Network Engineering Assignment 3

HIDDEN PRIMARY DNS

I give permission to have this assignment shared for peer evaluation.

1 CONFIGURING MASTER DNS

1.1 INSTALL PACKAGES

Firstly bind9 which is a DNS tool-set for ubuntu will need to installed

```
sudo apt install bind9 bind9utils bind9-doc
```

1.2 SET STATIC HOSTNAME

You will need to set both a static hostname and IP address for the server, firstly set the static IP by editing /etc/network/interfaces with any text editor

```
Sudo nano /etc/network/interfaces
```

And edit under the correct Serial Interface, mine was enp0s9, and I set my IP to 10.1.1.6.

Next set a static hostname by editing /etc/hosts.

```
Sudo nano /etc/hosts
```

And add your static IP with a hostname, below is mine

```
10.1.1.6        server.neteng.lan
```

1.3 CONFIGURE MASTER DNS

The first step in configure the master DNS server is to define the zones, this is done by editing /etc/bind/named.conf.local

```
sudo nano /etc/bind/named.conf.local
```

And edit to look something like this – explanation is after screenshot

```
  GNU nano 2.9.3                  /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 "neteng.lan" {
        type master;
        file "/etc/bind/db.neteng.lan";
        allow-transfer { 10.1.1.4; };
        also-notify { 10.1.1.4; };
};
```

Neteng.lan in “zone” is the domain of the network, previously I chose to name my host: server.neteng.lan with .neteng.lan being the domain and server being this machine.

File will need to point to a file that will be created next, it’s best to put it in the same location but it can be named anything

Allow-transfer & also-notify: is the static IP of the slave DNS which will be configured later in this document.

Next the zone file will need to be created, I just copied a pre-existing zone file to use as a template and edited that with nano.

```
sudo cp /etc/bind/db.local /etc/bind/db.neteng.lan

sudo nano /etc/bind/db.neteng.lan
```

The screenshot below is the final version of that zone file, however it’s taken in sublime text editor to fit on the screen.

```
;
; BIND data file for local loopback interface
;
$TTL    604800
@   IN  SOA neteng.lan. server.neteng.lan. (
                              14     ; Serial
                         604800     ; Refresh
                          86400     ; Retry
                        2419200     ; Expire
                         604800 )   ; Negative Cache TTL

;Name Server Information
@   IN  NS  server.neteng.lan.
server  IN  A   10.1.1.6

;Mail
CE.mail IN  MX  10  CE.mail.neteng.lan.
UR.mail IN  MX  10  UR.mail.neteng.lan.
TO.mail IN  MX  10  TO.mail.neteng.lan.
TD.mail IN  MX  10  TD.mail.neteng.lan.
UO.mail IN  MX  10  UO.mail.neteng.lan.
PC.mail IN  MX  10  PC.mail.neteng.lan.

CE.mail IN  A   10.1.1.6
UR.mail IN  A   10.1.1.6
TO.mail IN  A   10.1.1.6
TD.mail IN  A   10.1.1.6
UO.mail IN  A   10.1.1.6
PC.mail IN  A   10.1.1.6

;ftp
CE.ftp  IN  CNAME   www.CE.neteng.lan.
UR.ftp  IN  CNAME   www.UR.neteng.lan.
TO.ftp  IN  CNAME   www.TO.neteng.lan.
TD.ftp  IN  CNAME   www.TD.neteng.lan.
UO.ftp  IN  CNAME   www.UO.neteng.lan.
PC.ftp  IN  CNAME   www.PC.neteng.lan.

;www
www.CE  IN  A   10.1.1.6
www.UR  IN  A   10.1.1.6
www.TO  IN  A   10.1.1.6
www.TD  IN  A   10.1.1.6
www.UO  IN  A   10.1.1.6
www.PC  IN  A   10.1.1.6

```

The **Serial** number will need to be set greater than the previous serial number, many people just set it as the current date/time but I've just been incrementing it by 1 each time I edit the file.

I also just randomly set the mail & ftp address making them go back to this servers IP (10.1.1.6) as I didn't setup proper addresses for these servers which should ideally be done. But this wasn't apart of the assignment specifications.

1.4 CHECK FOR ERRORS AND RESTART

First check for errors with

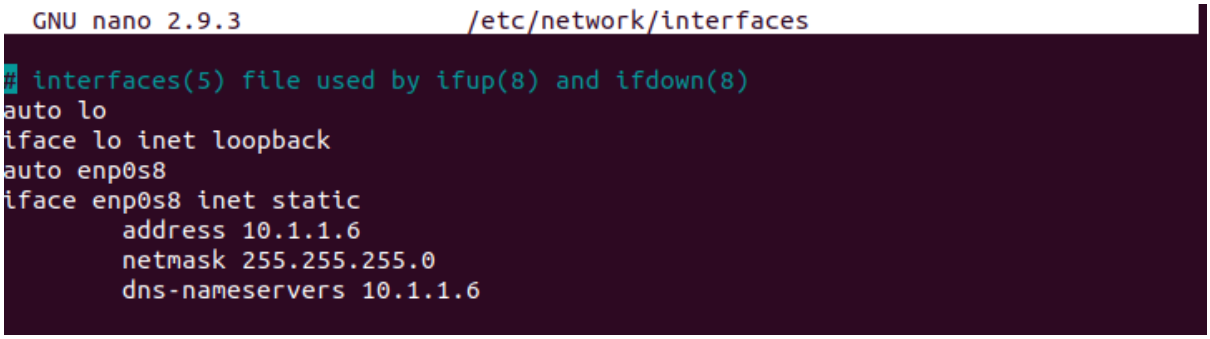
```
sudo named-chechconf
```

If there is no response then that means there are no errors, next check for errors with the zone file with

```
sudo named-checkzone neteng.lan /etc/bind/db.neteng.lan
```

If there are still no errors then add the dns server ip to the static interface that was set earlier in /etc/network/interfaces

```
sudo nano /etc/network/interfaces
```



And restart bind9

```
sudo systemctl restart bind9
```

2 SETUP SLAVE DNS

2.1 INSTALL BIND9 ON THIS MACHINE

```
sudo apt install bind9 bind9utils bind9-doc
```

2.2 Set Static IP address

Use text editor to edit interfaces

```
sudo nano /etc/network/interfaces
```

```
iface enp0s9 inet static
        address 10.1.1.4
        netmask 255.255.255.0
        dns-nameservers 10.1.1.6
        dns-nameservers 10.1.1.4
```

Also add the dns-nameservers IP of both the master DNS (what was configured before, in this case 10.1.1.6) and this soon to be slave DNS (which is 10.1.1.4)

2.3 Configure Slave DNS

Edit /etc/bind/named.conf.local using any text edit you wish.

```
sudo nano /etc/bind/named.conf.local
```

```
zone "neteng.lan" {
        type slave;
        file "/var/cache/db.neteng.lan"
        masters { 10.1.1.6; };
};
```

Make sure to notice the change in file, as the slave connects to the master DNS it won't have proper permissions access the real file, so we use /var/cache.

3 Configure Master DNS firewall

Ubuntu comes bundled with UFW now, which'll be used to setup the firewall on the master server, if you're not on ubuntu then install via:

```
sudo apt install ufw
```

Start UFW:

```
sudo ufw enable
```

Next is to deny all incoming requests with:

```
sudo ufw default deny incoming
```

And to accept from the IP of our slave server (10.1.1.4)

```
sudo ufw allow from 10.1.1.4
```

To check this firewall settings:

```
sudo ufw status
```

```
To                         Action      From
--                         ------      ----
Anywhere                   ALLOW       10.1.1.4
```