Executive Summary

On February 3 2011, the IANA allocated one of the last five available /8 IPv4 address blocks to each of the five regional IR, finally exhausting the original IPv4 inventory. Although it will be a few months before regional IR availability runs dry, we are now faced with the need to implement full-fledged measures to find a way to overcome the IPv4 exhaustion issue.

As of June 2010, the Internet penetration rate has reached 28.7% of the worldwide population, with the Asia-Pacific region slightly lower at 21.9%. Given these figures, it could be said that the Internet still has the potential to grow several times over in size as a network infrastructure.

However, in order to continue to use IPv4 with the still expanding Internet, it may be necessary for multiple users to share global addresses, or for organizations to transfer IPv4 addresses that they no longer need. If this scenario eventuates, mechanisms such as the existing IP address-based user authentication may become untenable or lose their meaning altogether.

There are also still many operational and security-related issues with migration to IPv6, such as how to safely migrate current IPv4 networks that are based around the premises of NAT and private addresses.

In order to overcome the IPv4 address exhaustion issue and develop the Internet into a safe and secure communication infrastructure that connects all of humankind, it will be essential to maintain continuous technological development and the operating framework mutually coordinated by providers and users.

This report discusses the results of the various ongoing surveys and analysis activities that IIJ carries out to maintain and develop the Internet infrastructure and enable our customers to continue to use it safely and securely. We also regularly present summaries of technological development as well as important technical information.

In the "Infrastructure Security" section, we report on the results of our ongoing statistics gathering and analyses for security incidents observed during the three months from October 1 to December 31, 2010. We also present our focused research for this period, including the status of a series of DDoS attacks that took place in September 2010, malware infections resulting from mashup content, the alteration of software distribution packages, and the anti-Malware engineering WorkShop 2010 (MWS2010).

In the "Messaging Technology" section, we examine spam ratio trends and regional source distribution, as well as trends in the main regional sources of spam, for the 14 weeks between late September 2010 and early January 2011. We also discuss the downward trend in spam ratios, and comment on the relationship between sender authentication technology results and spam.

In the "Internet Operation" section we look at the significance and impact of IPv4 address exhaustion, which has now entered its initial phase, and examine the points and issues that ISPs and companies must consider when responding to this issue.

Under "Internet Topics," we present an overview of the activities of the Nippon CSIRT Association, an institution that aims to improve the incident response capability of its members through collaboration and information sharing between CSIRT (Computer Security Incident Response Team) organizations in Japan.

IIJ will continue to publish periodic reports covering information such as this, and provide customers with a variety of solutions for the stable, secure, and innovative use of the Internet as an infrastructure for supporting corporate activities.

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