JP DNS Operational Experience

Shinta Sato
Japan Registry Service Co., Ltd. (JPRS)

shinta@jprs.jp
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Brief Introduction of JPRS

- JP domain registry
  - The second agreement ICANN has signed with ccTLD
  - 1st April 2002

- Commercial based company
  - Spinned off from JPNIC
  - Many JPNIC engineers and operators changed their belongings

For more information see JPRS web page
http://jprs.jp/
Agenda

- Introducing JP DNS
- Daily Management of JP DNS
- BIND 8.3.0 trouble
What is JP DNS

- JP DNS consists of...
  - JP Domains (350,000 domains)
    - General-Use JP Domain Names (2LD)
      - Alphanumerical characters (EXAMPLE.JP etc.)
        126,000 domain names registered
      - Japanese characters (日本語.JP etc.)
        61,000 domain names registered
    - Organizational Type / Geographical Type JP Domain Names
      - Organizational: CO.jp, AC.jp, …
      - Geographical: TOKYO.jp, …
        280,000 domain names registered
  - IP Addresses Allocated by APNIC
    - 260 of /16 IP reverse in-addr.arpa zones
      (Each zones have about 200 in-addr.arpa sub-domains)
JP DNS Server Operators

- One Primary DNS Server
  - Owned by JP Registry (JPNIC / JPRS)
    - ns0.nic.ad.jp

- Five Secondary DNS Servers
  - Owned by JP Registry (JPNIC / JPRS)
    - ns-jp.nic.ad.jp
  - Commercial ISPs
    - IIJ (ns0.iij.ad.jp)
    - SPIN (dns0.spin.ad.jp)
  - Research and Academic Networks
    - WIDE Project (ns.wide.ad.jp)
      - M Root Server Operators
    - SINET (ns-jp.sinet.ad.jp)
JP DNS System Data Flow

Registry DB

Master Data Server

ns0

JP Primary

JP Secondaries

ns-jp

IIJ

SPIN

WIDE

SINET
Query Types of JP DNS

A
ANY
MX
SOA
NS
AAAA
PTR
misc

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Weekly Trend of JP DNS Queries

- MRTG Snapshot for ns0.nic.ad.jp
  - Average queries: 350 queries/sec
  - High queries in Daytime
  - Low queries in Weekend

![Graph showing weekly trend of JP DNS Queries]
Peak Queries on ns0.nic.ad.jp

- Heavy queries come from unexpected events
  - April and May 2001
    - Starting of JP 2LD registration
  - August 2001
    - CodeRed or Nimda?
  - January and February 2002
    - BIND 8.3.0 released
Lame delegations on sub-domains can cause DNS storms between upper DNS server and BIND 8.3.0 recursive servers.
BIND 8.3.0 Trouble Report

Course of events

– 11th Jan 2002: BIND 8.3.0 released
  • Queries of ns0 increased rapidly.
  • Up to 6700 queries/sec!!
– 27th Jan. 2002: JPRS reported to ISC
– 2nd Feb. 2002: BIND 8.3.1 released (bug fixed version)
– 7th Feb. 2002: JPRS announced about BIND 8.3.0 problem
What to care on DNS Operation

- **Zone file operation**
  - Check the sub-domains.
    - Lame delegations is potential trouble

- **DNS queries**
  - Monitor the DNS traffic
    - MRTG is good
  - Check the ordinary traffic first

- **BIND software**
  - Check before install
    - Stable version need not to upgrade
  - Security fix must be done.
  - Do not use BIND 8.3.0!!
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- Telecommunications Advancement Organization of Japan (TAO).
  - JPRS’s research activity of investigation of DNS is a part of TAO’s research.
  - http://www.shiba.tao.go.jp/