BIND Recursive Server

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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

- Nothing
- You will include it in named.conf
- 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

```
$ORIGIN localhost.
$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 -> 127.0.0.1"
- We need a zone called 0.0.127.in-addr.arpa

0.0.127.in-addr.arpa file

```
$ORIGIN 0.0.127.in-addr.arpa.
$TTL 86400
@        IN     SOA localhost. root.localhost. (
                       1  ; serial
                    1800  ; refresh
                     900  ; retry
                   69120  ; expire
                    1080  ; negative cache ttl
                       )
               NS  localhost.
1              PTR localhost.
```

Assembling the files

- Here's my directory:
  ```
  [~/DNS/apricot2003/recursive] edlewis% 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 "/Users/edlewis/DNS/apricot2003/recursive";
     pid-file "/Users/edlewis/DNS/apricot2003/recursive/n.pid";
     recursion yes;
};
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
  - ◆ `sudo named –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?

Questions, anyone?