

Recursive Server

Overview

- Recursive Service
- Root server list
- localhost
- 0.0.127.in-addr.arpa
- named.conf

Recursive Server

- Used to lookup data by applications
- Needs to know how to reach top of DNS
- Also should stop some queries
 - localhost, 127.0.0.1
- Files
 - named.conf
 - root.hints
 - localhost zone
 - 0.0.127.in-addr.arpa zone
- We'll do named.conf last

Root server list

- List of the 13 root server records
- Where to get it
 - ftp rs.internic.net
 - anonymous login
 - cd domain
 - get one of these files (they are [nearly] the same)
 - db.cache
 - named.root
 - named.cache

What it looks like

```
.....
: This file holds the information on root name servers needed to
: initialize cache of Internet domain name servers
: (e.g. reference this file in the "cache . <file>"
: configuration file of BIND domain name servers).
:
: This file is made available by InterNIC
: under anonymous FTP as
: file      /domain/named.cache
: on server  FTP.INTERNIC.NET
:
: last update: Nov 5, 2002
: related version of root zone: 2002110501
:
: formerly NS.INTERNIC.NET
:
: 3600000 IN NS A.ROOT-SERVERS.NET.
A.ROOT-SERVERS.NET. 3600000 A 198.41.0.4
:
: .....
: housed in Japan, operated by WIDE
:
: 3600000 NS M.ROOT-SERVERS.NET.
M.ROOT-SERVERS.NET. 3600000 A 202.12.27.33
: End of File
```

What you do to this file (hints file)

- Nothing
- You will refer to it in named.conf using a zone statement
- In real networks, don't change it
 - But for learning, we will change it

localhost

- Loopback name in operating systems
- Means 127.0.0.1
- Queries for this shouldn't use recursion
- So we will configure a file to define the localhost. zone
 - Note the "."

localhost file

```
$TTL 86400
@           IN      SOA localhost. root.localhost. (
                1          ; serial
                1800       ; refresh
                900        ; retry
                69120      ; expire
                1080       ; negative cache ttl
                )
           NS      localhost.
           A      127.0.0.1
```

Reverse for localhost

- Since we want "localhost -> 127.0.0.1" we want to have "127.0.0.1 -> localhost"
- We need a zone called 0.0.127.in-addr.arpa.

0.0.127.in-addr.arpa file

```
$TTL 86400
@      IN      SOA localhost. root.localhost. (
        1      ; serial
        1800   ;refresh
        900    ;retry
        69120  ;expire
        1080   ;negative cache ttl
        )
1      NS     localhost.
      PTR    localhost.
```

Assembling the files

- Here's my directory:

```
[/var/named/recursive] % ls
0.0.127.in-addr.arpa  localhost
named.root
```
- The directory name and file names will be in named.conf
- Now I create a named.conf file in the same directory

named.conf

```
options {
    directory "/var/named/recursive";
    recursion yes; // by default recursion is on
};
zone "." {
    type hint;
    file "named.root";
};
zone "localhost." {
    type master;
    file "localhost";
};
zone "0.0.127.in-addr.arpa." {
    type master;
    file "0.0.127.in-addr.arpa";
};
```

Running the server

- From the directory
% named -g -c named.conf

Testing the server

- Just to show it is alive
% dig @127.0.0.1 www.arin.net
;<<> DIG 9.2.2rc1 <<> @127.0.0.1 www.arin.net
; global options: printcmd
; Got answer:
; ->HEADER<< opcode: QUERY, status: NOERROR, id: 16580
; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 10, ADDITIONAL:
0
; QUESTION SECTION:
;www.arin.net. IN A
; ANSWER SECTION:
www.arin.net. 10800 IN A 192.149.252.17
www.arin.net. 10800 IN A 192.149.252.16
; AUTHORITY SECTION:
arin.net. 10800 IN NS arrowroot.arin.net.
(and so on)
; Query time: 3066 msec
; SERVER: 127.0.0.1#53(127.0.0.1)
; WHEN: Wed Feb 19 11:07:05 2003
; MSG SIZE rcvd: 251

Congratulations - Your First Server!

- It's just the beginning...

Questions ?
