Executive Summary

Nearly three years have now passed since the initial outbreak of COVID-19 at the end of 2019. Over that time, the whole gamut of our daily lives across work and play has moved online, partly in response to social restrictions designed to stop the spread, and we have thus observed a global increase in Internet traffic. While many countries are lifting restrictions, the virus continues to mutate, and we are certainly aware that the future remains unpredictable.

International tensions between democratic and authoritarian regimes also continue to escalate, and half a year has now passed since Russia began its military invasion of Ukraine. From the perspective of economic security, this has cast into the spotlight the importance of supply chain risks relevant to the communications infrastructure that underpins the Internet.

An end to the global semiconductor shortages that have emerged since autumn 2020 remains elusive. The shortages have been attributed to a confluence of factors, including the COVID-19 pandemic, hostility between democratic and authoritarian regimes, and the invasion of Ukraine. Some are of the view that the situation will start moving toward a resolution from the latter half of this year, but the prospects remain unclear for some of these factors, so the situation will continue to bear close watching.

As the world grows increasingly uncertain, I feel that the Internet will play an increasingly important role in terms of the underlying infrastructure of our society and daily lives. Development of the Internet began back in the 1960s, and to this day, new Internet technologies are still being developed, and the discussion around rule-making and governance on the use of the Internet is ongoing.

Two important conferences related to the Internet will take place in Japan in 2023. IETF 116, which will focus on technology development, is slated for March, and IGF 2023, on Internet governance, is slated for November or December. Given our involvement with the Internet, we will be paying close attention to these events.

The IIR introduces the wide range of technology that IIJ researches and develops, comprising periodic observation reports that provide an outline of various data IIJ obtains through the daily operation of services, as well as focused research examining specific areas of technology.

Our periodic observation report in Chapter 1 provides our analysis of IIJ's fixed broadband and mobile traffic. We have been performing this analysis for some time now, and the numbers show that traffic continues to increase and that fixed broadband continues to shift from PPPoE to IPoE. Our analysis on usage by port also bears out the shift from HTTP (TCP/80) to HTTPS (TCP/443) and to QUIC (UDP/443).

Our focused research report in Chapter 2 describes our work live-streaming the Spring Festival in Tokyo, of which IIJ is a sponsor. This music festival has been running since 2005, but since 2020, the COVID-19 pandemic has resulted in some performances not going ahead and measures such as attendance limits being imposed. As such, we have been live-streaming the festival on the Internet so that as many people as possible can enjoy the music on offer. This is a real-life report from members of the team that set up systems for efficiently broadcasting from multiple venues and implemented features to make the experience enjoyable for viewers.

Through activities such as these, IIJ strives to improve and develop its services on a daily basis while maintaining the stability of the Internet. We will continue to provide a variety of services and solutions that our customers can take full advantage of as infrastructure for their corporate activities.

Junichi Shimagami

Mr. Shimagami is a Senior Executive Officer and the CTO of IIJ. His interest in the Internet led to him joining IIJ in September 1996. After engaging in the design and construction of the A-Bone Asia region network spearheaded by IIJ, as well as IIJ's backbone network, he was put in charge of IIJ network services. Since 2015, he has been responsible for network, cloud, and security technology across the board as CTO. In April 2017, he became chairman of the Telecom Services Association of Japan's MVNO Council, and in June 2021, he became a vice-chairman of the association.