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Ubuntu DNS Server Guide - BIND Caching Name Server Setup

By [Sam](#) on Sep 10, 2007 filed under [Guides](#) | [Discuss \(2 Comments\)](#)



In previous posts, I shared instructions for [setting up a Ubuntu LAMP \(Linux, Apache, mySQL, PHP\) server](#) and [configuring Apache and mySQL](#) to host new sites complete with phpmyadmin and cgi-bin access. I thought it would be useful to write a follow-up guide on setting up of an Ubuntu DNS (Domain Name Service) server on your LAN (local area network). For newcomers, DNS is a service that maps IP addresses to domain names (e.g., a public DNS server is responsible for mapping `www.google.com` to `74.125.19.103` and vice versa). There are several reasons why you may want to set up a private DNS server on you LAN. If your LAN includes more than a few machines, a private DNS server may be a more convenient way to map client host names to IP addresses then having to maintain a hosts configuration files on each client. A private DNS server can also help increase network performance by caching IP addresses of commonly visited websites instead of retrieving them from the public DNS servers maintained by ISPs at each request. This post describes how to set up a caching DNS server using BIND9 (Berkley Internet Naming Daemon Version 9), the most widely used DNS program and the DNS server that ships with Ubuntu. In a [follow-up post](#) I describe how to set up a master DNS server to serve DNS records for an imaginary domain (i.e., your LAN)

Step 1: Install BIND DNS server on Ubuntu

There are two ways to install BIND on Ubuntu. If you are performing a fresh installation of Ubuntu Server Edition (version 7.04 at time of writing) as per [this post](#), at some point the install shell will ask if you wish to install a DNS and/or LAMP server. Select DNS (and LAMP if you so desire using the arrow keys and spacebar) and continue (using tab and enter). On the other hand, if you have already completed the installation of your LAMP server then use Ubuntu's built in package

management program `aptitude` to install BIND. Open a terminal and type

```
sudo aptitude update
sudo aptitude install bind9
```

You may need to insert the Ubuntu install CD to perform this installation.

Step 2: Configure BIND Caching DNS server

By default, BIND installs on Ubuntu configured to act as a caching DNS server. However, you need to edit the configuration options file `/etc/bind/named.conf.options` to specify a public DNS server operating on the wide area network (WAN) to which un-cached domain names should be forwarded. Open this file with the text editor of your choice (I use `vi` here).

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

Uncomment and edit the `forwarders` section of this file to point to your internet service provider's DNS server. You may enter multiple DNS server addresses (separated by semicolons) if you desire. When finished, the `forwarders` section should look like the following with the `xxx.xxx.xxx.xxx` replaced with the appropriate IP address(es).

```
forwarders {
xxx.xxx.xxx.xxx;
xxx.xxx.xxx.xxx;
};
```

You must also edit the `/etc/resolv.conf` configuration file of all machines on your LAN (including the DNS server itself) to point to your new DNS server. Open this file

```
vi /etc/resolv.conf
```

and add

```
nameserver xxx.xxx.xxx.xxx
```

to the top of the file where `xxx.xxx.xxx.xxx` is the IP address of your new DNS server. When configuring the DNS server itself, change the `nameserver` address to `127.0.0.1`, which points to `localhost`. You may delete any additional `nameserver` lines appearing in the `resolv.conf` file although it may be prudent to leave lines in place that point to your ISP's DNS server so that client machines continue to function in the event of your server going offline (just make sure your DNS server is listed first). To implement the changes to your DNS server, restart BIND.

```
sudo /etc/init.d/bind9 restart
```

Finally, test your server by typing the following command in a terminal on any machine on your LAN configured to use your new DNS server.

```
dig www.zaphu.com
```

Near the end of the output of this command there should be a line that reads `Query time: 24 ms` (of course the actual time may be different). Execute the `dig www.zaphu.com` command again and you should notice that the query time significantly decreased indicating that your DNS server is caching DNS information for `www.zaphu.com`. Note that BIND caches DNS information to RAM and not

disk. In most cases this will not be a problem since most machines have plenty of memory and old records are purged from memory after a period of time. However, if you expect your server to get a lot of traffic you may want to periodically flush the cache using

```
sudo rndc -s localhost flush
```

or set the maximum amount of memory to use (in essence forcing overflow data to be deleted before it expires) by setting the `max-cache-size` option in the configuration file.

Congratulations! you are finished setting up your Ubuntu caching name server. See my next [post](#) where I discuss configuring a master DNS server to serve hostnames to machines on your LAN.

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Update, Oct. 24, 2007: Ubuntu 7.10 has been released and is receiving great reviews.

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