Asia Global Crossing™

IPv6 Status and Deployment Efforts in Japan

2002.1.15

Takashi Arano
Asia Global Crossing,Ltd.
Chair of IPv6 Deployment Committee,
Internet Association Japan

Japanese IPv6 Situations(I)

Service Providers

> Commercial Services

- IIJ
  - Native service. Dual-stack service soon.
- NTT Com
  - Native and IPv6-over-IPv4 tunnel to customers
  - Already has over 100 paying customers.
- PoweredCom, KDDI follows…

> Trial Services

- Almost all Tier-1 ISPs such as Fujitsu, NEC, SONY, etc. are doing or planning to do.
- IX: JPIX
- Even Local and small ISPs start trials: Chita CATV, CTNet
- Global challenge: Global Crossing

Japanese IPv6 Situations(II)

Implementations

- **Software**
  - Kame on BSD, USAGI on Linux
  - ACCESS's IPv6 stacks on build-in chips
- **Routers**
  - Backbone routers: Hitachi, NEC and Fujitsu have released their commercial versions.
  - SOHO routers: YAMAHA, Fujitsu, NEC, Hitachi, etc.

Applications

- **Many trails but all are still experimental**
  - Internet car by WIDE project
  - Internetnode's IPv6 temperature sensor
  - IPv6 refrigerator
  - IPv6 FAX, IPv6 phone, etc.

Japanese Deployment Efforts

Governmental

- IPv6 Promotion Council of Japan => Kosuke's presentation
- JGN (Japan Gigabit Network) IPv6

R&D

- WIDE IPv6 / NSPIXP6 / Kame / Usagi / TAHI

Industrial

- IAJapan IPv6 Deployment Committee
  - IPv6 Summit in Japan
  - IPv6 Operation Study Group
- JPNIC IPv6 project

Publication

- IPv6 Journal (RIIS)
- v6start (Nikkei BP)

Asia Global Crossing™

IPv6 Council

Initiated by Ministry of Public Management, Home Affairs, Posts and Telecommunications

Chair: Jun Murai

Not only router vendors and service providers, but home appliance developers, broadcasting companies, etc. are involved

TAO (Telecommunications Advancement Organization of Japan) conducts a nation-wide IPv6 experiment, using budget of 8.05 billion Yen (= $ 80M).

Research topics in IPv6 Council

Home appliance equipment, application and management

Multicasting and contents delivery using real contents

Security systems in a mobile E-commerce environment

Transition technologies and IPv4-IPv6 translation systems

Testbed for more than 300 home customers in cooperation with commercial ISPs and FTTH/DSL providers.

Asia Global Crossing™

IPv6 Deployment Committee

Promote Japanese IPv6 Deployment in Industry

- hold IPv6 conferences for enlightenment and education such as “IPv6 Summits”
- study issues which need to be solved for deployment; IPv6 Operation Study Group
- publish IPv6-related articles in IAJapan Review, etc.
- be a liaison to IPv6 organization and conferences in other countries such as IPv6 Forum

Established in Apr.2001 under Internet Association Japan

Executive Chair: Toru Takahashi, Vice Executive Chair: Jun Murai, Ryoichi Hosoya, Chair: Takashi Arano

Global IPv6 Summit in Yokohama, 2001

2nd IPv6 Summit in Japan

750 participants, 100 more than the last Summit

Discussed more real issues, while the last Summit focused on how to make people recognize IPv6

- **Keynotes from Jun Murai (WIDE) and Jawad Khaki (VP, MS)**
- **Three successful panels**
  - Enterprise Network, Home Network, Societal Impact

More than 60 IPv6 PCs observed in the conference site network

See http://www.jp.ipv6forum.com/

IPv6 Operation Study Group

Over 70 ISP operators and/or JANOG members are discussing from a “real operational” point of view

Subsidized by IPv6 Deployment Committee

Example topics to be discussed

- **Address Policy**
- **Routing**
- **Enterprise Network**
- **Any missing pieces to deploy IPv6 just like IPv4?**
  - Network monitoring, DNS, Renumbering, Transition tools …

Routing Issues

Difference in IPv4 and IPv6

- **Much much bigger space**
  - Potential number of external routes in future
- **No PI(Provider Independent) address for enterprises**
  - Enterprises can only get /48 from ISPs.
  - How can enterprises muti-home their network?
- **/48 static assignment per a customer needs special design consideration about aggregation in ISP internal networks.**
  - Dial-up naturally can aggregate address block per hundreds of customers.
- **Less routes per an ISP**
  - How to do traffic engineering with a single or a few prefix(es) ?

Enterprise Network Design & Operation

A new firewall model should be established.

- **Network manager v.s. end user who uses IPSec**
  - Managers want to know users' behaviors
  - IPSec hides users' behaviors even for network managers.
- **How to reconcile between traditional IPv4 firewall model and end-to-end model which IPv6 supports with IPSEC.**
  - Protection function against attacks from the outside is always necessary
  - Do IPv6 firewall need transparency and bi-directional communication?
- **The receiver can know the PC vendor the sender is using by EUI-64.**
- **Needs more security for each individual PC if every PC has a global address. Some central management system would be useful.**

IPv6 Journal

First Journal in the world regarding IPv6

- Four issues were already published.

Issued by RIIS (Research Institutes for Internet Strategies)

- http://www.riis.ad.jp/ipv6/

IPv6 experts from both industry and academy plan each issue. Arano is chairing this editing committee.

Examples of contents:

- NAT: Pros and Cons
- All about Global Address (address policy tutorial, why we need global address, current situation of IPv4 allocation, etc.)
- Recent Discussion regarding DNS
- Internet Car Research
- European activities (Euro6IX, etc.)
- Company & Product Status Reports
- Conference reports (Summits, IETF, APNIC, IPv6 TF meeting)

Other Activities

JPNIC IPv6 project

- Develops IPv6 registry systems
- Proposes a new IPv6 policy to APNIC, RIPE/NCC and ARIN
  - Currently on policy making process

v6start

- Nikkei-BP, one of major publishers, is providing educational web pages
- http://v6start.net/

Perspective of 2002

More commercial activities in Japan (and maybe Asia and Europe)

Windows XP will let people feel IPv6 near at hand

Seeds of IPv6 applications will emerge

Collaboration among Asia countries

More constructive and practical discussion will be progressed, although some criticism will be shown

- **More collaborative discussion among R&D, operations, business sectors are expected.**

Personal Observation: Government and IPv6

IPv6 declaration of the government has helped

- people start recognizing IPv6. As a result, more discussion occur
- mass communications deals with IPv6
- organizations can start doing something more easily.

8 Billion Yen of subsidization has helped

- devise new applications
- more importantly collaboration among many industries, not only networking but home electronics, car industry, etc.
- However, there may be risks that some of subsidized companies tend to rely on the government too much.

Summary

In Japan, research sectors have started to develop new types of applications such as home appliances in a national scale, based on governmental funding and other private ones.

On the other hand, IPv6 is more than just research topics. More and more traditional IPv4 people have started to be involved in IPv6 deployment in a business sense and discuss real operational issues.