nimblestorage

Yahoo! JAPAN Strengthens Data Centre Flexibility with Nimble

Yahoo Japan Corporation, Softbank Group, operates the country's largest internet portal site. The company provides more than 100 services to users including a search engine, email, a news service and online shopping.

During the past few years, Yahoo! JAPAN's users have been shifting from using PCs as their preferred way of accessing services to mobile devices such as smart phones and tablets. There has also been a shift from using web browsers to apps.

This shift has created challenges for Yahoo! JAPAN and resulted in the company looking for ways to make its back-end infrastructure more flexible and efficient. As part of this process, the company was keen to find a way to provide on-demand access to resources such as servers, storage and network capacity to support fluctuations in user demand.

In 2014, Yahoo! JAPAN introduced open cloud platform software OpenStack. This shift enabled the company to create an Infrastructure as a Service (IaaS) platform which allowed access to required resources within a few minutes while at the same time reducing data centre management costs.

Takuya Ito, Yahoo! JAPAN Senior Manager of Site Operations Division, System Management Group and Infrastructure Engineering Department, says code for the IaaS platform can be divided into three types: infrastructure code, application driver code and internal security code.

"The OpenStack environment allows us to create individual driver code within the OpenStack platform, allowing us to concentrate on our software development needs," he says.

Soon after Yahoo! JAPAN commenced its OpenStack deployment, the number of virtual machines within its infrastructure climbed to more than 50,000. At the same time accompanying storage system volumes reached dozens of sets and required a significant increase in management.

Yahoo! JAPAN Systems Management Group, Manager, Storage Infrastructure Engineering Department. Junya Shinohara says co-ordination between the controllers in the existing storage system was no longer sufficient. "When changing the settings of the cluster controllers, you had to login to each individual controller to change each setting. We needed to find a way to reduce the storage-related workload," he says.

There were also challenges as a result of the physical size of the existing storage equipment. Servers and storage systems could not be placed on the same rack, causing flexibility issues when scaling resources up or down.

The company was keen to find a compact storage system which did not consume extra rack space and offered higher energy efficiency. New storage would also have to offer a dedicated driver for the OpenStack Block Storage.

A Nimble Alternative

After reviewing a range of storage options, Yahoo! JAPAN made the decision to implement a Nimble CS700 storage array.

"We placed emphasis on finding a balance between functionality and volume," says Shinohara. "The high functionality, mass storage, space-saving and energy efficient features offered by Nimble led us to the decision that it was the most appropriate for our OpenStack platform."

Company Profile

Customer Challenges

- Required a scalable, energy-efficient storage infrastructure to support a growing Open Stack platform
- Needed to find ways to reduce storage management overheads during a period of rapid growth

Solution

- Nimble CS700 and CS300 storage arrays providing 233 terabytes of total storage usable capacity

Business Benefits

- Scalable support for critical OpenStack platform

"To date Nimble Storage has provided the speedy response to our detailed requests, and I really look forward to the same in the future."

Yahoo! JAPAN Senior Manager, Infrastructure Engineering Takuya Ito

Yahoo! JAPAN initially rented a Nimble Storage unit to conduct technical verification of its storage features and check its connectivity with OpenStack. A few months later, Yahoo deployed a Nimble Storage CS700 array as support for its OpenStack platform.

Yahoo! JAPAN Systems Management Group, Site Operation Division Keita Kobayashi says the project was completed very quickly with the assistance of Toshiba Corporation Cloud & Solutions Company.

"The Nimble storage is a simple design, and racking only took about two hours," he says. "After installation, the initial settings were handled by us and the web-based graphical interface allowed for a smooth setup. Despite using the storage product for the first time we had no worries and were able to bring it to phase-in stage."

Yahoo! JAPAN is currently using Nimble Storage in both the OpenStack platform development and company-oriented service production environments. Since I/O characteristics can differ greatly depending on application, Yahoo! JAPAN has devised a method to measure storage array performance, including Nimble Storage and other legacy storage products. As a result, applications which require high performance can be combined appropriately and directed to Nimble Storage arrays.

During operation of the OpenStack platform, more than 50,000 metric DB instances (Between 40 and 50 per minute) were stored in the Nimble Storage. To cope with this rising demand, in January 2015 a Nimble CS300 unit was added.

Yahoo! JAPAN also requested driver improvements to enhance storage features. One of these was the Image Transfer Optimization (ITO) feature.

As Ito explains, "One of the improvements we got Nimble to make was to offload part of the OpenStack Block Storage and OpenStack Image (Glance) functionality. This enabled data copying within the Nimble Storage array, and the peak network traffic during copying was no longer an issue. "We are now able to launch more than 500 instances of operating system templates within 20 to 30 seconds, which brought us the speed we were looking for in the OpenStack platform. This was a big win."

Yahoo! JAPAN also opted to implement Nimble's cloud-based management solution InfoSight. The application analyses storage performance and accurately diagnoses and pre-empts issues in real-time. For example, if there is an error or a malfunction on the OpenStack platform storage, InfoSight can quickly diagnose the issue and find the cause. By using the storage array's remote log-in feature, we can request support from both Toshiba and Nimble Storage remotely."

Future Plans

In the medium to longer term, Kobayashi says Yahoo! JAPAN is considering deploying Nimble storage to support a range of other services and critical applications further optimising its hardware racking using Nimble Storage arrays. The space-saving, energy efficient arrays makes it easy not only to locate the physical server and storage system in one rack, but to fit the whole OpenStack platform system chassis into one rack as well.

"We have launched 2,000 instances in a single rack pod using Nimble Storage," Shinohara says. "The single rack pod design of Nimble allows for easy additions or removal which is a great help."

Yahoo! JAPAN is also considering integrating all of its data centre system platforms in the OpenStack framework and this platform with the OpenStack Cloud Federation. Yahoo! JAPAN may benefit from deeper storage integration to maximise this opportunity.

"To date Nimble Storage has provided the speedy response to our detailed requests, and I really look forward to the same in the future."