

Executive Summary

The Internet is not controlled by a single body, as it is an autonomous distributed system that develops gradually as networks link to one another spontaneously. There are some laws governing its behavior, but there is no overall blueprint or scenario by which the Internet operates. It is affected by a number of things, such as trends in the social situation and the world economy, as well as changes in the behavior of users and forms of usage that these result in, and the demeanor and nature of the Internet is constantly changing through the interaction of these different layers.

In order to carry out the stable operation of an infrastructure like this that develops and changes autonomously, it is necessary to measure and analyze its behavior from multiple viewpoints on a constant basis, and to maintain an understanding of what developments are taking place, in order to be able to react swiftly and appropriately. When carrying this out, if appropriate methods are not used to measure and interpret data, the resulting information will be unreliable, making appropriate operation impossible.

For this reason, while it is important to develop technology for building and operating the Internet, we believe it is also crucial to measure operating status, analyze the resulting data to extract meaningful information from it, and create initiatives and systems for applying the results to everyday operation.

This report is published regularly to provide the results of a variety of measurements and analyses that IJ carries out to maintain and develop Internet infrastructure, in addition to information about related technologies.

In the “Infrastructure Security” section, we report statistics and analyses of security incidents observed for the three months from October 1 to December 31, 2009. We also present focused research covering the details of the Gumblar malware that re-emerged in October and continues to be active, in addition to information regarding the SSL/TLS vulnerability made public in November, and an analysis of techniques for surveying P2P file sharing networks.

In the “Messaging Technology” section, we report on the state of spam trends for the entire year of 2009, and international coordination initiatives that aim to spread the adoption of anti-spam measures. We also provide an overview of the DKIM sender authentication technology that uses digital signatures.

Under “Internet Backbone” we compare results of wide scale Internet measurement using multiple methods, and identify issues with the methods that have been commonly used for measuring Internet reachability to date, in addition to presenting proposals for improvement.

IJ 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.

Author:

Toshiya Asaba

President and CEO, IJ Innovation Institute Inc. Mr. Asaba joined IJ in its inaugural year of 1992, becoming involved in backbone construction, route control, and interconnectivity with domestic and foreign ISPs. Asaba was named IJ director in 1999, and as executive vice president in charge of technical development in 2004. Mr. Asaba founded the IJ Innovation Institute Inc. in June 2008, and became president and CEO of that organization.