



Internet Initiative Japan

Objective

Implement efficient storage to support increased business and higher service levels

Approach

Conducted a comprehensive study of the effectiveness of various technologies including tiered storage and all-flash

IT Matters

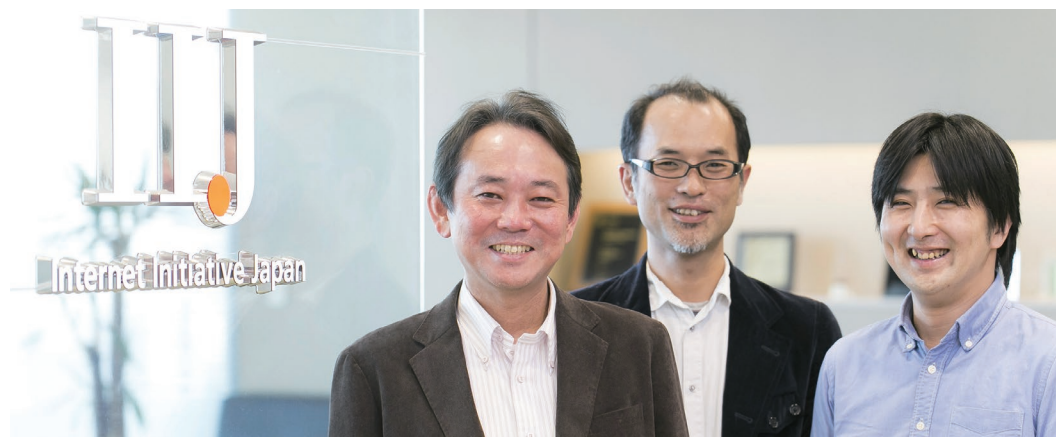
- Achieved high Input/Output Operations Per Second (IOPS) with low latency using high performance
- Provided more Logical Unit Numbers (LUNs) in one case, realizing Quality of Service (QoS) in LUN units
- Expanded single rack storage capacity to triple that of conventional systems
- Reduced footprint by 74% compared to conventional systems, keeping power consumption down

Business Matters

- Improved user satisfaction through guaranteed storage Input/Output (I/O) performance
- Using maximum capacity Solid-State Disk (SSD), inhibited system scale expansion in response to an annual 40% increase in storage capacity
- Reduced failure rate, shortened rebuilding time, and through stable performance, reduced operating load and risk

Internet Initiative Japan builds all-flash storage infrastructure

HPE 3PAR StoreServ supports next generation cloud storage with I/O guarantee



Internet Initiative Japan needed high performance storage that would support further business growth in the cloud services it already delivers to 1,300 businesses. It required I/O performance that could be guaranteed even at peak usage, they chose HPE 3PAR StoreServ All-Flash Storage.

Challenge

Need for high processing performance

Internet Initiative Japan (IIJ) offers next-generation cloud services that support over 1,300 businesses in Japan and overseas.

“In 2009, we started IIJ GIO, a high reliability, high quality cloud service that handles migration of company core business systems,” says Masakazu Tachikui, IIJ Executive Officer & Division Director of Cloud Division. “We have researched the comments of our customers for more than six years and based on our findings, we used leading edge technology when designing our next generation enterprise cloud. IIJ GIO P2 is built on the new One Cloud service concept.”

“We chose a product that could offer services with the highest value to our customers and big business advantages for us. That was HPE 3PAR StoreServ All-Flash Storage. As the storage infrastructure supporting the core of IJ GIO P2, we anticipate high satisfaction levels for our customers and a boost to our competitive edge.”

— Masakazu Tachikui, Executive Officer & Division Director, Cloud Division, Internet Initiative Japan Inc.



Masakazu Tachikui
Executive Officer
Division Director, Cloud Division
Internet Initiative Japan Inc.



Osamu Kamiya
General Manager
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One Cloud was launched by IJ in 2015 and is a guideline for creating a single cloud service that has both public and private advantages. In addition to offering computing, networking and security from a single resource, it also embodies a single cloud environment that connects multiple cloud services including those of other companies.

Osamu Kamiya, general manager, Cloud Division for the Service Planning Department at IJ explains: “IJ GIO P2 ties together all the IT infrastructure a company needs to do business. To do that, we prepared a wide range of options for system performance, not just for handling how large or small the system is. With Public Resources (shared type), we offer a wide range of service menus from Best Effort to Performance Guarantee types. Similarly, with Private Resources (dedicated type), resources are provided within a few minutes to a few dozen minutes and we offer the flexibility of usage in one day units.”

With IJ GIO P2, it is possible to use the best cloud resources in the right locations for various workloads, from core business systems to mid- to small-scale systems, as well as development and testing environments. Development and testing can be done using the Public Resource Best Effort type, and when operating in an actual environment, operation can be shifted to the Performance Guarantee type.

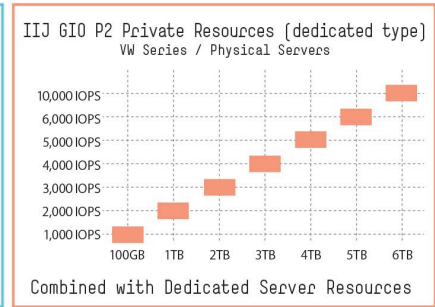
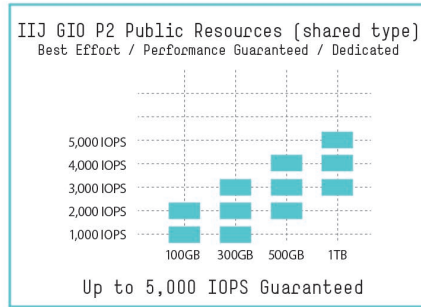
“When offering IJ GIO P2, we paid careful attention to providing high quality service. A good example is our storage service that allows customers to select I/O performance. To realize this, we had to build a high performance storage infrastructure that could maintain reliable I/O performance even during high load times,” says Tachikui.

Solution

Peak usage operational guarantee

IJ needed storage that would support cloud services and deliver the high processing performance needed for a greater number of customers and services. It required I/O performance that could be guaranteed even at peak usage, and that was why it chose HPE 3PAR StoreServ All-Flash Storage.

HPE 3PAR StoreServ All-Flash Storage is a strategic product promoting the shift to all-flash data centers. The model used with IJ GIO P2 operates with four controllers active, and realizes the high performance and low latency characteristic of all-flash products. The random access performance is said to reach ten or more times that of a Hard Disk Drive (HDD) based storage system.



HPE 3PAR StoreServ All Flash Storage Manifesting the IIJ GIO P2 Storage I/O Performance Guarantee



- High performance and low delay characteristic to all flash
- QoS realized in LUN units
- Single rack storage capacity expanded to three times that of conventional systems
- Housing space reduced 74% compared to conventional system, keeping power consumption down
- Large capacity SSD incorporated, reducing failure rate
- Significantly shortened rebuilding time [1/48 compared to SATA HDD]



Yusuke Yamamoto
Manager
Service Infrastructure Division
System Infrastructure Engineering
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“With the disk option of the Public Resources used with the HPE 3PAR StoreServ All-Flash Storage, a menu of up to 1 TB/5,000 IOPS can be selected, and similarly with the FC (Fiber Channel) storage menu of the Private Resources, it is possible to select a menu of up to 10 TB/10,000 IOPS. I/O performance check alignment allocated together with capacity, to securely operate online processing for which customers demand a high level response, or workloads such as batch processing that require completion within a limited time,” says Kamiya.

Yusuke Yamamoto, Manager of Service Infrastructure Division in System Infrastructure Engineering Department talks about how his team handled the I/O performance guarantee requirements: “With HPE 3PAR StoreServ All-Flash Storage, Quality of Service (QoS) can be utilized for the storage function. Key points are the ability to provide many Logical Unit Numbers (LUNs) in one case, and also to set QoS in LUN units. We can guarantee I/O performance for all the services housed in HPE 3PAR StoreServ.”

Guaranteed performance from its HPE 3PAR StoreServ All-Flash Storage enables IIJ to make accurate estimates on the number of contracts for which it can promise a 10,000 IOPS service. By using this sizing, IIJ guarantees I/O performance for its customers even if all services are at maximum demand level.

Yamamoto adds: “Being able to promise reliable service quality to customers is huge. By being able to set an upper limit for IOPS in service units, storage environment sizing is easy for us now.

“When access is concentrated and the storage load increases, there were times when we couldn’t provide sufficient performance to meet customer needs. This is due to scrambling for storage I/O. Even though storage products equipped with a QoS function were used, we had to use Best Effort because there is an upper limit to the number of QoS groups that can be set, and it was not possible to realize QoS in LUN units,” explains Yamamoto.

Case study

Internet Initiative
Japan Inc.

Industry

Communications

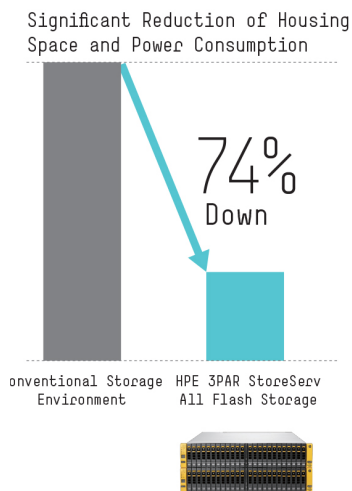
Customer at a glance

Hardware

- HPE 3PAR StoreServ All-Flash Storage

HPE Services

- Proactive Care



The most important requirements for the IJ GIO P2 storage infrastructure are efficient performance and the ability to introduce cloud service at a cost that matches the provision cost is also essential. In order to optimize performance and cost, with the first generation IJ GIO, the team combined high speed SSD with SAS/SATA HDD (Serial Attached SCSI (Small Computer System Interface)/Serial Advanced Technology Attachment HDD) which is advantageous with its capacity unit cost, and implemented “tiered storage” (hierarchical data management). Data with high access frequency was placed in SSD, and the remainder was moved to a disk hierarchy, allowing the team to keep storage costs down.

“We made a firm decision that we would not use the tiered storage function with the IJ GIO P2 storage infrastructure because HPE 3PAR StoreServ All-Flash Storage, which incorporates large capacity SSD, instantly led us to a solution to the problem. As long as the costs are counterbalanced, there is no need to combine SSD and HDD, and no need to use tiered storage. With the performance study we did, we were able to confirm that with HPE 3PAR StoreServ All-Flash Storage, even when several tens of thousands of IOPS are exceeded, delay does not occur, and various I/O patterns can be handled at a high performance level.”

Benefit

High level of customer satisfaction

The formidable I/O performance characteristic of all-flash products and the HPE 3PAR StoreServ All-Flash Storage with QoS in LUN units achieve the I/O Performance Guarantee for the IJ GIO P2 storage infrastructure and support high customer satisfaction levels.

“With the monitoring function provided by HPE 3PAR StoreServ, it is possible to accurately know performance and resource usage status in a timely fashion, making it possible to appropriately decide the timing for system enhancement. Also, using the API provided with HPE 3PAR StoreServ, we made big advances with settings automation and setup automation,” says Yamamoto. “In the future, even if it becomes necessary to migrate data due to a storage system update, by using the HPE 3PAR StoreServ migration function (Peer Motion), safe data migration is possible without stopping service.”

With IJ GIO P2, all operations such as adding or returning servers or storage, or expanding or contracting specs, can be performed by the user himself from a single control panel. Server environment setup time is a few minutes, and the time needed for data store preparation is just a few seconds.

IJ have seen a 40% yearly increase in storage capacity. The HPE 3PAR StoreServ All-Flash Storage reduced installation space 74% compared to conventional systems, and similarly, had a significant power consumption inhibiting effect. It also contributes to lower failure rates, shortening of rebuilding time, and reduced operation load and risk characteristic to all-flash products.

Tachikui concludes: “With IaaS for enterprise, the I/O Performance Guarantee was essential for IJ GIO P2 to gain a competitive edge among our many rivals. We chose a product that, having cleared the requirements we presented, could offer services with the highest value to our customers, a product with big business advantages for us - HPE 3PAR StoreServ All-Flash Storage. As the storage infrastructure supporting the core of IJ GIO P2, we anticipate high satisfaction levels for our customers and a boost to our competitive edge.”



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