

Executive Summary

When IIJ was founded in 1992, most Internet traffic consisted of FTP file transfers and NNTP Internet news distribution. At the time, ISP operators worked in concert with each other to optimize the efficient delivery of such major traffic. However, with the subsequent advent of the Web, HTTP became mainstream from around the latter half of the 90s, and the focus of traffic analysis and management shifted to HTTP traffic.

Meanwhile, after entering the new millennium, there was a declining trend in HTTP traffic for a time due to the emergence of rich content, as well as the diversification of applications using technologies such as P2P. However, in recent years the move to cloud computing and the proliferation of smartphones have led to HTTP once again starting to overtake other traffic for a variety of applications.

As this demonstrates, in the field of ISP engineering and operations, measures are taken to optimize traffic and ensure security by constantly taking into account technology and service trends, and anticipating Internet usage as well as changes in the behavior of the traffic it generates.

This report discusses the results of the various ongoing surveys and analysis activities that IIJ carries out to support 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 give a month-by-month chronological summary of major incidents observed during the three months from October 1 to December 31, 2013, and report on the results of our statistics gathering and analyses for the entire period. We also present our focused research for this period, including discussion of points to note when implementing memory forensics on devices equipped with large amounts of memory, and an explanation of the “forward secrecy” data protection technology that extends SSL encryption. Finally, we give an overview of website alteration surveys using Web crawlers that IIJ have implemented as part of our anti-malware activities, and report the latest survey results.

In the “Cloud Computing Technology” section, we provide an overall technical explanation of the IIJ GIO service, which is now in its fifth year since launching in 2009. In this volume, we give a general outline of the IIJ GIO Hosting Package Service and the IIJ GIO Component Service. We also discuss points regarding the physical construction of the large-scale infrastructure for implementing these services. In future volumes we will examine the technology used in physically constructed infrastructure, and look at points to note on the operational side.

In the “Web Traffic Report” section, we comment on the circumstances surrounding Web applications currently used as front-ends for a variety of services, and with these in mind, we report the results of our analysis of recent Web traffic characteristics. We also explain how it is important to identify traffic characteristics, as well as trends in the Web application technologies used and protocol changes, to maintain efficient operations as an ISP.

Through activities such as these, IIJ continues to strive towards improving and developing our services on a daily basis while maintaining the stability of the Internet. We will keep providing a variety of solutions that our customers can take full advantage of as infrastructure for their corporate activities.

Author:



Toshiya Asaba

President and CEO, IIJ Innovation Institute Inc. President and CEO, Stratosphere Inc. Mr. Asaba joined IIJ in its inaugural year of 1992, becoming involved in backbone construction, route control, and interconnectivity with domestic and foreign ISPs. He was named IIJ director in 1999, and executive vice president in charge of technical development in 2004. When the IIJ Innovation Institute Inc. was founded in June 2008, Mr. Asaba became its president and CEO. When Stratosphere Inc. was founded in April 2012, he also became president and CEO of that organization.