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Configuration

There a many ways to configure **BIND9**. Some of the most common configurations are a caching nameserver, primary master, and a as a secondary master.

- When configured as a caching nameserver BIND9 will find the answer to name queries and remember the answer when the domain is queried again.

- As a primary master server BIND9 reads the data for a zone from a file on it's host and is authoritative for that zone.

- In a secondary master configuration BIND9 gets the zone data from another nameserver authoritative for the zone.

Overview

The DNS configuration files are stored in the `/etc/bind` directory. The primary configuration file is `/etc/bind/named.conf`.

The *include* line specifies the filename which contains the DNS options. The *directory* line in the `/etc/bind/named.conf.options` file tells DNS where to look for files. All files BIND uses will be relative to this directory.

The file named `/etc/bind/db.root` describes the root nameservers in the world. The servers change over time, so the `/etc/bind/db.root` file must be maintained now and then. This is usually done as updates to the **bind9** package. The *zone* section defines a master server, and it is stored in a file mentioned in the *file* option.

It is possible to configure the same server to be a caching name server, primary master, and secondary master. A server and be the Start of Authority (SOA) for one zone, while providing secondary service for another zone. All the while providing caching services for hosts on the local LAN.

Caching Nameserver

The default configuration is setup to act as a caching server. All that is required is simply adding the IP Addresses of your ISP's DNS servers. Simply uncomment and edit the following in `/etc/bind/named.conf.options`:

```
forwarders {
            1.2.3.4;
            5.6.7.8;
        };
```

    Replace *1.2.3.4* and *5.6.7.8* with the IP Adresses of actual nameservers.

Now restart the DNS server, to enable the new configuration. From a terminal prompt:

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

See the section called "dig" for information on testing a caching DNS server.

Primary Master

In this section **BIND9** will be configured as the Primary Master for the domain *example.com*. Simply replace example.com with your FQDN (Fully Qualified Domain Name).

Forward Zone File

To add a DNS zone to BIND9, turning BIND9 into a Primary Master server, the first step is to edit `/etc/bind/named.conf.local`:

```
zone "example.com" {
        type master;
        file "/etc/bind/db.example.com";
};
```

Now use an existing zone file as a template to create the `/etc/bind/db.example.com` file:

```
sudo cp /etc/bind/db.local /etc/bind/db.example.com
```

Edit the new zone file `/etc/bind/db.example.com` change *localhost.* to the FQDN of your server, leaving the additional "." at the end. Change *127.0.0.1* to the nameserver's IP Address and *root.localhost* to a valid email address, but with a "." instead of the usual "@" symbol, again leaving the "." at the end.

Also, create an *A record* for ns.example.com. The name server in this example:

```
;
; BIND data file for local loopback interface
;
$TTL    604800
@       IN      SOA     ns.example.com. root.example.com. (
                              1         ; Serial
                         604800         ; Refresh
                          86400         ; Retry
                        2419200         ; Expire
                         604800 )       ; Negative Cache TTL
;
@       IN      NS      ns.example.com.
@       IN      A       192.168.1.10
ns      IN      A       192.168.1.10
```

You must increment the *Serial Number* every time you make changes to the zone file. If you make multiple changes before restarting BIND9, simply increment the Serial once.

Now, you can add DNS records to the bottom of the zone file. See the section called "Common Record Types" for details.

> Many admins like to use the last date edited as the serial of a zone, such as *2007010100* which is yyyymmddss (where *ss* is the Serial Number)

Once you have made a change to the zone file **BIND9** will need to be restarted for the changes to take affect:

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

Reverse Zone File

Now that the zone is setup and resolving names to IP Adresses a *Reverse zone* is also required. A Reverse zone allows DNS to resolve an address to a name.

Edit /etc/bind/named.conf.local and add the following:

```
zone "1.168.192.in-addr.arpa" {
        type master;
        notify no;
        file "/etc/bind/db.192";
};
```

> Replace *1.168.192* with the first three octets of whatever network you are using. Also, name the zone file `/etc/bind/db.192` appropriately. It should match the first octet of your network.

Now create the `/etc/bind/db.192` file:

```
sudo cp /etc/bind/db.127 /etc/bind/db.192
```

Next edit `/etc/bind/db.192` changing the basically the same options as `/etc/bind/db.example.com`:

```
;
; BIND reverse data file for local loopback interface
```

```
;
$TTL    604800
@       IN      SOA     ns.example.com. root.example.com. (
                              2            ; Serial
                        604800             ; Refresh
                         86400             ; Retry
                       2419200             ; Expire
                        604800 )           ; Negative Cache TTL
;
@       IN      NS      ns.
10      IN      PTR     ns.example.com.
```

The *Serial Number* in the Reverse zone needs to be incremented on each changes as well. For each *A record* you configure in `/etc/bind/db.example.com` you need to create a *PTR record* in `/etc/bind/db.192`.

After creating the reverse zone file restart **BIND9**:

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

Secondary Master

Once a *Primary Master* has been configured a *Secondary Master* is needed in order to maintain the availability of the domain should the Primary become unavailable.

First, on the Primary Master server, the zone transfer needs to be allowed. Add the *allow-transfer* option to the example Forward and Reverse zone definitions in `/etc/bind/named.conf.local`:

```
zone "example.com" {
        type master;
        file "/etc/bind/db.example.com";
        allow-transfer { 192.168.1.11; };
};

zone "1.168.192.in-addr.arpa" {
        type master;
        notify no;
        file "/etc/bind/db.192";
        allow-transfer { 192.168.1.11; };
};
```

> Replace *192.168.1.11* with the IP Address of your Secondary nameserver.

Next, on the Secondary Master, install the **bind9** package the same way as on the Primary. Then edit the `/etc/bind/named.conf.local` and add the following declarations for the Forward and Reverse zones:

```
zone "example.com" {
        type slave;
        file "db.example.com";
        masters { 192.168.1.10; };
};

zone "1.168.192.in-addr.arpa" {
        type slave;
        file "db.192";
        masters { 192.168.1.10; };
};
```

> Replace *192.168.1.10* with the IP Address of your Primary nameserver.

Restart **BIND9** on the Secondary Master:

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

In `/var/log/syslog` you should see something similar to:

```
slave zone "example.com" (IN) loaded (serial 6)
slave zone "100.18.172.in-addr.arpa" (IN) loaded (serial 3)
```

Note: A zone is only transferred if the *Serial Number* on the Primary is larger than the one on the Secondary.

Installation   Troubleshooting

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