

Study Group on Internet's Smooth Transition to IPv6—2nd Meeting

Summary of Minutes (Draft)

1. Date and Time

Tuesday, October 16, 2007; 15:00–17:00

2. Location

Meeting Room, Mitsubishi Research Institute, 2nd floor

3. Attendees (honorifics omitted)

(1) Study group members (In order of Japanese syllabary)

Takashi Arano, Hiroshi Esaki (TV conference participation), Yoshihiro Obata, Jiro Kokuryo, Tadao Saito, Tetsuo Takemura, Noriyuki Tsuchimori, Yoshimasa Tokui, Toshihiro Naito, Hitoshi Niki, Takashi Hanazawa, Keiichi Makizono, Mikio Mizutani, Takamichi Miyoshi, Yutaka Yasuda, Kimiko Yamagami

(2) MIC Representatives

Terasaki (Director-General, Telecommunications Bureau), Takeuchi (Director-General, Telecommunications Business Department), Ando (Director, General Affairs Division), Kurose (Director, Computer Communications Division), Honma (Senior Advisor, Telecommunications Policy Division), Yagishima (Senior Planning Officer, Computer Communications Division), Nakamura (Deputy-Director, Telecommunications Policy Division), Takamura (Deputy-Director, Computer Communications Division)

4. Agenda

(1) Study group on Internet's smooth transition to IPv6

Working group review report

(2) Others

5. Meeting Summary

[Summary of Minutes of the 1st meeting]

- The secretariat explained “Summary of Minutes of the 1st Meeting” (Attachment 2-1).
- It was decided that those who have comments on this should contact the secretariat on a separate occasion.

[International discussions on IPv4 address pool depletion]

- The secretariat explained “International Discussions on IPv4 Address Pool Depletion” (Attachment 2-2).

○ Main Comments from Members

In addition to the trends centering on ICANN for IPv4 address pool, if there is any information related to

the trends in IPv6 among Africa, Asia, North America, South America, Europe ISPs, and the U.S. Department of Defense, please provide it.

- Based on the above comment, it was decided that the secretariat would survey trends centering on ICANN regarding the IPv4 address pool and trends of IPv6 among Africa, Asia, North America, South America, Europe ISPs, and the U.S. Department of Defense, and report the results in a separate study group meeting.

[Working Group 1st interim report]

- o WG leader Esaki explained “Review Progress” (Attachment 2-3), “Predicted Time of IPv4 Address Pool Depletion” (Attachment 2-4), and “Impact of IPv4 Address Pool Depletion” (Attachment 2-5).
- o Main Discussions
 - In the explanation of Attachment 2-5, broadband connectors are said to need 10 times the IP addresses per subscriber compared to dialup connection, so please explain the change in the number of Internet users in the statistics of Attachment 2-4, and the correlation to the number of IP address uses in China, Brazil, Latin America, and Europe.
 - As the data on how many IP addresses are available per subscriber connected by dialup is not disclosed, we don't know the details.
 - Even if the number of uses of each ISP is unknown, as long as we know the total broadband users in each country, the number of dialup users, and the total number of addresses per user, we might be able to estimate the correlation. Though this may not be precise, it should serve as useful data showing the trends of use abroad, so please consider this. Regarding NGN, because it uses only private addresses, does this mean it is not affected by the address depletion problem?
 - Regarding NGN and WiMax, some bits of the address policy and interconnection policy are unclear, and considering that there are many indefinite elements, it should not be considered at this time.
 - NGN is constructed based on private addresses, but if global addresses are required for connecting to the carrier, global addresses shall be used.
 - Until addresses are depleted all over the world, we should acquire the number of addresses that are required in Japan, and if Internet prevalence is sufficient by then, we can survive with the addresses that were acquired over a long period.
 - It is very doubtful whether acquisition of addresses globally will be possible with just preparations over

the next three to five years. In addition, we have seen new services emerging one after the other, looking at the history of the Internet until now. Personally, my answer to the question of whether we will be able to acquire the addresses required for the future before depletion is “No.”

- As IP addresses are consumed during access as well as at the service side, unless technological innovation of services itself stops, the demand will not decrease in this situation. For this reason, the prevalence rate of 100% may serve as an indicator, but if the question is whether we will no longer need any address after that, the answer should be no. If we consider consumption in a different light, something other than prevalence rate, that is, in terms of the number of information terminals—for example, allotment of addresses to mobile terminals— any decrease in demand is very unlikely.
- If we can discover the correlation between the number of broadband users, number of dialup users, and number of IP address users requested just now, I would like to use it together with the report provided today as data for the conclusion to be prepared at the end of this study group.
- Based on this discussion, it was decided that the first interim report from the WG today would continue to be reviewed for the final report in future WGs. The secretariat will also survey the number of broadband users, number of dialup users, and number of IP address users, and incorporate these results in the final report.

[Solutions for IP address depletion]

- WG leader Esaki explained “Reviews for Draft Secondary Report” (Attachment 2-6).
- Main Discussions
 - The three strategies (IPv4 address conservation, market trading of IPv4 addresses, transition to IPv6, hereafter the same) were explained, but inevitably, the only choice we have is to transition to IPv6. As a measure until then, naturally there will be a need to spend huge costs on transient ideas. For this reason, we need to draw up plans for transitioning to IPv6, and summarize what we need the government to do for smooth transition to IPv6. During that time, we should plan it so that it will result in the international competitive strength of Japan, so that this method becomes a world standard.
 - What I mean about this cost is that, as all of the three strategies proposed for depletion of addresses will require costs, we should pick the strategy that has the greatest future. We need to discuss this appropriately so that future national policies or endeavors by the private sector can keep pace with it.
 - There is a need for this WG to review, through the process of discussions, what specific policies industry or the government is expected to carry out.

- The very difficult thing about this problem is that there is very high interdependency of the players, and so the level of influence is unclear. In such times, we should prepare guidelines and clarify the measures for the various players and the times to implement these measures to possibly lower overall costs. At this time, we will need to review the interdependency of not only telecommunications carriers, but also that in a broad scope including household appliances, etc. We also need to carefully review the priority order of the measures to be taken.
- I don't think the consumption of IPv4 addresses in Japan will decrease until the world also transitions to IPv6 as long as Internet in Japan is a part of the global Internet, so these three strategies to resolve address depletion are not exclusive. Even if transition to IPv6 were the ultimate solution, I think we will need to implement the other two strategies until its first effects appear. We will also need to think about what to do if addresses become depleted even after having implemented these strategies.
- As just mentioned, I think we will need to implement an industrial transition with the three strategies mutually depending on each other. For this reason, we will need to review the optimum method in WG meetings while obtaining opinions from those actually involved in the operations. Regarding the countries mentioned earlier in relation to methods other than transition to IPv6, I think it will be difficult to review semi-obligatory handling, or to establish monetary incentives. What can be said at this point is that whichever method we take, it will require costs.
- With conventional applications, as global addresses and private addresses are used in combination, 2-level NAT traversal is difficult, and real-time two-way communication is hard. However, new applications in the future are expected to require real-time two-way communication to a considerable extent. In the sense of promoting the development of these applications, we should transition to IPv6, which has many addresses, as much as possible.
- In the WG meetings, we should definitely discuss the measures to be taken by Japan for the transfer, to others, of IPv4 addresses that have already been allocated globally as indicated in Attachment 2-2. There will certainly be a need to clear various technical problems faced at that time, so let's continue to review this issue.
- The market trading of IPv4 addresses is currently being reviewed by APNIC, as a countermeasure against the existence of international black markets. We in this WG should review what sort of policies to prepare, globally or domestically, should market trading start.
- I am sure there will be people who will question selling things that were received at no cost. What do you think?

- Rules on the trading of addresses and rules approving the transfer of ownership rights are currently being discussed on the international scene. Overall, these are being accepted with approval, but discussions have not gone as far as whether to impose conditions for routing tables and transfers, so we need to input this from our side.
- As the trading of addresses is very possible anywhere in the world, what we will need to consider now is how to design the required system. Even if IPv6 turns out to be a reasonable technology eventually, history tells us that not all reasonable technologies necessarily survive. For example, if there is a gap between a technology that is considered reasonable macro-wise and an idea which is reasonable at the individual level, if actions are continued at these different individual levels, disguising near-future prospects, we will not be able to make adjustments to a more reasonable one later, and evolution may stop here in some cases. In this sense, there may be scenarios where evolution may stop should actions that attempt to get away with strategies other than transition to IPv6 be continued, so we need to discuss reasonable aspects of technology thoroughly and then review the issue from a macro viewpoint.
- Setting aside the issue of whether it is reasonable or not, it is a fact that IPv6 is the only solution we have, and it is a fact that various problems will be met in implementation because there are too many IPv6 addresses. For this reason, we need to consider how to overcome this problem in the future.
- If there are other choices available, we should think about them. However, in this timeframe, we have no choice but to say there are no other options. Moreover, regarding the issue mentioned earlier, about implementing international rules, it will be difficult to discuss it in this WG, as there are no experts in this area, so we should discuss it in the next study group meeting, etc.
- The earlier issue about whether to take the macro view or individual view is difficult. Some risks of us accelerating IPv6 would be on the international scene. China would definitely go with IPv6, while the U.S. may remain with IPv4 because they have some leeway concerning IPv4. Therefore, when we think of the structure of the whole network, there is a possibility of a split between Asia's Tier 1 (ISP group with broadband IP backbone) and that of the U.S. We should review this matter a little bit more.
- Regarding the situation of the U.S., as ARIN, Department of Defense, and Federal network have started full-scale preparations to transition to IPv6, it is difficult to make judgments based on only superficial aspects. ISOC and ICANN have also started discussions, and ISPs in North America are suffering, too. Input from the members of this study group and WG who are technical experts and are already running the IPv6 network will have a major influence on the formation of opinions by IPS in the U.S.
- We ask the WG to discuss the three strategies discussed earlier as well as a means of merging them, including international trends. If there are any additional topics that need to be discussed, please email

your comments to the secretariat.

- In order to promote transition to IPv6, measures for information home appliances are also required. Given that this will drag on for several tens of years if IPv4 is built into home appliances, we should consider measures for promoting transition to IPv6 now, including tax benefits, from a slightly broader spectrum.
 - We are the only service in Japan that provides global IP to customers, so it will be very hard for us to take that away from the users of this service. In the current situation in which there is a possibility of global IP depletion, we think it is essential to quickly transition to IPv6 as a means of continuing this service. For us to be able to make this transition smoothly, we ask the WG to discuss v6DNS, DHCP, and v6IX.
 - As just mentioned, the scenario and schedule for various players to transition to IPv6 are important. Even solely inside Japan, there will be a need for all players to transition synchronously, so we ask the WG to consider the most appropriate scenario. Please include information home appliances and ensure that no players are omitted.
- Based on the above discussion, it was decided that strategies for depletion of IPv4 addresses would continue to be discussed in the WG. In addition, technological support for these strategies will also be reviewed, and reported in study group meetings.

[Replacement of members]

- Chairperson Saito introduced Ms. Yamagami of the Japan Association of Consumer Affairs Specialists, who will replace member Kadomura.
- Ms. Yamagami introduced herself.