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
                          )
                NS        localhost.
     1          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
```
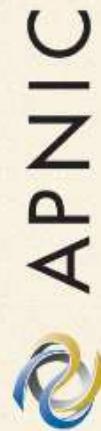
Testing the server

- ## 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 ?