Network Management Issues in Japan

Network Management:
The Latest Battle over Net Neutrality
February 29, 2008

Haruka Saito
Counselor for Telecom Policy
Embassy of Japan
hsaito@embjapan.org
MIC Study Group Reports

- Report of the Study Group on a Framework for Competition Rules to Address the Transition to IP-Based Networks
  
  “New Competition Promotion Program 2010”


- Report of the Study Group on Network Neutrality

  ➢ 11/15/2006 ~ 09/19/2007
Network Neutrality (from the user perspective)

(1) IP-based networks should be accessible to users and easy to use, allowing ready access to content and application layers.

(2) IP-based networks should be accessible and available to any lawful terminal that meets the relevant technical standards, and should support terminal-to-terminal (or “end-to-end”) communication.

(3) Users should be provided with equal access to telecommunications and platform layers at a reasonable price.

Note: In this case, “the user” refers not just to end users but also includes content providers and other related companies that conduct business using IP networks.

Policy evaluation parameters for ensuring network neutrality

- Equitable cost distribution of networks
- Neutrality of cost sharing models for upgrading communications networks
- Equal access to networks
- Neutrality of telecommunications layer with respect to other layers

Specific policies deployed in integrated manner for parameters
Actions to Be Taken for Ensuring Network Neutrality

Network Neutrality

Equitable cost allocation of networks
   (in response to network congestions)
   - Implement field trials on content delivery system using P2P
   - Establishing packet shaping guidelines
   - Consider establishing QoS authentication system for ISPs

Equal access to networks
   (prevent abuse of market dominance)
   - Develop interconnection rules regarding NGN developed by NTT EAST and WEST
   - Review dominant regulations
     (transition to the framework of dominant regulations responding to market integration)
     - Practical use of the results of competition review mechanism when recognizing existence of market dominance
     - Recognize leverage to relevant markets and possibility of collective dominance
     - Recognize market dominance in submarkets in response to market integration represented by FMC
     - Improve market monitoring system

Other related issues to be considered

Diversify access network
   (ensure effective use of pole/conduit, support for network development by municipalities, smooth introduction of BWA (Broadband Wireless Access))

Consider new legislative systems
   respond to emerging new business models under ongoing market convergence

Consider effective measures for user protection

Review terminal equipment policy
   (review of terminal approval standard and consideration of responsibility sharing models on terminal equipment)

Ensure openness of platform function including authorization/charging functions

Active contributions to ensure consistency of international regimes
The total amount of IP traffic in Japan was estimated at 812.9 Gbps (Nov 2007), which accounts for about 2.5 times more than that of 3 years ago (323.6 Gbps).

To address the traffic increase, it is necessary for the ISPs to increase their network capacity.
IP Traffic of a Major ISP

Occupation rate of bandwidth

Randomly selected day in April 2006

Download

Upload

©2007 Ministry of Internal Affairs and Communications. All Rights Reserved.
Bandwidth Usage and P2P Users

10% of all users occupy 60 to 90% of traffic

Top 10% of P2P users(*) occupy more than 60% of the traffic

Bandwidth used by heavy users completely differs from that used by average users.

average user : 550Mbyte

P2P user : 17Gbyte

P2P heavy users: 104Gbyte

Distribution of uses in all traffic

75% P2P traffic
(less than 10% of all users)

25% Other traffic
(more than 90% of all users)

63% Heavy users
(10% of P2P users)

37% Average users
(90% of P2P users)

P2P users (10%) controls 60 to 90% of traffic.

Top 10% among P2P users occupy over 60% of traffic.

(*) the P2P users are considered as users whose P2P traffic exceeds over 1 Mbyte within 24 hrs.
(Note) The data was provided by Plala Networks (partly extracted)

(*,*) the Plala Networks has controlled its P2P bandwidth since November 2003, therefore the latest published data in uncontrolled situation is for 2003.
Action to Address Network Congestion Using P2P

- Currently unclear if technological innovation can absorb incremental costs due to increasing traffic.

- To address network congestion, flexibility of network to absorb traffic fluctuation is necessary. (network scalability)

- The advantage of P2P in allowing for improving efficient content delivery should be utilized. Flexible choice of content delivery technologies such as C/S model and CDN as well as P2P should be ensured.

- As a first step, an experiment in traffic dispersal methodology using P2P should be considered.
“P2P Network Experiment Council” was established in August 2007.
Result of experiments will be summarized by end-March 2009.

**Purposes**
- “P2P Network Experiment Council” was established with the aim of promoting new content delivery businesses using broadband network, and diffusing the use of broadband services to regional areas.
- To achieve the above goals, the council participants exchange information and views on new network services applying P2P application technologies, support P2P-experiments and P2P-services, and examine the results of experiments.

**Participants (in alphabetical order)**
  - MIC (observer)

---

**P2P Network Experiment Council**

**SG on P2P Delivery Model**
- **P2P Security Guideline Drafting Group**
  - Content delivery service providers
    - Culture
    - Education
    - Movies/Cartoon Films
    - Sports
    - Games

**SG on Joint Delivery Architecture**
- Telecommunication carriers, CDN service providers, P2P service providers
- ISPs, IXs, Content holders

**Study Group**
- On Effective Delivery Network
  - Local Government A
  - Local Government B
  - Local Government C
  - Local Government D
Addressing the Traffic Increase: Who should pay?

- **Additional charge on heavy users?**
  - ✔ In general, it is acceptable to collect an additional charge from heavy users.
  - ✔ However, issues to be considered:
    - User charges are a fixed rate on a best-effort basis.
    - Acceptable to develop multi-tiered Internet structures (fast lane and slow lane)?
    - Possible to find rational price differentiation between heavy users and light users?
  
  → In the meantime, a case-by-case approach should be taken.

- **Additional charge for CPs?**
  - ✔ As long as both the CP and ISP markets are competitive,
    
    → Market principle may work.

- **Equality on cost allocation among ISPs?**
  - ✔ Market mechanism may not work due to several factors such as asymmetry of information (eg. upper-tier ISP vs. lower-tier ISP.
  - ✔ It may be appropriate to allow for traffic shaping without any bit discrimination.
Relationship between Upper tier ISP and Lower-tier ISPs

CP

ISP-A

ISP-B

End user

Rich content (video streaming, etc.)

ISP-A has an opportunity to compensate for the increasing equipment cost by collecting from CPs and ISP-B.

ISP-B has no opportunity to compensate for the increasing equipment cost. (It is difficult to collect directly from end users.)
Since a large amount of Internet traffic volume is caused by P2P, some ISPs set out traffic restriction for P2P.

A council composed of four telecom business associations (Japan Internet Providers Association, Telecommunications Carriers Association, Telecom Service Association, Japan Cable and Telecommunications Association) was established. (MIC is an observer.)

At the outset, the council will set the minimum basic standards regarding traffic shaping rules. Based on these standards, Each ISP will establish and implement their own operating policy.

Establishment of “Guideline for Traffic Shaping” (scheduled for Spring 2008)

The guideline will clarify the basic standards such as:

1) scope of information necessary to put into the contract agreement
2) basic requirements to operate traffic shaping
3) relevant legal interpretation (i.e. secrecy of communication).

From the viewpoint of user protection, operating policy should be clearly and sufficiently stated in contract agreement and should be implemented accordingly.
Thank you!

hsaito@embjapan.org