

“Fujitsu ETERNUS CD10000 S2 system architecture maximizes the advantage of erasure coding for CRUSH algorithm and redundancy.”

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High performance, reliable and safe ‘Nifty cloud object storage’ on-demand service dramatically lowers cost for IoT era.

#### At a glance

Country: Japan

Industry: ISP business, Web service,  
Cloud business

Founded: 1986

Employees: 806 (as of March 31 2016,  
consolidated)

Website: [www.nifty.co.jp](http://www.nifty.co.jp)

#### Challenge

- To improve stability, availability and quality of large scale cloud storage with OSS
- To have low cost storage service for IoT era
- To reduce operation workload of large scale cloud storage

#### Solution

Selected FUJITSU Storage ETERNUS CD10000 S2 with OSS distributed storage system Ceph for its service infrastructure. Ceph's Controlled Replication Under Scalable Hashing (CRUSH) algorithm and erasure coding<sup>1</sup> improves stable operation and availability.

#### Benefit

- Ceph's CRUSH algorithm and erasure coding improves stability and availability
- Expand ETERNUS CD10000 S2 usage, not limiting to API's object access or Nifty cloud service infrastructure, will give five yen per GB service
- ETERNUS CD10000 S2 reduces workload of patch and major version optimization, creating extra time for user's developing work

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<sup>1</sup>Technology to improve availability and capacity efficiency with data parity between server configuring distributed storage system



## Customer

Nifty Corporation has been pioneering in the internet community. It started the 'Nifty cloud object storage' service in June 2016 providing unlimited capacity and five Japanese yen per GB to respond to IoT demands. 'Nifty cloud object storage' provides a low cost service by having the Nifty account. The on-demand service is immediately available after log-in. It provides a flexible service when developers urgently require resource for verification. It is suitable for big data storage and also for small start testing.

## Products and services

■ FUJITSU Storage ETERNUS CD10000 S2 Hyper Scale Storage

## Challenge

In January 2010 Nifty started its public cloud service 'Nifty cloud', leading the industry trend. Nifty has more than 5,000 (end of October 2016) records with this service and demand is still growing. "Nifty cloud has a strong basic structure. Its service level agreement (SLA) guarantees more than 99.99 percent server availability rate per month. It offers 'Made in Japan' quality, security measures and high performance compared to equivalent services. The user friendly interface features on-demand add/delete server in five minutes and the control panel on the browser manages resource. Currently 95 percent of '@Nifty' (internet service) is deployed on the cloud environment. Achievements and operation knowledge from internal tests adds to our strength," explains Junichiro Abe, Cloud Platform Department, Cloud Business Division, NIFTY Corporation.

Nifty started its revolutionary low cost service 'Nifty cloud object storage' in June 2016 providing five yen per GB (5,000 Jpn yen/TB/month) due to increasing demands for IoT and big data. The service provides low cost, unlimited capacity and a high level of stability and reliability. Distributed storage technology 'Ceph' with Open Source Software (OSS) was key to this revolutionary service.

## Solution

How to deploy and operate large cloud storage for the coming IoT era? "I was following Ceph from the start-up of Nifty cloud storage. I found potential in the idea," recalls Yuichi Saotome, Cloud Infrastructure Department, Cloud Business Division, NIFTY Corporation. The superior architecture of CRUSH algorithm also attracted Nifty's attention. "Distributed storage systems normally have separate storage for central directories to map data and data storage. This creates a risk for stability. Ceph's CRUSH algorithm efficiently maps data objects to storage devices without relying on a central directory. CRUSH is designed to facilitate the addition and removal of storage while minimizing unnecessary data movement. The simple architecture improves stability and performance speed," says Saotome.

Having OSS in Ceph was also important. "We take responsibility for the service we provide to the customer. We have to depend on the vendor when failure occurs, but with OSS we can analyze the cause ourselves. The Ceph community is very active and it has future prospects," explains Ken Kobayashi, Cloud Platform Department, Cloud Business Division, NIFTY Corporation. There is a new petabyte scale of large cloud storage using Ceph. Ceph is also used as a storage infrastructure of OpenStack in Western countries. With these cases in mind, Nifty considered using Ceph for its system storage infrastructure and verification. During the process, Fujitsu partner PFU introduced Fujitsu hyper scale storage ETERNUS CD10000 using Ceph for the first time in Japan.

Nifty had three options to work with Ceph: deploying the whole system on its own, cooperating with a vendor with open source advantages or implementing FUJITSU Storage ETERNUS CD10000.

## Benefit

Nifty was using Ceph for verification and internal use, but the first use of Ceph was to provide a service. A service with reliability and stability was important. "From the review of the existing system implementations, we believed Fujitsu and PFU would make the system work in the best way. We used a verification machine to verify the details of performance and availability for a year to clarify the issues. Satisfied with the result, we decided to implement Fujitsu ETERNUS CD10000 S2. Fujitsu's information from the Ceph community was helpful for providing service. If we worked on our own, we would have taken more time for production, and operation design may have been more challenging," says Saotome.

"Ceph uses CRUSH algorithm to efficiently protect large amounts of data stored in object storage. FUJITSU Storage ETERNUS CD10000 S2 system architecture maximizes the advantage of erasure coding for CRUSH algorithm and redundancy," says Kobayashi. In June 2016, 'Nifty cloud object storage' with Fujitsu ETERNUS CD10000 S2 started the service. "This service is low cost and only requires a Nifty cloud account for registration. The on-demand service is immediately available after log-in. It provides a flexible service when a developer urgently requires resource for verification. It is suitable for big data storage and also for small start testing."

FUJITSU Storage ETERNUS CD10000 S2 contributes to low cost data storage service. "It is difficult to achieve five yen/GB with object storage service alone. We will expand the use of ETERNUS CD10000 S2 to NAS head, big data analysis and added value service in collaboration with the IoT department, beside Nifty cloud service infrastructure, for effective investment. The compatibility of Ceph's API to Amazon Web Services (AWS) S3 and OpenStack's Swift expands the possibility too," says Kobayashi. It will reduce operation workload too. "We hope to use the reduced workload, time of patch optimization and major version update to concentrate on developing an added value service," explains Saotome. Abe talks about the next plan, "We publish benchmark results of object storage on our blog for users. We will also publish case studies in the future. We have a plan for having more service locations. Fujitsu provided us release information from the Ceph community for our service enhancement. We hope to continue the relationship with Fujitsu for the expansion of our service." Nifty cloud object storage is the next IoT era service. Fujitsu and PFU will continue to support the service infrastructure of Nifty cloud.

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