



BIGLOBE constructs lower-cost, high-density scalable storage environment

HPE ProLiant SL4500 ensures mail storage for 3 million BIGLOBE broadband users

Objective

Support customer data requirements—which have already exceeded 500 TB—with a robust, scalable mail storage system while significantly reducing the total cost of storage (installation, operation, data centre).

Approach

Choose a storage environment such as object storage that takes advantage of x86 architecture on a server with the capability of loading a high-capacity HDD in order to achieve cost-effectiveness, good service quality, and reliable data protection rather than choosing NAS or SAN as storage solution.

IT Matters

- Achieved a low cost/2 PB high-capacity storage environment running Scality RING on a HPE ProLiant SL4540 Gen8 Server
- Deployed 88 TB (4 TB SATA×22) disk capacity and 192 GB memory per single HPE ProLiant SL4540 Server node
- Easily integrated existing Zimbra mail application with Scality RING
- Substantially reduced operation and maintenance cost with ProLiant SL4540 self-management capabilities
- On-site maintenance support within 4 hours is available 24 hours a day, 365 days a year with HPE Support Plus 24

Business Matters

- Overwhelming cost advantage in comparison with generic 2U server
- Highly competitive mail service infrastructure
- Scalability of storage capacity in excess of tens of petabytes
- Ability to use object storage to store archived logs and pictures



As a leading Japanese internet and cloud service provider, BIGLOBE is migrating to a more robust mail storage system for their 3 million broadband clients. BIGLOBE chose HPE ProLiant SL4540 Gen8 Server powered by Intel® Xeon® processor E5-2400 product family running the Scality RING software package.

BIGLOBE takes on challenges for growing mail data requirements and costs

BIGLOBE is one of Japan's leading ISPs. NEC started PC communication service PC-VAN in 1986, and 10 years later 3 different communication services were merged to create BIGLOBE. BIGLOBE has since expanded into cloud services and the MVNO business. In 2014, BIGLOBE became independent from NEC.

Currently, BIGLOBE is migrating its email storage environment to an HPE ProLiant SL4500 Scalable System solution in order to meet the growing data requirements of its 300 million broadband users.

“The HPE ProLiant SL4540 can reduce the cost by 2/3 in comparison with conventional storage environments. When we forecasted for the next five years after installation, we determined that the highest return on investment would be obtained with the ProLiant SL4540.”

– Ryuichi Ishige, Manager of Cloud Services, BIGLOBE

Ryuichi Ishige, Manager of Cloud Services, said “From the start of our operations with respect to mail infrastructure, we have systematically used trial and error methods to mitigate high cost in regards to growing data requirements.”

In order to reduce costs for BIGLOBE’s mail service infrastructure, several changeovers were carried out. Initially, the original DNA set up was transitioned to NAS realising a 50% cost savings. Secondly, the move to a virtualised server environment further reduced the cost to about 1/10th of the original system.

Mr. Ishige commented, “We are seeing a trend towards a need for total data capacity larger than 500 TB. The reason behind this growing need is we believe there is a change in the mail user mindset. Whereas before users deleted read emails, now they archive them.”

While managing growing data demands, the project team had to lower the cost of storage. When attempting to solve this dilemma, the proposal of object storage piqued Mr. Ishige’s and his team’s interest.

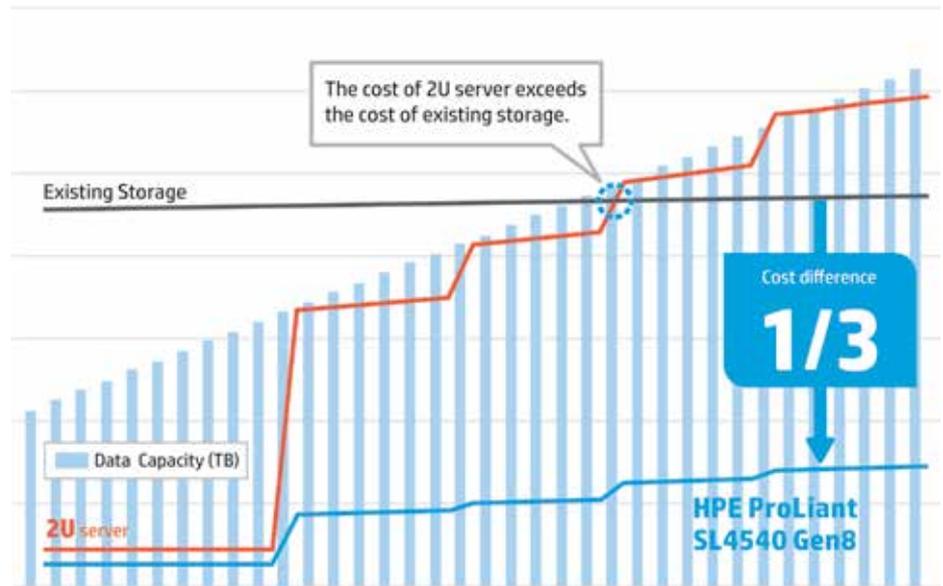
“Object storage delivers a very simple storage environment for x86 server clusters. In addition, petabyte-class scalability is available.” Mr. Ishige said.

In object storage, data is treated as an object rather than a block or a file, giving it an ID and metadata to be able to uniquely identify data for its respective application. The foremost feature of an object-based storage device (OSD) is that it requires less metadata than file systems to store and access files, and reduces the overhead of managing file metadata by storing the metadata with the object.

Mr. Ishige stated, “We expect to reduce our operation management load because of object storage’s simple structure and flexibility for ever-increasing data. Also, we can use a generic x86 server. It significantly reduces the installation cost when compared to dedicated storage products.”

Since 2012, Mr. Ishige and his team have conducted extensive research to deepen their understanding of object storage. After considering all their options, they chose to install Scality RING software from US-based Scality due to their patented object storage technology. Scality software combined with the HPE ProLiant SL4540 Gen8 Servers running the Intel® Xeon® processor E5-2400 product family provided a low-cost, high-performance platform.

Cost Comparison between different system configurations



Scale-out server with large storage

HPE ProLiant SL4540 Gen8

- Intel® Xeon E5-2400 Series (Max 2CPU/16Core)
- Max 192GB Memory / Max 60 disks



HPE ProLiant SL4500
(2 server nodes in 4.3U Chassis)



Solution

Implementing Scalify RING to support object storage

Scalify RING runs on Linux OS. The ring-shaped structure operating on x86 server clusters distributes data efficiently and offers great flexibility. Scalify RING, a scale-out Software Defined Storage (SDS) solution, is a proven product that has been implemented by many service providers that require large-scale storage environments, data centre operators, and businesses in the communications industry.

“It is possible to implement Scalify RING with only six servers, and it is capable of expanding its storage capacity simply by adding more servers. While expanding our storage, we did not experience any downtime even without RAID management. From the data protection perspective, the ability to replicate objects multiple times over various different nodes makes data retention very secure,” Yohei Yamamoto from NEC Solution Innovators, Ltd. stated. NEC Solution Innovators, Ltd. is a partner company that has been supporting BIGLOBE’s development and operations for more than 10 years in various systems, including this project.

“Scality RING provides a simple user experience without worrying about directories and data volume configuration,” said Mr. Yamamoto. “In addition, Scality RING has an extensive history of usage among mail server data storage providers. Scality RING also has excellent compatibility with existing software by providing open connectors so that for example, Zimbra, a mail platform which BIGLOBE has been using, can be integrated.”

“In comparison with the existing storage environment, we expect to operate at 1/3 of the original cost. We need four times more than our current storage capacity while still cutting cost by 2/3,” explained Mr. Ishige.

The fact that costs were greatly reduced, even while quadrupling the replication of objects and utilising more storage capacity, is noteworthy. However, great care has to be taken when selecting the type of platform because it can have a massive financial impact on the investment.

HPE ProLiant SL4500 ultra-high density server maximises return on investment

Mr. Ishige recalls how the project team chose the Scality RING platform: “Although we had initially thought about using a 2U server, we realised that network devices would be required in proportion to the server number. As a result, we feared it would exponentially raise the total cost. Furthermore, as the number of 2U servers increases, the cost would eventually outweigh the cost of conventional storage environments in the near future.”

In order to increase Scality RING’s return on investment, it was essential to be capable of equipping a number of HDDs, which greatly exceeds the limits of the 2U servers. When looking for a suitable server with ample storage, an engineer from Scality recommended the HPE ProLiant SL4500 Scalable System.

The high-density HPE ProLiant SL4540 Gen8 Server is best suited for large scale-out when there are high storage demands. The 4.3U form factor chassis stores 3 server nodes.

The server is densely packed with module-type high-capacity storage, an I/O module, and a power supply unit. It is possible to be equipped with up to 88 TB (4 TB SATA × 22) and maximum 192 GB of memory per node.

“When we considered overall cost again, we identified operation costs including server, network equipment, power and space, and we compared the cost outlook due to the differences in system configurations,” said Mr. Ishige. “As a result, a combination of the HPE ProLiant SL4540 Gen8 Server and Scality RING became the obvious choice to achieve optimal cost. The ProLiant SL4540 can reduce the cost by 2/3 in comparison with conventional storage environments. When we forecasted for the next five years after installation, we determined that the highest return on investment would be obtained with the ProLiant SL4540.”

Yuta Umezu from DC Platform Group, Cloud Service HQ, said, “HPE has signed a global partnership with Scality, and has extensive experience with systems, including the petabyte-class system.”

Benefit

Achieve an excellent petabyte-class storage environment while maintaining cost effectiveness

In order to implement the latest technology for the new mail infrastructure, BIGLOBE took sufficient time for verification.

“We started to do trial runs with Scality RING in November 2012,” said Mr. Umezu. “We carefully built safe recovery procedures by checking behaviours when failures occurred which we created for learning purposes. And in 2014, we conducted a verification test using an actual HPE ProLiant SL4540 Gen8 Server.”

In June 2014, the final testing stage was started when mail data from 200 internal users migrated to the new system. The HPE ProLiant SL4540 Gen8 × 6 node (3 chassis) equipped with 192 GB of memory and 88 TB (4 TB SATA × 22 pieces) disk per node was introduced in the first phase.

Customer at a glance

Hardware

- HPE ProLiant SL4540 Gen8 Server

HPE Services

- HPE Support Plus 24

Mr. Yamamoto said, “After confirming stability and service quality of the system in an internal environment, we wanted to sequentially begin migrating customers over to the new system.”

HPE ProLiant SL4540 Gen8 Servers were introduced due to their ability to reduce load demands by means of an operation management system. The servers have unique self-operating features such as the capability to self-diagnose, report status, and be remotely managed with the aid of iLO 4. The team actively utilises those functions along with HPE Support Plus 24, an established system that offers around the clock service 24 hours a day, 365 days a year, including on-site maintenance support within 4 hours.

“Undertaking this project and operating with this ultra-high density server hardware is a first for BIGLOBE as a company. We are assured of a well-prepared system with support from HPE, by taking all possible measures so we can quickly respond to any possible failures,” Mr. Umezu explained.

The project to migrate about 300 million BIGLOBE customers to the new system is now underway. BIGLOBE expects the new service infrastructure to be ready for their users in late 2015. At that point the scale of the system will be over 2 PB of capacity operating with HPE ProLiant SL4540 Gen8 × 26 nodes (13 chassis) and 572 (4 TB SATA) disks.

“New options that combine large capacity storage servers and object storage are very good news for providers like us, who deal with huge amounts of data,” said Mr. Ishige. “We believe that we can achieve a more cost-competitive server infrastructure using the appropriate item in the right place to realise the performance, reliability, and cost we need.”

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hpe.com/info/servers



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