

DNS Stands for Domain Name Service. On the Internet, the Domain Name Service (DNS) stores and associates many types of information with domain names; most importantly, it translates domain names (computer hostnames) to IP addresses. It also lists mail exchange servers accepting e-mail for each domain. In providing a worldwide keyword-based redirection service, DNS is an essential component of contemporary Internet use. If you can no longer resolve addresses in a web browser, but can ping via an IP address, the usual culprit is DNS.

BIND (Berkeley Internet Name Domain) is an open reference implementation of the Domain Name System (DNS) protocol and provides a redistributable implementation of the major components of the Domain Name System. This is what we will be using with Ubuntu. It provides:

- a name server (named)
- a resolver library
- troubleshooting tools like nslookup and dig

The BIND DNS Server is used on the vast majority of name serving machines on the Internet, providing a robust and stable architecture on top of which an organization's naming architecture can be built. The resolver library included in the BIND distribution provides the standard APIs for translation between domain names and Internet addresses and is intended to be linked with applications requiring name service.

Using the WinSCP editor instead of vi

If you would like to use the editor included in WinSCP instead of vi, then you will need to first enable the root account, then log in through WinSCP as root. This is accomplished by using the PuTTY terminal and running the command

```
sudo passwd root
```

You will enter the your password to run an elevated command

You will then need to create a password for root (I suggest cisIsTheBest!) and enter it twice. You will then be allowed to log into PuTTY or WinSCP as the root user. All instructions below assume you have logged in with a normal user account (not root) and will be using vi as the editor, so please make any necessary adjustments.

Installing Bind in Ubuntu

Install all the required packages for bind9. sudo is the command to run a function as the administrator. This is in lieu of logging in as the root user. Apt-get is a utility to install and update programs. With Fedora, we were using the command yum. Ubuntu uses apt-get.

From the PuTTY terminal type in

```
sudo apt-get install bind9 dnsutils
```

put in the password of cisIsTheBest! when requested.

Configuring Bind

Ubuntu provides you with a pre-configured Bind, during my experience with editing this file in vi, I felt very bad putting you all through this, so I included pre-configured files for you to begin with. You will need to move these files to their appropriate directories in Ubuntu, and then edit them as listed below. The first three were created when installing bind. The last two I created. The directory zones must be created by you. Any reference to UB150 is a reference to my Ubuntu machine name, so you will need to change this to your Ubuntu machine name.

```
/etc/resolvconf/resolv.conf.d/tail
/etc/resolv.conf
/etc/bind/named.conf.local
/etc/bind/named.conf.options
/etc/bind/zones/dunn.local.db (your file will be named differently according to
your domain setup)
/etc/bind/zones/ rev.9.168.192.in-addr.arpa
```

Edit the file named.conf.local. Change any reference to dunn.local to your domain name.

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

```
// The // lines are comments
zone "dunn.local" {
type master;
file "/etc/bind/zones/dunn.local.db";
};

zone "9.168.192.in-addr.arpa"{
type master;
file "/etc/bind/zones/rev.9.168.192.in-addr.arpa";
};
```

In the named.conf.options file, make certain the forwarders are sent to your Windows 2008 R2 DNS server at 192.168.9.xxx If there is a line in this file looking like the one below, make no changes and exit the editor. You are forwarding requests to the Windows 2008 server for resolution Ubuntu DNS cannot resolve it.

```
sudo vi /etc/bind/named.conf.options
```

```
options {
    directory "/var/cache/bind";
    forwarders {
        192.168.9.10;
```

```
};  
allow-recursion { localnets; };  
};
```

The zone definition file is where we will put all the addresses / machine names that our DNS server will know. In the files below, replace any reference to dunn.local with your domain name, and any reference to UB150 to the name of your Ubuntu server.

```
sudo mkdir /etc/bind/zones  
sudo vi /etc/bind/zones/dunn.local.db
```

```
//replace dunn.local.db with your domain name .db. Do not forget  
the period (.) after the domain name!
```

```
dunn.local.      IN      SOA      00ubuntu.dunn.local.  
admin.dunn.local. (  
; Do not modify the following lines!  
                                2006081401  
                                28800  
                                3600  
                                604800  
                                38400  
)  
;  
  
dunn.local.      IN      NS       00ubuntu.dunn.local.  
; Replace the IP address with the right IP addresses.  
00ubuntu IN      A        192.168.9.160  
00server IN      A        192.168.9.98  
cis010   IN      A        192.168.9.10
```

The Reverse DNS Zone file:

A normal DNS query would be of the form 'what is the IP of host=www in domain=mydomain.com'. There are times however when we want to be able to find out the name of the host whose IP address = x.x.x.x. Sometimes this is required for diagnostic purposes, more frequently these days it is used for security purposes to trace a hacker or spammer, indeed many modern mailing systems use reverse mapping to provide simple authentication using dual look-up, IP to name and name to IP.

In order to perform Reverse Mapping and to support normal recursive and Iterative (non-recursive) queries the DNS designers defined a special (reserved) Domain Name called IN-ADDR.ARPA. This domain allows for all supported Internet IPv4 addresses (and now IPv6). You should only need to modify this file, changing all references of dunn.local and UB150 to your domain and Ubuntu name and/or number. It should look something like the following:

```
sudo vi /etc/bind/zones/rev.9.168.192.in-addr.arpa
```

```
@ IN SOA 00ubuntu.dunn.local. admin.dunn.local. (
                                2006081401;
                                28800;
                                604800;
                                604800;
                                86400
)
;
                                IN      NS      00ubuntu.dunn.local.
4                                IN      PTR     dunn.local
```

Modify both files `/etc/resolvconf/resolv.conf.d/tail` and the file `/etc/resolv.conf` with the following settings, changing the nameserver IP to your Ubuntu's IP number, and `dunn.local` with your current domain name.

```
search dunn.local.
nameserver 192.168.9.xxx (your ubuntu server IP address)
domain dunn.local
```

Restart Networking: `sudo service networking restart`

Restart Bind service: `sudo /etc/init.d/bind9 restart`

If you receive a red "failed" message on the startup, then you need to find the cause - one of the configuration files has an error. This error can be as small as a period in the wrong place. Careful examination of the files is very important. To assist in finding the error, look at the log files at `/var/log/syslog`. This is accomplished from the PuTTY terminal

```
tail /var/log/syslog
```

Scroll to the end of the file and look for the filename and error messages. Fix the error and restart the bind service. Keep searching until you have successfully started the bind service.

Test your DNS Using the following commands

```
dig dunn.local
ping www.skagit.edu -c 4
ping ciselearn.skagit.edu -c 4
nslookup windows_server_name
```

Making the Ubuntu Server a DNS server

If the ping resolves the names (www.skagit.edu and cislearn.skagit.edu) to an IP number, then your DNS server is working.

Reference: <https://help.ubuntu.com/community/BIND9ServerHowto>