AfNOG 2005
Track E1 - Scalable Internet Services

Domain Name System - Exercise 5

Setting up an Authoritative Slave/Secondary Name Server

In this exercise you will setup a slave/secondary name server on your computer.

1. Ask someone who will agree to be slave for your domain. You must choose someone on a DIFFERENT table. (Remember RFC2182: secondaries must be on remote networks). You can have more than one slave if you wish.

You will have to give the person setting up a slave nameserver for your domain the following pieces of information.

Domain Name: _____.afnogws.gh

Master Nameservers FQDN: _____.e1.ws.afnog.org

IP Address of Master Nameserver: 196.200219.____

2. Do the following on your own computer.

 Edit the /var/named/etc/namedb/master/gh.afnogws.<domain-name>
(where gh.afnogws.<domain-name> is the zone file you created in the previous exercise). Make an entry in that file for a secondary name server.

The entries will now look something like:

```
<............After your SOA record.............>

        IN    NS  pc#.e1.ws.afnog.org.
        IN    NS  pc##.e1.ws.afnog.org.  ; <----- this is the entry to add
        IN    A   196.200.219.#
```

(Where pc##.e1.ws.afnog.org. is the name of the slave nameserver machine.)

NOTE: DO NOT FORGET to increase the serial number in the zone file (usually by 1).

3. Edit the /var/named/etc/namedb/named.conf and add the IP address of the slave server to the "allow-transfer" directive for your domain. This is to allow the slave nameserver to transfer the zone file from your computer.

```
zone "<domain-name>.afnogws.gh" {
    type master;
    file "master/gh.afnogws.<domain-name>";
    allow-transfer { 196.200.219.#; 196.200.219.##; }; //<- edited line.
     allow-update { none; };
};
```

(Where 196.200.219.## is the IP address of the slave nameserver.)

4. Reload the zone file and check for errors in the /var/log/messages file.

5. If there are no errors in the /var/log/messages file, run a dig +norec on your domain name for NS records.

IMPORTANT: If after the step 5. above you don't have any errors, ask your friend to setup the slave/secondary nameserver for you on his/her machine.

SETTING UP THE SLAVE NAMESERVER

1. If you are slave for someone else set it up by editing the /var/named/etc/namedb/named.conf file.

```
# vi /var/named/etc/namedb/named.conf
```

Make the following entries in the /var/named/etc/namedb/named.conf file.

```
        zone "<friends-domain-name>.afnogws.gh" {
                type slave;
                file "slave/gh.afnogws.<friends-domain-name>";
                masters { 196.200.219.#; };
                allow-transfer { none; };
                allow-update { none; };
        };
```

(Where <friends-domain-name> is the domain name you are setting up a slave nameserver for and 196.200.219.# is the IP address of the master nameserver.)

2. Enter the following command to reload the named.conf file, and transfer the
   zone file from the master nameserver.

```
# rndc reload
```

3. Check the log file /var/log/messages to ensure that your named server started
   without any errors.

4. Check if the gh.afnogws.<friends-domain-name> file exists in the /var/named/etc/namedb/slave directory. If it exists, then the slave/secondary nameserver has transferred the zone file from the master/primary name server.

   This file in the /var/named/etc/namedb/slave is created by the named daemon and should not be edited.

```
# ls -al  /var/named/etc/namedb/slave
```

5. If it does not exist you will have to debug the problem to figure out what the problem could be. Your main debugging tool here will be the log file /var/log/messages.

6. Once you get the gh.afnogws.<friends-domain-name> file in the /var/named/etc/namedb/slave directory, Test if your server is resolving the domain.

```
# dig +norec @127.0.0.1  <friends-domain-name>.afnogws.gh ns
```
Check if you get an AA (Authoritative Answer).

You have now successfully setup a slave nameserver for your friend. Inform you friend that the slave nameserver has been setup.

Once slave name server has been setup for our domain:

7. Test if the secondary your friend setup for you works and is setup correctly.

```
# dig +norec @196.200.219.# <domain-name>.afnogws.gh soa
# dig +norec @196.200.219.## <domain-name>.afnogws.gh soa
```
Check if the serial numbers are the same.

```
# dig +norec @196.200.219.# <domain-name>.afnogws.gh ns
# dig +norec @196.200.219.## <domain-name>.afnogws.gh ns
```
Check if the results in the ANSWER SECTION from the two commands are the same.

8. Please fill the domain name request form below and submit it to the hostmaster for delegation.

   Domain name: _____**.afnogws.gh**

   Master nameserver: **pc____.e1.ws.afnog.org**

   Slave nameserver: **pc____.e1.ws.afnog.org**

Slave nameserver: **pc_____.e1.ws.afnog.org (optional)**

Slave nameserver: **pc_____.e1.ws.afnog.org (optional)**

9. You will not get delegation until the hostmaster has checked:
           * Your nameservers are all authoritative for your domain
           * They all have the same SOA serial number
           * The NS records within the zone match the list of servers you
             are requesting delegation for
           * The slave(s) are not on the same desk as you

10. Once you have delegation, try to resolve www.<domain-name>.afnogws.gh:
           * On your own machine
           * On someone else's machine (who is not slave for you)
           * On a machine elsewhere on the Internet, if you have access to one

11. Add a new entry to your zone file. Remember to update the serial number and reload your zone file.

rndc reload <domain name>.afnogws.gh

Check that your slaves have updated. Try resolving this new name from elsewhere.

Setting up Reverse DNS (in-addr.arpa.)

1. Setup reverse DNS for the assigned /24 IP block.

        IP Block: **196.200._____.0/24**

        Reverse DNS Zone: **_____.200.196.in-addr.arpa.**

NOTE: Doing this exercise is similar to the exercises on setting up an authoritative nameserver (master & slave). Go to the Hostmaster for delegation after you have setup the reverse DNS and checked that it has been setuo correctly.

Delegating a Sub-Domain

1. Setup a sub-domain from a friends domain.

        Sub-domain Name: **_____.<friends-domain>.afnogws.gh**

   - You will have to setup the master nameserver on your PC
   - Get another friend to setup a slave nameserver for that domain on his/her PC

2. Ask your friend to delegate a sub-domain to you (friend should refer to handouts to delegate sub-domain).

NOTE: Doing this exercise is similar to the exercises on setting up an authoritative nameserver. Additionally your friend will have to delegate the sub-domain to after you have setup the domain/zone as in the master/slave exercises.