(Tentative translation)

Draft Report of the Study Group on a Framework for Competition Rules to Address the Transition to IP-Based Networks

"New Competition Promotion Program 2010"

July 2006

Introduction

The Study Group on a Framework for Competition Rules to Address the Transition to IP-Based Networks was set up in October 2005 and has been studying the directions of competition rules to address the transition to IP (Internet Protocol) -based networks in the telecommunications sector. The Study Group has published a draft report in July 2006, and is currently implementing the procedure to request public comments. Its outline is summarized below. The Study Group is scheduled to finalize its report in mid-September, 2006.

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Summary of the Draft Report

Chapter 1 Changes in the Competitive Environment in the Transition to IP-Based Networks and the Necessity for Revising Competition Rules

1. Changes in the competitive environments in the transition to IP-based networks

(1) The spread of broadband

Extensive competition in the broadband service market has brought about decreasing costs and higher-speed connection to the broadband services. As a result, Japan has become one of the countries in which its citizenry can enjoy the benefit of the cheapest and fastest broadband services in the world.

(2) Development of horizontal market integration

Market integration in the transition to IP-based networks has been eroding the traditional distinction among service categories. As a result, the competition within individual markets defined by conventional service distinction (intra-modal competition) has been steadily losing its rational, to be replaced by incremental realization of competition in integrated markets (inter-modal competition). Horizontal market integration is expected to be realized through convergence of transmission platforms.

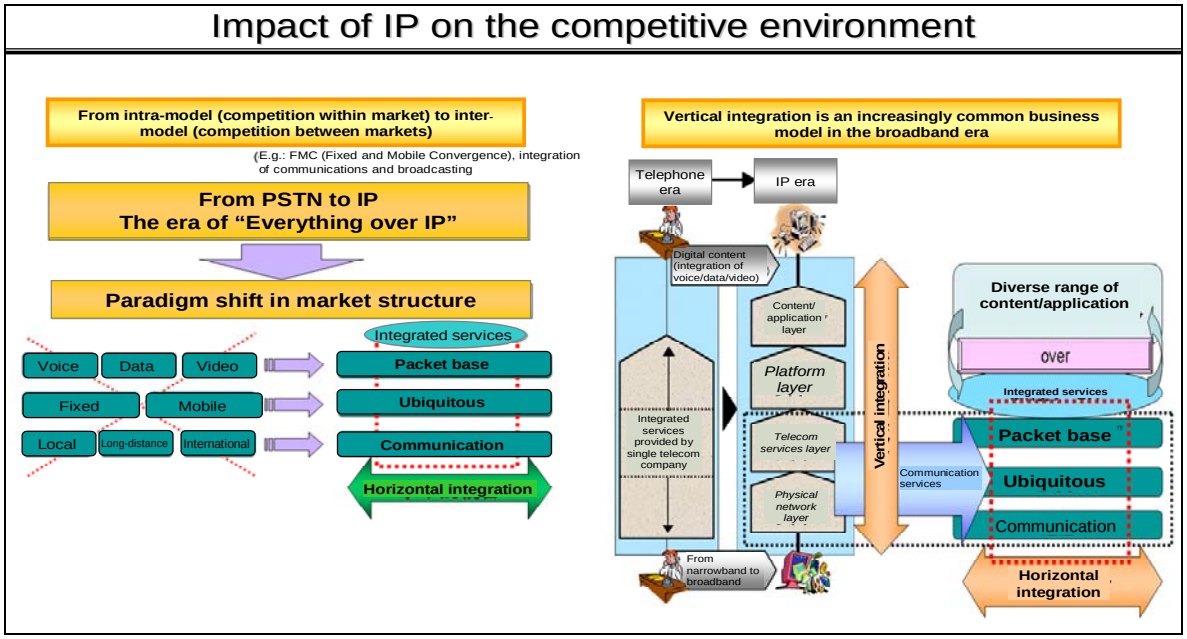
(3) Development of vertical market integration

Along with the progress in the development of the broadband service market and the transition to IP-based networks, business models have been changing dramatically. Here, the layered competition model is used to analyze changes in these business models.

The layered competition model defines four layers for analysis: i) the physical network layer, ii) the telecommunications service layer, iii) the platform layer (functioning to smooth out distribution of content and application over the telecommunications service layer, e.g. authentication, charging, QoS management and copyright control and the like), and iv) the content/application layer.

Looking at the latest business models, it can be said that an integrated business model has been established that provides services ranging from upstream through to downstream layers. This vertical integration business model is offered either by a

single player or by a combination of players. This approach is made possible by the separation or “unbundling” of layer functions to address progress in the transition to IP-based networks. Here, the functions provided in each layer are modularized and each module is combined to produce integrated services with greater added value.



2. The necessity for a revision of competition rules to address the transition to IP-based networks

Since the revised Telecommunications Business Law was enacted in 2004, the competition rules in the telecommunications market shifted from “ex ante” regulations to “ex post” regulations, whereby “ex ante” regulations are currently focusing mainly on dominant regulations to prevent abuse of market dominance.

After these changes in the competition model were implemented, however, horizontal and vertical market integrations have emerged quite rapidly and full-fledged progress in the transition to IP-based networks has been viewed as a realistic part of the road map for policy consideration. For this reason, it has become necessary to examine the framework for competition rules from the viewpoint of the broadband market as a whole by utilizing the layered competition model.

Given that Japan has developed the most advanced broadband infrastructure in the world, it stands to reason that Japan may also have to face up to new issues before other countries. The mission of this Study Group is therefore to define a road map for deliberation on competition models at a time when business models and network structures in the IP era are starting to take concrete.

Chapter 2 Basic Principles for Competition Policy in the Transition to IP-based Networks

1. Basic principles for competition rules in the transition to IP-based networks

It is necessary to start with defining the basic principles, based on which competition rules need to be developed. The five principles for competition policy are thus summarized as follows:

i) Ensuring fair competition at the telecommunications layer (comprising the physical network layer and the telecommunications service layer);
ii) Ensuring fair competition focusing on the vertical integration business model;
iii) Ensuring competitive and technological neutrality;
iv) Protecting consumer interests; and
v) Ensuring that competition rules are flexible, transparent and consistent.

2. Time frames for the consideration

This report discusses the framework of competition rules by setting the early 2010s as a milestone. There are three main reasons for this:

i) 2010 is the final target year of “New IT Reform Strategy” (adopted in January 2006 by the IT Strategy Headquarters of the government) and the “u-Japan Strategy” (released in December 2004);
ii) The full-scale construction of IP-based next-generation networks (NGNs) by each carrier will be largely realized with substantial progress in the migration to IP-based networks by the early 2010s with IP services becoming the norm rather than the exception; and
iii) The convergence and/or alliance of telecommunications and broadcasting services is likely to be well advanced by this time.

Chapter 3 A Framework for Interconnection Policy

1. Appropriate balance between facility-based competition and service-based competition

(1) Basic concept

There are two approaches to promoting competition in the telecommunications sector: facility-based competition where each carrier builds its own networks and other relevant facilities to provide services, and service-based competition where

dominant carriers are forced to make their bottleneck facilities available to competitive carriers to provide services.

As of the end of FY2005 (March 2006), NTT East(Nippon Telegraph and Telephone East Corporation) and West(Nippon Telegraph and Telephone West Corporation) accounts for some 94% of local telecommunications markets in Japan in terms of the number of subscriber lines. In the current market structure, then, NTT East and West are in a position, where there is a reason to be concerned about an abuse of its market dominance. The competition mode in the telecommunications market is thus in a transitional phase from monopoly to competition.

For this reason, the competition model in the transition to IP-based networks should seek to promote both facility-based and service-based competition as well as to achieve an appropriate balance between the two, for instance, by abolishing the dominant regulations once concerns about abuse of market dominance associated with “bottleneck” facilities have been judged to be eliminated.

(2) Market environment and competition policy in Europe and the United States

A variety of policy implications can be found in the competition rules employed in Europe and the United States. It is necessary, however, to view each policy direction based on understanding of differences in market structure and the historical background to the competition policy adopted.

In the United States, competition in the telecommunications layer mainly revolves around the CATV operators and RBOCs, and takes the form of facility-based competition predicated on direct rivalry between these two major groupings. In Japan, by way of contrast, NTT East and West continue to dominate the physical network layer with 94% of subscribers’ lines. Furthermore, the restructuring of NTT in 1999 retained the investment relationships between the various companies of the group, and NTT holding company and NTT East and West are still subject to regulations under the NTT Law. Thus, the development of telecommunications markets following the breakup of AT&T and the resulting current market structure in the United States are quite different from the situation in Japan.

In many ways, the market structure in EU member nations tends to be similar to that of Japan. However, one of the key characteristics of the EU market structure is the way in which the dominant carrier in one member nation often engages in investments and tie-ups with carriers in other member nations and/or resells services locally in competition with existing carriers. This approach helps to promote competition in the telecommunications sector throughout the EU as a whole. However, in the case of Japan, since cross market entry between NTT East and West has not been realized under the holding company system, there are different aspects in the form of competition in telecommunications market from that of the EU.

(3) Approaches to promoting facility-based competition

As the first step in encouraging facility-based competition, it is necessary to promote opening up of the line infrastructure. With respect to basic infrastructure such as telegraph poles and conduits that dates back to the time when NTT was still a public corporation, several trials are currently underway such as that of simplification of procedural requirements for laying out of optical fiber on telegraph poles. Followed by evaluation of the trials due to be drawn up in September 2006, it is appropriate to finalize the simplification procedures and incorporate them into "*Guidelines for the Use of Infrastructure such as Telegraph Poles and Conduits by Public Utilities"* and move to their full implementation.

An associated follow-up system comprised owned by participating operators should also be set up, together with a database of disputes and other relevant information that will help to strengthen dispute settlement functions.

Secondly, with respect to optical fiber of local governments, it is appropriate to further encourage opening up of optical fiber networks in accordance with the "*Next-Generation Broadband Strategy 2010"* (The draft version was released in June 2006.).

Finally, it is important to promote introduction of new wireless access technology, such as the latest wireless LANs and mobile wireless broadband systems using the 2.5 GHz band.

2. Basic viewpoints concerning interconnection policy

(1) Background of interconnection policy

Interconnection policy has traditionally focused on bottleneck facilities owned by NTT East and West and on promoting open access to their bottleneck facilities so that NTT's competitors can offer services under equivalent terms and conditions as NTT East and West. The ultimate objective of this approach is to create a fair competitive condition in the industry and thereby encourage service-based competition.

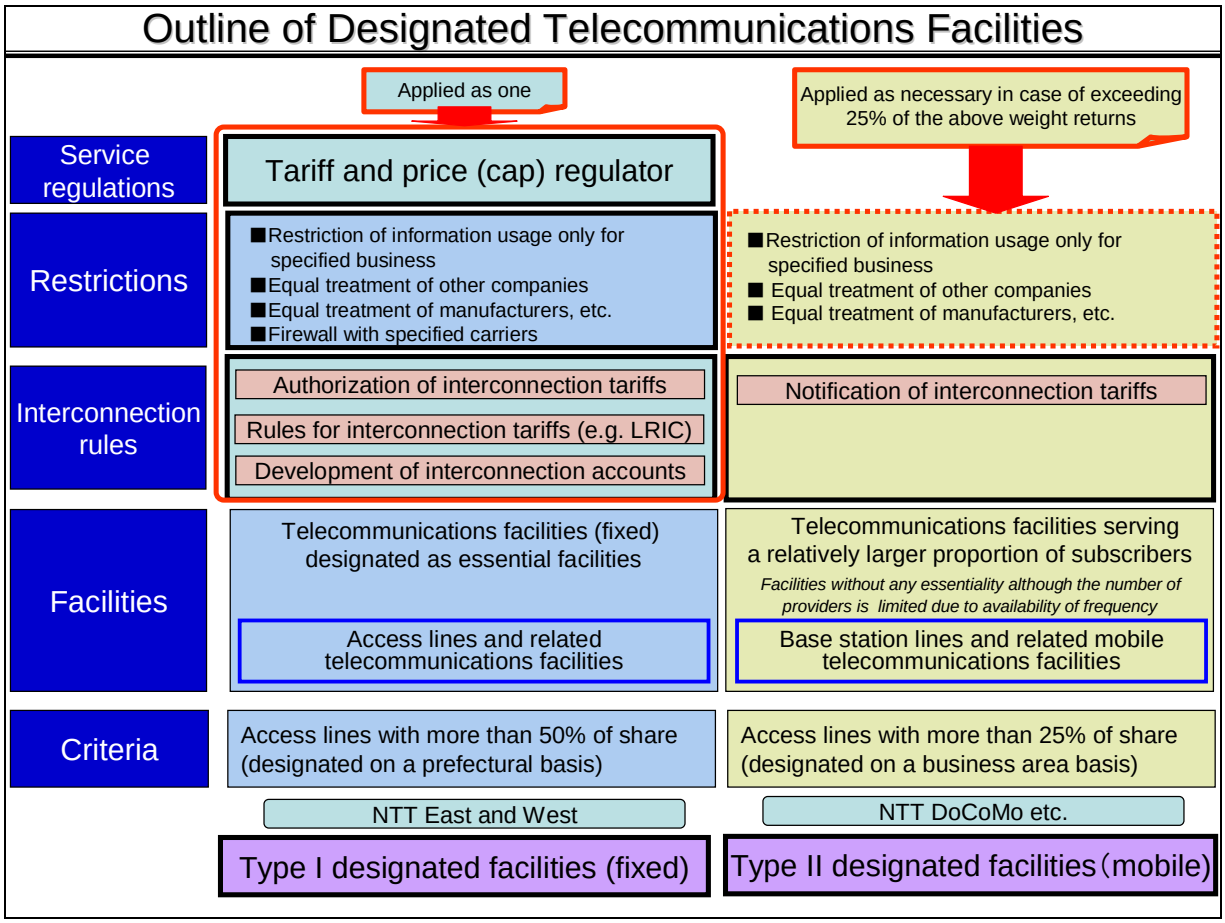
(2) Basic policy direction of interconnection policy

Given that NTT's competitors are obliged to use bottleneck facilities owned by NTT East and West, the interconnection rules need to continue to play a key role in promoting competition among operators.

3. A framework for designated telecommunications facilities system[1]

(1) Viewpoints for consideration

The Study Group reviews current criteria used for designation of telecommunications facilities, as well as directions of the policy in response to the alliance within the NTT Group as outlined in the NTT mid-term management strategy, and a framework of the designated telecommunications facilities system are also reviewed.



(2) Criteria for designated telecommunications facilities system

[1] Regulations imposed on dominant operators in the market as per the provisions of the Telecommunications Business Law, classified into Type 1 designation (for fixed-line markets) and Type 2 designation (for mobile markets).

Type 1 designated facilities are subject to mandatory access provisions such as unbundling and interconnection pricing controls. Owners of designated facilities are also subject to a raft of practice regulations requiring, among other things, equal treatment for all operators. Only facilities that carry more than 50% of subscriber lines within a prefecture can be designated. NTT East and West currently have Type 1 designated facilities in every prefecture of Japan.

For Type 2 designated facilities, operators are required to submit interconnection stipulations. Facilities that serve more than 25% of terminals within the administrative zone can be designated. NTT DoCoMo Group, KDDI and Okinawa Cellular currently have Type 2 designated facilities. Additional regulations requiring equal treatment of operators apply to facilities that account for more than 25% of revenue. NTT DoCoMo Group is currently subject to these regulations.

Designation criteria for Type I (fixed-line) designated telecommunications facilities currently operate copper cable and optical fiber lines as one. This approach should be continued for the time being, in the absence of any convincing reason to distinguish between the two, particularly given that:

i) Copper cable and optical fiber are both used for the provision of broadband services, which are highly possible alternative (substitutable) services from the viewpoint of the users;
ii) Both are laid in existing line infrastructure; and
iii) NTT East and West effectively have the advantage in upgrading existing copper cable to optical fiber.

In light of the different characteristics of the fixed-line markets and mobile markets, it is not considered appropriate at this time to alter the designation criteria for Type II (mobile) designated telecommunications facilities by introducing a higher EU-style threshold of 40% - 50% and imposing dominant regulations as used on Type I (fixed-line) designated telecommunications facilities.

(3) Mid-term management strategy for the NTT Group and a framework for the designated telecommunications facilities system

1) Alliance between NTT East/West and NTT DoCoMo

While the provision of FMC (Fixed Mobile Convergence) services offered through the alliance between NTT East and West and NTT DoCoMo is basically considered desirable, the combined power of these two dominant presences raises concerns about the potential increase in factors that may act as a barrier to competition in the fixed-line and mobile markets respectively.

FMC services could be provided via interconnection between the two and/or the MVNO model (i.e, NTT East/West become MVNOs of NTT DoCoMo (MNO)), although such an approach is necessarily predicated on fair and equivalent treatment of competitors. FMC services through sharing facilities of NTT East/West and NTT DoCoMo should not be basically permitted from the viewpoint of ensuring fair competition. It is appropriate to require approval of NTT East and West's business expanding relief[2] for providing those services, and to impose on NTT East and West adequate conditions that ensure fair competition.

2) Cooperation between NTT East and West and their subsidiaries/affiliates

[2] Under the NTT Law, NTT East West are restricted to provide regional telecommunications (intra-prefecture telecommunications).Although, if there is no concern to do harm to fair competition, with the approval of the minister of MIC, NTT East and West are able to do business other than regional telecommunications ,such as inter-prefecture telecommunications, using management resources for regional telecommunications.

NTT East and West have set up a number of subsidiaries and affiliates as a means of business development and expansion. In many cases, these involve establishments of subsidiaries for outsourcing purposes designed to achieve management efficiencies at NTT East and West. As a result, the total NTT East and West workforce has radically dropped from 127,000 (as of the timing of NTT's reorganization in July 1999) to around 20,000 (as of March 2006).

In this case, even if dominant regulations are applied to NTT East and West, they may have no effect on subsidiaries and affiliates, potentially allowing NTT East and West to circumvent the dominant regulations and diminishing the actual effect of rules designed to ensure fair competition.

Accordingly, it is important to commence immediately the study on new competition rules to prevent abuse of joint or collective market dominance created by NTT East and West in conjunction with their affiliates and subsidiaries.

3) Other Cooperation of the NTT Group

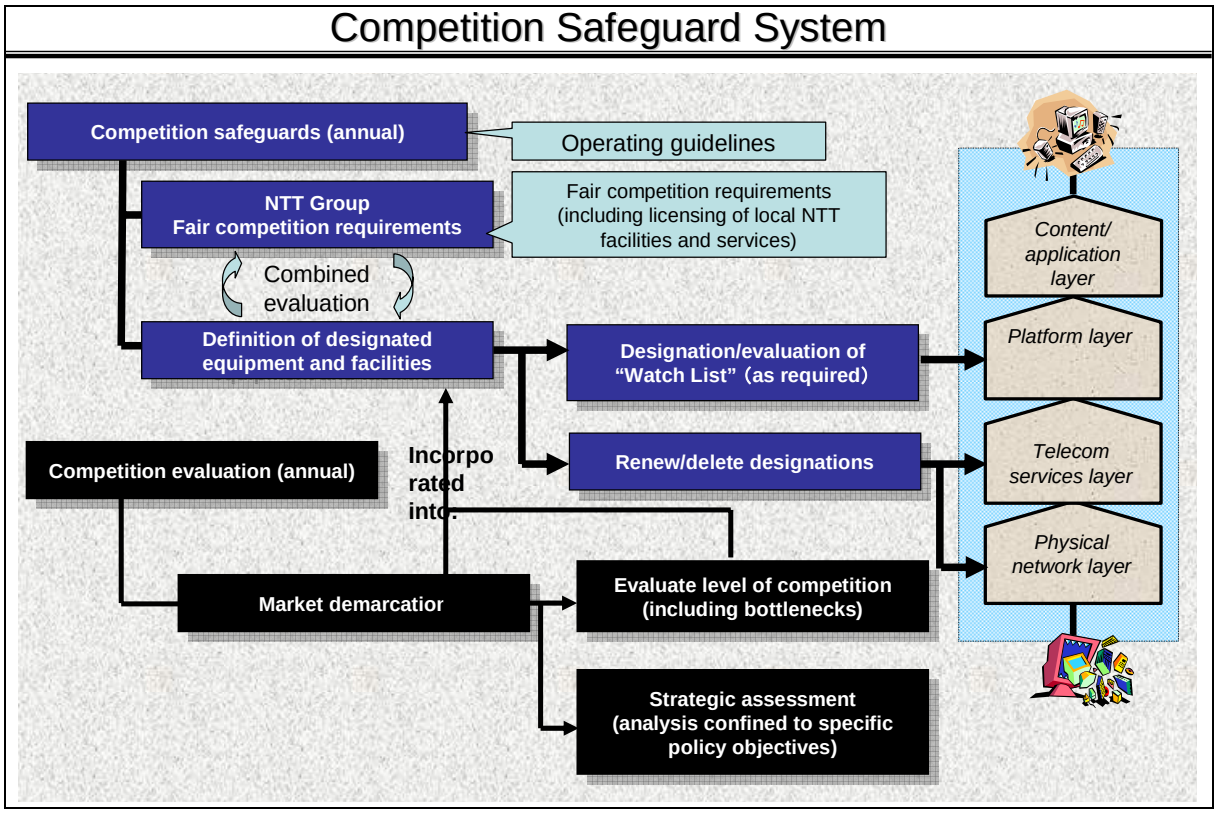
With respect to cooperation among NTT East and West and other companies in the NTT group, it is appropriate to basically reorganize current competition safeguards comprehensively, and regularly conduct verification to ensure that fair competition requirements are met. (*See the following section (5)*)

(4) Flexible review of the coverage of designated telecommunications facilities

In order to allow flexible review of the coverage of designated telecommunications facilities to accompany progress in the transition to IP-based networks, it is necessary to operate the system by bearing in mind two key factors: (i) review designated telecommunications facilities focusing on a functionality perspective and (ii) designate telecommunications facilities taking into consideration "platform" functionality (e.g. authentication, charging, and QoS management).

(5) Establishment of "competition safeguard system"

The establishment of "competition safeguard system" in which the existing designated telecommunications facilities system is reorganized comprehensively and systematically should be implemented promptly. Specifically, this should include the following:



i) Coverage of designated telecommunications facilities should be reviewed annually in conjunction with a verification of the efficacy of the current fair competition requirements imposed on the NTT Group.

ii) Coverage of designated telecommunications facilities at the telecommunications layer should be predicated on functionality considerations in verification. Designation of platform layer functions should also be taken into consideration to prevent abuse of market dominance by NTT East and West at higher layers.

iii) In designating platform layer functions as designated telecommunications facilities, they should be monitored with a clear marking of "Watch List" when there is the likelihood of creating barriers to the competition. When a high likelihood of abuse of market dominance is found to exist, the relevant functions should be subject to telecommunications facility designation without any delay.

iv) If the review process concludes that the NTT Group has not satisfied the fair competition requirements to which it is subject, the government shall take action considered appropriate.

v) Guidelines shall be formulated when this system is put into operation.

Toward this aim based on the considerations outlined above, supporting documentation such as "*Guidelines for the Operation of a Competition Safeguard System"* should be formulated as soon as practicable, and brought into operation since FY07 (starting from April 2007).

Similarly, study on the mechanism for preventing abuses of joint or collective

market dominance involving NTT East and West and its subsidiaries and affiliates should be commenced as soon as practicable.

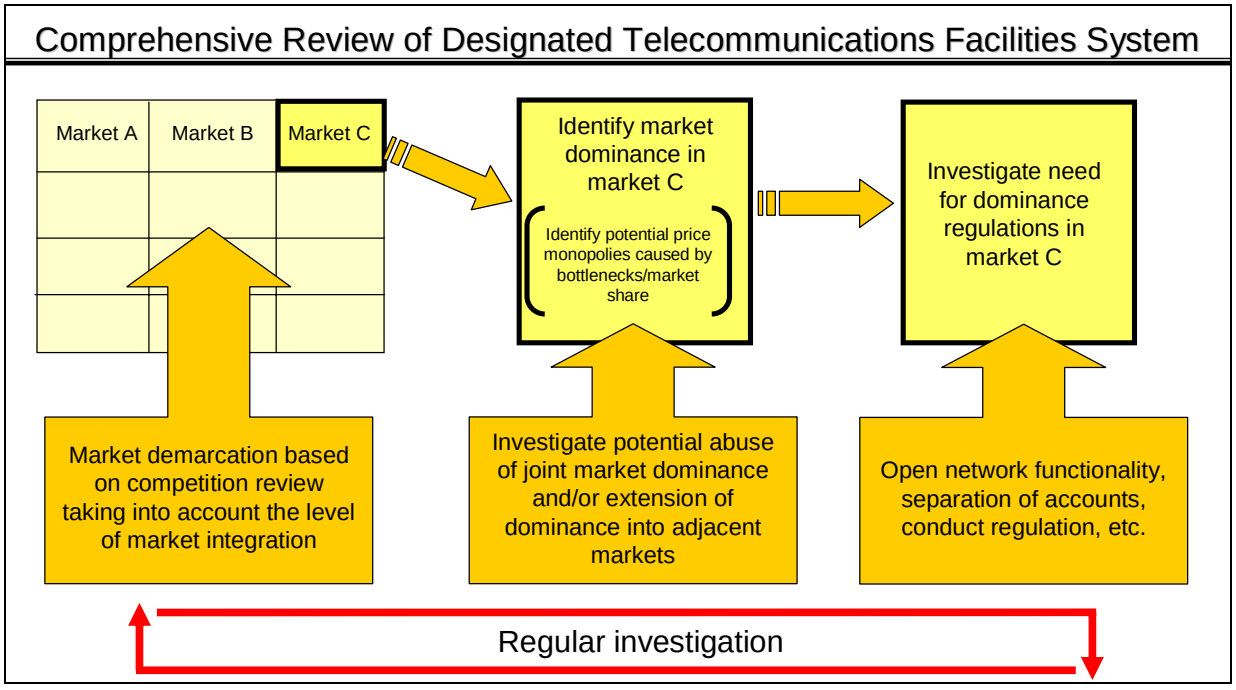
A comprehensive review of the designated telecommunications facilities designation system (*See section (6) below*), keeping in mind the relationship with the ongoing competition review system, should incorporate legislative amendments where appropriate.

(6) Comprehensive review of the designated telecommunications facilities system

The current basic framework for designated telecommunications facilities system, with its distinction between Type I (fixed-line market) and Type II facilities (mobile market), should be reviewed as soon as practicable assuming the possible rapid development of market integration of fixed and mobile markets accompanying the progress in the transition to IP-based networks.

Specifically, the current approach should be replaced with a new framework involving:

i) Demarcation of markets based on the current competition review system; then
ii) Recognition of market dominance capabilities within and/or between layers in each market thus defined; and finally,
iii) Based on the recognition, designating telecommunications facilities subject to opening access and/or applying conduct regulations to operators in a market-dominant position as appropriate.



Further considerations should include improvement of the competition review system employed by the Ministry of Internal affairs and Communications (MIC), particularly with respect to the recognition of market dominance, including joint (or collective) market dominance and leverage. The results of this analysis should be incorporated into a comprehensive review of the designated telecommunications facilities system (including development of a specific framework) to be introduced by 2010.

(7) Other tasks to be considered

Other pressing tasks that should be studied as soon as practicable include:

i) Reappraisal of the status of local IP networks owned by NTT East and West (These networks are currently designated as bottleneck facilities and their status should be reviewed in the progress of development of NGNs);
ii) Review of collocation rules, encompassing proposals such as mandatory provision of WDM facilities where interoffice dark fiber capacity is unavailable, regulations governing use of space in exchange buildings, and collocation rules for telegraph poles; and
iii) Regulations designed to ensure a further equal footing condition for NTT East and West service divisions and their competitors.

4. A framework for ensuring a competitive environment as to NTT East and West's next-generation networks (NGNs)

NTT East and West have stated that they plan to introduce full-scale next-generation network services in the latter half of FY2007. It is important to ensure that competitors are in a similar position to launch their own services at the same time. Toward this aim, MIC should begin study on interconnection rules for next-generation networks. Recommendations should then be submitted to the Information and Communications Council on new rule systems identified as important and necessary in order to generate informative outcomes as soon as possible.

One of the key considerations in the above-mentioned deliberations should be guaranteeing open access to video distribution platforms (keeping in mind the launch of IP multicast broadcasting services by terrestrial broadcasting companies).

It needs the permission of NTT East and West's business, expanding relief to provide commercial NGNs services. The permission requires taking measures to ensure fair competition based on related guidelines. It is necessary to review the aim of this system that is "using management resources for regional telecommunications." Moreover, it is necessary to keep in mind that such permission relatively does damage to the aim of NTT law that NTT East and West are the companies which

provide regional telecommunications.

5. Revision of the accounting system related to Type I designated facilities

In light of the changes in the market structure, a study group of experts should be set up to discuss the future of the interconnection accounting system, including aspects such as cost allocation standards and official equipment life expectancy standards in the transition from PSTNs to IP-based networks. The study group should aim to have recommendations delivered by the summer of 2007.

6. A framework for calculating interconnection charges

(1) A framework for PSTNs interconnection charges

In light of the anticipated deduction of NTS (non-traffic-sensitive) costs to be completed by FY2009, the Information and Communications Council review of forthcoming PSTNs interconnection charges should aim to produce concrete recommendations for FY2008 – 09 predicated on modifications to the existing LRIC (Long-Run Incremental Cost) model. The review should also consider a future framework of calculating interconnection charges in FY2010 and beyond, with recommendations to be delivered during 2007.

A comparative analysis should be performed on the three main options for calculating interconnection charges from FY2010 onwards — retaining the existing LRIC model, determining charges based on actual costs, or switching to a “bill and keep” model — in order to identify the best option.

The review of PSTNs interconnection charges should take into account uniform charging between East and West.

(2) A framework of optical fiber interconnection charges

In light of anticipated strong demand for optical fiber-based services in the medium term, the “forward-looking cost method” is still considered appropriate for optical fiber interconnection charges. Consideration should be given to future investment associated with the number of operating fibers and expected life of installed optical fibers (currently stipulated as 10 years), as well as investment risk associated with the demand by competitors.

It is worth pointing out that regulations requiring NTT East and West to open up their optical fiber networks are not intended to prevent the operators from gaining a fair return on plant and equipment investment. Provided that investments are made on the basis of appropriate investment risk and fair rate of return, NTT East and West should be able to generate profits from leasing infrastructure to competitors.

It is appropriate for MIC to start considering the interconnection charges for

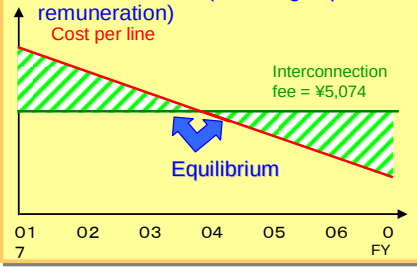
optical fiber based on the considerations outlined above, followed by the application by NTT East and West for approval to alter interconnection tariffs. In this consideration, accountability would be required of NTT East and West. Where reasonable grounds exist to warrant changes to interconnection charges, NTT East and West would be able to apply to MIC at any time deemed appropriate.

Interconnection charges for subscriber optical fiber

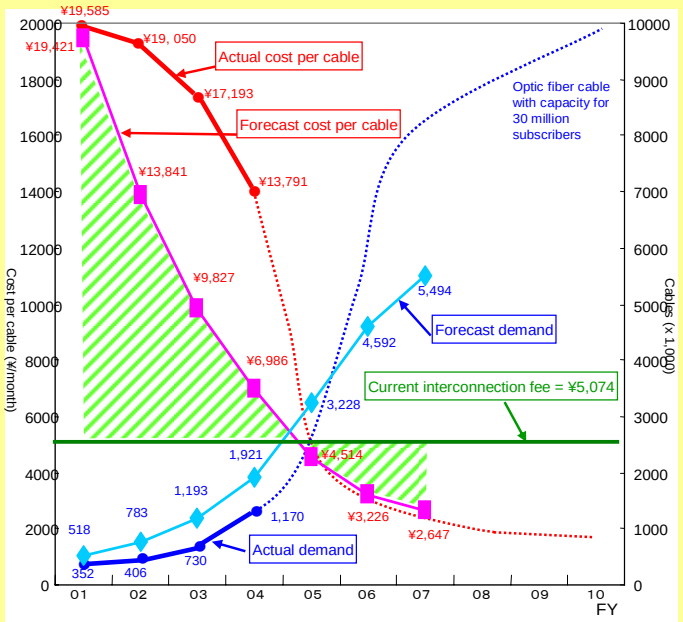
Calculation of interconnection charges for subscriber optical fiber

Forward-looking cost method — based on unit price and demand forecasts for the seven-year period of FY01-07

⇒ Structure designed to recoup investment costs (including capital remuneration)



Subscriber optic fiber interconnection charges versus demand forecasts



Dotted lines represent scenario where 30 million households are using optical fiber services by the end of FY2010.

(3) Other topics that should be studied

Recommendations on interconnection pricing for next-generation networks owned by NTT East and West are required quickly, given that commercial services are due for launch in the latter half of FY2007. A review is also required into the Stack test (within FY2006) and the feasibility of abolishing “ex post” settlement systems for interconnection charges.

7. Approach to Coping with the Diversification of Interconnection Types

(*See the full text in ANNEX-1*)

With respect to peering and transit interconnection among ISPs, there is a concern of distorted soundness of account settlements between operators through the traditional market mechanism for ISP interconnections against the backdrop of changes in the relationship between domestic Tier-1 ISPs and Tier-2 ISPs, as well as

migration of carriers' networks to IP-based networks. As a result, there is a possibility of emergence in the near future of a number of disputes with regard to ISPs' interconnections.

Thus, in order to prevent the barriers to fair competition, such as abuse of market dominance in the ISP market from working, it is desirable for MIC to take necessary measures, including preparing for guidelines for settling disputes involving ISPs' interconnections, in addition to reinforcing and continuing monitoring of the relevant markets and utilizing dispute resolution functions.

8. A framework for the promotion of competition in the mobile communication markets including MVNOs

It is appropriate to facilitate new entrants of MVNOs to promote competition in the mobile market under the frequency restrictions. By promoting the entry of MVNOs into the mobile market from other business domains, while MNOs advance to another business domain such as financial service, new business models will be birthed, and a new "win-win" relationship is expected to be generated through partnership between MNOs and MVNOs.

As for the legal relationship between MNOs and MVNOs, it can take either the form of wholesale telecommunications services or that of interconnections between the two. Basically, whichever form is taken is left up to the concerned parties. However, in order to encourage healthy development of the MVNO market, it is appropriate to revise the "*MVNO Business Guideline*" to clarify the terms and conditions concerning the relationship between MNOs and MVNOs in the Telecommunications Business Law.

Chapter 4 A Framework for Tariff Policy

1. Basic viewpoints concerning tariff policy

Multi-staged deregulatory measures have been taken for telecommunications services pricing in order to move towards a "detariff" position and minimize the intervention of government authorities. At present, tariff policy represents a combination of two policy objectives: "preventing abuse of market dominance" and "protecting the interests of consumers".

2. A framework for price cap regulations

Price cap regulations should be reviewed ahead of the forthcoming standard price index ("x" value or the efficiency index) review due in FY2009, particularly with respect to the standard price index during the transitional phase to IP-based networks

and abolishment of the sub-basket for subscriber lines. The review should also consider the relationship between price cap regulation and the universal service system.

3. A framework for new tariff structures

Provided that the costs associated with providing telecommunications services are adequately recouped from user charges and advertising revenue, pricing structures for telecommunications services provided under newly emerging business models are considered appropriate in terms of tariff policy.

However, consideration should also be given to a review of a service-specific accounting system and the formulation of a set of guidelines on improper pricing criteria. In light of the diversification of pricing structures, discussions should encompass the following areas :(i) framework for “best-effort” service prices, (ii) upgrading of user protection legislation, and (iii) developing a standard price index.

Chapter 5 A Framework to Ensure Network Neutrality

(*See the full text in ANNEX-2*)

1. Changes in network structure and network neutrality

In the transition to IP-based networks, ensuring network neutrality from the perspective of end users has been gaining importance, in accordance with the following three specific principles:

(i) IP-based networks should be accessible to users and easy to use, allowing ready access to content and application layers;
(ii) 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”) telecommunications; and
(iii) Users should be provided with equality of access to telecommunications and platform layers at a reasonable price.

The two key policy evaluation parameters for network neutrality are “equal access to networks” and “equitable cost distribution of networks.”

2. Equal access to networks

Intelligent functionality such as service control features can be added to IP-based networks at the user end (i.e., the terminal layer and the content/application layer). Meanwhile, carriers are increasingly incorporating intelligent functionality into their IP-based networks while developing next-generation networks.

In the progress of deployment of IP-based networks, if intelligent functionality is contained only in the network domain, there should be a limit to the level of technological innovations and the benefits should be confined to the network domain only. It is therefore necessary to allow for implementing intelligent functionality both within the network and at the user end. In the vertical integration business models, this means ensuring that no layer can be controlled or dominated by any other layer. To this end, it is important to guarantee full and genuine open access among all layers, thereby ensuring equality of access to the network.

This can be achieved by a variety of factors such as forcing dominant carriers to permit open access to platform features, preventing unreasonable restrictions on specific application features, and ensuring open access to terminal layers.

3. Equitable cost distribution of networks

In Japan, packet transmission traffic has increased exponentially in recent years (increase by 1.5 to 2 times annually). The causes of this increase have been generated in many areas, from higher layers through to lower layers, and it is difficult to establish a cause-and-effect relationship between the volume of traffic associated with specific factors. For this reason, a neutral cost-sharing model for boosting overall network capacity is required.

More specifically, considerations should be given to issues such as the possibility of a charging system based on bandwidth, measures to ensure appropriate charges for “rich content” distribution, and the relationship between cost-sharing models and the rapidly evolving technologies.

4. The debate in the U. S. regarding network neutrality

The Federal Communications Commission (FCC) adopted the policy statement; "four principles to encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet" Accordingly, there is a move in Congress as well to legislate network neutrality.

5. A framework for studies

The studies over network neutrality are not merely a theoretical construct; this neutrality serves as a general framework for specific policy initiatives in a wide range of areas. Given that Japan has a highly advanced broadband infrastructure, network neutrality issues are likely to arise here first. For this reason, MIC should launch a further study on network neutrality with industry representatives and other interested parties, with the first phase to be completed by the summer of 2007.

Chapter 6 Other Policy Issues to be Considered in the Transition to IP-Based Networks

1. A framework for promoting competition at the terminal layer

Certification systems should be reappraised, starting from 2006, with a view to promoting competition in the area of IP-compatible terminal functionality (i.e., basic functions such as communication quality, security and reliability, and terminal and network connectivity). Recommendations should be delivered during 2007.

It is equally important to promote competition in mobile terminal markets through initiatives such as possible options to abolish sales subsidies and removal of SIM (Subscriber Identity Module) locking. Toward this aim, a forum for discussion among industry representatives and other interested parties should be set up, with recommendations to be delivered by summer 2007.

2. Strengthening dispute settlement functions

With IP technology expected to continue driving the diversification of business models, it is increasingly important to upgrade dispute settlement functions in the Telecommunications Dispute Settlement Committee. For this purpose, it is appropriate for the Committee to deal with the disputes between carriers and upper-layer players such as content providers. In addition, it is appropriate to add the mediation and arbitration processes as well as resolutions with regard to the disputes between competing operators and owners of facilities such as telegraph poles.

Opinion submission procedures should be reviewed during FY2006 to prevent disclosure of information that could be used to identify participants where reasonable grounds for confidentiality are deemed to exist.

3. Revision of universal service[3] system

(*See the full text in ANNEX-3*)

In light of the transition from PSTNs to IP-based networks, a feasibility study should be conducted on the scope of the universal service system and the associated cost calculation methods, with recommendations to be delivered during 2007,

[3] In Japan, universal service legislation was enacted in June 2002. The universal service system is designed to provide subsidies towards the costs associated with the provision of universal service (calculated using the LRIC model) where such costs exceed revenue. To date, however, there have been no cases of net costs in excess of revenue and so the system has never been used.

In April 2006, however, amendments to the universal service mechanism introduced the concept of "unviable regions," defined as those where costs exceed 2σ relative to the national average figure. In these unviable regions, net costs are recalculated using the LRIC model, with the sum total of portions in excess of the national average defined as the net cost. The amended universal service scheme will be launched during FY2006. As a result of the amendments, the calculation of compensation payable to each carrier will now be based on the telecommunication numbers owned (This includes both fixed-line, 050 base VoIP service and mobile carriers.), rather than annual turnover.

followed by a full investigation in around 2009.

If the traditional concept of universal service is continued to be employed, there is the risk of being unable to adapt to rapidly changing technology, since the definition of universal service would have to be continually redefined, and the system would no longer function effectively. Thus, as one of the options, the service-oriented “universal service” approach should be replaced by the idea of “universal access” — that is, focusing on the cost to maintain the access lines instead of focusing on the cost to provide services and ensuring that everybody has equal access to broadband services whatever access technology is used.

4. Clarification of the market exit rules

A review should be conducted during FY2006 to identify areas for improvement in relation to existing procedures for the suspension and cessation of business activities. It may be necessary to formulate formal guidelines or the equivalent.

5. Other actions required of government

Government can make an active contribution in a number of areas. These include:

- Ensuring the transparency of competition rules (by setting up a portal site for competition policy, for example);
- Deliberating on the future of telecommunications numbering systems;
- Addressing issues at the international level, such as international disputes over peering; and
- Ensuring that domestic competition rules are consistent with the international marketplace.

Chapter 7 Toward A Formulation of New Competition Promotion Program

As soon as practicable, the MIC should set to work on formulation of a new policy agenda called “*New Competition Promotion Program 2010”* setting out a framework of competition rules to address progress in the transition to IP-based networks, based on the recommendations of the Study Group.

The New Competition Promotion Program 2010 should be reported to the Information and Communications Council. The Information and Communications Council should also be provided with annual progress reports detailing implementation of the Program. A PDCA process should be followed, including soliciting of opinions and suggestions from a broad range of sources. The Program

itself should be reviewed on a regular basis.

ANNEX-1

Approach to Coping with the Diversification of Interconnection Types (Chapter 3, Section 7)

The interconnection among the ISPs making up the Internet uses a hierarchical configuration with the Tier-1 providers in US at the top. In Japan as well, the configuration is also hierarchical, with the primary ISPs connected to Tier-1 and secondary ISPs connected to these primary ISPs. There are two types for interconnection between ISPs: peering (in which both ISPs exchange traffic with each other) or transit (in which the traffic from other ISPs is carried to “the Internet”). In general, peering is free[4], while a fee is charged for transit.

By paying for transit to interconnect to a higher level ISP, a lower level ISP can gain access to “the Internet”. Meanwhile, peering between two primary ISPs or secondary ISPs enables these ISPs to exchange traffic with one another. There are two types of peering: public peering, which is conducted by an Internet exchange (IX), and private peering, which does not go through IXs.

Normally, a confidentiality agreement is concluded for such interconnection agreements among ISPs. For this reason, it is difficult to determine their actual status in any detail, but basically, competition among ISPs has functioned comparatively effectively up to now. With the transition to IP-based networks, it is possible that new problems relating to the interconnections among ISPs may occur, however, as a result of changes in market configuration.

(1) Issues for study

1) Potential for structural changes in the interconnection among ISPs

Firstly, there is a possibility that structural changes will occur in the interconnections among ISPs. Interconnection to the Internet in itself has been viewed as having value, and within the hierarchical tier system, the interconnection among ISPs has functioned well.

In recent years, however, many content delivery services for video and other rich content have appeared, and traffic has come to be concentrated at ISPs that have agreements with specific content providers. In other words, it has been recognized that securing pathways to specific popular sites has market value, and interconnections have been concentrated at ISPs that provide access to providers that provide access to content that is popular with users. For this reason, a situation is being created in which the market value of interconnections among ISPs change

[4] Although peering is normally free, paid peering (in which a fee is charged) also exists.

in accordance with user trends. This gives rise to the possibility of an increase in interconnection configurations that are different from the conventional tier configuration for the interconnections among ISPs.

In addition, as telecommunications carriers that own the facilities move forward with the construction of their own IP-based networks, these carriers may move in the direction of embedding ISP-like functions in their own networks. Once this happens, these carriers are likely to have an advantage over other ISPs in negotiating ability and a close watch will need to be kept to see whether or not interconnection agreements among ISPs can be concluded smoothly.

Moreover, in the era of IPv4 when there was an insufficient number of global addresses, to make up for the lack of IP addresses, ISPs were required to provide global addresses to their users each time they connected to the Internet. Users in turn needed to use Network Access Translation (NAT) functions to convert between global addresses and private addresses to enable internet connections from multiple terminals on the LAN. IPv6 will resolve, however, this insufficiency of global addresses, leading to a relative decline in the value of these address-providing functions.

Reflecting this situation, the structural changes in the ISP market will produce relationships among ISPs that are different from those that have been established up to now and the possibility that new problems will arise in the interconnections among ISPs cannot be discounted.

2) Multi-stage interconnections among ISPs and ensuring QoS

Secondly, it is necessary to ensure quality of service (QoS) in multi-stage interconnections among ISPs. Many ISPs are currently interposed in the IP-based network and QoS has been secured on a "best effort" basis. In contrast, in case of closed IP-based networks such as IP-VPN, it is possible to ensure stable QoS within their own networks.

In case large-scale telecommunications carriers construct their own IP-based networks, they will be able to provide IP-based services that ensure QoS within their own networks. In contrast, ISPs will not be able to offer the same service and their QoS may be controlled by the higher level ISPs' policy (relating to quality, security, etc.), leading to the situation that QoS to users may be affected by heteronomous factors.

(2) Directions for future study

The factors such as the change of the relationship between higher level ISPs

and lower level ISPs and the transition to IP-based networks may cause the problems related to the viability of settlement among companies through market mechanisms, leading to an increasing number of disputes in the area of interconnection among ISPs.

For this reason, to prevent abuse of market dominance in the ISP market and other barriers to fair competition, the regulatory authority should intensify and continue monitoring of this market and take necessary action as needed, such as preparing guidelines and the like for the use of dispute settlement functions to settle disputes relating to interconnections among ISPs.

It would also be appropriate to study technical aspects such as methods of measuring the amount of IP traffic. This is because interconnection conditions should be determined not only through mutual negotiations among carriers but based on objective traffic data. In addition, unlike the period in which IP-based networks were restricted to be used by certain limited users in order for the IP-based network itself to become the main telecommunications network, it will be necessary to determine the total traffic volume passing through the IP-based networks in Japan and the traffic between IXs. These trends will need to be analyzed in order to plan for needed expansion of network equipment.

ANNEX-2

A Framework to Ensure Network Neutrality (Chapter 5)

1. Changes in network structure and network neutrality

In the transition from public switched telephone networks (PSTNs) to IP-based networks, the emergence of the vertical integration business models may occur. In the vertical integration business models, each layer is modularized and services in the broadband market are provided with multiple players intertwined on multiple levels.

(1) Principle of network neutrality

In principle, the objective of the competition policy is to maximize user benefits. Thus, when looking at the vertical integration business models as well, network neutrality should be ensured from the perspective of users according to the use of the IP-based networks. Specifically, three principles should be ensured from the perspective of network neutrality:

i) IP-based networks should be accessible to users and easy to use, allowing ready access to content and application layer;
ii) 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; and,
iii) Users should be provided with equality of access to telecommunications and platform layers at a reasonable price.

In this case, "users" refers not just to end users but also includes content providers and other related companies that conduct business using IP-based networks.

(2) Network neutrality as a policy evaluation parameter

The following two specific policy evaluation parameters are needed to ensure network neutrality:

(a) “Equal access to networks”: ensuring that the telecommunications layer (the physical network layer and the telecommunications services layer) has fair access to the layers above and below that layer; and
(b) “Equitable cost distribution of networks”: how the cost burden of enhancing the telecommunications network is borne fairly

The need to ensure network neutrality is a basic principle for the use of IP-based networks represented by next-generation networks (NGNs). As the policy evaluation

parameters that achieve this basic principle, specific policy issues shall be organized and verified in terms of (a) and (b) above and the policies needed to ensure an environment enabling fair competition shall be comprehensively deployed

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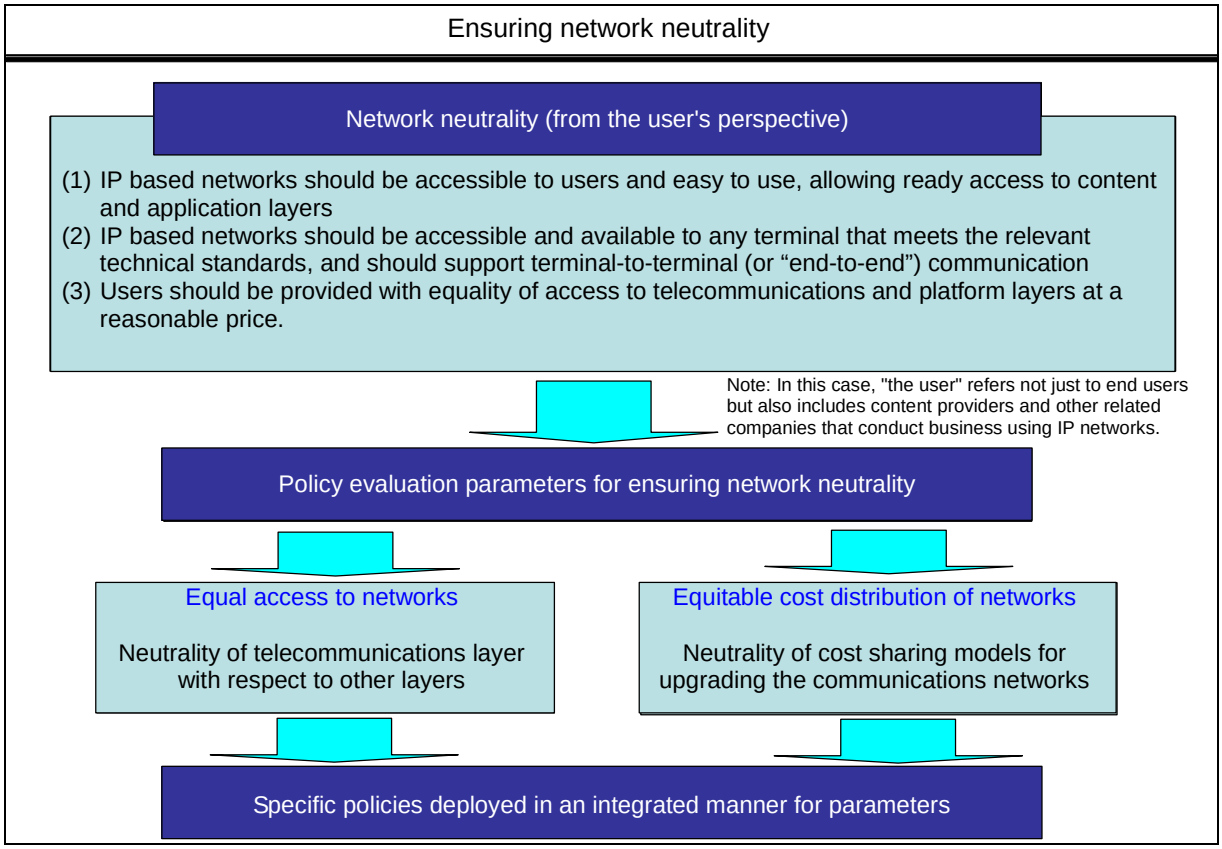


2. Equal access to networks

(1) Ensuring open interfaces between layers

In the conventional PSTNs, control of services on the telecommunications layer was carried out in an integrated manner. However, in an IP-based network, control of telecommunications services and use of content and applications on various layers will become possible. For example, the following two modes are thought to be applicable.

1) IP-based network with intelligence at the end side

In the first mode, it is becoming possible to provide intelligence (service control functions, etc.) at the end of the network ("edge users" or the sections adjoining the telecommunications layer and platform layer). For example, on the terminal layer, the widespread use of PCs has resulted in a dramatic increase in aggregate intelligence, and modes are appearing in which additional services can

be achieved by providing applications at the end of the network, as exemplified by the IP phone service that has been achieved at the application level.

With regard to the distribution of rich content as well, the use of peer-to-peer (P2P) technologies instead of the conventional mode of distributing content from the content distribution server to terminals is creating the mechanism by which it is common for user terminals to exchange distributed content among themselves and distribute content to other users. Naturally, in such cases, copyright clearance should be conducted for the digital content.

Changes are also evident to the business models on the content/application layer. For example, modes that utilize applications on the web through the use of Ajax (Asynchronous JavaScript and XML) technology are beginning to show rapid growth, and SaaS (Software as a Service), in which network applications provided on the upper layer are used on the network without embedding applications on the terminal side are also appearing. In this sense, as shown above, the concept of an "end user side" as opposed to the "network side" does not simply mean the terminal layer but also includes the content/application layer.

2) IP-based networks that provide intelligence to the network (telecommunications layer) side

In the second mode, as in the past, the construction of networks is being promoted in the direction of embedding intelligence into the IP-based networks. The NGNs being constructed by telecommunications carriers are expected to have bandwidth control functions, session control functions, authentication/security/accounting management and other platform/service provision functions on top of the access network, core network and other transmission functions. The aim is to build in service control functions on the network side.

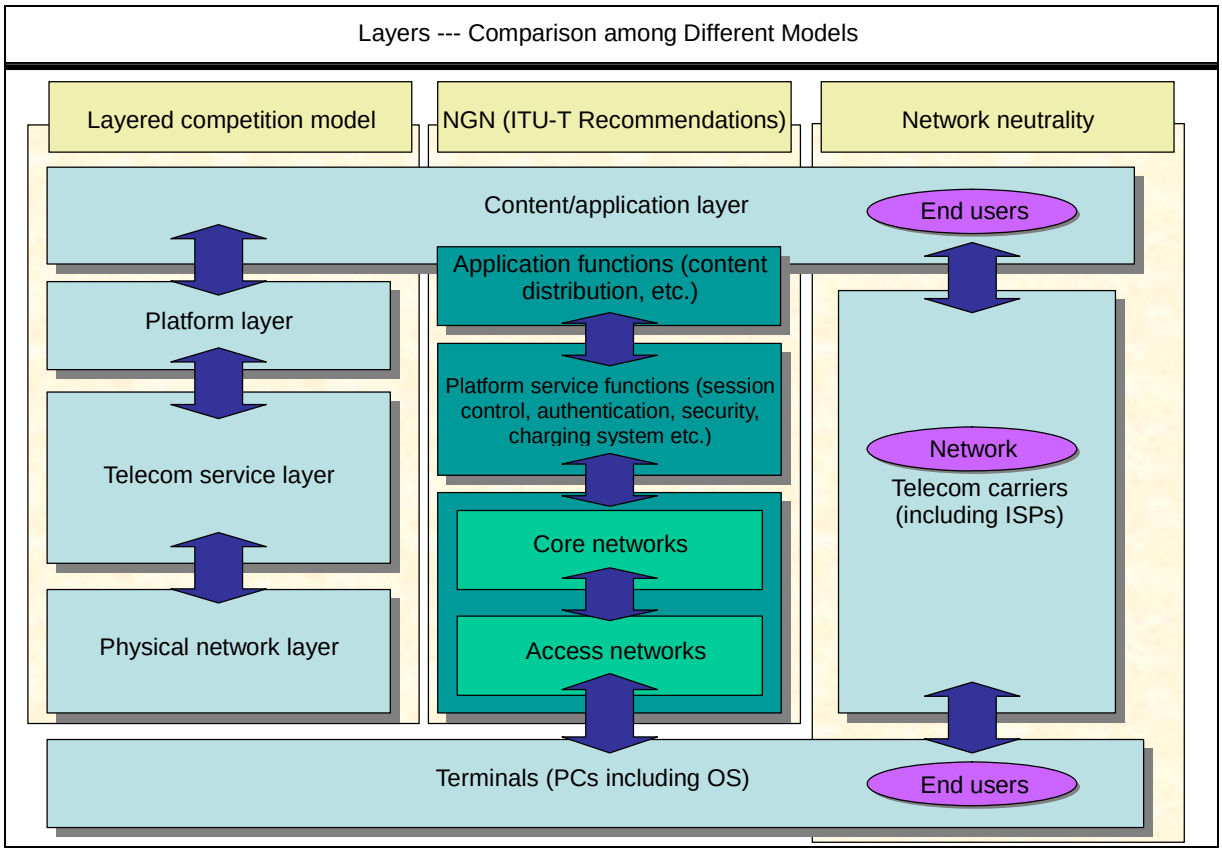
Up to now, one aspect of IP-based networks is that they have been constructed and operated based on the assumption that they will be used by users with technical knowledge. However, with the increasing transition to IP-based networks, general users will also use IP-based services, and so there will be a need to ensure high quality service with stable security and QoS by providing intelligence to not only the end user sides but the network sides, as well. In particular, when delays, etc., occur in the data transmission due to insufficient capacity on the telecommunications layer, it is required to the network side to boost transmission capacity, establish active routing, and distribute traffic, and so on.

3) Achievement of free intelligence provision modes

One factor in the growth of the Internet is considered to be that technical innovation could be freely conducted on the end user sides as well, leading to an increase in intelligence. However, with the progress in the shift to IP-based networks, it is becoming possible to build in intelligence on the network side, and it is possible that providing intelligence to only the network side may limit the players involved in technical innovation and cause results to be confined to the network.

For this reason, it would be best to try to ensure the healthy development of the entire IP-based network by building a framework capable of possessing intelligence on both the network side and the end side.

Enabling intelligence to be built in on both the network side and the end side means that it will be necessary to exempt specific layers from unilaterally being controlled or governed by other layers in the vertical integration business model. To put it another way, by ensuring true openness in the interface between layers, equal access to networks in the IP-based network can be ensured.



(2) Ensuring openness with upper layers

1) Openness of platform functions

To ensure the neutrality of the telecommunications layer with respect to other layers, telecommunications carriers shall build an environment enabling fair competition into their NGNs. When applying a principle that the NGNs being built by the telecommunications carriers are required to ensure openness with respect to upper layers, it is desirable that all of the telecommunications carriers that own their networks will respond to this requirement.

However, the requirements will be even more stringent for telecommunications carriers with market dominance in the telecommunications layer and whose abuse of market dominance with regard to upper layers is a concern. In this sense, a policy response to ensure the openness of platform layer functions and the openness of the interface between layers will be particularly important for the NGNs of NTT East and West, in terms of ensuring smooth distribution for the content/application layer. (See Chapter 3, Section 4)

2) Validation of use restrictions on specific application functions

Related to this issue, it is a question of whether or not to allow network restrictions on specific application functions such as file exchange software.

When a few heavy users monopolize the network bandwidth so other users cannot secure sufficient bandwidth, with the result that overall quality of service (QoS) declines, the bandwidth used by heavy users is usually restricted by telecommunications carriers to maintain the overall QoS.

However, if telecommunications carriers should take action to restrict bandwidth for specific applications in terms of a business strategy, this would be recognized as an action to restrict competition. Moreover, if the telecommunications carrier were to determine that the user was using that application by detecting the content of individual telecommunications packets of each user without obtaining the agreement of users, and if the telecommunications carrier should be engaged in acts such as constantly destroying packets and blocking this usage contrary to the wishes of the user, this would infringe on the privacy of communications.

Nevertheless, in some ways it is difficult to establish clear guidelines for this kind of problem, and it is possible that various other cases may occur in the future. For these reasons, more detailed studies based on the opinions of relevant entities are needed.

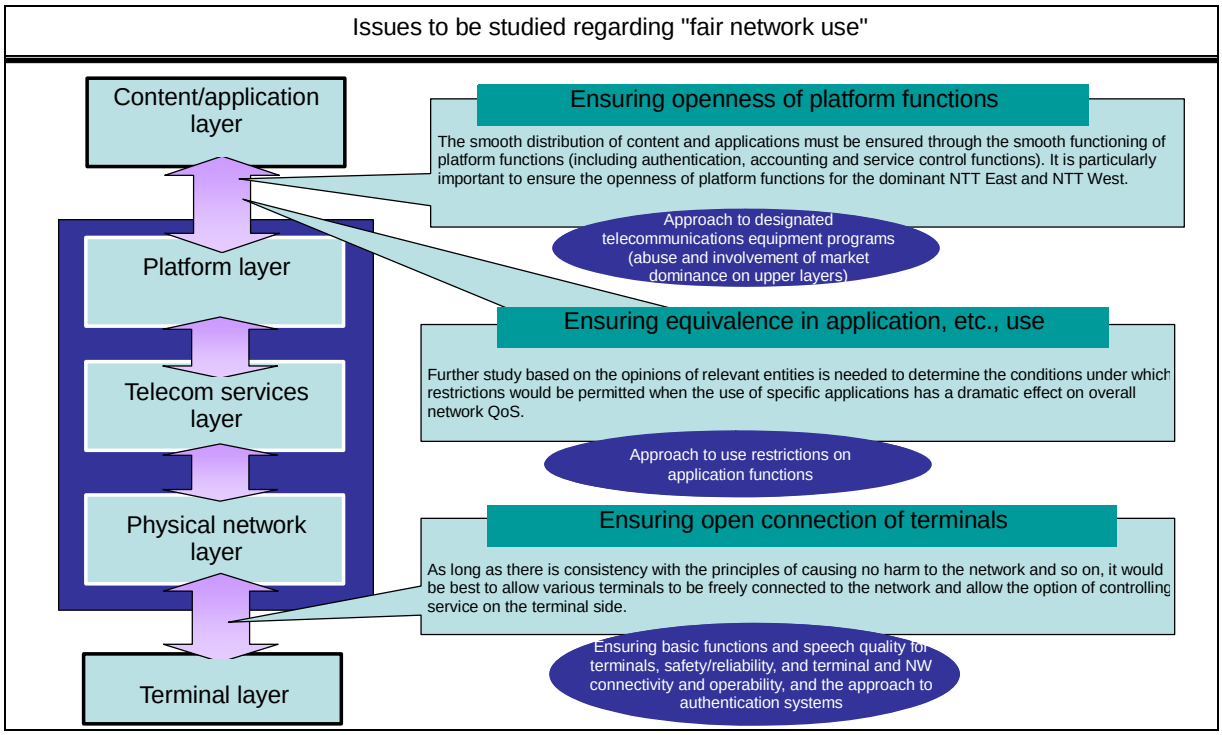
3) Ensuring openness on the lower (terminal) layer

In IP-based networks, it is important to strive for openness of the interface between the telecommunications layer and the terminal layer. Previously, in the

business model for the mobile telecommunications market, for example, the telecommunications services and terminals were provided in an integrated manner. In the case of IP-based networks, however, as long as there is consistency with the principle of causing no harm to the network and so on, it would be best to allow various terminals to be freely interconnected to the network and allow the option of controlling service on the terminal side.

Moreover, not only in the mobile telecommunications market, but also in the NGNs constructed by NTT East and West, it is considered to be inappropriate to allow the addition of monitoring/control or restriction of functions equivalent to those on the terminal side by means of the service control functions built into these networks if such terminals are consistent with the above-mentioned principle of "no harm to the network", etc.

Based on this approach, in the technical requirements for NGNs, it will be necessary to avoid situations in which the network side possesses functions that restrict terminal side intelligence more than necessary, and to ensure basic functions (service quality, safety/reliability, and interconnectivity and interoperability between the terminal and the network) on the side of the terminals interconnected to the IP-based network. Studies should also be conducted for the approach to terminal approval systems (See Chapter 6, Section 1).



3. Equitable cost distribution of networks

(1) Need to upgrade the telecommunications network to cope with rapid increase in IP traffic

With emergence of vertical integration business models, various functions are modularized and these functions are provided in combinations. However, a study is needed to determine who will bear the cost of upgrading the network in question, and in what way.

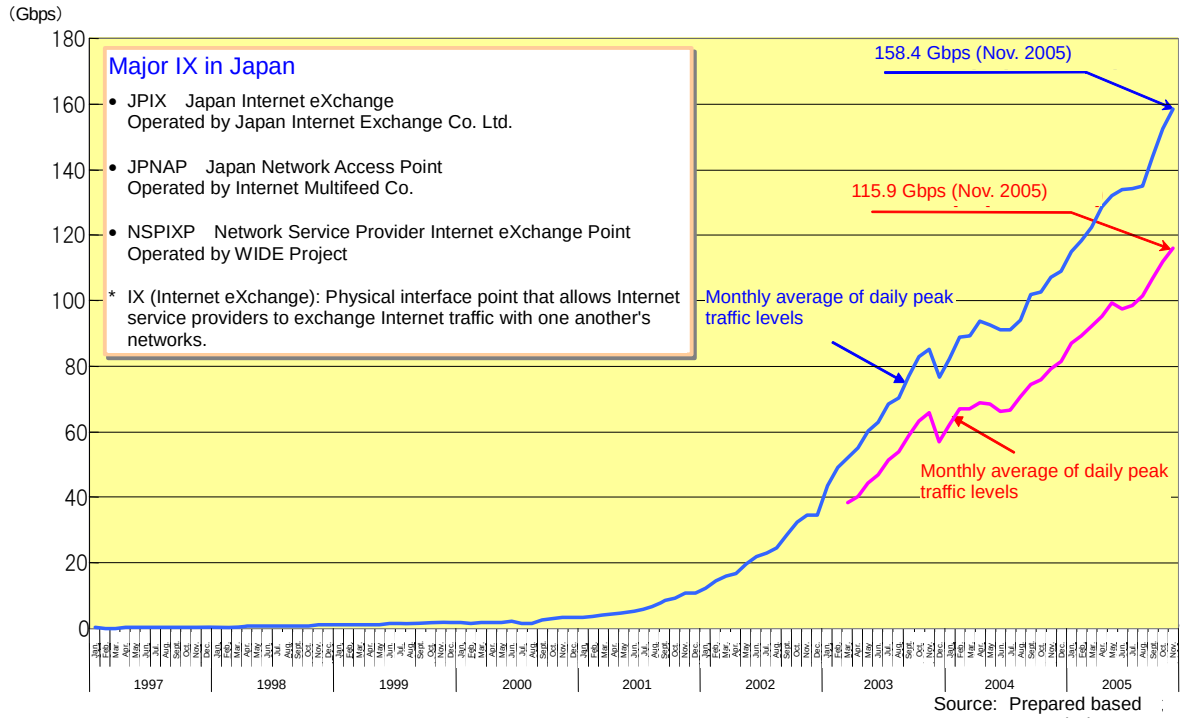
A comparison of the PSTNs and IP-based network configuration reveals that costs that should be borne by each company are clear in the case of the PSTNs. For the routing is clear even if the interconnections between networks are via multiple telecommunications networks, and traffic management is possible.

In contrast, IP-based networks are based on autonomous routing, and at least at this point in time, it is difficult to clearly determine the packet distribution volume for each route. The reason that interconnections among ISPs are made through peering and transit is a reflection of this property of IP-based networks.

1) Accelerated increase of packet transmission volume

In recent years, IP traffic has been doubling every year. Reasons for this include the fact that the number of broadband subscribers and Internet users continues to increase. In terms of the perspective of changes in market structure, however, the following two factors can be given as examples.

Traffic exchanged at major IX in Japan



Firstly, the increase in IP traffic is the result of the full-fledged use of the Internet in socioeconomic activities, such as the rapid increase in file exchange using P2P networks. Moreover, IP traffic may be further increased by the structuring and advancement of the Internet itself, such as the increase in XML-based content (XML stands for "eXtensible Markup Language") and cross-referencing mechanisms using RSS (Really Simply Syndication), the emergence of the business model known as web 2.0, and increased network use by company systems such as SaaS.

Secondly, the construction of a broadband infrastructure on the telecommunications layer is progressing, and the distribution of rich content is increasing rapidly. In particular, subscribers to fiber-to-the-home (FTTH) services have increased dramatically in recent years, but in the case of FTTH services, expansion of the upload bandwidths and improvement of the use environment for P2P distribution of rich content are enabling not only content providers but also end users to distribute rich content.

2) Need for a neutral cost-sharing model

In this way, factors causing the rapid increase in IP traffic are present in various locations, from upper layers to lower layers. However, the fact that it is difficult to determine the exact relationship between the causative entities and the

increased traffic produced as a result is a problem.

For this reason, in order to deal with the question of who should bear the burden of transmission capacity upgrades that are required due to the increase in traffic, and in what way, a neutral mechanism that will prevent specific market participants from causing an excessive burden is needed. This is the issue of the equitable cost distribution of networks.

(2) Approach to market mechanisms and cost distribution

In the multi-stage market configuration, as long as market mechanisms are functioning smoothly, the cost of maintaining an IP-based network is recovered in a way that reflects the balance of supply and demand among individual transaction participants. However, if packet distribution increases dramatically at a greater rate than expected as a result of rapid technical innovation, the popularization of the broadband infrastructure and increased intelligence on the terminal side, the businesses that reflect the appropriate balance between supply and demand may not be transacted in all transactional relationships.

In the vertical integration business model, it is very possible that market participants on specific layers may come to have an advantage over the market participants on other layers.

With regard to the approach to cost-sharing models for upgrading the telecommunications network, it would be appropriate to conduct a study focusing on several transaction relationships such as those noted below.

1) Validity of bandwidth-based fees

Firstly, a study of a framework on usage fees for broadband service is needed. A fixed cost model is usually adopted for the usage fees for "best effort" broadband service. With this model, the telecommunications carrier envisions the average network usage and, based on this average usage, constructs a network with a certain level of redundancy. However, if some heavy users monopolize network bandwidth and the other users are unable to secure adequate bandwidth, as above-mentioned, the basic approach of "best effort" service may lose its validity.

Accordingly, based on the principle of beneficiary burden, a new approach has emerged in which users are divided into those users who are assured stable use of a greater amount of bandwidth and all other users, with the former group receiving greater benefit from the service in question as compared to the latter group. To put it another way, this is the approach of establishing bandwidth-based usage fees that assess different fees depending on bandwidth usage (or by

establishing a service menu with a guaranteed minimum bandwidth and then charging additional fees).

In this case, it must be verified whether the additional fees that users are charged by the telecommunications carrier are really being applied to the upgrades to the telecommunications network that is the ostensible reason for the additional fees. In other words, upgrading of the telecommunications network should not be done only by the telecommunications carrier to enable Internet access but, on the IP-based networks, should be accomplished through the addition of equipment on the part of the multiple ISPs interconnected to that network. For this reason, there must be healthy market competition among ISPs and settlements among companies must be conducted smoothly.

With regard to this point, companies that have their own networks are expected to build full-fledged IP-based networks and use these networks to enter the Internet connection market that was formerly made up of ISPs. In such cases, verification of whether or not smooth settlement fees among companies are formed in this market will be needed (See Chapter 3, Section 6&7).

2) Validity of collecting additional fees for rich content distribution

Secondly, there is a debate over whether, in addition to the usage fees paid by the content provider, etc., to the ISP and data center, a certain additional cost burden should be solicited or not. However, when soliciting an additional cost burden, it is thought that it is first necessary for the telecommunications carrier to show rational proof that the usage fees in question are not being formed in a sound way through market mechanisms. In addition, the telecommunications carrier must also not unjustifiably discriminate against specific content providers in terms of fees.

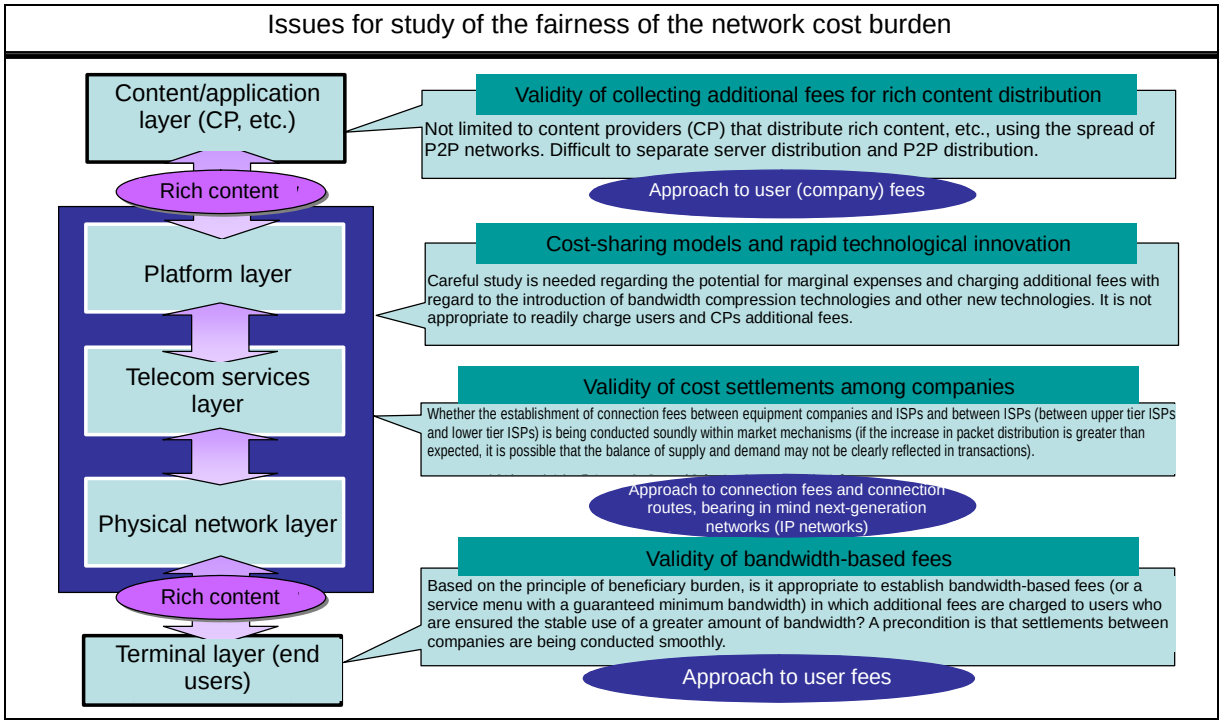
Moreover, since content distribution modes themselves are no longer limited to batch distribution from a server but also now include P2P type distribution through users, there is an additional aspect in that it is expected to be difficult in practical terms to make a sharp distinction between the two types of distribution and charge additional fees for only the former.

Furthermore, the distribution of rich content is not limited to content providers and the like. With the deployment of a broadband infrastructure, it is becoming possible for ordinary users to easily provide videos and many other types of rich content on the Internet. In such cases, it would not be fair for only the content providers and other companies to charge additional fees. After all, the point of departure for discussion is that the above-mentioned additional fees are charged as expenses to upgrade the communications network for the distribution of rich content. It would be difficult to provide rational evidence for making a distinction between

ordinary users and companies in this respect.

3) Cost-sharing models and rapid technological innovation

In this way, there is a great deal of debate concerning the fairness of cost-sharing models for the upgrading of telecommunications networks, and a one-size-fits-all approach to introducing rules for competition and ensuring fairness is not appropriate. Further study is needed regarding the relationship between the possibility of charging additional fees and the lowering of marginal expenses with regard to the introduction of new technologies, such as the introduction of bandwidth compression technologies as a result of rapid technological innovation.



4. The debate in the U. S. regarding network neutrality

In the United States, there is a lively debate regarding network neutrality. In August 2005, the Federal Communications Commission (FCC) adopted "four principles to encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet."[5]Specifically, these principles are as follows.

(i) Consumers are entitled to access the lawful Internet contents of their choice.
(ii) Consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.

[5] FCC, “Policy statement” (September 23, 2005)
http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf

(iii) Consumers are entitled to connect their choice of legal devices that do not harm the network.
(iv) Consumers are entitled to competition among network providers, application and service providers, and content providers.

Accordingly, there is a move in Congress as well to legislate network neutrality. Several bills have been submitted to both houses of Congress, and debate is underway. Specific provisions currently being debated include provisions to prohibit network companies from altering network content, provisions to prevent content providers from establishing faster access "priority lanes" and charging users extra fees to access these lanes, and provisions to prohibit the establishment of restrictions on interconnection of terminals except in cases such as when this would cause physical harm to the network and so on.

Opinion remains divided with regard to what degree of authority to grant the FCC, which is the regulatory agency. Specifically, there is debate over various proposals: the proposal to allow the FCC to handle disputes relating to network neutrality, the proposal to require the FCC to study and report on this question, the proposal to grant a certain degree of authority to the Justice Department and so on.

5. Approach to future study

Accordingly, using the principle of network neutrality as a base, the major issues to study were compiled from the perspective of two policy evaluation parameters for achieving network neutrality: "Equal access to networks" and "Equitable cost distribution of networks".

The debate surrounding network neutrality has tended to grow diffuse because up to now the term has not been defined in a uniform manner. However, this report begins by attempting to summarize the scope of the debate and identify the constituent factors in that debate.

The importance of the debate over network neutrality is that it is not simply a conceptual debate. The network neutrality approach can be used as a framework for organizing various specific individual policy issues. Actually, as we have seen earlier, the issue of network neutrality is not limited to the conventional issues of ensuring smooth interconnections on the telecommunications layer, appropriate cost burdens among telecommunications carriers, and the imposition of appropriate fees for users. It also deals with issues not considered in the past, such as the openness of the interfaces between layers, from the terminal layer to the content/application layer, and the approach to the cost burden between and within layers. It also encompasses the range in which dominant regulations and other interconnection policies and tariff policies and the like relate to one another. Moreover, with the rapid progress of

technological innovation, it is difficult in some ways to determine the approach to policy by means of static market analysis.

Japan is now a major power in terms of its broadband infrastructure. However, with the progress in broadband and IP-based network formation and the rapid spread of FTTH services in particular, there has been an increase in the upload bandwidth in particular, and the transmission volume on P2P networks is increasing at an accelerating rate. For this reason, issues relating to network neutrality are likely to be manifested sooner here than in any other country.

Also, the regulatory authority should conduct even more detailed interviews with regard to network neutrality to solicit the opinions of market participants on each layer, and a forum for studies by market players in each layer should be established. These efforts should be based on the principle of ensuring an environment that enables users to freely use the IP-based network to the extent that legitimate purposes allow. Phase I of the study should be conducted around the summer 2007.

In the above-mentioned study, first the future trends in IP traffic should be predicted, and the approach to determining IP traffic, the trends in peering and transit interconnection modes, and the approach to broadband use fees should be examined from a comprehensive perspective. Then, phase II of the study should be conducted paying attention to the status of the progress in such areas as the construction of NGNs by NTT East and West, the establishment of rules for competition, the progress of competition on the terminal layer, and the verification of tariff policies.

ANNEX-3

Revision of the Universal Service System (Chapter 6, Section 3)

(1) Need for review of universal service system accompanying the transition to IP-based networks

The universal service system has not been activated so far, although the system itself was introduced in June 2002 after a major revision of the Telecommunications Business Law. However, a review was conducted three years after the system was introduced, and in April 2006, a revised system was put into effect.

Under the current universal service system, subscriber telephones, public telephones and emergency calls are the scope of the universal service. In this revision, local telephone calls were eliminated from the scope of the universal service, as competition has developed. In this review, it was decided to review the system in three years (FY2009). However, as there is expected to be rapid progress in the transition from PSTNs to IP-based networks, it is required to begin work on studying the scope of the universal service and the methodology of assessing costs.

(2) Basic perspective for review

The universal services are defined as services that are indispensable for people's daily lives and should be provided stably and on an equable fairs nationwide under appropriate conditions including tariffs that enable anyone to use the services (Telecommunications Business Law Article 7).

There are three basic requirements for universal services:

(i) Essentiality: Services those are indispensable for people's daily lives
(ii) Affordability: Services that can be used for tariffs that enable anyone to use them
(iii) Availability: Services that can be used in any area with no variations

“Changes to market structure and review of universal services”

As above-mentioned, the progress in the transition to IP-based networks is eliminating the former barriers between fixed and mobile services and the distance categorization of telecommunications services, it is becoming difficult to continue to adopt the current approach of a specifying the scope of universal services and which is to be maintained. On the other hand, even if broadband services faster than a certain transmission speed were categorized as universal services, with rapid technological innovation, it may become impossible to immediately say with certainty

that these services are services that must be ensured as a minimum for all users.

In other words, it is possible that, as long as the conventional concept of universal services is adopted, it will be necessary to constantly update the definition of this term to cope with rapid technological innovation, and there are concerns as to whether the stable operation of the system will be adversely affected.

“Basic perspective for review”

In the review of the universal service system, there would be various options. For this reason, the review must be conducted carefully, while comparing the advantages and disadvantages of multiple options. As the universal service system is one that ensures the provision of the telecommunications services that are indispensable for people's daily lives, the opinions of a wide range of entities in various fields should be solicited in the review, with particular attention paid to ensuring that the process is fair and open.

In this review, deeper consideration is thought to be appropriate; for example, the concept of "universal service" should be modified so that in terms of broadband access, for example, it includes the concept of "universal access" that ensures a society in which anyone in any part of the country is able to enjoy the benefits of use with no disparities.

The universal access approach will require deeper consideration in the future, but the approach is a technologically neutral one in which, regardless of the type of service, whether subscriber phone service or IP phone service, when services that meet certain requirements can be accessed through the access network, a portion of the maintenance costs for that access network in unprofitable regions will be supported by the universal service system.

However, in such cases, careful study will also be needed for points such as the following.

Firstly, as the shift to IP-based networks progresses, the barriers between fixed and mobile market categories will be lost. In such cases, if services with mobility are included in the concept of universal access, the question of how to define the approach of "universal provision" must be resolved.

In the case of current fixed-line telephone lines, the location of use of the telephone service can be identified exactly. However, no such restrictions exist in services with mobility. For this reason, study is needed to determine what standards (business zones) will be needed as sufficient conditions for the range in which services with mobility are provided, from the perspective of universality that allows

use with no disparity between locations.

Secondly, if all means of accessing broadband service are supported by the universal service system without specifying the transmission mode, it is possible that coverage under the system will be extended even in cases in which multiple companies provide overlapping services.

In such cases, the amount for the cost to be supported under the system will expand, and the burden on telecommunications carriers and even users may increase dramatically depending on the approach to the design of the system. Accordingly, an effort must be made to rigorously define the nature of and requirements for the broadband access that should truly be ensured, and a study of approaches to cost assessment models should also be conducted.

Thirdly, as tariffs levels and the degree of penetration will be different for each service (unlike the existing fixed-line telephone service, which is a standard tariff nationwide), a study must be made to determine what judgment criteria would be appropriate for the affordable price that is a constituent requirement for universal service. In the case of broadband service in particular, usage tariffs that involve a bundled type fixed price are charged, and a study is required for the methodology used to determine what portions of the service that is provided should be specified as supported by the universal service system.

(3) Study timeframe for the review

Following a review, the revised universal service system went into effect in April 2006. For this reason, conducting another complete review of the system would not be desirable in terms of system stability.

On the other hand, even the most recent review of the system calls for the system approach to be reviewed after three years. In addition, the New IT Reform Strategy establishes as a government objective the elimination of areas with no broadband access by fiscal year 2010, and this date will mark the completion of a national level broadband infrastructure. Accordingly, it would be desirable to conduct a full-fledged study in 2009.

The NTT midterm operations strategy notes that, by fiscal year 2010, there are expected to be approximately 30 million subscribers for fiber-optic IP phone using FTTH service. However, this means that roughly half of all households will still be using PSTNs fixed-line telephone service. For this reason, careful study will be needed for the review of the universal service system in a situation in which both PSTNs and IP-based networks exist.

Specifically, assuming that the "zero broadband" regions are eliminated at the beginning of the decade that starts in 2010, if the scope of universal service is limited to conventional PSTN-based fixed-line telephones, it is possible that PSTNs will remain to a greater degree than necessary. On the other hand, it would be appropriate to conduct a review of PSTN-based telephones and IP-based phones (for example, fiber-optic IP phones) as soon as possible, with particular attention paid to market trends, and based on the assumption that the substitutability in the service market will increase.

Accordingly, to begin with, a forum should be established for study by experts regarding the approach to the review of the universal service system, bearing in mind the spread of broadband services, and a feasibility study and the like should be conducted in order to identify and review specific points of contention. The findings should be released sometime in 2007.