

## Executive Summary

My name is Junichi Shimagami, CTO of IJJ, Internet Initiative Japan Inc. IJJ started publishing the IIR, our Internet Infrastructure Review, in 2008. I am proud to deliver the latest Volume 35, which is the first for the fiscal year 2017.

After the last volume of the IIR, the spread of the “WannaCry” ransomware that targets Microsoft Windows products took the world by surprise in the areas of Internet and security. Full-scale infection of WannaCry began on May 12, and in the UK, the National Health Service was one of the worst hit, causing significant disruption to health service organizations. In Japan, IPA, the Information-technology Promotion Agency, Japan, also issued an alert on May 14. Many people in Japan may remember seeing repeated reports on the television news while at home that Sunday.

Although WannaCry is extremely capable of spreading itself across networks, current Microsoft Windows products will not be infected if the security patch released on March 14 is applied properly. Microsoft has even taken the unusual step of issuing special patches for old products, such as Windows XP, that it does not support officially anymore. To protect yourself, it is essential to use products that are officially supported by the manufacturer, and apply software patches diligently. This incident reminds us that basic actions play an essential role in maintaining security, no matter what the infrastructure may be.

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

In Chapter 1, we provide a summary of Internet security over a three-month period as usual. This volume covers from January 1 through March 31, 2017. In this period, a number of hacktivism-based attacks were once again carried out by Anonymous and other groups, and there were frequent incidents such as DDoS attacks, information leaks caused by unauthorized access, and website defacements. In our focused research, we examine the Struts 2 vulnerability, and discuss the dynamic analysis of macOS ransomware using monitor.app. Struts 2 is a web application framework that has been used by many organizations since its release in 2007, and numerous vulnerabilities have been reported in the past as well. Because it is not easy to change a system once it has been implemented, we look at a measure that provides protection without changing an existing application, by placing a web application firewall in front of it.

In Chapter 2, we cover the latest trends in email spam. In the first half of this chapter, we report on spam ratio trends over the past year. The spam ratio fluctuated significantly from week to week in fiscal 2016. Although the ratio had been declining in recent years, the annual average spam ratio has begun to rise again. In the second half, we discuss the trends and penetration in Japan for the effective anti-spam solution DMARC and its related technologies. It seems that the penetration rate of DMARC is still low compared to the SPF and DKIM sender authentication technologies that were implemented earlier. We present important points to consider when implementing DMARC, in the hopes that this technology will see more widespread use.

IJJ continues to strive towards improving and developing our services daily, while maintaining the stability of the ICT environment. We will keep providing 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 IJJ. His interest in the Internet led to him joining IJJ in September 1996. After engaging in the design and construction of the A-Bone Asia region network spearheaded by IJJ, as well as IJJ's backbone network, he was put in charge of IJJ 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.