

Executive Summary

In recent years, a “cloud-first” mindset has been instilled in companies, with the use of cloud services considered above all else when building or renewing corporate IT systems. According to a report called “Japan Storage in the Cloud 2014–2018 Forecast and 2013 Analysis” published by IDC in October of last year, the market scale of pay-as-you-go storage services offered as public cloud services (storage in the cloud), which was 15,819,000,000 yen in 2013, is forecast to subsequently expand at an average annual growth rate of 26.7%, reaching 51,560,000,000 yen in 2018.

Looking at the status of facilities for IJ’s IJ GIO cloud service, the physical storage capacity required for services increased by approximately 40% between the end of 2013 and the end of 2014, and is starting to demonstrate more growth than server numbers. Even for services with surging demand such as this, it is necessary to maintain overall system availability for the infrastructure providing them, while also dealing with continual expansion and renewal of facilities, handling urgent failures and faults, and implementing vulnerability countermeasures reliably. To do this, at the facility design stage it is imperative to thoroughly evaluate matters ahead of time, including which technology and products to adopt, and which architecture to build, to secure features such as fault-tolerance, maintainability, and scalability.

This report discusses the results of the various ongoing surveys and analysis activities that IJ, as a service provider, carries out to support the Internet and cloud infrastructure, and enable our customers to continue to use them 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, 2014, and report on the results of our statistics gathering and analyses for the entire period. We also present our focused research for this period, discussing countermeasures against the alteration of domain name registry registration information, and looking at a tool that scans for traces (IOCs) of threats lurking in the memory of a device. In addition, we provide an explanation of ID management technology.

In the “Cloud Computing Technology” section, we give an overview of the new IJ GIO cloud service that IJ provides, and summarize the deployment status and usage trends for the service facilities that support it. We also examine ongoing initiatives for the stable operation of service infrastructure, such as approaches to the construction of large-scale infrastructure, the renewal of facilities to maintain infrastructure, and processes such as failure and fault handling.

In the “Storage Technology” section, we present our research into the “UKAI” storage system that enables flexible control over the actual data location of virtual disks, for which location management is difficult as service infrastructure moves toward virtualization and the cloud. We first give an overview of the status of virtualization infrastructure that UKAI is designed around, then discuss issues that need to be overcome, architecture for resolving these issues, and details of a prototype implementation.

Through activities such as these, IJ 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.

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President and CEO, IJ Innovation Institute Inc. President and CEO, Stratosphere 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. He was named IJ director in 1999, and executive vice president in charge of technical development in 2004. When the IJ 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.