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**APT REPORT ON**

**some lessons from current discussion on network neutrality in korea**

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**Background**

In Korea, the migration to fixed broadband took place more rapidly than any other country in the world. Meanwhile, as the fast migration of internet networks was matched by an equally fast growth of broadband internet users, it was possible for telecom operators to generate enough revenue to recoup their network investments. More recently, however, with the introduction of new converged type of applications, such as bandwidth-intensive or sensitive to transmission protocols, and the sharp surge in demand for such applications, traffic requirements of web applications have been continuously increased. Internet traffic, previously centered on text traffic (text-based web), has rapidly evolved to P2P-cented, then to video streaming-centered traffic. This has caused problems for highly traffic-intensive services and services requiring QoS. But that are unsolvable through the existing best-effort service model based on flat-rate tariffing structure.

This has also led to complaints against CSPs(Content Service Providers). Being the main causes of the recent exponential growth in traffic, CSPs have been accused of free riding on the network investment by telecom operators. The idea is that, in such situation, equally treating providers of packet services and CSPs would have minus incentives in network investment, ultimately hindering network development. And it is unfair to treat CSPs and heavy data users, who generate large volume of traffic, equally with general internet users. The argument is that not limiting the traffic generated by the minority and continuing to let them enjoy bandwidth unlimitedly would cause inconvenience to the rest of the majority group.

Indeed, current inequality between internet use and paying is coming from irrational generation of internet traffic by small numbers of heavy data users, both in fixed and wireless networks. In case fixed network in Korea, the top 5% of heavy data users generate 49% of all traffic, and in wireless networks, the top 1% of heavy data users generate 45% of all traffic. In sum, a small minority of users are responsible for slowing down of internet quality. The surging traffic demand is demanding continuous expansion of fixed network facilities, and resulted in scarceness of wireless spectrum resources. Therefore, there is an urgent need in Korea for consideration on traffic management in Korean network service.

In an effort to better manage traffic, telecom operators in Korea have been increasingly introducing specialized traffic management techniques. These techniques are used to: 1. Improve the efficiency of traffic handling; 2. Set an order of priority in traffic handling by type of traffic; 3. Charge additional fees for QoS-guaranteed services; and 4. Block certain types of content that negatively affect the quality of connection.

**The Need of Regulating for Network Neutrality**

Currently, in Korea, we concluded that we should consider our own specific market environment in order to decide network neutrality policy. Therefore discussions are currently underway to establish a policy agenda which reflects this view. Because competition rules are well settled down in Korea, most of experts agree with that network neutrality should not be discussed from regulatory viewpoint but be left to the market. In other words, it is natural that the Korean broadband internet market, where three telecom operators and over one hundred SO are actively competing, has a minimal need of regulation. Pro-competition regulatory schemes are also well in place, such as those touching LLU (2001), mandatory provision of facilities (2003) and internet interconnection (2005), which may make it unnecessary to introduce additional network neutrality rules aimed at preventing unfair or competition-restrictive practices by telecom operators.

On the contrary, the US internet market has an oligarchic competition structure where suppliers are two or less in most areas. Measures such as the repeal of the LLU(Local Loop Unbundling) or the classification of internet access services as an ‘information service,’ and not as a ‘communications services,’ in 2004, were aimed at preventing competition-restrictive behavior. But in Europe, where exist wholesale regulations including a LLU scheme unlike in the US, telecom regulators, mindful of market competition, hold the position that there is no need for further regulation to ensure network neutrality.

<Competition and regulatory environment in US, Europe and South Korea >

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| \ | US | Europe | South Korea |
| Market environment | ￭ Limited consumers’ right to choose (a market 60% controlled by ILECs) | ￭ Effective competition in the market (Easy to switch providers) | ￭Effective competition in the market |
| Regulatory environment | ￭UNE\* requirement repealed (2004); unclear rules (internet access now classified as ‘information service’ instead of ‘communications service) | ￭ Regulation of providers with SMP, a LLU scheme in place￭Additional requirements of transparency and minimum quality standards introduced. | ￭ Regulation of basic communications services (2004)(LLU, price regulation, etc. )  |

\*Unbundled Network Element

**Current Status in Korea**

In December 2011, as a way of regulating network neutrality at the level of traffic management, the KCC(Korea Communications Commission) issued guidelines. It is developed based on discussions on related topics in the US, Japan and Europe where speed caps or limits on data amounts are already being imposed on heavy users. We have found that they authorize reasonable management of traffic by internet access providers, provided that this is done in a manner not to infringe upon users’ rights and in accordance with the principles of transparency and openness. Concretely, the guidelines stipulate that a service provider may manage traffic, when it is deemed necessary for the security and stability of the network or for the alleviation of temporary overload or network congestion, and in other cases where such action is necessary under relevant laws and regulations. Telecom operators are, meanwhile, required under the same guidelines, to disclose the purpose, scope, conditions, procedures and methods of traffic management, and when they take dispositions to manage network traffic, to notify or announce such dispositions, stating also their precise impacts.

Concerning what constitutes the reasonable scope of traffic management, a broad consensus is currently being reached to limit it to small numbers of heavy users’ overconsumption of traffic and to traffic-intensive applications such as P2P and video streams. In other words, the need for traffic management is recognized in these guidelines to protect internet users from negative impacts on the use environment, such as slowdown in connection speed, caused by a minority of heavy data users monopolizing bandwidth by generating large traffic through P2P and other traffic-intensive applications. The need for routine traffic management is also recognized to prevent a major internet blackout or outage in networks, as traffic in congested sections such as P2P and video stream traffic is expected to continue to grow exponentially. The guidelines, further, recognize that a network needs to be managed to prevent the deterioration of quality in basic internet services such as web-browsing and email as well.

Otherwise, active discussions are also taking place in Korea in order to regulate the market power of platform operators. In the past, users of information and communications services or broadcasting services were all simple end users. Such, however, is no longer the case because, today, it is possible to provide services without network facilities, using only a platform. With the widespread use of smartphones and other smart devices and technologies, platforms are rapidly emerging as the core elements in the center of ICT value chain. Platform operators, as generators of large traffic, are among the chief culprits of explosive data growth, which interferes with the principle of fair use of network resources. To take the example of video streaming, a live webcast of a baseball game by an online portal places heavy loads on a wireless network and can produce disruptive effects such as slowing down the speed and lowering the quality of connection.

Efforts are also made in Korea to establish an equitable principle for sharing of network costs, based on cooperation, as this is deemed essential for ensuring future active network investment and building an IT ecosystem which creates a virtuous cycle benefiting all its actors. By fairly sharing network costs, service providers can offer their customers a stable network environment for more convenient access to services. This will also reduce the burden associated with upgrading network facilities for network operators. In the era of voice communications citizens’ right to communicate was guaranteed by imposing universal service requirements on telecom operators, for the continued growth of the IT industry. Thus sharing of network costs must be adopted in the era of data explosion in an equitable manner. Also, platform operators are required to participate in the effort of network improvement and burden sharing.

**Current Status in Overseas**

(1) U.S.

The discussion about network neutrality in the U.S. takes the approach that is faithful to the concept and history of the Internet. It is stipulated that the purpose of the Federal Communications Commission (FCC)’s network neutrality regulations is to ensure the innovation of CP/AP and users by blocking the ISPs’ behavior of limiting network openness. In Open Internet R&O in 2010, the FCC emphasized the concept of the “virtuous circle” in the Internet service, which is based on the idea that the virtuous circle can be obtained from openness and freedom. That is, there should be no gatekeeper that blocks access to the Internet. However, ISPs adopt “no blocking,” which prevents the prohibition of contents/application transmission. And they also have the intention of allowing reasonable discrimination by prohibiting unreasonable discrimination of CP/AP or users. The concept also has the conditional characteristic that indirectly recognizes ISPs’ traffic management rights at a certain level, by providing the ISPs’ traffic management practice and Internet service agreement terms.

Reasonable network management by ISPs is allowed in the U.S. Although the different agreement terms for end-users conditionally are allowed, if the network management conditions are transparently disclosed in advance, anti-competitive behavior and infringements against the end-users’ freedom in using the Internet (high ideal value of the Internet) are regarded as unreasonable discrimination. On the other hand, ISP’s price differentiation according to differentiated network management is also allowed. The FCC has the standpoint that if they need to invest more for the network or to manage traffic differently due to network congestion or other reasons, the related cost can be shared by the end-users, rather than the CP/AP. However, the FCC doesn’t prohibit ISPs from charging the CP/AP without exception, but allows billing in the form of the managed service, considering that the FCC allows the managed service that guarantees the QoS in advance.

(2) Japan

In Japan, network neutrality has been discussed in earnest since 2006, when the “Working Group on Network Neutrality” started at the Ministry of Internal Affairs and Communications (MIC). The final report published by the Working Group in September 2007, had the stance that network neutrality was to be examined from the viewpoint of the competition policy, and proposed a policy direction to ensure network neutrality from the viewpoint of fairness in network use and fairness in network cost sharing.

In Japan, Internet traffic has been increasing due to the rapid penetration of broadband networks and services. If a handful of heavy users constantly occupy network bandwidth, general user communications will slow down. In order to prevent this problem, some Internet service providers (ISPs) are conducting packet shaping. In May 2008, the telecommunications carrier organizations worked out the Guideline for Packet Shaping as the minimum necessary rule to avoid arbitrary operations of packet shaping at the “Study Group on the Guideline for Packet Shaping” (MIC participated as an observer). The guideline was revised in June 2010, and March 2012.

The network neutrality principal of the MIC has not been implemented as a legally binding force. It should be understood as a basic direction that ought to be considered when figuring out future policy tasks, while detailed implementation is left to the market.

(3) EU

The EU announced an advisory statement in June 2010 and collected opinions about network neutrality, the results of which were announced in November 2010. The EU tends to leave the matter of network neutrality to the market function, and responds to the issue with existing systems, rather than by establishing additional regulatory methods. The EU allows ISPs’ network/traffic management under certain conditions, by stipulating that it can be a legal means of providing differentiated services. However, the requirements defined by the regulatory framework (e.g., minimum level of quality) should be observed, and the information related to network management should be accessed by the user for ISPs’ network/traffic management. In addition, billing to the CP/AP is allowed in reference to differentiated network management. The Internet market has a two-sided nature, and the nodes of the Internet value chain, such as the ISPs, CP/AP, and end-users are dependent on each other. The current agreement between the ISPs and the CP/AP is based on a commercial contract. The ISPs are aware that there is a cause of increasing the revenue or making up for the network investment cost, by charging users as well as the contents/applications provided by the CP/AP.

(4) U.K.

The U.K. began discussing network neutrality in earnest by issuing an advisory statement in June 2010. Unlike the U.S., the U.K. handles the issue of network neutrality from the perspective of ISPs’ traffic management, which is a more practical issue. While the FCC places greater emphasis on the CP/AP and end-users, and, in particular, the CP/AP with regard to regulations, Ofcom emphasizes the end-user’s convenience more, and approaches the issue in favor of the ISPs, rather than the CP/AP, as is the case in the U.S.

Ofcom has the standpoint of allowing ISPs’ traffic management, which is based on the notion that social welfare can be improved if the ISPs provide a high-quality access service that ensures the QoS through traffic management. In addition, ISP’s differentiated billing in connection with differentiated network management is allowed. Ofcom seems to believe that there is no reason for prohibiting billing the CP/AP, considering the value chain structure of the Internet service. Ofcom also believes that prohibiting billing the CP/AP on the assumption that the ISPs may commit unfair business practices, because the ISPs’ discriminatory behavior at the time of billing the CP/AP is out of the question, considering the current market structure.

(5) Singapore

The Infocomm Development Authority of Singapore (IDA) published its Net Neutrality framework in June 2011 following a public consultation.  In developing its framework, IDA recognized the importance of facilitating innovation and economic efficiencies on the Internet by providing flexibility for ISPs, network operators and Internet companies to innovate and differentiate their service offerings, while ensuring that consumer interests are adequately protected given the growing reliance on both fixed line and mobile Internet broadband services. IDA’s Net Neutrality framework rests on a three-pronged approach that involves facilitating competition in the Internet access market; improving information transparency so that consumers can make informed choices on Internet access services; and ensuring that consumers enjoy a reasonable quality of access to the Internet, through prohibiting blocking of legitimate Internet content, and the imposition of Quality of Service requirements on fixed line broadband services.

**Future Tasks: Fee-based Cost Sharing Method**

Due to the current flat rate pricing model and low fees charged for dedicated lines, network operators’ revenue is too insufficient to cover the rising cost of data traffic, resulted from an increase in the use of smartphones and high-capacity video traffic. Therefore, the present pricing model in which the balance between investment and revenue is largely distorted needs to be changed according to the “user pays principle”.

Efforts to explore a new pricing model based on the volume of traffic, for a sustainable internet environment, are currently underway, but are still at an early stage. A new pricing model should be coupled with guidelines on sharing network investment costs with heavy traffic-generating third-party operators. End-user tariff structures must be studied to bring them more in line with the cost environment of giga internet and LTE. Finally, the method for revenue sharing between network operators and content providers must be revised as well, so that it reflects traffic costs.

**Implications from the Korean Case**

Construction and maintenance costs of information and communications infrastructure have been significantly lowered for developing countries from the benefit of late comers advantage. Developing countries, although lagging behind developed countries, in terms of industrialization, are virtually on a par with the latter, in terms of ICT readiness. In the case of the wireless segment, the market is expanding at a galloping rate in most countries. Such, however, is not the case with the internet. In most developing countries, the use of the internet, although it is increasing steadily, is still at a fairly low level.

The rapid advances of information technology, meanwhile, have their own downsides and their effects on the society have not been always positive. One of the major problems that have emerged in the recent decades is the digital divide. The digital divide, initially, a reflection of socioeconomic divisions existing within a society, has come to denote the disparity existing between countries, in terms of economic development, national income, level of technological development and industrialization and level of human development; which are principal factors correlated to information access. As chronic economic problems facing developing countries and low developed countries worsen the digital divide in these countries, the gap between so-called ICT-rich countries and ICT-poor countries has further widened, becoming another factor of inequality between countries, in addition to economic inequality.

Therefore, one of the most urgent tasks lying ahead for developing countries is to reduce the digital divide by addressing the causes of inequality in information access at their source and by upgrading infrastructure and ensuring its stability. To assist this goal, telecom regulators in these countries must adopt a network policy which is focused on investment, rather than on openness. Given that network infrastructure is the basis of competitiveness for the IT industry, the policy needs to be focused on the promotion of network investment. The telecom regulator should establish a comprehensive national-level infrastructure plan and provide a blueprint, and reduce uncertainty related to network investment. These measures should be coupled with the effort to awaken network operators to the importance of investment. Making it easy for network operators to predict future investment requirements would be another way that can importantly help to promote network investment.