Concerns on IPv6 as a public policy issue

Xiaoya Yang

Telecommunication Standardization Bureau

International Telecommunication Union

xiaoya.yang@itu.int

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# Differentiated Opinions (1/2)

- On the one hand, some ITU Members are of the opinion that:
  - Current distribution of IPv4 address correctly reflects current use of the Internet and proper functioning of market forces
  - IPv4 to IPv6 transition are driven by market forces at the economically optimum rate
  - Industry self-regulation, no need for governmental involvement in Internet Governance

Differentiated Opinions (2/2)

- On the other hand, some other ITU Members consider IPv6 is a topic for public policy discussion
  - IP resource management
    - Equitable access to IPv6 address
    - Governmental involvement
  - IPv4 to IPv6 migration
    - Migration cost, including training, new equipment, configuration and IPv6 addresses
    - Incentive from public sector to help IPv6 uptake

IP Resource management(1/6)

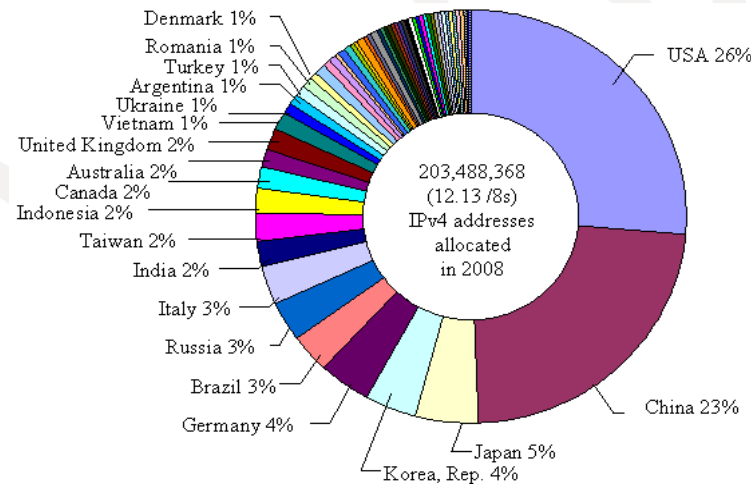- Imbalances of IPv4 Allocation due to historical reasons
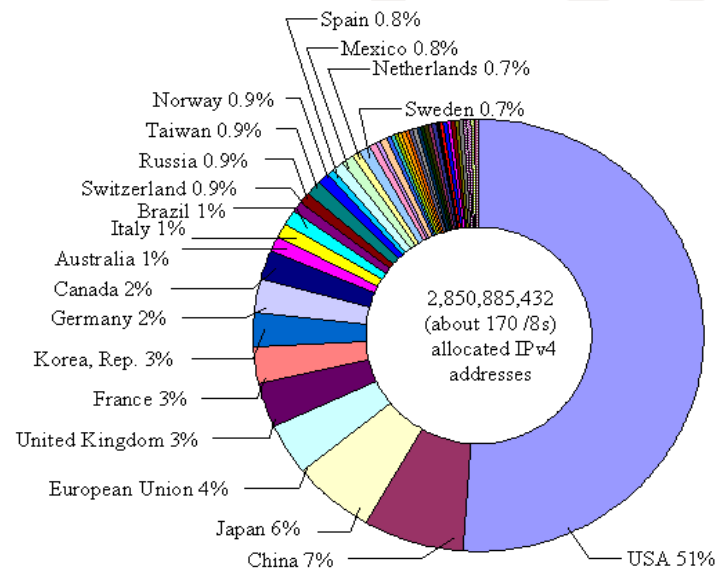
IPv4 allocation per economy as of 15 May 2009

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IP Resource management(2/6)

- Current practice of US allocations accounting for ¼ of global allocation every year.

IPv4 addresses allocated during 2008

IP resource management (3/6)

- IPv4 policy evolvement = a tighten-up process
- Will IPv6 follow a similar path?
  - Same policy principle as IPv4:
    - Based on demonstrated (immediate) needs
    - First come, first served
    - Can/will adapt as required to changing needs and circumstances [1]
      [1] see the ICANN/RIR factsheet on IPv6
  - *"From a public policy perspective, there is a risk to create, yet again, an early adopter reward and a corresponding late adopter set of barriers and penalties"* [2]
    [2] see Millet & Huston (2005) http://mailman.apnic.net/mailing-lists/sig-policy/archive/2005/08/msg00005.html
  - None of the following can guarantee that history will not repeat itself in the future
    - IPv6 space is enormous
    - Who needs IPv6 address can get it easily today

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IP resource management (4/6)

- developing countries feel they are under-represented in the Internet policy development process
- The Tunis Agenda for the Information Society recognized:
  - ➢ *"that all governments should have an equal role and responsibility for international Internet governance"* (paragraph 68).
- Background report of WGIG (2005):
  - ➢ *"There is a lack of a global mechanism for participation by Governments, especially from developing countries, in addressing multisectoral issues related to global Internet policy development."* (paragraph 19)
  - ➢ *[t]here is currently limited involvement of either governments or civil society in the policy making or practical management of IP addresses, although generally RIRs encourage such groups to participate in RIR policy development.* (paragraph 85)

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IP resource management (5/6)

- ~50% countries/territories in GAC today
- Many of the non-represented in GAC are developing or least developed countries:

RIRs	AfriNIC	ARIN	APNIC	LACNIC	RIPE NCC	Total
GAC / Country Code	21 / 54	5 / 28	24 / 57	9 / 29	47 / 76	106 / 244
Representative (%)	39	17.8	42	31	61.8	43

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IP resource management (6/6)

- WGIG Report (June 2005) :
  - *"In the light of the transition to IPv6, some countries feel that allocation policies for IP addresses should ensure balanced access to resources on a geographical basis."* (paragraph 22)
  - *"Transition to IPv6 should ensure that allocation policies for IP addresses provide equitable access to resources."* (paragraph 77)

- Background Report of WGIG:
  - "Others have argued that, …, *a review of the current numbering management is required to ensure equitable distribution of resources and access for all into the future.*" (Paragraph 85)
  - *"Some governments have the position that the allocation of IP numbers, or some subset of these numbers, should be under the sovereignty of national governments and should be managed via a national Internet registry (NIR). "* (Paragraph 85)
  - *"[e]nsuring more balanced use of the IPv4 space, correcting the unbalanced distribution of IP numbers and sustainable transformation of the IP addressing system to IPv6."* (paragraph 105)

WTSA Resolution 64
(Johannesburg, Oct. 2008)

IP address allocation and encouraging the deployment of IPv6

- It instructs ITU-T Study Group 2 & 3 to study the allocation and economic aspects of IP addresses
- It instructs the Director of TSB, in close collaboration with the Director of BDT, to:
  - initiate a **project** to assist developing countries, responding to their regional needs as identified by BDT;
  - establish a **website** to provide information about global activities related to IPv6;
  - promote awareness of the importance of IPv6 deployment, to facilitate joint **training** activities, and to provide information to developing countries.
- It further instructs the Director of TSB to:
  - study the question of **IPv6 address allocation and registration** for interested members and, especially, developing countries
  - report to the 2009 session of the ITU Council.
- It invites contributions from ITU Member Members

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ITU-T Study Group 3 meeting
(19-23 Jan. 2009)

- During discussion of ad hoc group on developing country issues, the following statement was made:

  Many developing countries had requested that the TSB become an additional registry for IP addresses so that countries could have the option of obtaining IP addresses directly from ITU. This request should be evaluated and its advantages and disadvantages should be reported in the study that the Director of TSB is instructed to present to Council 2009 (Resolution 64).

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Studies as requested by WTSA Res. 64

- **A Study on IPv6 Address Allocation and Distribution Methods**

  by the National Advanced IPv6 Centre of Excellence, Universiti Sains Malaysia, Malaysia
  - ➤ Country Internet Registry (CIR) model as a parallel alternative to RIRs

- **Economic Factors in the Allocation of IP Addresses**

  by prof. Milton Mueller, Director, Convergence Center, Syracuse University, New York, USA
 - ➤ ITU contribute to the model framework of IPv6 transfer market

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IPv4 to IPv6 Migration

- TSB Circular 30 (March 2009) - Questionnaire on IPv6 address allocation and encouraging the deployment of IPv6.
- Replies by Aug 2009: APNIC, NRO and 33 ITU members
- Top 3 Barriers to IPv6 uptake identified:
  - **lack of market demand to achieve a profitable business case to deploy IPv6**
  - **lack of information on** urgency, transition, RIR policies and practices to obtain IPv6 addresses
  - **resistance to change**, either due to satisfaction with the current system, lack of confidence of IPv6, etc.
- Requests from developing countries:
  - Awareness raising & capacity building

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ITU IPv6 Project

- Objectives
  - understand the regional needs of developing countries,
  - raise awareness,
  - encourage deployment and create joint programs between developing country members with similar agenda
  - to facilitate the adoption of IPv6 in the world.
- Key elements:
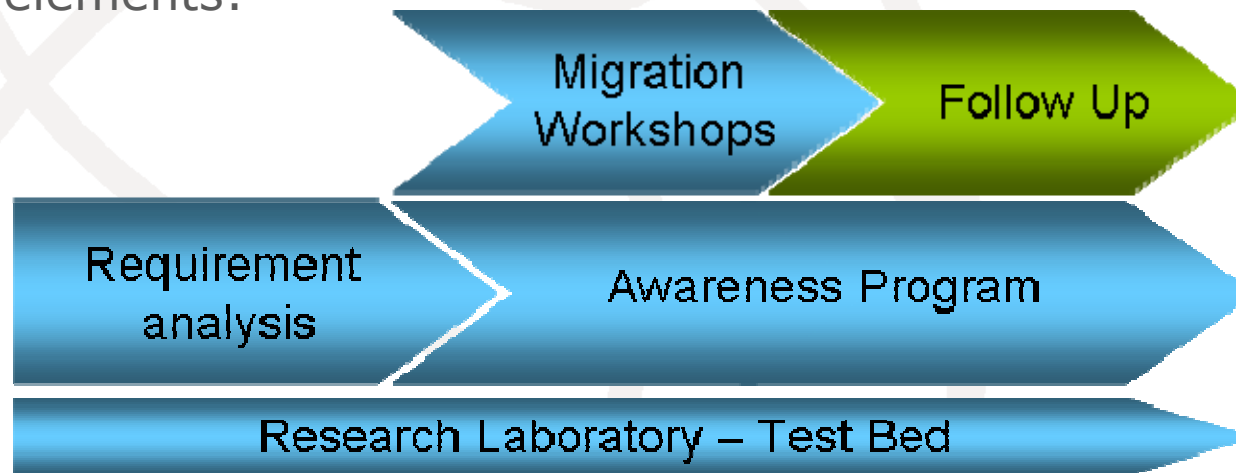
- important strategy: partnership with private/public orgs in national/international levels

ITU Discussion with ICANN, RIPE-NCC

- Agreed on close cooperation and join efforts to help developing countries on:
  - awareness-raising of the urgency of IPv6 deployment,
  - making them familiar with the current IPv6 management policy and mechanisms,
  - building their human capacity by organizing joint training events and trial projects.

- Suggestion: ITU to draft a global policy proposal to reserve a block of IPv6 addresses, taking into consideration the future needs of developing countries, to be consented by all five RIRs' policy making conferences first, then finally adopted by ICANN as a global policy.

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ITU Council 09 decision

- Setup a Group on IPv6 (Open to ITU-T and ITU-D members)
- Terms of References:
  - To draft the aforementioned global policy proposal.
  - To further study possible methodologies and related implementation mechanisms to ensure 'equitable access' to IPv6 resource by countries.
  - To further study the possibility for ITU to become another Internet Registry, and propose policies and procedures for ITU to manage a reserved IPv6 block.
  - To further study the feasibility and advisability of implementing the CIR model for those countries who would request national allocations.
  - To assist in the implementation of the aforementioned project called for by Resolution 64.
- Its first meeting will be held on **15-16 March 2010**, in ITU, Geneva, Switzerland

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Invitations

- Contributions/participations are cordially invited to:
  - the 1st meeting of this IPv6 Group
  - enhance the ITU IPv6 website
  - the ITU IPv6 project

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Useful Links

- **ITU IPv6 portal: http://www.itu.int/ipv6**
- World Telecommunication Standard Assembly Resolution 64: http://www.itu.int/publ/T-RES-T.64-2008/en
- World Telecommunication Policy Forum (WTPF 2009) OPINION 5 on Capacity building in support of the adoption of IPv6: http://www.itu.int/md/dologin_md.asp?lang=en&id=S09-WTPF-C-0004!R1!MSW-E
- NAv6 Study on IPv6 Address Allocation and Distribution Methods: http://www.itu.int/dms_pub/itu-t/oth/3B/02/T3B020000020002PDFE.pdf
- Prof. Mueller study on Economic Factors in the Allocation of IP Addresses: http://www.itu.int/dms_pub/itu-t/oth/3B/02/T3B020000020003PDFE.pdf
- General background on the IPv6 study: http://www.itu.int/dms_pub/itu-t/oth/3B/02/T3B020000020001PDFE.pdf
- Working Group on Internet Governance reports: http://www.wgig.org/WGIG-Report.html
- ICANN/RIR IPv6 factsheet: http://www.itu.int/dms_pub/itu-t/oth/3B/01/T3B010000020001PDFE.pdf
- ISOC A Fine Balance: Internet Number Resource Distribution and De-Centralisation: http://www.itu.int/dms_pub/itu-t/oth/3B/01/T3B010000010001PDFE.pdf
- Report of the ITU IPv6 Workshop (4-5 Sept. 2009): http://www.itu.int/oth/T061500000E/en

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Thank you