IPv4 to IPv6: challenges and opportunities

Organisers
- Japan Network Information Center (JPNIC)
- Number Resource Organization (NRO)
- Internet Society (ISOC)
- Internet Association Japan (IA Japan)
- Japan Internet Service Providers Association (JAIPA)
- Institute for InfoSocionomics, Kumon Center, Tama University
- Center for Global Communications, International University of Japan (GLOCOM)
- Global Internet Policy Initiative (GIPI)

Panellists
- **Paul Wilson,** Director General of APNIC
- **Makiko Yamada,** Director of International Policy Division, Ministry of Communications and Internal Affairs of Japan
- **Jonne Soininen,** Head of Internet Affairs, Nokia Siemens Networks
- **Naomasa Maruyama**, Trustee of JPNIC
- **Izumi Aizu,** Deputy Director, Institute for HyperNetwork Society
- **Adiel Akplogan,** Chief Executive Officer, AfriNIC
- **Patrik Fältström**, Cisco Systems
- **Leslie Daigle,** Chief Internet Technology Officer. Internet Society
- **William Manning,** research staff, Information Sciences Institute, USC
- **Jordi Palet,** CEO and CTO, Consulintel

Summary of discussion
Over 100 participants and panellists attended the workshop.

- Paul Wilson gave an overview of the current situation, noting that current forecasts put the date of IPv4 exhaustion at around 2010 or 2011. He explained the benefits of moving to IPv6. It was noted that IPv4 and IPv6 would co-exist for many years, with IPv4 remaining in use for perhaps another 20 or 30 years. The current challenge is to make the transition to IPv6, but the cost of deploying IPv6 is currently higher than the cost of remaining with IPv4. It was recognised that stakeholders need to work together to encourage adoption of IPv6.
- Makiko Yamada presented the Japanese government's work on encouraging transition to IPv6, reporting on a study group created by the government to analyze the issue. The study group is due to release a report in March 2008 on which the government will take action.
- Jonne Soininen explained that from the business community's view, the bad news was that there is no clear business case yet. However, the good news is that there is already interest within the business community to begin preparing for the transition.
- Naomasa Maruyama echoed the business community's view, explaining that a JPNIC survey of ISPs showed that while more than 70% of the ISPs in Japan

are aware of the projected depletion date for IPv4, only 30% are starting to prepare for a transition to IPv6. ISPs are concerned about what may happen if they do not adopt IPv6: if there are no more addresses, then many new businesses or existing business may suffer. The challenge is to address the gap between the 70% of those aware of the problem and the 30% planning to address the problem.

- Izumi Aizu spoke from the view of users of the Internet. He called for governments to make government web sites accessible via IPv6 as well as IPv4 to help encourage the use and awareness of IPv6. Mr Aizu reported that the ICANN At-Large Advisory Committee (ALAC) issued a statement at the recent Los Angeles ICANN meeting supporting open and inclusive policy development for both IPv4 and IPv6, and noting that ALAC was willing to participate in the process.

- Adiel Akplogan reported that there was very high interest in IPv6 in Africa but that there is need for support, training and awareness campaigns. He noted that this mirrored the global situation regarding IPv6 adoption.

- Patrik Falstrom explained some of technical requirements needed to support IPv4 and IPv6. He noted that it was very important to ensure the new users in Africa and other developing regions are able to access any and all parts of the Internet and not be relegated to islands of IPv6. Achieving this requires significant technical, business and policy support.

- Leslie Daigle reported on the IETF's work and explained that the technical community is ready to provide technical support during the transition and is willing to work with other stakeholders to ensure better outcomes during the transition.

- William Manning reported on the relationship between DNS and the two IP versions, noting that all DNS name servers, including root, gTLD and ccTLD servers, should eventually be capable of using both IPv4 and IPv6 using a dual stack to communicate between the two protocols. He noted that IPv6 is not backward compatible with IPv4, which means that extra measures must be taken to make sure IPv4 and IPv6 can communicate. Mr Manning emphasized that there will be no identifiable date by which networks must move from IPv4 to dual stack or native IPv6, so it is the responsibility of all stakeholders to plan and prepare.

- Jordi Palet explained that there are a lot of business opportunities that can be gained from deploying IPv6, so the focus should not just be on the potential problems in initially deploying IPv6.

After the panellists had spoken, there was some time for discussion from the rest of the workshop attendees. The discussion was very interesting and lively, with agreement that the all stakeholders need to work together, sooner rather than later, to encourage and support the deployment of IPv6 before the predicted date of IPv4 exhaustion.

Relevant Organizations and ways of communicating with them

Possible follow-up
There are already many forums in which the deployment of IPv6 is being discussed. Stakeholder groups need to work together to promote and support the deployment of IPv6.