Reverse DNS

Overview

- Principles
- Creating reverse zones
- Setting up nameservers
- Reverse delegation procedures

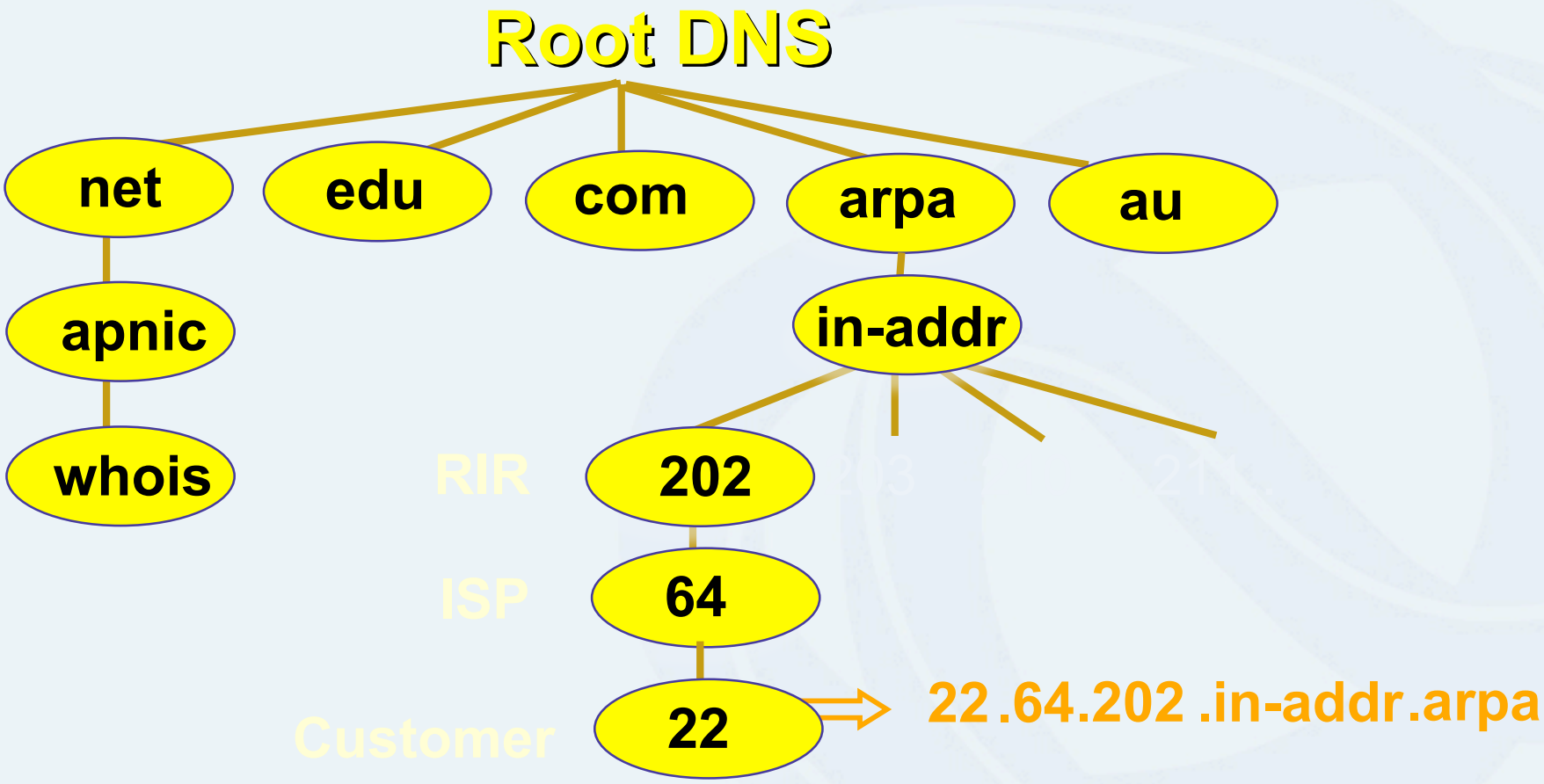
What is ‘Reverse DNS’?

- ‘Forward DNS’ maps names to numbers
  - svc00.apnic.net -> 202.12.28.131
- ‘Reverse DNS’ maps numbers to names
  - 202.12.28.131 -> svc00.apnic.net

Reverse DNS - why bother?

- Service denial
  - That only allow access when fully reverse delegated eg. anonymous ftp
- Diagnostics
  - Assisting in trace routes etc
- SPAM identifications
- Registration responsibilities

Principles – DNS tree



Creating reverse zones

- Same as creating a forward zone file
  - SOA and initial NS records are the same as normal zone
  - Main difference
    - need to create additional PTR records
- Can use BIND or other DNS software to create and manage reverse zones
  - Details can be different

Creating reverse zones - contd

- Files involved
  - Zone files
    - Forward zone file
      - e.g. db.domain.net
    - Reverse zone file
      - e.g. db.192.168.254
  - Config files
    - <named.conf>
  - Other
    - Hints files etc.
      - Root.hints

Start of Authority (SOA) record

```
<domain.name.>          CLASS   SOA     <hostname.domain.name.>
<mailbox.domain.name> (
                                                <serial-number>
                                                <refresh>
                                                <retry>
                                                <expire>
                                                <negative-caching> )
```

253.253.192.in-addr.arpa.

Pointer (PTR) records

- Create pointer (PTR) records for each IP address

```
131.28.12.202.in-addr.arpa.  IN PTR svc00.apnic.net.
```

```
131                 IN      PTR             svc00.apnic.net.
```

A reverse zone example

```
$ORIGIN 1.168.192.in-addr.arpa.
@       3600   IN SOA test.company.org. (
                      sys\.admin.company.org.
                      2002021301     ; serial
                      1h             ; refresh
                      30M            ; retry
                      1W             ; expiry
                      3600 )         ; neg. answ. ttl

        NS     ns.company.org.
        NS     ns2.company.org.

1       PTR    gw.company.org.
               router.company.org.

2       PTR    ns.company.org.
;auto generate:  65 PTR host65.company.org
$GENERATE 65-127 $ PTR host$.company.org.
```

Setting up the primary nameserver

- Add an entry specifying the primary server to the ***named.conf*** file

```
zone "<domain-name>" in {
type master;
file "<path-name>"; };
```

-
  - Ex: 28.12.202.in-addr.arpa.
- <type master>
  - Define the name server as the primary
- <path-name>
  - location of the file that contains the zone records

Setting up the secondary nameserver

- Add an entry specifying the primary server to the ***named.conf*** file

```
zone "<domain-name>" in {
type slave;
file "<path-name>";
Masters { <IP address> ; }; };
```

- <type slave> defines the name server as the secondary
- <ip address> is the IP address of the primary name server
- <domain-name> is same as before
- <path-name> is where the back-up file is

Reverse delegation requirements

- /24 Delegations
  - Address blocks should be assigned/allocated
  - At least two name servers
- /16 Delegations
  - Same as /24 delegations
  - APNIC delegates entire zone to member
  - Recommend APNIC secondary zone
- < /24 Delegations
  - Read “classless in-addr.arpa delegation”

Subdomains of in-addr.arpa domain

- Example: an organisation given a /16
  - 192.168.0.0/16 (one zone file and further delegations to downstreams)
  - 168.192.in-addr.arpa zone file should have:

```
0.168.192.in-addr.arpa.     NS ns1.organisation0.com.
0.168.192.in-addr.arpa.     NS ns2.organisation0.com.
1.168.192.in-addr.arpa.     NS ns1.organisation1.com.
1.168.192.in-addr.arpa.     NS ns2.organisation1.com.
2.168.192.in-addr.arpa.     NS ns1.organisation2.com.
2.168.192.in-addr.arpa.     NS ns2.organisation2.com.
        :
        :
```

Subdomains of in-addr.arpa domain

- Example: an organisation given a /20
  - 192.168.0.0/20 (a lot of zone files!) – have to do it per /24)
  - Zone files

0.168.192.in-addr.arpa.
1.168.192.in-addr.arpa.
2.168.192.in-addr.arpa.
:
:
15.168.192.in-addr.arpa.

APNIC & ISPs responsibilities

- APNIC
  - Manage reverse delegations of address block distributed by APNIC
  - Process organisations requests for reverse delegations of network allocations
- Organisations
  - Be familiar with APNIC procedures
  - Ensure that addresses are reverse-mapped
  - Maintain nameservers for allocations
    - Minimise pollution of DNS

Questions ?