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

- Mapping numbers to names -

RIR

ISP

Customer

22.64.202.in-addr.arpa
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 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 \texttt{named.conf} file

\begin{verbatim}
zone "<domain-name>" in {
  type master;
  file "<path-name>";
};
\end{verbatim}


- \texttt{<type master>}
  - Define the name server as the primary

- \texttt{<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

```plaintext
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”

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RFC 2317
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.
    .
    .
    .
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 ?