SPECIFICATION - DNS

DNS (Domain Name Service) server

We use ISC BIND (http://www.isc.org/BIND) as our DNS server.

PREREQUISITE

The domain name of your organization, a complete set of IP addresses and FQDNs of your organization. See SPECIFICATION - IP ADDRESS AND DOMAIN NAME.

REQUIRED KNOWNLEDGE

1. Concept on IP address and domain name.
2. Confidence in working on shell and using text editor such as vi.

INTRODUCTION

You are required to setup a master DNS server for your organization. Optionally, you may setup a slave DNS server for your organization.

The master and slave DNS servers should provide the following services:

- Master name service providing both forward queries and reverse queries.
- Slave name service providing both forward queries and reverse queries.
- Zone transfer from master DNS server to slave DNS server.

CONFIGURATION

1. Make sure you have the required software installed.

   As root, run

   ```
   # rpm -q bind bindconf bind-utils bind-devel caching-nameserver
   ```

   If they are present, their names and versions will be shown.

2. Run bindconf GUI tool

   As root, run bindconf.

   ```
   # bindconf
   ```

CONFIGURATION - FORWARD MASTER ZONE

1. Press **Add** button
2. Select **Forward Master Zone** (see Figure: 1), and enter your organization's **domain name**,

   e.g. `keep-similing.org`.

Figure 1: Forward master zone

3. Set **Domain name** and **Contact** email address (see Figure: 2).

   e.g. `keep-similing.org` for **domain name** and `nsmaster@keep-simiiling.org` for **contact email address**.

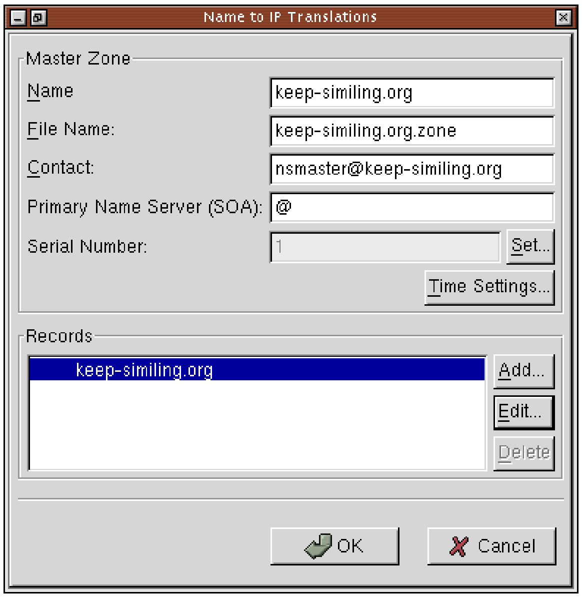

Figure 2: Forward master zone details

4. In **Records** section, press **Add...** button. Enter a hostname and it's IP address in **Host Name** and **Address** respectively (see Figure. 3).

   e.g. `cat` and `10.1.1.7`

Figure 3: Add host to forward master zone

Repeat this step to add hostnames and IP addresses for the rest of the hosts in your organization (see Figure. 4).

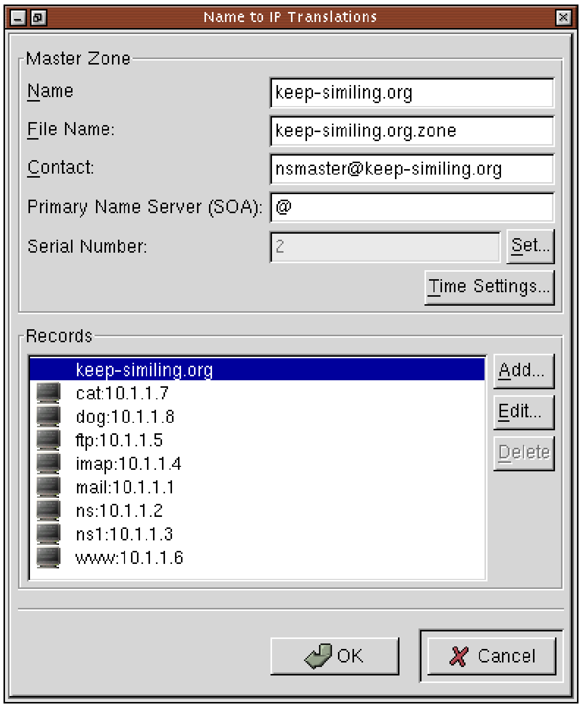

Figure 4: Several hosts registered in the forward master zone

5. In **Records** section, select `keep-similing.org` and press **Edit...**.

6. In **Name Servers** section, press **Add...** and enter your organization's DNS server name (e.g. `ns.keep-similing.org`) in **Served by** (see Figure: 5).

7. In **Mail Exchangers** section, press **Add...** and enter your organization's email server name (e.g. `mail.keep-similing.org`) in **Host Name** and `10` in **Priority** (see Figure: 6).

8. In **Address** section, enter the IP address of your organization's email server (e.g. `10.1.1.1`) in **IP Address (optional)** (see Figure: 7).

9. Select **Apply** from **File** menu to save the setup.

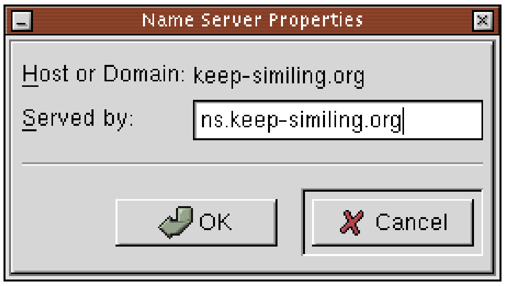

Figure 5: Name server propertities

Figure 6: Add MX record to forward master zone

CONFIGURATION - REVERSE MASTER ZONE

1. Press **Add** button
2. Select **Reverse Master Zone**
3. Set **IP Address (first 3 Octets)** to the first 3 octects of your organization's network number (e.g. `10.1.1`) (see Figure: 8).
4. In **Name Servers** section, press **Add...** button. Enter the DNS server name of your organization (e.g. `ns.keep-similing.org.`) to **Served by** (see Figure: 9 and 10).

   (ATTENTION: there is a trailing dot " ." in `ns.keep-similing.org.`)
5. In **Reverse Address Table** section, press **Add...** button. Enter the **last octect** of each IP address registered in your organization and the FQDN of that IP address in **IP Address** and **Full Host Name** (see Figure: 11).

   e.g. Enter `1` and `mail.keep-similing.org.` in **IP Address** and **Full Host Name** respectively, if the IP address of mail.keep-similing.org is xxx.xxx.xxx.1.

   Repeat the last step to add IP addresses and FQDN of the rest of the hosts in your organization.

   See Figure: 12 for the final reverse zone setting.
6. Remember to add the hostnames and IP addresses of ther other servers in your organization.
7. Select **Apply** from **File** menu to save the setup.

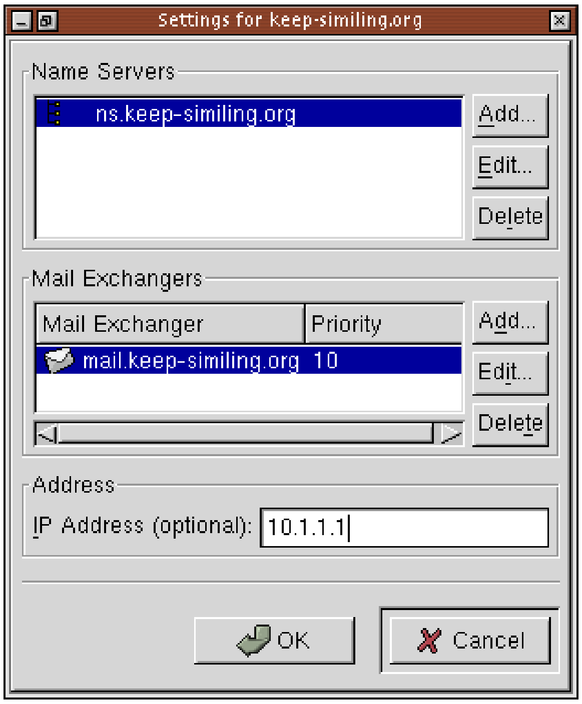

Figure 7: Name server setting

CONFIGURATION - SLAVE

Please use another computer for setting up slave DNS server.

In the computer for setting up a slave DNS server, do the followings:

1. As root, run bindconf

    ```
    # bindconf
    ```

2. Press **Add** button.
3. Select **Slave Zone**.
4. Set **Domain Name** to `keep-similing.org` (see Figure: 13).
5. Set **Masters List** to the IP address of your master DNS server (e.g. `10.1.1.2`) (see Figure: 14).
6. Select bf Apply from **File** menu to save the setup.

HOW TO ENABLE DNS SERVER

As root, run chkconfig and service

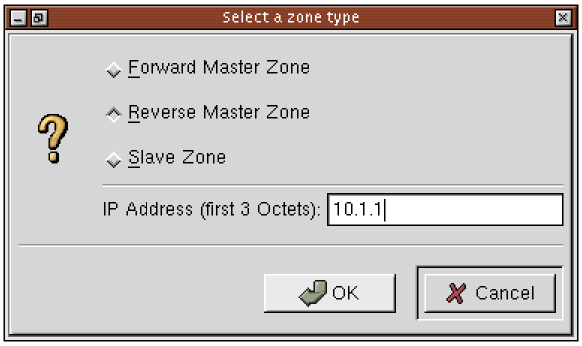

Figure 8: Selecting reverse master zone setting

```
# chkconfig named on
# service named restart
```

ANNOUNCEMENT OF DNS SERVICE

As a member of DNS team, you have the responsibility to help all of your fellows in the organization configure their systems to use your DNS service. What you need to do is the ask your fellows to do the following setup in their systems **AS ROOT**:

1. **Edit /etc/nsswitch.conf**

   Edit /etc/nsswitch.conf, look for the line starting with "`hosts:`" in `/etc/nsswitch.conf` (How? type "`/^host:`"). Change the line such that it becomes exactly the same as the one below:

   ```
   hosts:  files dns
   ```

2. **Edit /etc/resolv.conf**

   For each type of computers (left-hand column), edit /etc/resolv.conf such that the file contains only the lines specified on the right-hand column.

   (a) **One master DNS only**

	/etc/resolv.conf
Master DNS server	`search keep-similing.org` `nameserver 127.0.0.1`
All other computers	`search keep-similing.org` `nameserver 10.1.1.1`

   (b) **One master DNS and one slave DNS**

   If your organization has more than one name server (e.g. 1 master name server and 1 slave name server), the setup is slightly different.

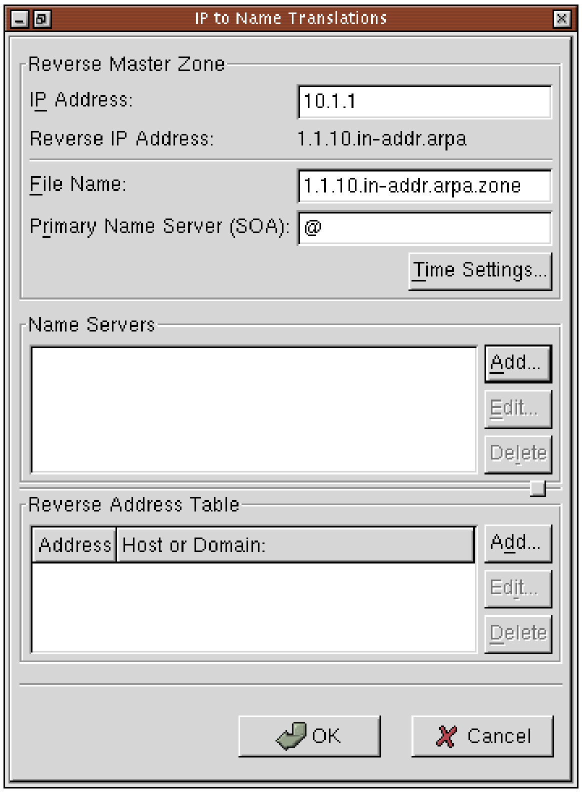

Figure 9: Reverse master zone setting: overview

	/etc/resolv.conf

Master DNS server	`search keep-similing.org`
	`nameserver 127.0.0.1`
	`nameserver 10.1.1.2`

Slave DNS server	`search keep-similing.org`
	`nameserver 127.0.0.1`
	`nameserver 10.1.1.1`

All other computers	`search keep-similing.org`
	`nameserver 10.1.1.1`
	`nameserver 10.1.1.2`

TEST YOUR DNS SERVER

As normal user, run `nslookup`

```
$ nslookup
```

Enter hostnames, FQDNs or IP addresses of your organization to see if they can be revolved.

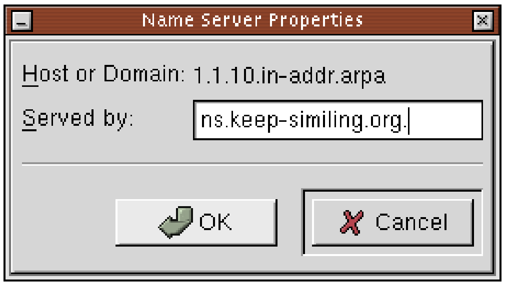

Figure 10: Reverse master zone setting: specifying name server

Figure 11: Reverse master zone setting: individual host

e.g.

```
$ nslookup ns
$ nslookup mail
$ nslookup www.keep-similing.org
$ nslookup 10.1.1.1
```

The output should be similar to this one:

```
Name:  mail.keep-similing.org
Address:  10.1.1.1
```

FILES

`/etc/named.conf`	BIND configuration file
`/var/named`	Zone files location
`/usr/sbin/rndc`	Name server control utility
`/usr/bin/bindconf`	RedHat DNS configuration tools
`/etc/mail/local-host-names`	List of hosts in local network
`/etc/mail/sendmail.mc`	Master configuration file
`/etc/sendmail.cf`	Sendmail configuration file

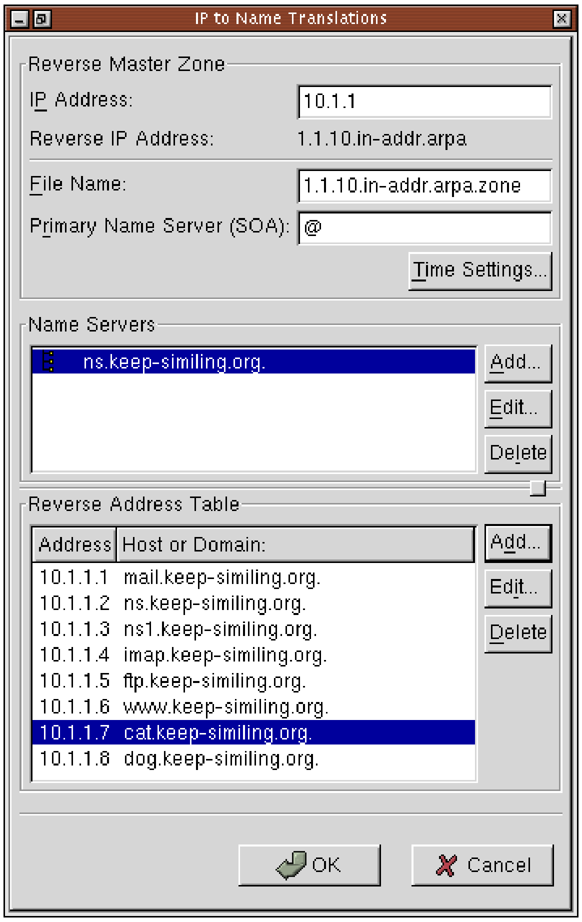

Figure 12: Reverse master zone setting

RPMS

`bind`	The DNS server
`bind-utils`	Utilities for querying DNS name servers
`bind-devel`	Include files and libraries needed for bind DNS development
`bindconf`	A Red Hat DNS configuration tool

SEE

`http://www.isc.org/BIND`

Have fun!

-*- spec-smtp -*-

Figure 13: Selecting slave zone

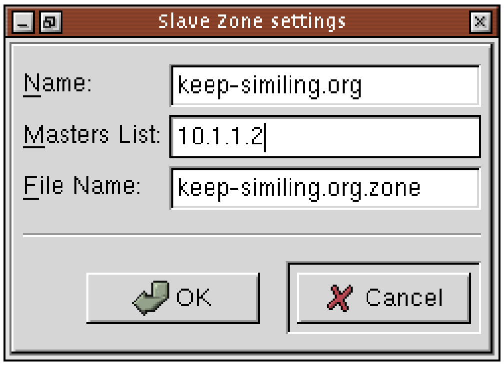

Figure 14: Slave zone setting