CIA Lab Assignment: Domain Name System (2)*

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Feedback deadline:
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Abstract

Last time we compiled and installed a name server, and created zone files for our domain. Today we will set up the reverse zone for your practicum domain. We will also set up slave servers for your zones, and execute a zone transfer.

Since the zone file syntax is the same for BIND and NSD, this text does not explicitly make a distinction between them.

1 Reverse Zone Files

DNS is also used to look up hostnames by IP address.

Questions

1. Why is that useful?
2. (a) Set up your own reverse zone for your IPv4 subnet.
   (b) Show that a reverse lookup works.
3. If Niels had been here and he had not yet implemented the reverse zone delegation, what information would you need to give him so that he can implement it?

2 Delegating Your Own Zone

Work together with one of your fellow students. Each of you will create a subdomain of your own domain (i.e. your domain is `<name>.prac.os3.nl`, the subdomain will be `<sub>.<name>.prac.os3.nl`). Then delegate the authority for that subdomain to your partner. Your partner will set up a zone file for that subdomain and add two or more hosts. Test this setup extensively, document the results, and only then repeat for the subdomain that your partner delegated to you. **So do not do the delegations in parallel, this makes your logs very hard to read for the lab teachers.**

*Based on earlier work by E.P. Schatborn and A. van Inge. Version September 26, 2017.

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4. How did you set up the subdomains and their delegation?
   (a) How did you set up the subdomains in your zone file?
   (b) What named.conf/nsd.conf options did you add or change?
   (c) Show the results of the tests that you performed.

2.1 Setting Up A Slave Server

Now that you have delegated a subdomain to your partner, you will set up your own server as slave for that domain. The primary and slave servers must always contain the exact same zone data.

5. (a) How did you set up the slave nameserver?
   (b) Show the changes to the configuration files that you made.
6. What happens if the primary nameserver for the subdomain fails? And for how long?
7. Considering that the slave nameserver is also the delegating nameserver, explain why this is essentially a bad setup?

3 Zone Transfers

The primary and slave servers must always contain the exact same zone data. If the data on your primary server is updated, the slave must also be updated. This is done via zone transfers. Set up the primary server for the domain that was delegated to you and the slave nameserver on your partner's machine to allow zone transfers.

Use a DNS tool (for instance `dig`) on your slave server to do a zone transfer from your primary nameserver.

8. Show the output of the DNS tool.
9. Describe the steps in the transfer process.
10. What information did the slave server receive? In what format?

4 Extra Assignments (Optional)

11. Show how to make BIND/NSD run in a chroot environment.
12. What do all those parameters in the SOA record do, and what use could fiddling with them have?

13. Check that the SOA parameters work as advertised by experimenting with the cache. Show the results of your experiments.

14. Use ACLs or views to limit who can request what from your nameserver. Show the required configuration.

15. When you look at `ftp://ftp.internic.net/domain/named.cache` the root domain is actually delegated to name servers in the `root-servers.net` domain. Explain this circular dependency.