Community Initiatives on DNSSEC

ccNSO Members Meeting

June 22, 2010
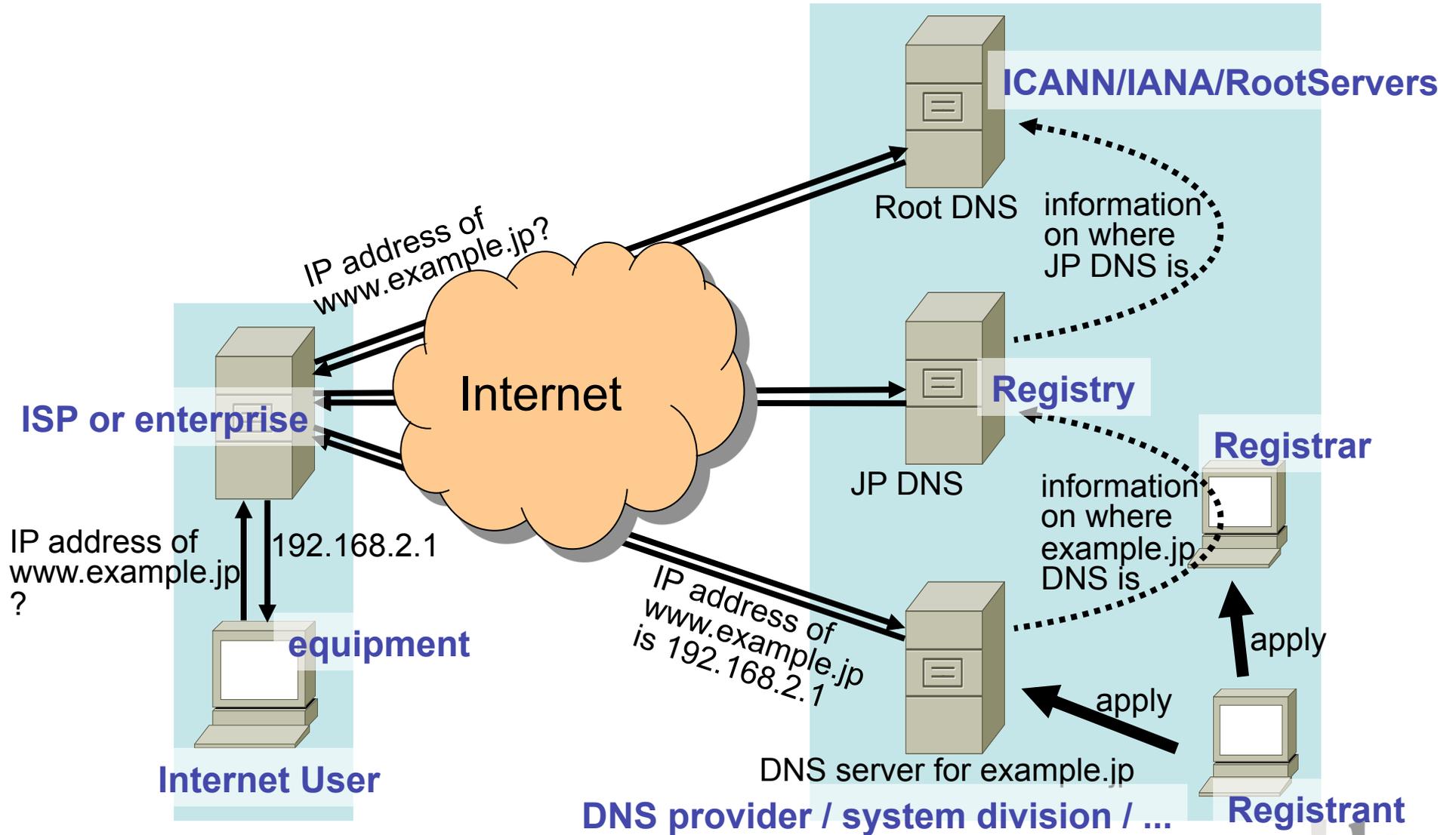
Hiro Hotta, JPRS

jPRS
JAPAN REGISTRY SERVICES

Core Functions of Domain Name Registries

- data entry function
  - assuring uniqueness of every registered domain name on the Internet
  - registering domain names in its registry database upon request by registrants
  - managing information about each domain name - registrant's name, technical contact, expiration date, etc.

- name server function
  - operating a name server containing the list of domain names *that the registry manages*, so that domain names can be used for e-mail addresses, URLs, etc.

  ==> registry, by itself, cannot make domain names available for use

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!Jp

Collaborators in DNS

ICANN/IANA/RootServers

Root DNS

information on where JP DNS is

IP address of www.example.jp?

Internet

ISP or enterprise

Registry

JP DNS

Registrar

IP address of www.example.jp?

192.168.2.1

IP address of www.example.jp is 192.168.2.1

information on where example.jp DNS is

equipment

apply

apply

Internet User

DNS server for example.jp

Registrant

DNS provider / system division / ...

.jp

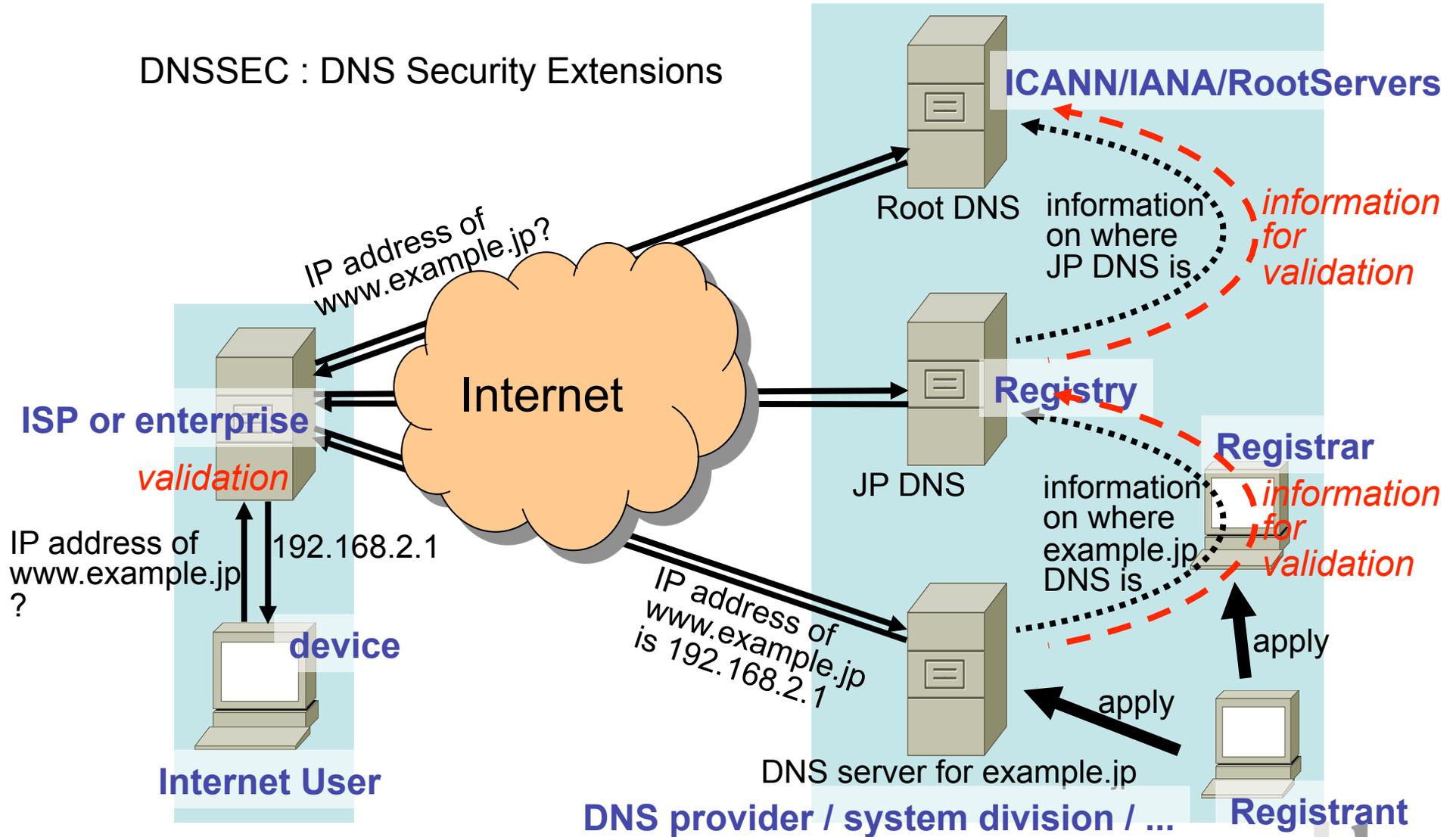# To make the collaboration better, JPRS does

- information sharing/provision regarding DNS in Japanese
  - on JPRS TechWeb <http://jprs.jp/tech/>
  - via announcement to public
  - in JANOG (Japan Network Operators Group) ML/meetings
  - in Internet Week (annual event) meetings
  - in Interop
  - in Registrars meetings   etc.
- co-secretariat for DNSOPS (DNS Operators Group, Japan)
  - information sharing and discussion to solve issues
    - ML
    - physical meetings
  - members
    - Registry, Registrars, DNS providers, DNS operators in enterprises, DNS-related device manufacturers, researchers on DNS, ...

JPRS' efforts against DNS abuse

- strengthen the authentication / authorization for registrars to access/modify registry data
- pruning inappropriately managed domain names (lame delegations) in cooperation with registrars
- analysis and care for incidents in cooperation with other entities
  - eg, cooperated with ISP when a famous blog was occasionally directed to a forged site
- education of community members with regard to DNS vulnerabilities, especially new ones with high risks
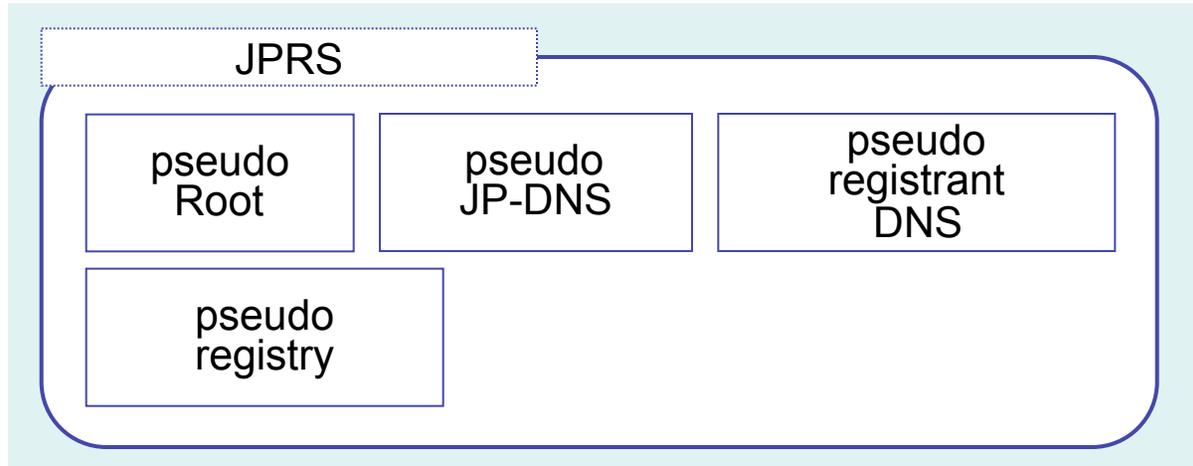- etc.

Collaborators in DNSSEC (in typical case)

DNSSEC : DNS Security Extensions

ICANN/IANA/RootServers

Root DNS
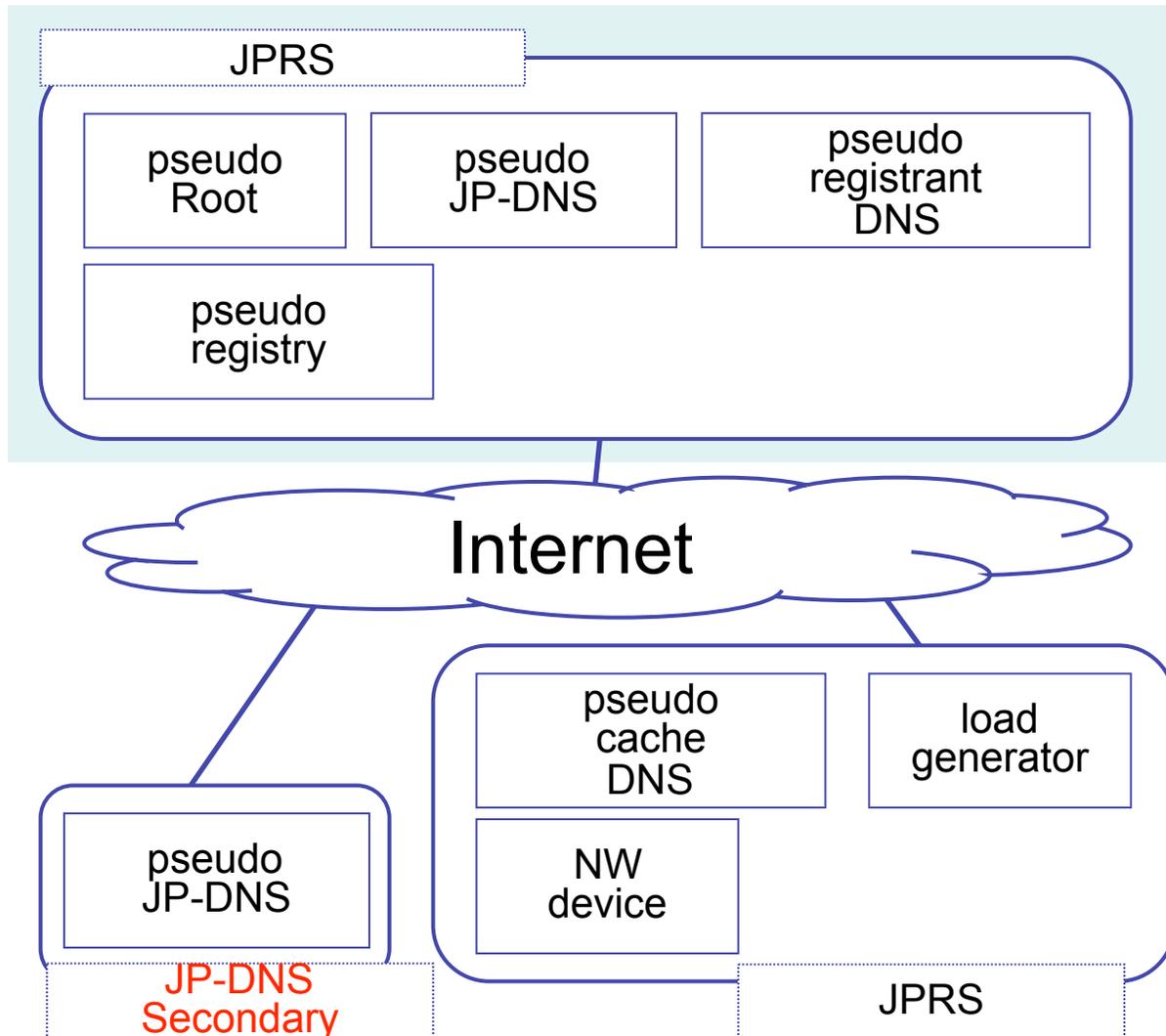
information on where JP DNS is

information for validation

IP address of www.example.jp?

Internet

Registry

JP DNS

ISP or enterprise

validation

information on where example.jp DNS is

Registrar

information for validation

IP address of www.example.jp ?

192.168.2.1

IP address of www.example.jp is 192.168.2.1

apply

device

apply

Internet User

DNS server for example.jp

Registrant

DNS provider / system division / ...

DNSSEC technical test / evaluation

	Step1/2	Step3/4	Step5	Step6
Schedule	Oct'09 ~ Dec'09	Jan'10 ~ June'10	Jul'10 ~ Nov'10	Aug'10 ~
Description	- Fundamental function test - Behavior check of zone transfer	- Behavior check of caching DNS servers (full resolvers) - Behavior check of network devices - Listing of check items of ISPs/HW vendors	- Behavior check of DS registration - Accumulation of operation experiences	**Merging with DNSSEC Japan testbed**
Participants	JPRS, JP Secondary DNS operators	JPRS, JP Secondary DNS operators, ISPs, HW vendors	JPRS, JP Secondary DNS operators, ISPs, HW vendors, JP Registrars	
Diagram				
Output / Remarks	Publication of results	DNSSEC evaluation guidelines for participants	Publication of results/outputs	

C

step1 Oct.2009-Dec.2009

JPRS

| pseudo Root | pseudo JP-DNS | pseudo registrant DNS |

pseudo registry

not connected to the Internet

step2   Oct.2009-Dec.2009

JPRS

| pseudo Root | pseudo JP-DNS | pseudo registrant DNS |

pseudo registry

Internet

pseudo cache DNS

load generator

NW device

pseudo JP-DNS

JP-DNS Secondary

JPRS

additional participants

4 secondary JP-DNS operators

step3   Jan.2010-June.2010

JPRS

- pseudo Root
- pseudo JP-DNS
- pseudo registrant DNS
- pseudo registry

Internet

- pseudo cache DNS
- load generator
- NW device
- pseudo DNS hosting

pseudo JP-DNS

JP-DNS Secondary

ISP
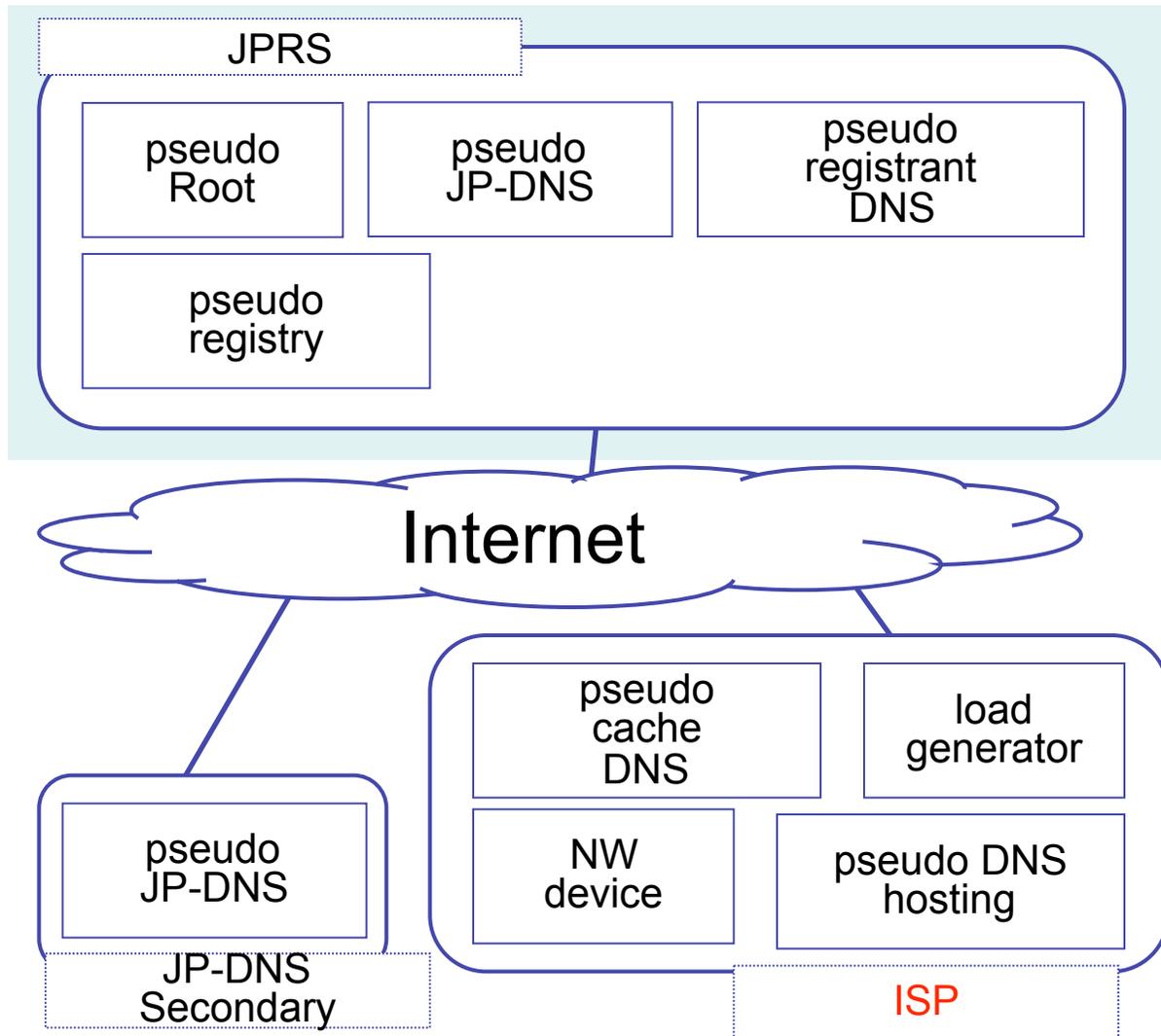
additional participants

7 ISPs

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step4 Jan.2010-June.2010

JPRS

pseudo Root

pseudo JP-DNS

pseudo registrant DNS

pseudo registry

Internet

pseudo JP-DNS

JP-DNS Secondary

pseudo cache DNS

load generator

NW device

pseudo DNS hosting

ISP/ HW vendor
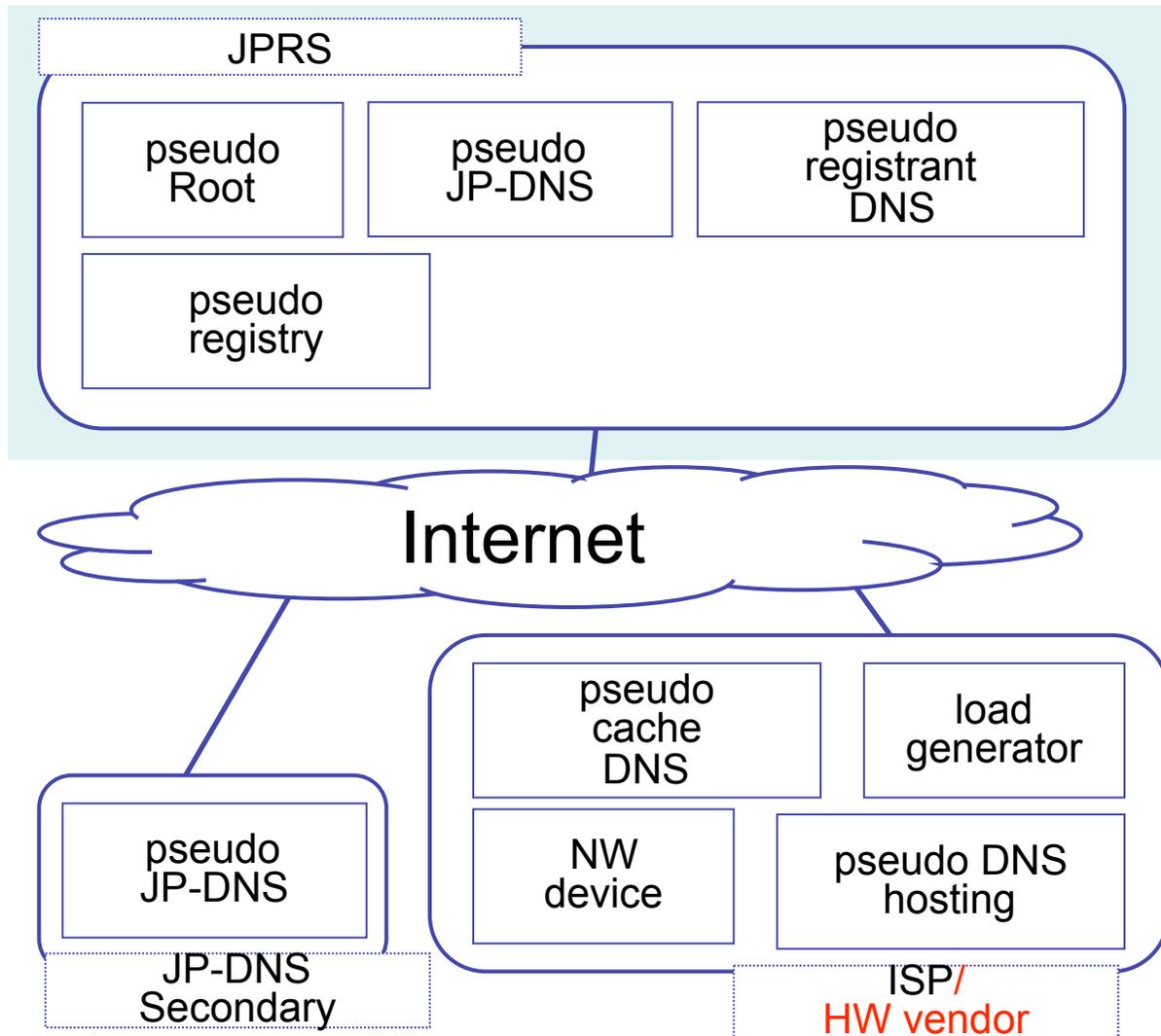
additional participants

4 equipment vendors

step5 July.2010-Nov.2010

JPRS

pseudo Root

pseudo JP-DNS

pseudo registrant DNS

pseudo JP registry

additional participants

4-6 registrars anticipated

Internet

pseudo JP-DNS

JP-DNS Secondary

pseudo DNS hosting

pseudo registrar

JP Registrar

pseudo cache DNS

load generator

NW device

pseudo DNS hosting

ISP/ HW vendor

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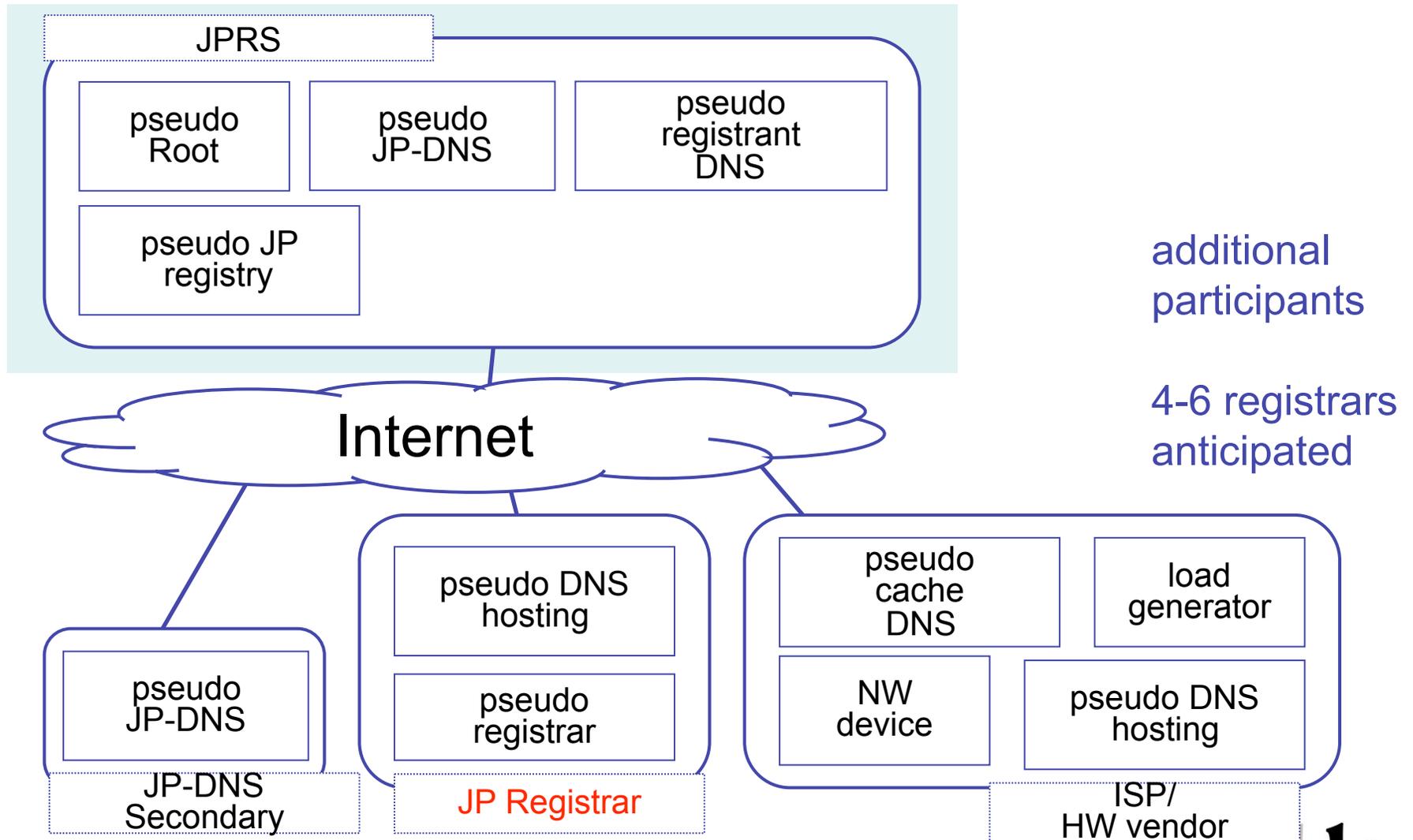
step6   Aug.2010-Mar.2011
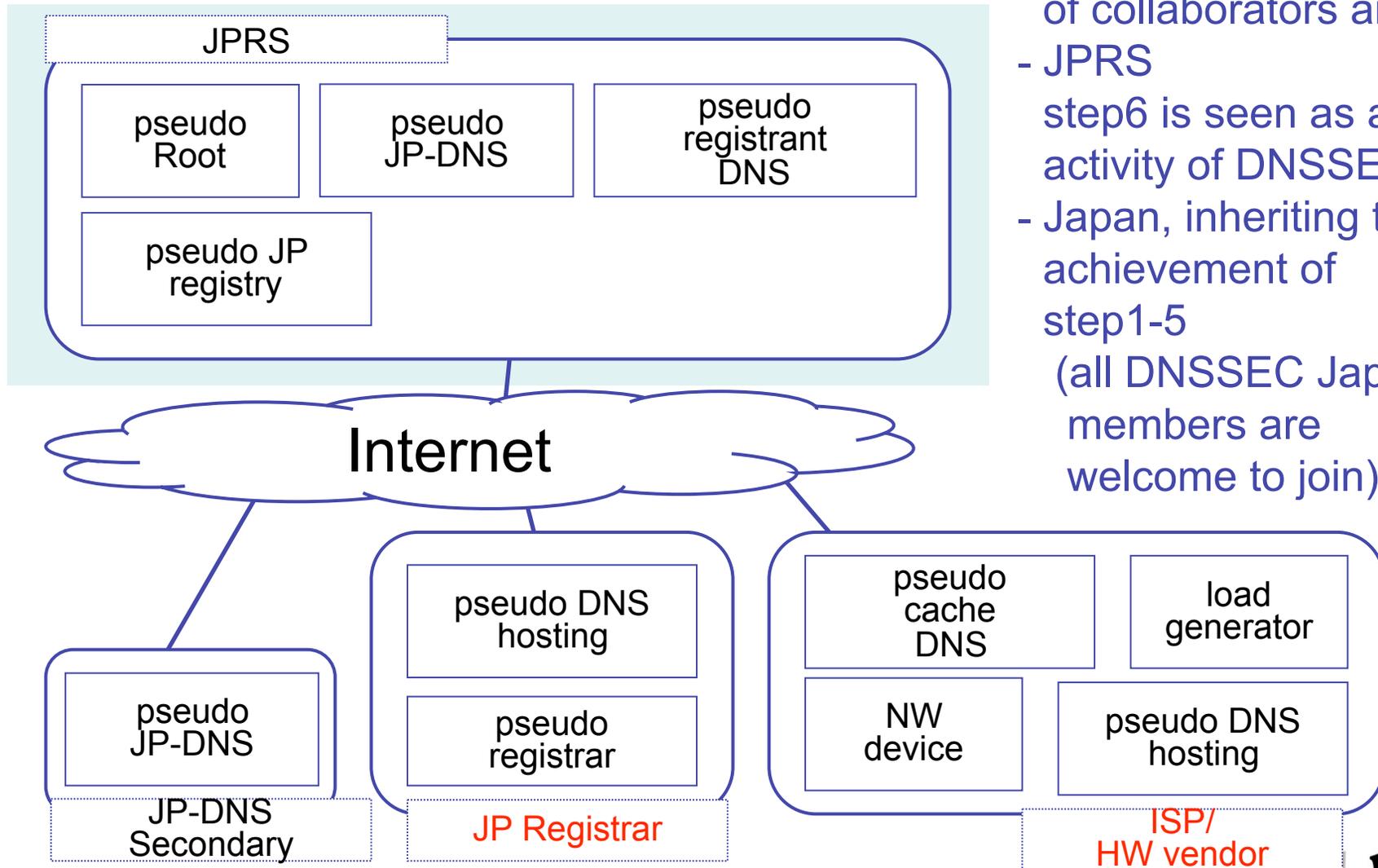
step1-5 is an activity of collaborators and
- JPRS
step6 is seen as an activity of DNSSEC
- Japan, inheriting the achievement of step1-5
  (all DNSSEC Japan members are welcome to join)

DNSSEC Japan - a community initiative -   (1/4)

- What "DNSSEC Japan" is
  - a forum for domain name registries, registrars, registrants and relevant parties such as DNS and network operators
  - with the aim of introducing and deploying DNSSEC that enhances security of the DNS

- Organization
  - Chair   Yoshiki Ishida (JPIX and JANOG)
  - Vice Chairs   Tsuyoshi Toyono (Internet Multifeed)

                       Yoshiro Yoneya (JPRS)
  - Secretariat   JPRS

- Participation principle
  - to carry out activities based on the mutual cooperation by participants

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DNSSEC Japan - a community initiative -   (2/4)

- Objectives
  - to sort out and discuss issues in relation to deployment and operation of DNSSEC
  - to enhance technical capability of participants and sharing of technical expertise
  - to conduct outreach activities such as providing relevant tools and giving technical commentaries

- Activities
  - to sort out and share issues regarding introduction and operation of DNSSEC
  - to conduct technical verifications and accumulate expertise for introduction and operation of DNSSEC
  - to develop BCP relating to introduction and operation of DNSSEC
  - to deploy DNSSEC through propagating results of its activities

JAPAN REGISTRY SERVICES

DNSSEC Japan - a community initiative -   (3/4)

- Schedule
  - 24 Nov 2009   Inauguration
  - Jan 2010   Formation of WGs for testing and public relations
  - July 2010   Event for public relations
  - Aug 2010   Test start
  - Nov 2010   Event for public relations
  - Mar 2011   Conclusion

- Members as of April 26 2010
  - 26

- Information
  - Web   dnssec.jp

  - Email   sec@dnssec.jp

DNSSEC Japan - a community initiative - (4/4)

- current activities
  - technical verification WG
    - collect and verify information relevant to DNSSEC introduction / deployment
  - publicity WG
    - publicize information about DNSSEC and DNSSEC Japan
  - operational workshop
    - protocol understanding Sub-WG works on sharing of understanding of RFCs
    - operational technology Sub-WG works on hands-on learning of DNSSEC operation

Summary

- DNS needs community collaboration
- To make the collaboration better, JPRS does
  - information sharing with / provision to relevant community
  - co-secretariat of DNSOPS
  - secretariat of DNSSEC Japan
  - etc.

- DNSSEC needs sophisticated collaboration within community
- To accomplish collaboration among players, Registry initiative and community initiative are both needed - in harmony
  - to lead DNSSEC testing/evaluation
  - to raise knowledge/literacy of DNSSEC
- to observe mature preparation of DNSSEC environment before registry's service-in