JP DNS Operational Experience

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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
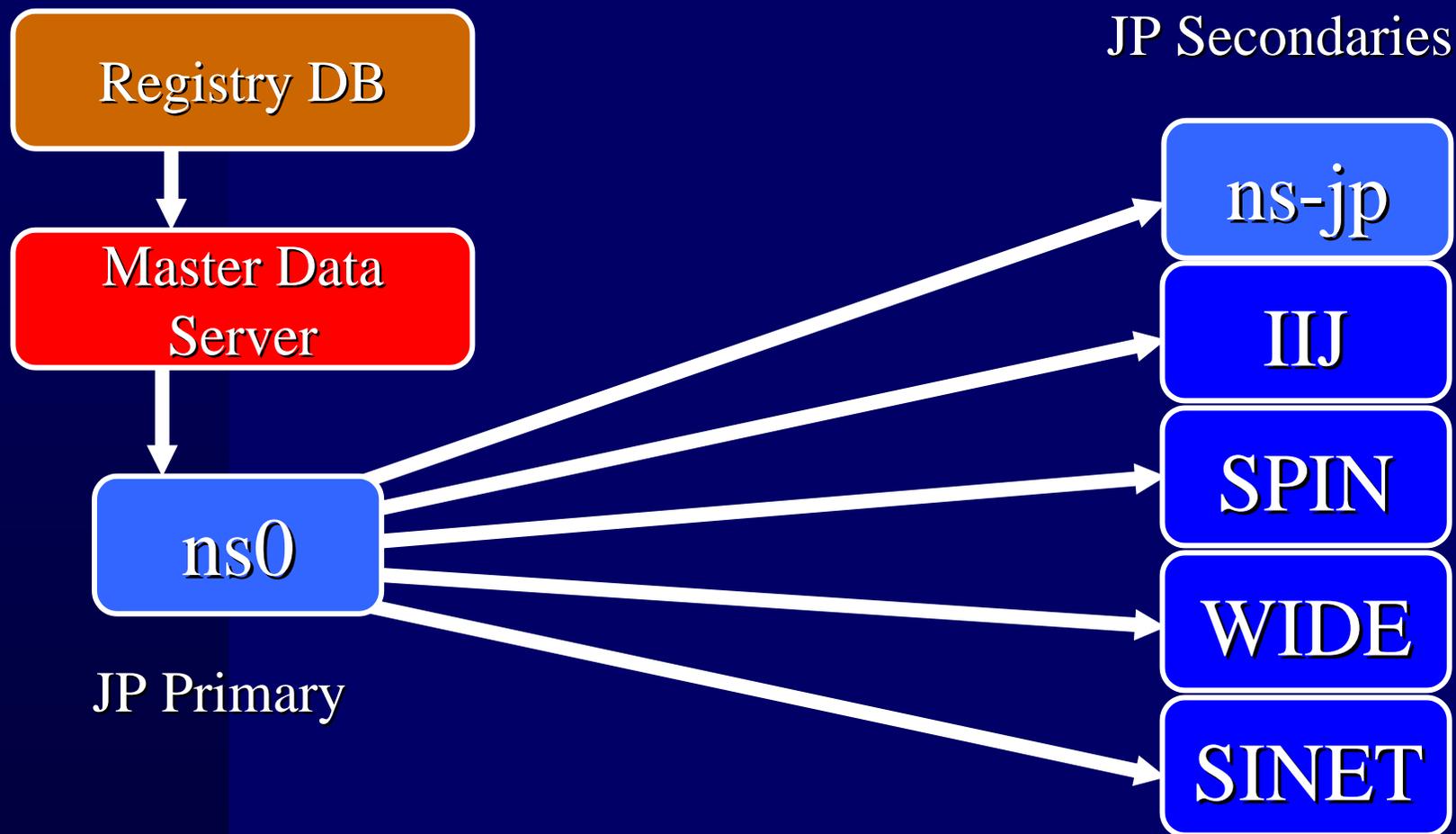- BIND 8.3.0 trouble

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 (.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)
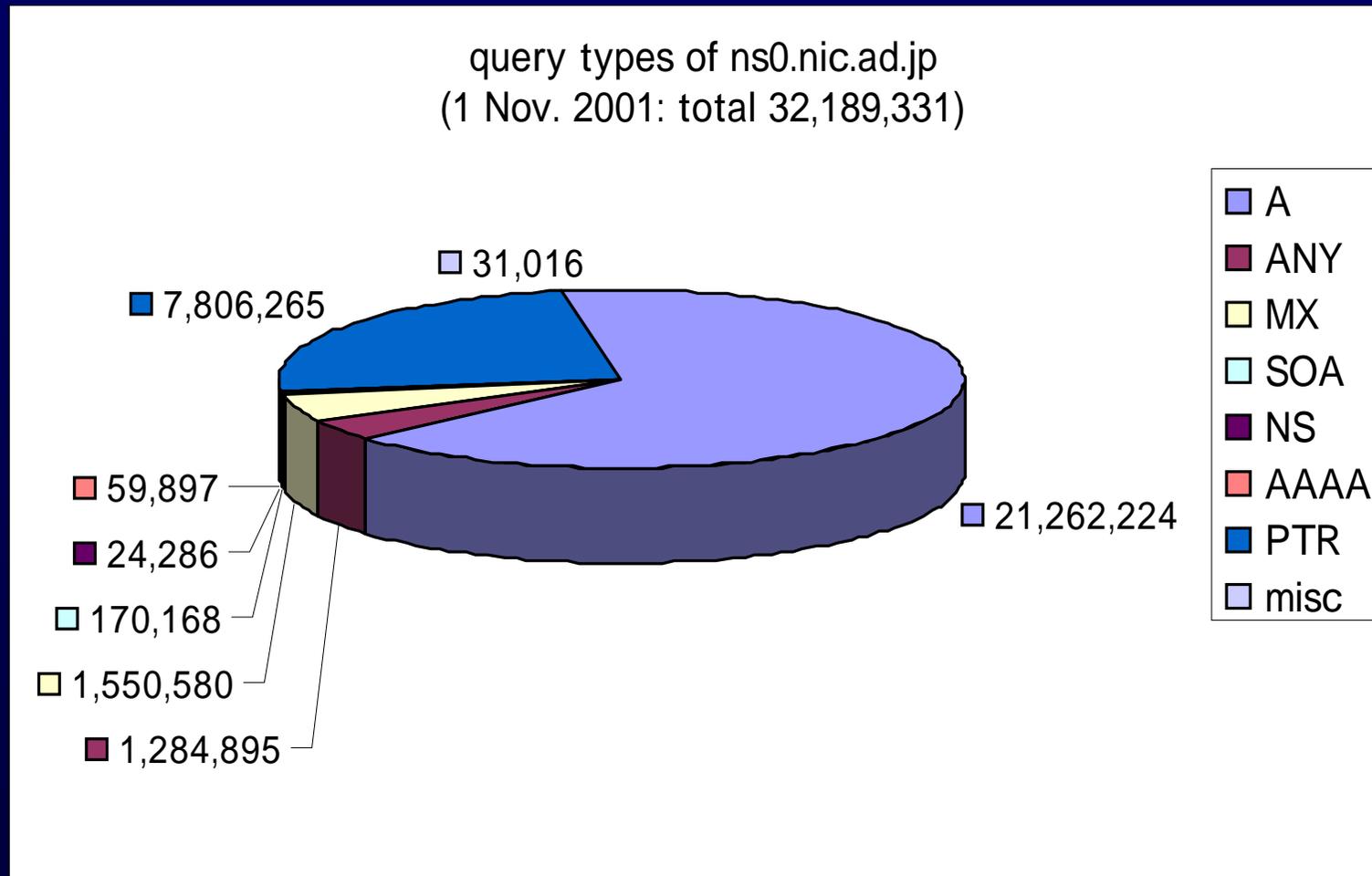
No. 4

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

query types of ns0.nic.ad.jp
(1 Nov. 2001: total 32,189,331)

31,016

7,806,265

59,897

24,286

170,168

1,550,580

1,284,895

21,262,224

- A
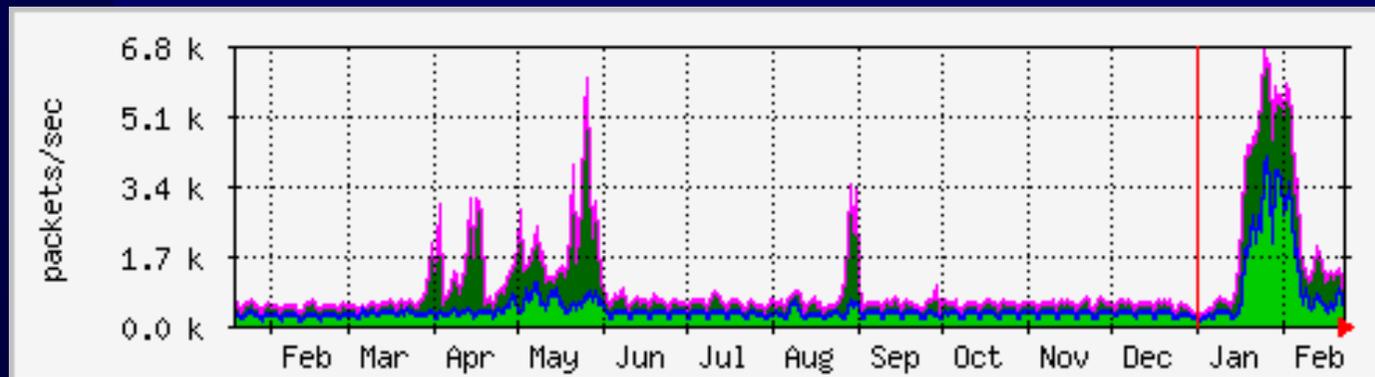- ANY
- MX
- SOA
- NS
- AAAA
- PTR
- misc

Weekly Trend of JP DNS Queries

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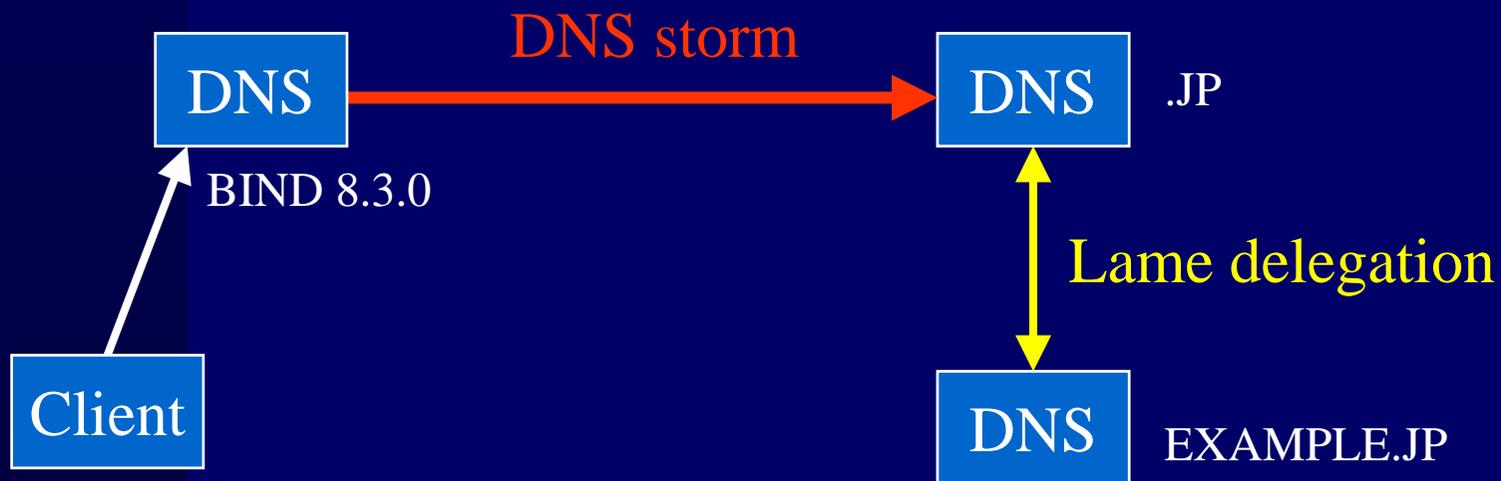 - Low queries in Weekend
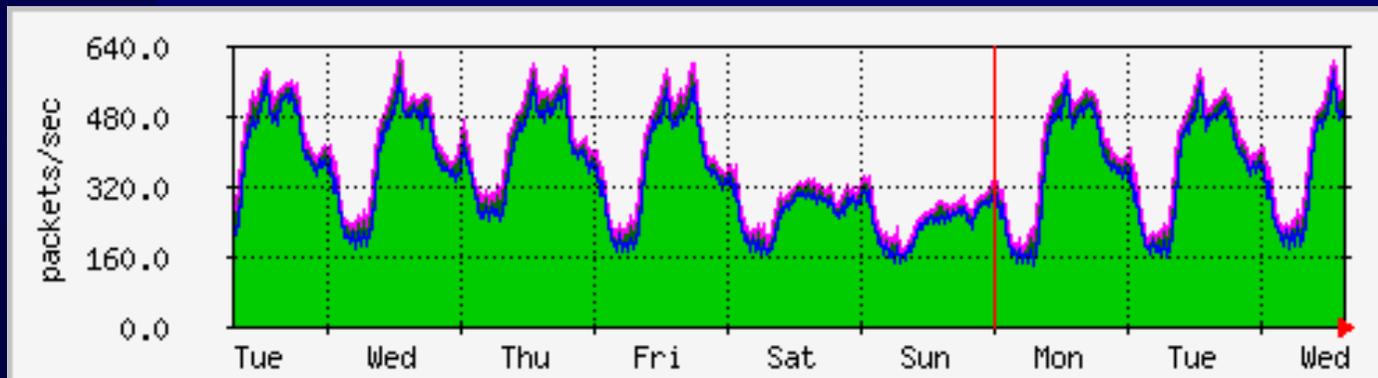
Peak Queries on ns0.nic.ad.jp

- 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

BIND 8.3.0 Trouble Situation

- 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!!

Acknowledgement

- 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/