Broadband Competition Policy in Japan

March 2008

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Broadband Competition Policy in Japan

- Current Status of Broadband Market in Japan
- Outline of “New Competition Policy Program 2010”
- Specific Issues
  - Network Neutrality Issues
  - Revitalization of Mobile Business
Transition in the Number of Japan’s Broadband Subscribers

【Number of Telecommunication Service Users】
(Unit: 10 thousand)

- Fixed Communications (telephony)
- Mobile Communications (telephony)
- Broadband service
- IP Telephony

As of Jan. 2008

【Number of Broadband Service Users】

- DSL
- FTTH
- CATV
- FWA

As of Dec. 2007

As of Dec. 2007

As of Dec. 2007

As of Dec. 2007

As of Dec. 2007
Tariff for Broadband Services

(yen/month)

<table>
<thead>
<tr>
<th>Service Provider</th>
<th>FTTH (100 M)</th>
<th>FTTH (100 M)</th>
<th>USEN (100 M)</th>
<th>FTTH (47 M)</th>
<th>Softbank BB (50 M)</th>
<th>KDDI (50 M)</th>
<th>KDDI (5 M)</th>
<th>Itscom (30 M)</th>
<th>Itscom (512k)</th>
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</thead>
<tbody>
<tr>
<td>NTT East(1)</td>
<td>5,985</td>
<td>3,570</td>
<td>2,980</td>
<td>3,465</td>
<td>4,206</td>
<td>3,969</td>
<td>2,908</td>
<td>1,344</td>
<td>1,050</td>
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<td>K-opticom</td>
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<td>3,505</td>
<td>5,250</td>
<td>5,991</td>
<td>5,754</td>
<td></td>
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<tr>
<td>USEN(100 M)</td>
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<td>Softbank BB (50 M)</td>
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<td>Itscom (512k)</td>
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</table>

Note 1: When using BB.excite as the ISP
Note 2: When the service can be provided to 8 or more residences
Note 3: Includes basic IP telephone charges as well

Sources: Respective company web sites
Japanese Broadband Service in Global Comparison

**Broadband prices (100kbit/s)**

(US dollar)

<table>
<thead>
<tr>
<th>Country</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>0.07</td>
</tr>
<tr>
<td>Korea</td>
<td>0.08</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.14</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.23</td>
</tr>
<tr>
<td>Singapore</td>
<td>0.24</td>
</tr>
<tr>
<td>Italy</td>
<td>0.3</td>
</tr>
<tr>
<td>Taiwan, China</td>
<td>0.34</td>
</tr>
<tr>
<td>France</td>
<td>0.36</td>
</tr>
<tr>
<td>Finland</td>
<td>0.36</td>
</tr>
<tr>
<td>United States</td>
<td>0.49</td>
</tr>
<tr>
<td>Germany</td>
<td>0.51</td>
</tr>
<tr>
<td>The U.K.</td>
<td>0.63</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0.69</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>0.83</td>
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<tr>
<td>Portugal</td>
<td>0.93</td>
</tr>
<tr>
<td>Bosnia-Herzegovina</td>
<td>0.93</td>
</tr>
<tr>
<td>Canada</td>
<td>1.01</td>
</tr>
<tr>
<td>Macao, China</td>
<td>1.07</td>
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<tr>
<td>Brazil</td>
<td>1.08</td>
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<tr>
<td>Belgium</td>
<td>1.21</td>
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</tbody>
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**Speed of DSL**

(Mbit/s)

<table>
<thead>
<tr>
<th>Country</th>
<th>Speed</th>
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<tbody>
<tr>
<td>Japan</td>
<td>51.2</td>
</tr>
<tr>
<td>Korea</td>
<td>51.2</td>
</tr>
<tr>
<td>Singapore</td>
<td>30.72</td>
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<td>Sweden</td>
<td>24</td>
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<tr>
<td>Finland</td>
<td>24</td>
</tr>
<tr>
<td>Netherlands</td>
<td>20.48</td>
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<tr>
<td>Taiwan, China</td>
<td>12.88</td>
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<tr>
<td>Italy</td>
<td>12.288</td>
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<tr>
<td>France</td>
<td>10.24</td>
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<tr>
<td>Kazakhstan</td>
<td>8.192</td>
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<tr>
<td>The U.K.</td>
<td>8.128</td>
</tr>
<tr>
<td>Portugal</td>
<td>8.128</td>
</tr>
<tr>
<td>Brazil</td>
<td>8</td>
</tr>
<tr>
<td>Iceland</td>
<td>6.144</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>6.144</td>
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<tr>
<td>Poland</td>
<td>6.144</td>
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<tr>
<td>Germany</td>
<td>6.016</td>
</tr>
<tr>
<td>Philippines</td>
<td>5.12</td>
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</table>

Source: ITU Internet Reports 2006 "digital.life" (December 2006)
As a roadmap to fulfill “Next Generation Broadband Strategy 2010,” “Digital Divide Elimination Strategy,” including concrete measures to eliminate “broadband zero” area, will be released by MIC in June 2008.

(Note) “Broadband availability map,” describing availability of broadband services (ADSL, FTTH etc.) in each town or village, has been provided via the internet.
Broadband Competition Policy in Japan

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  - Network Neutrality Issues
  - Revitalization of Mobile Business
Outline of Japanese Telecom Competition Policy

**From monopoly to competition**
- 1985 ~ 1997
  - Introduction of market principles
  - Privatization of NTT--PC
  - Reorganization of NTT (1999)
  - Deregulation of market entry restriction
  - Abolition of foreign investment regulation (except for NTT and NTT regional companies)
  - Establishment of interconnection rules (introduction of LRIC model)

**Further promotion of competition**
- 1997 ~ 2001
  - Strengthening of asymmetric regulations
  - Establishment of USF mechanism
  - Setting up of Telecommunications Business Dispute Committee
  - Establishment of interconnection rules (introduction of LRIC model)

**From “ex-ante” regulation to “ex-post” regulation**
- 2001 ~ 2004
  - Abolition of Type I and Type II business categories
  - Drastic deregulation of price and tariff regulations
  - Introduction of competition review mechanism

**Review of Competition Rules corresponding to transition to full IP-based networks**

**From monopoly to competition**
- 1985 ~
  - Introduction of market principles
  - Privatization of NTT--PC

**Further promotion of competition**
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  - Reorganization of NTT (1999)
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**From “ex-ante” regulation to “ex-post” regulation**
- 2001 ~
  - Strengthening of asymmetric regulations
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  - Setting up of Telecommunications Business Dispute Committee
  - Establishment of interconnection rules (introduction of LRIC model)

**Transition from PSTN to IP-based networks**

**Review of competition rules through transparent procedures**
Number of competitive telecom carriers

<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>87</td>
<td>738</td>
<td>1,259</td>
<td>4,726</td>
<td>9,348</td>
<td>14,441</td>
</tr>
</tbody>
</table>

Structure of NTT group (reorganized in July 1999)

- NTT (Holding company)
- NTT East
- NTT West
- NTT DoCoMo
- NTT Communication

Regulated under NTT Law

NTT regional companies own 93% of all the access lines.
(as of the end of March 2007)
Market Share of NTT East and West

(share by number of lines)

- Copper lines: 99.9%
- Copper&fiber&CATV lines: 92.5%
- FTTH: 78.9%

(share by revenue)

- Fixed telephone (including ISDN): 90.6%
- ADSL: 38.0%
- FTTH service: 69.0%

(as of the end of March 2007)
Development of DSL Service Market and Introduction of Interconnection Rules

- Establishment of collocation and unbundling rules for access networks of NTT E/W

- Autumn 2000
Changes in Market Environment and Review of Competition Policy

Changes in competitive environment

1. Progress of broadband deployment
2. Development of horizontal market integration
3. Development of vertical market integration

Development of horizontal market integration

Transition from PSTN to IP Networks
(The age of “Everything over IP”)

Drastic Change of Market Structure (Paradigm Shift)

voice data video
fixed mobile regional long distance international

Integrated Services
- “packet based”
- “ubiquitous”
- “communication”

Horizontal integration

From “intramodal” competition to “intermodal” Competition

Development of vertical market integration

A variety of content and applications
under “packet based”
under “ubiquitous”
under “communication”

“New Competition Promotion Program 2010” (Sep 2006, revised in Oct 2007)

Related to a review of a framework of competition rules to address the transition to IP-based networks, define a road map for deliberation to be implemented by the early 2010s.
Outline of “New Competition Promotion Program 2010”

Comprehensive Review of Competition Rules to Address the Shift to IP Based Networks (Comprehensively implemented by early 2010s)

1. Promotion of Facility Based Competition
   - Promotion to Use Physical Networks Owned by Local Governments etc.
   - Promotion of Diversification of Access Networks (WiMAX etc.)
   - Review of Dominant Regulations
     - Introduction of Competition Safeguard System (from FY 2007)
     - Comprehensive review of Dominant Regulations (Implementation will be launched by FY 2010.)
   - Review of Calculation Method for Interconnection Charges of NTT E&W

2. Review of Interconnection Policy
   - Establishment of Interconnection rules for NGNs (by the end of FY2007)
   - Consideration (“feasibility study” in 2007 to be followed by precise consideration at the Information and Communications Council by the end of 2008)
   - Review of the Price Cap Regulation etc.

3. Review of Universal Service System

4. Review of Tariff Policy
   - Study concerning the Network Neutrality principles (the first SG report in September 2007, followed by the second report by the end of 2008)
   - Review of Dispute Settlement Functions etc.

5. Other Main Policies

✔ Status of NTT will be concluded following consideration in 2010.
✔ Comprehensive legal framework including telecommunications and broadcasting will be concluded by 2010.
Broadband Competition Policy in Japan

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- Specific Issues
  - Network Neutrality Issues
  - Revitalization of Mobile Business
(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 terminal that meets the relevant technical standards, and should support terminal-to-terminal (or “end-to-end”) communication.
(3) Users should be provided with equality of 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.

Equitable cost distribution of networks (A)
Neutrality of cost sharing models for upgrading the communications networks

Equal access to networks (B)
Neutrality of telecommunications layer with respect to other layers
Basic Framework for Network Neutrality

SG on Network Neutrality (Nov. 2006 – Sep. 2007)

Change of Market Structure

- Changes on network structure
  - (Transition from PSTNs to IP based networks)
- Progress of market integration such as FMC
- Proliferation of new communications such as P2P

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 terminal that meets the relevant technical standards, and should support terminal-to-terminal (or “end-to-end”) communication.
3. Users should be provided with equality of 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.

Ensuring utilization of networks

- “with proper cost allocation” (A) & “without any discrimination” (B)

Equitable cost distribution of networks (A)
- Neutrality of cost sharing models for upgrading the communications networks

Equal access to networks (B)
- Neutrality of telecommunications layer with respect to other layers
The total amount of IP traffic in Japan was estimated at 812.9Gbps in Nov 2007, increased by about 2.5 times in 3 years.
“The traffic flowing into domestic ISPs from foreign ISPs (Inbound traffic, B3)” has been remarkably increasing by twice in 1.5 years. It has exceeded “the traffic exchanged at any place outside domestic major IXs (mainly private peering, B2)” at Nov 2007. [Left diagram]

In the traffic exchanged among domestic ISPs, the percentage of “the traffic exchanged at domestic major IXs (B1)” has turned upward again.
P2P traffic has a significant impact on networks rather than streaming and web surfing. Average P2P occupation rate increased by 30% at peak traffic level and by 10% at off peak level in 6 months period.
P2P occupation rate is higher in upstream than in downstream.
P2P traffic occupied no less than approx. 50% throughout 24h in Apr. 2006.
Bandwidth Usage and P2P Users

10% of all users occupy 60 through 90% of the traffic

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)

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

- P2P users (10%) controls 60 through 90% of the traffic.
- Top 10% among P2P users occupy over 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

Measured : 2003/6/30 – 2003/7/1 11:59

(*) “the P2P users” are considered as the 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.
Dispersion of Intelligence in Networks

Newly emerging services coordinated between terminal equipment and intelligence in servers (SaaS, online data storage etc.)

Remarkable improvement of computing capability of terminal equipment such as PCs

Ubiquitous economy, CGC (Consumer Generated Media), diversity of content delivery mode including P2P

End user as a “private” content provider

networks (meshed)
Background of Dramatic Traffic Increase

- Broadly usage of P2P-based file exchange, driven by increasing availability for broader upload bandwidth in response to proliferation of FTTH service

- In addition to increase of rich content including video, many new business models with CGC (Consumer Generated Content) have emerged.
  ⇒ Content may flow into the network from a variety of network edges

- Some new factors possibly to making Internet traffic increase.
  - Emergence of new communications represented by M2M in line with progress of ubiquitous economy
  - Increase of network utilization including SaaS within firms
  - Proliferation of grid computing
Currently unclear if technological innovation can absorb incremental cost due to increasing traffic.

For coping with dramatic traffic increase (network congestion), ensuring dynamic interaction is required between networks and terminals, allowing networks to flexibly absorb traffic fluctuating. (network scalability).

Advantage of P2P in allow for improving content delivery efficiency should be utilized. Flexible choice of content delivery technologies such as C/S model and CDN as well as P2P should be ensured.

Field Trials by “P2P Network Experiment Council” (FY07-08)
P2P Network Experiment Council

- “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 targets, the council participants exchange their 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)**
- Bitmedia Inc., BitTorrent K.K., BROTHER INDUSTRIES LTD., DREAMBOAT Co.Ltd., INFOCITY Inc., Internet Initiative Japan Inc.,
- Grid Solutions inc., Japan Broadcasting Corporation, J-Stream Inc., Kadokawa Digix INC., Mandala, NEC Corporation,
- NHK ENTERPRISES Inc., NTT Communications Corporation, SOFTBANK BB Corp., TOKYO SHOSEKI CO.LTD.,
- TOYAMA INTERNET SHIMINJUKU, TV Bank Corp., VeriSign Japan K.K.
- MIC (as an observer)

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**SG on P2P Delivery Model**

- **P2P Security Guideline Drafting Group**
  - Content delivery service providers
  - Content holders
    - 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
Outline of “Guideline for Packet Shaping (Draft)” (March 2008)

1. Background of the Guideline

- Development of broadband
  - Dramatic Traffic Increase
  - A few heavy users are occupying most of the bandwidth

- Some ISPs practise “Packet Shaping”

- Based on the discussion in the “WG on Network Neutrality”, ISPs held a conference in Sep. 2007.
  (MIC is participating as an observer.)

- Establishing the Guideline as a basic principle regarding ISPs’ practise of packet shaping

2. Principle of the Guideline

**Coverage of the Guideline**

① Traffic restriction of specific applications (e.g. P2P traffic)
② Traffic restriction or canceling the contract of heavy users whose traffic exceeds a certain threshold

**Basic concept**

- In principle, ISPs should increase their network capacity when network traffic has increased.
- Packet shaping is allowed only in an exceptional situation.

  Packet shaping should be justified only from an objective criteria.

3. Points at issue

- Relation to “Secrecy of Communications” (Article 6, Telecommunications Business Law)
- Relation to “Fairness in use” (Article 6, Telecommunications Business Law)
- How to provide users with information about packet shaping
- Further issues to be considered

4. Schedule

March 17 Public comment (~ April 14)
⇒ April 2008 Establishment of the Guideline
Guideline for Packet Shaping (Draft)

1. Background on the deliberations
   - Dramatic traffic increase / a few heavy users are occupying most of the bandwidth.
   - To tackle these problems, some ISPs currently practise "packet shaping."

2. Purpose and positioning
   - To avoid arbitrary use of packet shaping, the guideline is established as a basic principle regarding the practise of packet shaping by ISPs.

3. Coverage of the Guideline
   - The guideline covers the following two cases.
     1. Traffic restriction on specific applications (e.g. P2P traffic)
     2. Traffic restriction or canceling the contract of heavy users whose traffic exceeds a certain threshold.

4. Basic principles
   - Basic principle means that ISP should increase the network capacity when traffic has increased. Packet Shaping is allowed only in an exceptional situation.
   - Specifically, Packet Shaping must be justified only from an objective criteria, such as when the QoS of general users is degraded by the traffic of P2P applications which occupy bandwidth excessively and continuously.

5. Secrecy of communications
   - Clarifies specific cases when packet shaping is allowed as ISPs lawful pursuit of business.

6. Fairness in use
   - Clarifies specific rules to be followed regarding “fairness in use”.

7. Disclosure of information
   - In terms of consumer protection, ISPs are required to provide sufficient information to users regarding their packet shaping policy (terms and conditions of contract, description of tariffs, etc.)
   - ISPs are also required to provide relevant information to CPs and other ISPs.

8. Issues for further consideration
   - Coping with increase of video content (YouTube, etc.)
   - Information sharing systems among relevant players such as ISPs, CPs, etc.
   - Cost sharing model (cost allocation among ISPs, additional charges for heavy users etc.)
Major points of Guideline (1/2)

(1) Relation to “secrecy of communications”

- ISPs analyze the header or payload information of the packet when they practise packet shaping*. Such information constitutes “secrecy of communications” (Article 4, Telecommunications Business Law).
- The guideline clarifies requirements and specific cases when packet shaping is legally allowed.

Requirements for action to be allowed legally

1. Justification of action
2. Necessity of action, balanced with justification
3. Validity of means

Cases when ISPs restrict traffic of specific applications

**When ISPs “restrict” traffic of P2P applications such as “winny”**

- Justification & necessity for action
  - The QoS of general users is degraded by P2P traffic which occupies bandwidth excessively and continuously.
  - Packet shaping is for maintaining network stability and securing QoS for other users.
- Validity of means
  - The practice of packet shaping is applied only to specific apps whose traffic volume is extremely excessive.

Packet shaping may be justified as a lawful action.

**When ISPs “shut out” traffic of P2P applications such as “winny”**

- Such actions do not satisfy validity of means because ISPs can maintain their operations by other means such as restricting the traffic of P2P apps, which is recognized as a lighter restriction than shutting out the traffic.

Difficult to be justified as a lawful action

Case when ISPs restrict use of bandwidth for specific users

**When ISPs restrict use by heavy users**

- Justification & necessity for action
  - QoS of general users is degraded by traffic due to specific heavy users occupying the bandwidth excessively and continuously.
  - Packet shaping is for maintaining network stability and securing QoS for other users.
- Validity of means
  - The practice of packet shaping is applied only to specific users whose traffic amount is extremely excessive.

Packet shaping may be justified as a lawful action.

* In the case where end users agree individually, ISPs can shut out the traffic of P2P applications.

It is permissible to check the traffic of respective users, for restricting the bandwidth of heavy users or giving them a warning to decrease their use.
(2) Relationship to “fairness in use”

The Guideline clarifies the rules to be followed when implementing packet shaping in the context of the relationship to “fairness in use” (Article 6, Telecommunications Business Law).

【Cases when ISPs restrict P2P traffic of specific heavy users】
< Conditions >
● ISPs must distinguish heavy users' traffic from general users' traffic based on objective data.
● Based on tariffs, the traffic restriction on heavy users should be limited to an equivalent traffic volume of general users.

In general, such an action is recognized as not violating the “fairness in use” principle.

【Cases when ISPs restrict traffic or charge additionally for specific heavy user groups】
● Discriminatory practises are applied to users under the same conditions.

【Cases when ISPs restrict traffic of specific CPs】
● CPs are also covered by the “fairness in use” principle.

Except when there is a valid reason, in general, such an action may be recognized as violating the “fairness in use” principle.

(3) How to provide information about Packet Shaping

① ISPs should provide sufficient information about their packet shaping policy to their users.

- Required information includes:
  ◆ Implementation of packet shaping contract
  ◆ Terms and concrete measures for packet shaping

- Required measures for providing information:
  ◆ Clear description in the tariff (addition to model contract)
  ◆ Provision of relevant information on HPs etc.

② The information on packet shaping policy is also useful for other ISPs and CPs, affected by this policy. In this context, it is required to disclose this information to other ISPs or CPs as well as to users.

③ ISPs with contracts (e.g., transiting or roaming) are required to share information about their respective packet shaping policies. Peering ISPs (with no contracts) are required to provide the same information to those ISPs as well as to users.
Relationship between Upper-tier ISP and Lower-tier ISPs

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 difficult to collect directly from end users.

Rich content (video streaming, etc.)
Coping with the Traffic Increase

- **Additional charge on heavy users?**
  - ✔ User charges are a fixed rate on a best-effort basis.
  - ⇒ Possibility to disturb equality of cost burden among heavy users and light users.
  - ✔ In general, it is acceptable to collect an additional charge from heavy users.
  - ✔ On the other hand, issues to be considered exist:
    - • 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?**
  - ✔ 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 (e.g., upper-tier ISP vs. lower-tier ISP), and increasing burden for enhancing network capacity.
  - ✔ It is appropriate to allow for packet shaping without any bit discrimination.
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 terminal that meets the relevant technical standards, and should support terminal-to-terminal (or “end-to-end”) communication.
(3) Users should be provided with equality of 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.

Change of Market Structure

- Changes on network structure
  (Transition from PSTNs to IP based networks)
- Progress of market integration such as FMC
- Proliferation of new communications such as P2P

Ensuring utilization of networks

“with proper cost allocation” (A) & “without any discrimination” (B)

Network neutrality (from the user perspective)

Equitable cost distribution of networks (A)
Neutrality of cost sharing models for upgrading the communications networks

Equal access to networks (B)
Neutrality of telecommunications layer with respect to other layers
Change of Market Structure and Network Neutrality

Vertical integration

Physical network layer
Platform layer
Communication service layer
Content and application layer

A variety of intelligence around networks
Ubiquitous networks
Users including M2M

A variety of content and applications

Vertical integration

Business model developed by one single player
Collaborative business models

Horizontal integration
Differences between the Internet and NGNs

**Internet**
- a) No scheme to ensure overall QoS on end-end basis.
- b) Each NW is interconnected on a multilayer basis and the Internet itself is an open and autonomous network.
- c) Best effort model to find out best solution through collaboration among anonymous players.

**Next Generation Networks (NGNs)**
- a) IP-based networks are to be restructured from legacy PSTN networks.
- b) Networks are controlled by carriers to ensure QoS and security though the functions of SDP (Service Delivery Platform).
Freedom to Choose Networks

Next Generation Network

Application function
- Application Servers
  - Video phone
  - Content delivery

Platform/Service function
- Session Control
- Authentication
- Security
- Charging

Network function (transmission)
- Core node
- Edge node

Access Networks
- Optical access
- Wireless LAN
- Other accesses

Internet

Interconnection among ISPs

Tier 1

QoS may differ according to network

Security and authentication system may depend on applications used in terminals

Collaboration

A

B

C

D

E

Ubiquitous network

Application Servers

Video phone

Content delivery

Session Control

Authentication

Security

Charging

Optical access

Wireless LAN

Other accesses

Application Servers

Video phone

Content delivery

Session Control

Authentication

Security

Charging

Optical access

Wireless LAN

Other accesses

PCs

Cell phones

Telephones

TVs

Networked home appliances
Interconnection Rules on Next Generation Networks

- **Scope of facilities required to be opened**
  - In addition to NNI and SNI, additional measures should be taken to ensure openness between different layers, taking care of requests by competitive carriers as well as NTT East and West.
  - Necessary to let unbundling rules flexible, reflecting characteristics of IP based networks.

- **Calculation methodology for access charges**
  - Methodology to set access charges reflecting characteristics of IP based networks (appropriate profit level should be achieved for NTT East and West).
  - Developing charge settlement system between NGN and ISPs

- **Setting appropriate terms required for interconnection (equivalency between NTT East & West and competitive carriers)**

- **Other issues including measures to ensure openness for video delivery platform, smooth coalition between fixed networks and mobile networks**

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Interconnection rules for NGN developed by NTT East/West are currently under discussion at Telecommunications Council. (The report is expected to be finalized by the end of March 2008.)
Outline of Dominant Regulations

**Service regulations**

**Restrictions**

- Tariff and price (cap) regulation
  - Restriction of information usage only for specified business
  - Equal treatment of other companies
  - Equal treatment of manufacturers, etc.
  - Firewall with specified carriers

**Interconnection rules**

- Authorization of interconnection tariffs
- Rules for interconnection tariffs (e.g. LRIC)
- Development of interconnection accounts

**Facilities**

- Telecommunications facilities (fixed) designated as essential facilities
  - Access lines and related telecommunications facilities
- Base station lines and related mobile telecommunications facilities

**Criteria**

- Access lines with more than 50% share (designated on a prefectural basis)
- Access lines with more than 25% of share (designated on a business area basis)

**NTT East and West**

**NTT DoCoMo etc.**

**Type I designated facilities (fixed)**

**Type II designated facilities (mobile)**

- Applied as necessary in case of exceeding 25% of the above weight returns
- Applied as one

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Facilities without any essentiality although the number of providers is limited due to availability of frequency
Basic Directions for Reviewing Dominant Regulations

**Market dominance**

- **bottleneck**
  - Share of access lines
  - **Essential facility**
  - Identify the market having possibility to abuse market dominance* (vertically and horizontally)

- **Other market dominance**
  - Market share \( + \alpha^* \)
  - **Caused by oligopolistic market environment**
  - Identify submarkets (converged markets) * (Focus to be shed mainly on the horizontal equivalent competition)
  - Identify the market having possibility to abuse market control power* (vertically and horizontally)

**Add these concepts**

- Leverage of market dominance on relevant markets
- Possibilities of collective dominance in collaboration with allied companies

*mark indicates the possibility to take advantage of competition review mechanism.
Outline of Network Neutrality Issues

**Equitable cost allocation of networks**
- Revealing network congestion (traffic volume doubled in 2 years)

**Equal access to networks**
- Development of NGNs
- Progress of Market Integration

**Necessity for developing cost sharing model on building up additional network capacity**
- Additional charge for heavy users (no specific factor to disturb healthy competition. More detail discussion on reasonable differentials between heavy users and light users etc.) are to be required.
- Additional payment by CPs to ISPs --- not required under the healthy competitive environment in CP and ISP market (dependent on market mechanism)
- Cost allocation between upper tier ISPs and lower tier ISP (possibility for market mechanism not working effectively)

**Necessity of preventing abuse of market dominance (ensuring horizontal and vertical fair competition)**
- Establishment of interconnection rules on NGNs developed by NTT East and West
- Review of dominant regulation in correspondence to market integration

**Progress of Market Integration**

**Establishment of interconnection rules on NGNs developed by NTT East and West**
- Issues to be considered include:
  - Review of threshold definition on market dominance
  - Prevention on abuse of market dominance among plural markets (Collective dominance, leverage of market dominance with other closely related markets)
  - Establishment of mechanism to prohibit market dominance jointly abused by dominant carriers and related entities
  - Utilization of competition review system

**Development of NGNs**

**Review of dominant regulation in correspondence to market integration**

**Necessity for developing cost sharing model on building up additional network capacity**
- Necessary to develop scalable networks to absorb fluctuations of traffic
- Easing traffic congestion by taking advantage of P 2 P technology
- Field trials on traffic dispersion using P 2 P technology

**Basic principles on packet sharing to be specified to avoid disturbing competition, ensuring confidentiality of communications, proper measures to provide Information on packet shaping to subscribers etc.**

**Certain level of criteria on packet shaping to be developed**

**Development of “Guideline for packet shaping”**

**Issues to be considered include:**
- Review of threshold definition on market dominance
- Prevention on abuse of market dominance among plural markets (Collective dominance, leverage of market dominance with other closely related markets)
- Establishment of mechanism to prohibit market dominance jointly abused by dominant carriers and related entities
- Utilization of competition review system

**Consideration of interconnection rules on NGN**

**Consideration of reform of dominant regulations**
Study Group on Internet Policy

1st phase

Study Group on Network Neutrality
( Nov 2006 ~ September 2007 )

New Competition Promotion Program 2010
( revised in October 2007 )

Study Group on Internet Policy
( February ~ December 2008 )

2nd phase

New Competition Promotion Program 2010  ( Revised on 23 October 2007 )

> Development of Environments Intended to Ensure Network Neutrality

In the transition to IP-based networks, a study shall be undertaken concerning the framework for network neutrality, such as fair usage of networks (neutrality of the communications layer to the other layers) and fairness in cost sharing for the networks (neutrality of the cost sharing model for increasing network capacity).

For this reason, MIC shall, based on the "Study Group on Network Neutrality" report (released in September 2007), continue to consider the following regarding several issues over network neutrality.

(b) Consideration of How Network Neutrality and Competition Models should Be

While network structures and market environments are changing drastically in front of us, MIC shall establish a new venue for consideration in FY2007 to extract and summarize a wide range of medium-term policy issues related to how network neutrality and the competition model should be, such as the appearance of business models with earnings models that differ from the existing ones, effects on the competition environment from increasing borderlessness driven by the Internet and the nature of the Internet governance related to it, how market environments should be developed as IPv4 is transitioning to IPv6, and the direction of business expansion in local regions by entities such as ISPs and CATV operators, and draw a definite conclusion, with 2008 as the approximate due date.
Issues to be Considered at Study Group on Internet Policy

SG on Network Neutrality (Phase 1)
- Equitable cost allocation of networks
  - P 2 P network experiment (~ FY08)
  - Development of guideline for packet shaping (Spring 2008)
- Interconnection rules for NGN developed by NTT regional companies (to be concluded by the end of March 2008)
- Review of dominant regulations (to be concluded by the end of 2008)
- Other relevant matters

SG on Internet Policy (Phase 2)
- Follow-up (further study)
  - Development for smooth content delivery systems
  - Other possible solutions for network congestion
  - Business environment for ISPs
  - Internet governance issues
  - Enhancement of CATV
  - Development of models for sharing responsibility
  - Consideration on new business models
  - New competition rules in response to borderless internet
  - Review on impact on market structure in the transition to IPv6
  - Promotion of diversity of access networks
  - Review of legal framework in correspondence to emerging new business models
  - SG on Platform Functions (Feb. – Nov. 2008)

Follow-up (further study)
- Other relevant matters
- Development of overall internet strategy
Broadband Competition Policy in Japan

- Current Status of Broadband Market in Japan
- Outline of “New Competition Policy Program 2010”
- Specific Issues
  - Network Neutrality Issues
  - Revitalization of Mobile Business
Number of Mobile Service Subscribers

(Unit: 10 thousand subscribers)

Number of subscribers | 49 | 87 | 138 | 171 | 213 | 433 | 1,171 | 2,691 | 4,731 | 5,685 | 6,678 | 7,482 | 8,112 | 8,665 | 9,147 | 9,648 | 10,170 |
Rate of increase from previous year | 101.6 | 77.3 | 58.8 | 24.3 | 24.5 | 103.2 | 170.4 | 129.7 | 42.2 | 23.7 | 20.2 | 17.5 | 12.0 | 8.4 | 6.8 | 5.6 | 5.5 | 5.4
Change of APRU for Mobile Business

Change of the ratio by service in the whole APRU

The ratio of the data APRU in the whole APRU

(*) APRU (Average Rate Per User)

(US$ per year) APRU (2003)
**Market share by main mobile phone operators**

H H I (Herfindahl-Hirschman Index), one of the indicators to measure the degree of monopolizing market. Squares the number of each operator’s market share and adds up. Its range is from 0 to 10,000, and means higher degree of monopoly when it closes to 10,000.

( from MIC)
Changes required in Mobile Business

**Business Model 1.0**
- Content & Applications
- Mobile Service
  - Vertically integrated Business models
- Mobile terminal
- Users

**Business Model 2.0**
- Content & Application
- Mobile Service
- Open Mobile Business Environment
- Fixed Service
- variety of ubiquities terminals (including home appliances)
- A various ways to utilize telecommunications services including M2M (machine to machine)

**Progress broadband development and IP transition**

**Ubiquities Network**
- Content application layer
- Platform layer
- Telecommunications service layer
- Network layer
- Terminal layer

**Business Models**
- Model 1.0
- Model 2.0
Review of Sales Model for Mobile Business (1)

Role of sales incentives

- Activating the potential demand for high end terminals by providing users with “low price.”
- Facilitating diversification of services through bundling terminals and services.

Matters to be considered

1. Lack of users’ recognition that cost for terminals is implicitly financed by service price.
2. Rational and equal cost bearing has not been ensured among users.
3. Increase of cost owed by carriers due to increasing sales incentives consisting of one forth of APRU
4. Lack of diversity resulted by unifies sales method
5. Concerns for fair competition caused by that access charge or wholesale price is calculated based on rate base where sales incentives are included.
6. Limitation for diversity of terminal development with only carriers can decide details of terminals.
7. Concerns for letting the terminal market shrink

Necessity for revising the current sales model

( discuss policy to clearly show users the terminal cost and the connection cost )

Current sales model

- Terminal price
- Sales incentive
- Service fee

Lack of transparency caused by bundling terminal price and service price

Existence of unfairness among users

Cost equivalent to sales incentives can be recovered from service revenues within a certain period of time.
Review of Sales Model for Mobile Business (2)

Current Model

User

Terminal price

Sales Incentives

Compensated for sales incentives

Service fee [Monthly]

Partial introduction in 2008
Consideration of full-scale introduction by 2010, at the latest

New Model

User

Terminal price

(initial cost)

Terminal Fee [Monthly]
(equivalent to the sales incentives for terminals)

Service fee [Monthly]

Separation Plan
(separation of terminal fees from service fees)

Period Contract

Status of SIM unlock

- The real significance of SIM locks will disappear through the introduction of service period contracts.
- However, differences in 3G systems do exist (W-CDMA [Docomo / Softbank] and cdma2000 [au]); thus, SIM locks at this time could distort competition.
- In principle, SIM unlock is desirable. Looking at the direction of future development for BWA and the terminal market, by 2010, this issue of SIM unlock will be concluded at the timing of 2010.

Promotion of MVNO entry through reductions in access charge and wholesale price

Clarification of earnings and expenses related to terminal sales (implicit pressure to decrease sales incentives)

Correction of inequality on burden of terminal costs

Promotion of terminal diversification through SIM unlock
Promotion of New Entries of MVNOs

- MVNOs (Mobile Virtual Network Operators) provide telecommunications service without setting up their own wireless facilities.
- MNO goes beyond simple telecommunications service provision to implement vertically integrated business including content/application layer, represented by music and game distribution, and alliance with financial services.
- It is expected players in other areas come as MVNOs into the mobile communications market and build up new business models.
- A “win-win” relationship can be built between MNO and MVNO.

**Service Diversification**

- Users (Enjoy a diversity of services)
- Added Value (Services and terminals)
- MVNO
- Wholesale service and/or interconnections

**New Market Creation**

- MVNO (Entry from a variety of business categories)
- Linkage of existing services with mobile services
- Creation of New Markets Economic Revitalization
- games, e-money and more

Revitalization of the mobile business and achieving service diversification through promotion of new entries as MVNO into the mobile market
Maximize benefit for Japanese users and help give Japan’s ICT industry a comparative advantage
Any Question?