machine > Install VMwar…

Monitoring

IFTOP Monitor

Iftop does for network monitoring what top does for CPU usage. It listens to network traffic on a named interface and displays a table of current bandwidth usage by pairs of hosts.

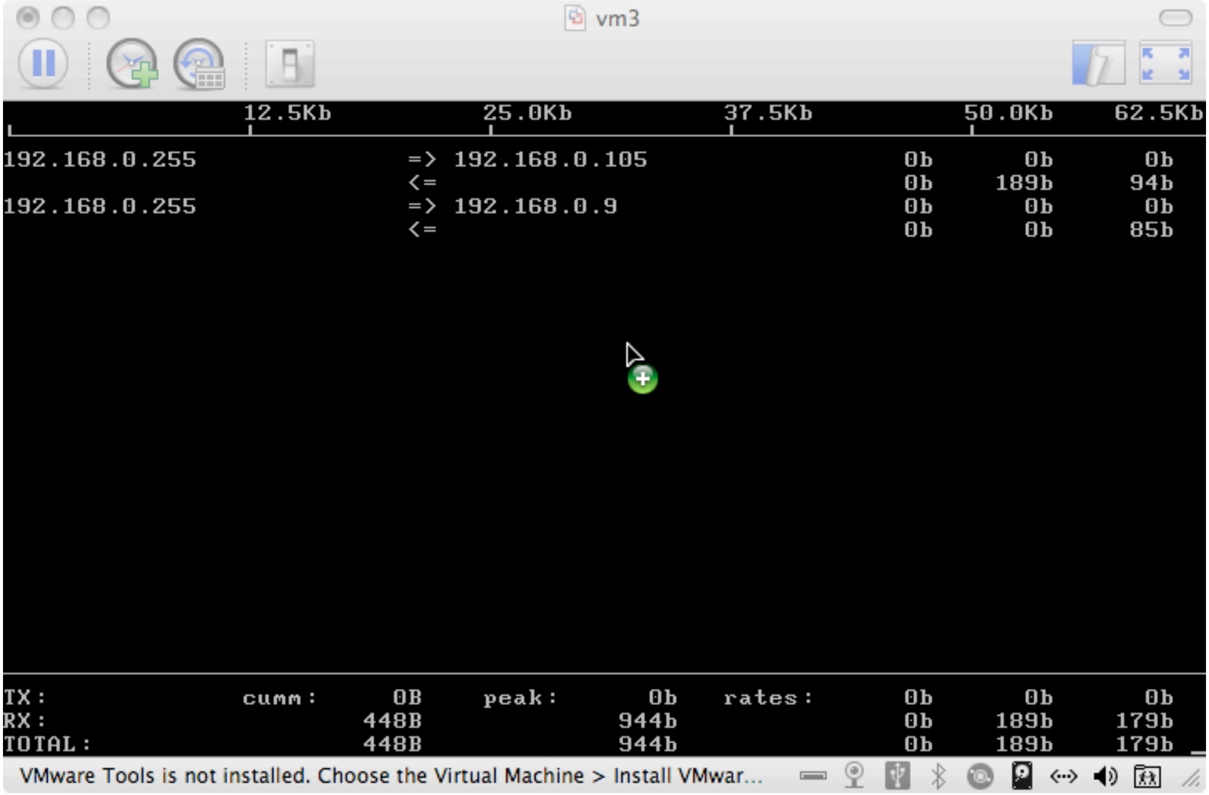
Simple to install by running comman

# apt-get install ifto

to run the application, use the following command:

# iftop

Output looks like this:



```
                12.5Kb          25.0Kb          37.5Kb          50.0Kb     62.5Kb
192.168.0.255                      => 192.168.0.105                  0b      0b      0b
                                   <=                                0b    189b     94b
192.168.0.255                      => 192.168.0.9                    0b      0b      0b
                                   <=                                0b      0b     85b




TX:             cumm:      0B     peak:      0b     rates:      0b      0b      0b
RX:                      448B              944b                 0b    189b    179b
TOTAL:                   448B              944b                 0b    189b    179b
```

VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

Monitoring

BWM-NG Monitor

Yet another simple, but effective bandwidth monitor.
Supports /proc/net/dev, netstat,getifaddr, syscti and libstatgrab.
Unlimited number of intefaces supported. Can white/blacklist interfaces plus may more config options.

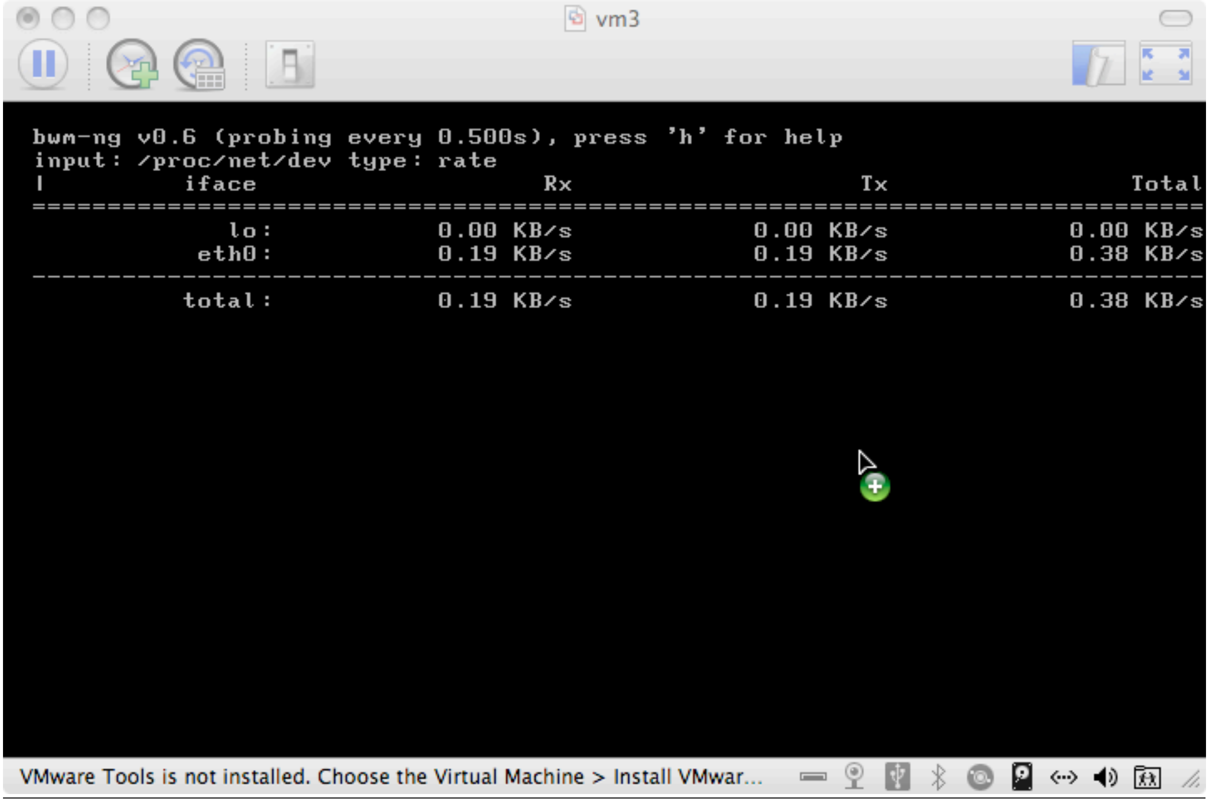
Install from

# apt-get install bwm-ng

Run application from

# bwm-ng

Output is :



```
bwm-ng v0.6 (probing every 0.500s), press 'h' for help
input: /proc/net/dev type: rate
|         iface                   Rx                   Tx                 Total
==============================================================================
             lo:          0.00 KB/s            0.00 KB/s            0.00 KB/s
           eth0:          0.19 KB/s            0.19 KB/s            0.38 KB/s
------------------------------------------------------------------------------
          total:          0.19 KB/s            0.19 KB/s            0.38 KB/s
```

VMware Tools is not installed. Choose the Virtual Machine > Install VMwar...

Summary & Conclusions

So, all in all the assignment worked out as planned and all required services have been installed and fully tested. The network and domain does everything required in the brief and additional test software installed on the DHCP clients. Additional customisation has also been added with items such as Webmin, ISPCONFIG3 and various additional monitoring services. This was our first time configuring anything to this scale, so it was great experience and a very worthwhile exercise.

Looking back the biggest mistake we made was not backing up some of the configuration files before editing them and making use of the clone facility in Vmware. This lead to server rebuilds and configuring all the services again. Neither of us will be making that mistake again

Another aspect of the assignment we feel could have planned better is time aspect, in particular the virtual hosting section. We assumed that this wouldn't be all that difficult to implement so I left it until last. Having read through various articles and guides about what was needed to be done and from what we thought was pretty straight forward. However, it didn't work out like that all. It was actually one of the more tricky aspects of the whole assignment. It left us under a lot of pressure and we were running tight on time to get it right. Many many hours were spent trying to figure out what was wrong and as it turns out it was a fairly elementary mistake to make. I was only entering the IP address of the main server into the apache2.conf file. NameVirtualHost 192.168.0.20:80. We also needed to define the two new IP addresses created .30 and .40. This left us with very little time, until we got one week extension, to sort out other side issues the server was experiencing.

We both feel that we have gained very good experience from this assignment. As mentioned previously, we had never built and designed any servers or network to this scale before. We have both worked in teams perviously and presently, worked with Apache and Samba before but it was our first time ever dealing with CUPS administration and also working with BIND. It was interesting to see DNS working, something that we both have been aware of for many years but never knew exactly how it worked.

There was a lot of learning on the-fly and huge amount of research done online. We feel that we have gained good experience in sourcing and filtering the right data from a huge online resource that can sometimes lead you down the garden path – as we experienced first hand during this assignment.

It was good too that we had some problems along the way that will hopefully stand to me in the future.

In conclusion, we both agree that this assignment and module in its over all conent has compounded and developed greatly our knowledge of a spectrum of topics and stands us well for future related modules and our current roles in the workplace.

Bibliography

References taken from but not limited to the following sources of information:

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BIND9:
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http://www.ubuntugeek.com/dns-server-setup-using-bind-in-ubuntu.html

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http://ubuntuforums.org/showthread.php?t=76647

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http://www.linuxforums.org/forum/servers/120309-cups-403-forbidden-error.html#post581234

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http://timhorgan.wordpress.com/2011/03/21/dhcp-server/
http://www.jonathanmoeller.com/screed/?p=2371
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https://help.ubuntu.com/community/Postfix

Dovecot:
https://help.ubuntu.com/community/Dovecot

FTP:
https://help.ubuntu.com/6.06/ubuntu/serverguide/C/ftp-server.html

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https://help.ubuntu.com/10.10/serverguide/C/openssh-server.html.

Server monitoring:
http://www.ubuntugeek.com/bandwidth-monitoring-tools-for-ubuntu-users.html