Executive Summary

To understand the traffic conditions experienced by fixed broadband subscribers in Japan, the Ministry of Internal Affairs and Communications (MIC) collects and estimates traffic with cooperation from major Internet service providers, Internet exchanges, and researchers. IIJ also participates in these studies, which have been ongoing since 2004 and provide one of the most valuable datasets for chronicling the development of the Internet. The latest results, based on data for May 2020, were recently released[*1]. As reported in the media, and as you no doubt know, Internet traffic is on the rise worldwide because of the COVID-19 situation. The data period this time around coincides with when people's movements were most heavily restricted, with Japan having announced a state of emergency. As a result, fixed broadband subscribers' total download traffic was up a hefty 57.4% year on year, versus the 17.5% year-on-year increase in May 2019. Total upload traffic also saw strong growth of 48.5%. The numbers once again bear out the impact of COVID-19 on Internet traffic, and these data are also valuable in that they evidence the huge role that the Internet plays in times of emergency.

This role is not limited to the current COVID-19 situation. The Internet has long played a major role during natural disasters that have heavily impacted on society, including earthquakes and typhoons. And we will continue working to ensure that the Internet is able to fulfil its anticipated role as social infrastructure.

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 for this issue, in Chapter 1, looks at our analysis of IIJ's fixed broadband and mobile traffic. As I mentioned, the MIC's recent traffic data bear out the impact of COVID-19, and our analysis here provides an even more detailed view of the impact. Our results clearly show that with people's movements being restricted this year, total traffic reached a peak in May once Japan declared a state of emergency, and subsequently started to ease off in June. The distribution of traffic per user for early June shows an increase in fixed broadband and a decline in mobile, so the traffic data also back up the observation that people were more active at home once their movements were restricted.

Our focused research report in Chapter 2 explains the VMNO concept that we are advocating in relation to how MVNOs should be set up in the 5G era. 5G services began rolling out last year in a number of countries, and MNO services launched in Japan last year as well. The current 5G services, however, are NSA (non-standalone) deployments that use the existing 4G setup with 5G introduced only on the wireless component to provide ultra-high-speed communications. In NSA deployments, the relationship between MNOs and MVNOs is unchanged from the 4G era. To achieve the 5G goals of massive machine type communications and ultra-low latency, we will need to migrate to SA (standalone) deployments that use a full 5G setup. The VMNO concept puts forward an approach that will allow MVNOs to provide services that take advantage of 5G's characteristics under SA deployments.

In the focused research report in Chapter 3, we describe our efforts as an operator of large-scale email services to automate the detection of spam and streamline service operations using machine learning technologies. We use Splunk as part of these efforts, but Splunk's NLP (Natural Language Processing) tools did not previously support Japanese, so we created our own NLP extension to make Japanese text mining possible. We hope this report also serves as a useful example of a business use case for text mining.

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 MVNO Council.

*1   Ministry of Internal Affairs and Communications, "Japanese Internet traffic data and estimates" (https://www.soumu.go.jp/menu_news/ s-news/01kiban04_02000171.html, in Japanese).