The Challenge of Creating an Optical Broadband and Ubiquitous Network Society

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NTT West Research and Development Center is pursuing R&D related to telecommunications infrastructure, in areas such as the technical advancement of local IPv6 (Internet protocol version six) networks, and the construction of next-generation networks that will serve as a revenue base for the future. It is also engaged in the development and functional extension of IP services, such as Hikari Denwa (an IP phone service over fiber to the home), video delivery, and security. In addition, the center is actively focused on technological development of operations systems to ensure fast, high-volume processing for the installation and activation of optical-fiber services and on quality enhancement of IP networks.

Japan has the most highly evolved broadband services in the world, both in terms of diffusion rate and unit cost for transmission speed. A wide array of new content and applications for the hotly discussed Web 2.0 (next-generation Web) is now emerging in the market, and its value is rising rapidly as a result of advanced network capabilities, which are driving growth in social networking services and other areas. Growth is particularly strong in the fields of online advertising and online delivery of content such as music and games. As a result, the Web is steadily developing into a tool used not only for the transmission of information, but also as a means for purchasing products and services.

When peer-to-peer (P2P) applications entered the spotlight, we found that networks became rapidly congested as the number of P2P users increased. We also learned that in high-definition video delivery services, even a small amount of packet loss can adversely affect video quality. To address issues like these, there is a growing need for the construction of faster, higher-capacity networks whose quality of service (QoS) can be controlled.

In March 2005, NTT West introduced its FLET'S Hikari Premium service, based on IPv6 technology, which enables higher bandwidth, flexible quality control, and easy connection to a greater variety of digital devices. It allows customers to securely use the expanding array of available IP services. FLET'S Hikari Premium was originally offered to households and apartment complexes as an optical-fiber Internet access service, equipped with security functions and high-quality applications. In August 2006, NTT West expanded its lineup of corporate products by rolling out its new FLET'S Hikari Enterprise services, featuring a 1-Gbit/s user-network interface.

Taking advantage of the massive address space offered by the IPv6 protocol, NTT West Research and Development Center is now engaged in the technical development, validation, and commercialization of a broad array of new technologies, including access control, routing, QoS, security, multicasting, network storage, and quality management. Even as we continue to improve existing services, we are actively and effectively utilizing the enormous address space of IPv6 to develop multihoming technologies, which allow people and objects to have multiple IP addresses. We are also very focused on developing personal and portable technologies that enable communication from the same "environment," regardless of location or access method. Through all these activities, we hope to contribute to the creation of a broadband and ubiquitous network society.

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