Executive Summary

You are probably aware that in Japan's power industry the retail sale of electricity will be completely deregulated from April, but following on from that, there are moves to also liberalize the social infrastructure industry that had been protected by regulations up until now, including the unbundling of power production from power distribution and transmission, and the liberalization of gas pipes. At the same time, when it comes to the topic of security, there are some concerning aspects. Around 30 years ago, telecommunications were liberalized ahead of other industries, and most notably the Internet spread from the United States as an open infrastructure, to the point where it is not exaggerating to say it has become the infrastructure of telecommunications. However, a multitude of security-related incidents and events were reported along the way. As a company in the telecommunications business, IIJ conducts its operations in compliance with the Telecommunication Business Act, which contains provisions for protecting the secrecy of communications. During the process of liberalizing social infrastructure, secrecy of communications and assurance of security will be crucial—not only to preserve the integrity of information conveyed over this infrastructure, but also to maintain an environment that keeps all aspects of our social lives secure. I feel that the liberalization of social infrastructure is an opportunity to reaffirm awareness of this, and at the same time reacknowledge that as the importance of security rises, there will be an even greater impact when infrastructure is affected by something.

This report discusses the results of the various ongoing surveys and analysis activities that IIJ, as a service provider, carries out to support the Internet and cloud infrastructure, and enable our customers to continue to use them safely and securely. We also regularly present summaries of technological development as well as important technical information.

In Chapter 1, we trace and analyze attacks and occurrences we have covered in the past, with a focus on incidents and events that took place day-to-day during the current survey period. In this report, we give an in-depth overview of ISO 27017, which was developed as an international standard for cloud security. This must be looked at from different perspectives depending on whether you are a service provider or user, and here we explain how it and other international standards should be applied.

In Chapter 2, we look at IIJ GIO Infrastructure P2, a new cloud service we announced last year. It features new functions with control systems implemented via SDN at their core, and it enables us to provide optimal solutions by combining agile and flexible private cloud technology and a new form of network service, the IIJ Omnibus Service.

In Chapter 3, we discuss high-resolution audio and DSD streaming. The transmission of "sound" has been dominated by PCM audio since the beginning of the digital transmission era, but digital transmission via technology originating in Japan called $\Delta\Sigma$ (delta-sigma) modulation is at the core of DSD streaming. In this chapter, we unravel the history of this topic, and talk about the live streaming we carried out last year. We gave a taste of DSD streaming to people in Japan, North America, Europe and Asia, and although this was only made possible by the optimum operation provided by IIJ's infrastructure, through having our own high-capacity backbone and years of experience in content delivery, it inspires visions of the creation of a new world brought about through the increased capacity of the Internet.

Through activities such as these, IIJ continues to strive towards improving and developing our services on a daily basis, while maintaining the stability of the Internet. We will keep providing a variety of services and solutions that our customers can take full advantage of as infrastructure for their corporate activities.

Yoshikazu Yamai

Mr. Yamai is an Executive Managing Officer of IIJ and Director of the Service Operation Division. Upon joining IIJ in June 1999, he was temporarily transferred to Crosswave Communications, Inc., where he was engaged in WDM and SONET network construction, wide-area LAN service planning, and data center construction, before returning to his post in June 2004. Since then he has managed IIJ's Service Operation Division as Director. He also heads IIJ's data center operations, and he played a key role in the establishment of the modular "Matsue Data Center Park," which was the first in Japan to use outside-air cooling.