IPv6 DNS Operation of .JP

IPv6Summit @ APRICOT2005
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Agenda

- What .JP did
- What .JP is doing
- What .JP will do

What .JP did (1/3)

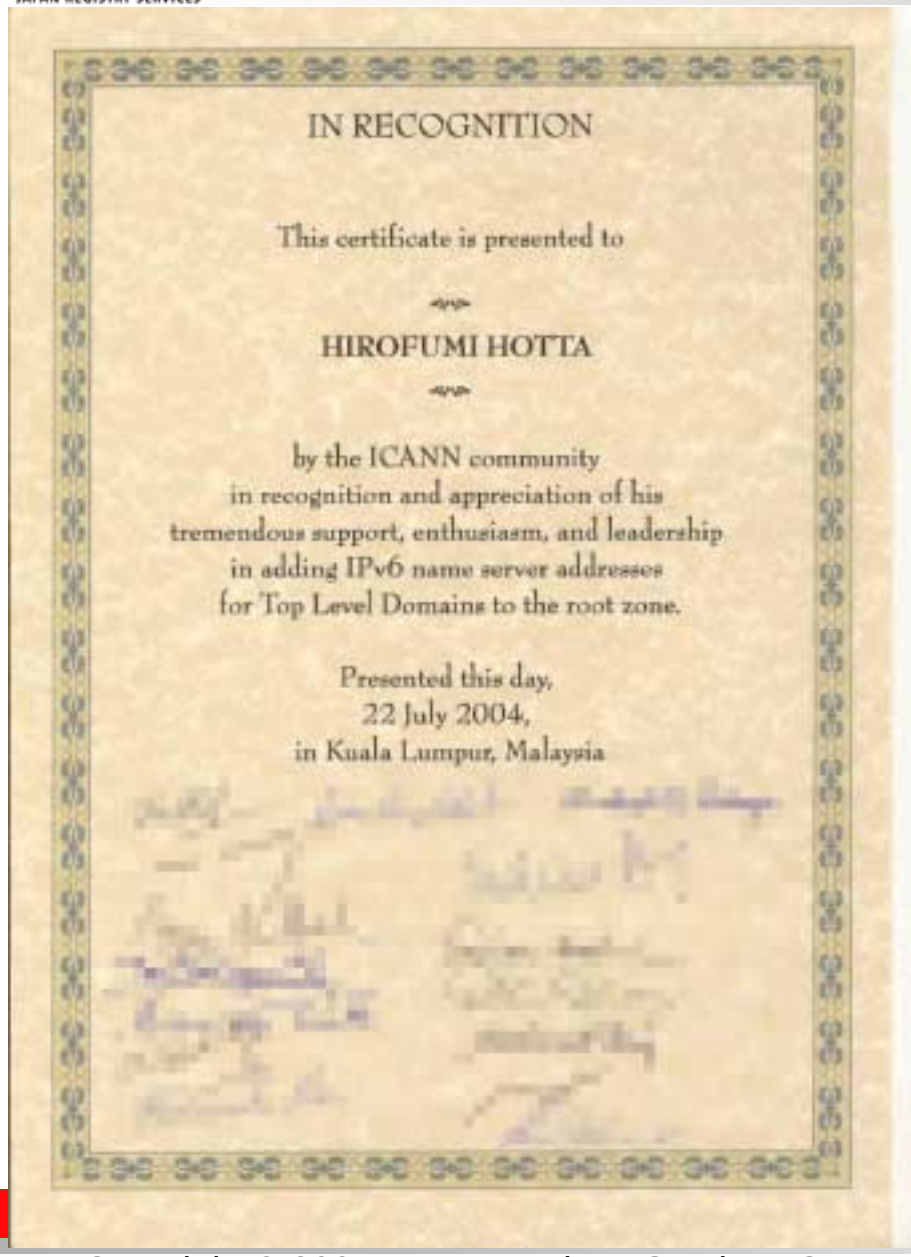
- AAAA glue records registered in .JP zone
  - Since March 2000
  - As regular services (i.e., not experimental)
- IPv6 transport support for .JP name servers
  - 4 among 6 .JP name servers
    - e.dns.jp Aug. 2001 (WIDE Project)
    - d.dns.jp Aug. 2001 (IIJ)
    - f.dns.jp Mar. 2003 (SINET)
    - a.dns.jp Jan. 2004 (JPRS)

What .JP did (2/3)

- Domain name unification of NS hosts
  - Finished in Aug. 2003
  - Following the result of the estimation on the maximum number of NSs
- Shift to Critical Infrastructure IPv6 addresses
    - About Critical Infrastructure, see http://www.apnic.net/info/faq/critical-infrastructure-faq.html
  - E.DNS.JP
    - Apr 2003
  - A.DNS.JP
    - Jan 2004

What .JP did (3/3)

- Added AAAA glue record of .JP NS hosts in Root Zone
  - Finished in July 2004
  - Technical verification and procedure making effort with IANA/ICANN
  - Became one of the first IPv6 full compliant TLD in the World
    - http://www.icann.org/announcements/announcement-20jul04.htm
  - Awarded by ICANN for its contribution in ICANN KL meeting
    - see the next page



IN RECOGNITION

This certificate is presented to

HIROFUMI HOTTA

by the ICANN community
in recognition and appreciation of his
tremendous support, enthusiasm, and leadership
in adding IPv6 name server addresses
for Top Level Domains to the root zone.

Presented this day,
22 July 2004,
in Kuala Lumpur, Malaysia

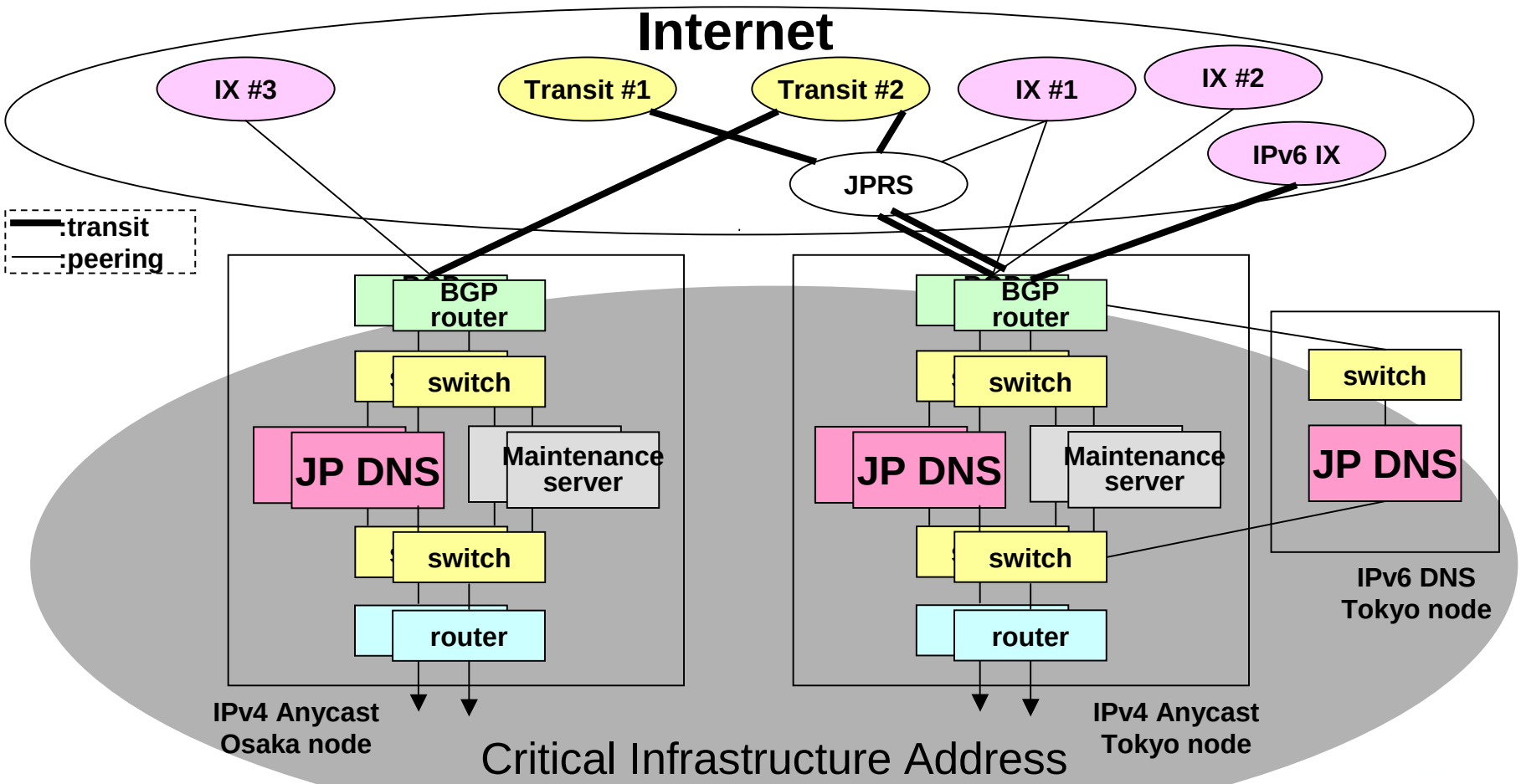
NS maximum number estimation

- UDP response packet size has limitation in DNS protocol
- More NSs make .JP DNS more reliable
  - Efficient name compression is necessary
- Simulation on the number of NSs for .JP (dns.jp)

NS	AAAA	A	Add.	Judge
3	3	3	AAAA x3, A x3	All
4	3	4	AAAA x3, A x4	All
5	3	5	AAAA x3, A x4	OK
6	3	6	AAAA x3, A x3	OK
7	3	7	AAAA x3, A x2	OK
8	3	8	AAAA x3, A x1	OK
9	3	9	AAAA x3, A x0	Bad
10	3	10	AAAA <3, A x0	NG

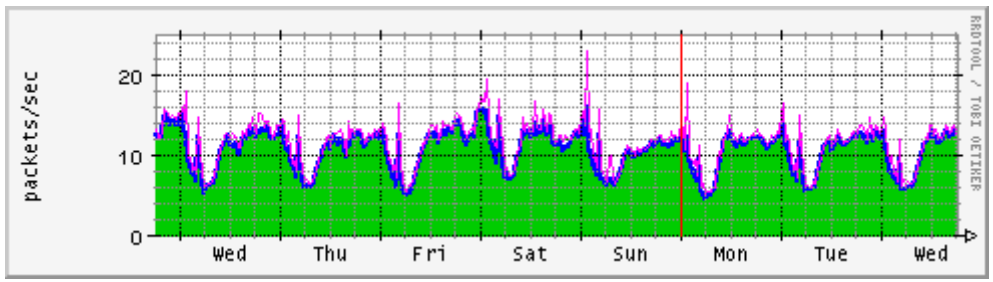
NS	AAAA	A	Add.	Judge
4	4	4	AAAA x4, A x3	OK
5	4	5	AAAA x4, A x2	OK
6	4	6	AAAA x4, A x1	OK
7	4	7	AAAA <4, A x0	NG
5	5	5	AAAA x5, A x1	OK
6	5	6	AAAA x5, A x0	Bad
7	5	7	AAAA <5, A x0	NG
6	6	6	AAAA <6, A x0	NG

Technical details of a.dns.jp

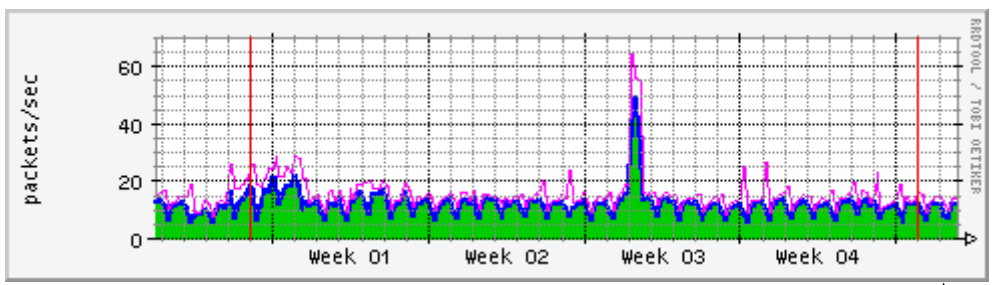


What .JP is doing

- Performance measurement
  - Very few DNS queries in IPv6 transport



Weekly Graph



Monthly Graph

Feb.2, 2005

What .JP will do

- Promotion of EDNS0 capable cache servers deployment
  - To accommodate more IPv6 addresses in a response packet
  - e.g., Most recent BIND8/9
- More stability of DNS
  - BCP for IPv6 Anycast is required
  - e.g., RFC3258 for IPv4

Other IPv6-related activities

- IPv6 diffusion measurement
  - Intec NetCore and JPRS
  - From May 2003
  - How many JP domain names are associated to IPv6 addresses

Summary

a. To provide IPv6 information in DNS
   - Registration of AAAA RR

b. To provide IPv6 accessibility of DNS servers
   - IPv6 transport support

For the deployment of IPv6, both a. and b. are mandatory for TLD registries
   - *.JP is IPv6 ready!*

c. To enforce DNS stability
   - IP Anycast, Measurement, and so on.

More works to be done…

Questions?

http://jprs.jp/

http://日本レジストリサービス.jp/