



Success Story

NHN Successfully Enters Public Cloud Market with Cloud Services Based on NetApp and OpenStack



KEY HIGHLIGHTS

Industry

Technology, gaming

The Challenge

Deploy an effective storage and data management solution to support entry into the public cloud services market.

The Solution

Build a public cloud infrastructure based on NetApp® storage and OpenStack software.

Benefits

- Efficiency gained through NetApp FlexClone® technology and NetApp deduplication
- Data protection enhanced with NetApp Snapshot® technology
- High performance delivered with enterprise-level operation of block device
- Scalability achieved with the ability to nondisruptively scale up to 24 controllers

NHN Entertainment: Associated with Fun

NHN Entertainment was established by spinning off the video game business from NHN Corporation (now known as Naver Corporation) in August of 2013. Its key business sectors are online and mobile games. Hangame, its online game portal, provides service in Korea and Japan, and its new global brand, TOAST, which stands for “Toward Art, Science, Technology”, is designed to expand the company’s mobile game business globally.

With the launch of Hangame in 1999, NHN Entertainment has provided numerous online games for all ages in a variety of genres, including casual, role-playing, and sports. In the mobile game sector, the company uses TOAST to provide consumers with various published and in-house games, such as Wooparoo Mountain, Wooparoo Saga, LINE POP, and LINE POP 2.

To achieve business success in the global mobile game market, NHN Entertainment established its Global One Build strategy, in which a game is released in all target countries at the same time. With this strategy, NHN has released high-quality

games such as The Soul and Crusaders Quest, which have been well received in Korea and in other countries.

The Challenge

The leap from game company to cloud service provider

Based on its expertise in IT operations, technology, and service operations, NHN Entertainment is diversifying its portfolio of services with new offerings like cross-border e-commerce and easy payment systems. In December 2014, NHN Entertainment officially announced its business-to-business (B2B) cloud solution, TOAST Cloud, signaling its giant leap forward in becoming a new B2B cloud service provider.

TOAST is a platform that provides game companies with mobile application analytics, mobile application promotion, game publishing tools, and infrastructure.

NHN Entertainment intends to maintain the growth of its mobile game business while using TOAST Cloud to increase and stabilize its revenue stream. To maximize the potential of TOAST Cloud, NHN Entertainment introduced two major services running on NHN infrastructure. The first is TOAST Analytics, which analyzes and displays in real time

“NetApp not only meets all of our needs in terms of performance, stability, and efficiency, but also gives us features such as NetApp Snapshot and NetApp FlexClone technologies in the OpenStack environment.”

Myeong-joon Lee

Senior Engineer, System Operation Team, NHN Entertainment

the indexes generated by games. The second is TOAST Promotion, which supports cross-marketing opportunities by working with TOAST Analytics.

With its unique technology and game expertise, NHN Entertainment is poised to become one of the premier providers of public cloud services. With its TOAST Cloud services, the company is planning to become a leader in the game industry.

The Solution

NetApp, a leader of OpenStack Cloud

Before launching its public cloud service, NHN Entertainment sought an appropriate and effective solution for storage and data management. While investigating the most appropriate solution, NHN Entertainment discovered OpenStack, an open-source technology that helps reduce the initial cost of moving to the cloud.

Myeong-joon Lee, senior engineer for NHN Entertainment's System Operation Team, said, “We have researched both CloudStack solutions and the OpenStack solution for the public cloud business. We chose the open-source-based OpenStack cloud, which is more widely used and met our needs for providing infrastructure as a service to our customers.

“When developing a public cloud, it is crucial to choose a well-known, proven storage provider that can

provide excellent safety, scaling, and performance while also supporting various OpenStack features without any issues. NetApp not only meets all of our needs in terms of performance, stability, and efficiency, but also gives us features such as NetApp Snapshot and NetApp FlexClone technologies in the OpenStack environment. Our team gave the best ratings to NetApp for its fast VM distribution speed via NetApp FlexClone and high stability via NetApp Snapshot copies,” he adds.

OpenStack provides high performance and exceptional stability

OpenStack is a global collaboration project to build a new open-source cloud platform. This project involves the collaboration of more than 12,000 developers and 250 companies around the world, including NetApp. OpenStack began in 2010 as a joint project of Rackspace Hosting and NASA. It grew rapidly into an entity with the OpenStack Foundation (established in September 2012) in the center. In Korea, major companies (KT, Samsung SDS, LG CNS, and so on) and government organizations participate in this project.

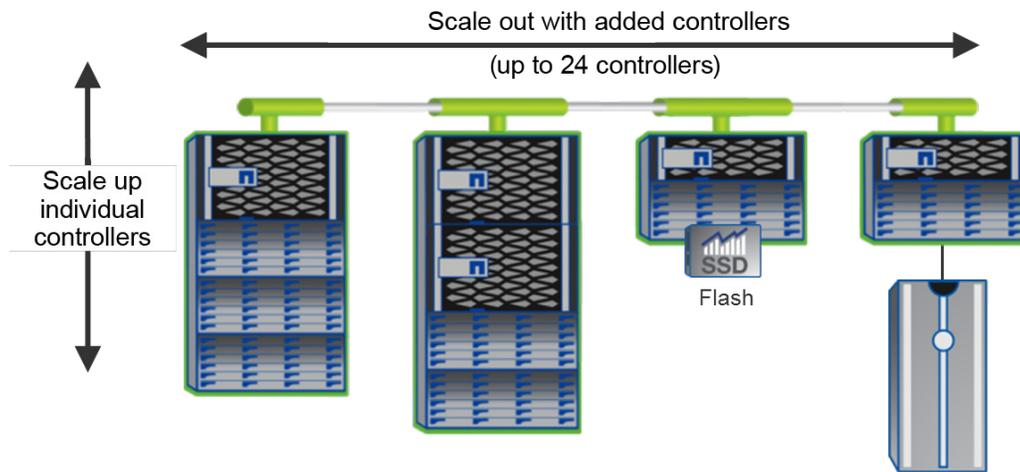
Eun-cheol Jung, an engineer for the NHN Entertainment System Operation Team, said, “As data management and storage are the key factors in the public cloud business, we had to choose a specialized industry-proven vendor. The NetApp Data

ONTAP® operating system is exceptional in terms of operational usability and data management, and has proven its excellence through many cloud use cases. Thus, NetApp was the ideal vendor, from a time-to-market perspective.”

NetApp is one of the most active participants in the OpenStack storage sector. The company has donated the NetApp Volume Driver, which automatically performs storage provisioning for the OpenStack Essex release from April 2012. Since the Folsom release in October 2012, the NetApp clustered Data ONTAP storage OS has been selected as the back-end storage for the OpenStack block storage service. With the Havana release in October 2013, NetApp began supporting the OpenStack platform for the enterprise environment through a combination of the Red Hat Enterprise Linux OpenStack Platform and FlexPod® technology.

Furthermore, with the Icehouse release in April 2014, NetApp began providing E-Series technology, which is designed for high-performance applications and data-intensive workflows, and began providing the all-flash EF-Series array. These contributions demonstrate the company's commitment and dedication to developing OpenStack technology.

NetApp's contributions to rapid data management with clustered Data ONTAP, and to improvements in efficiency with



NHN Entertainment has adopted NetApp clustered Data ONTAP, a unified scale-out storage platform that responds to customers' changing needs while reducing the risks and costs of the cloud. This technology enables storage maintenance, hardware lifecycle operations, and software upgrades without requiring interruptions to business operations—and it establishes a foundation to meet the SLAs required in a cloud environment.

iSCSI and NFS provisioning, have also helped build a true software-defined storage solution. Clustered Data ONTAP is actively used in computing, block storage, object storage, and image- and file-sharing services for OpenStack. NetApp's contributions are possible because the company can apply its powerful, proven data management technologies for a cloud or a virtual environment to OpenStack.

Jung continues, "In my opinion, the most important factor in choosing storage is stability. We built our infrastructure by using NetApp seven to eight months ago. We have not experienced any storage failures to date. In terms of stability, we have complete confidence in NetApp."

Business Benefits

Supporting an enterprise environment

Adopting OpenStack cloud through NetApp makes it easy to meet the requirements for an enterprise environment. NetApp, along with Cisco and Red Hat, provides FlexPod, an integrated architecture that uses a prevalidated solution to facilitate greater efficiency.

FlexPod is a well-known, proven architecture that enables faster development by eliminating the verification period during service distribution. NetApp provides documentation for FlexPod and OpenStack in its configuration guide to explain how to distribute and operate

the private cloud. In addition, NetApp and Red Hat provide an enterprise environment that supports the OpenStack environment.

Providing an operational environment that considers users

NetApp uses NFS as its Glance storage. This approach enables deduplication for efficient space management, shares NFS on multiple Glance API servers, and allows flexible capacity management. The NetApp clustered Data ONTAP operating system allows deduplication with a greater than 90% ratio and makes it possible to use NetApp as a file or a Swift back end.

When using NetApp Snapshot technology to protect data in OpenStack, the NetApp driver replaces the LVM-based snapshot copy with the file-based NetApp FlexClone copy. This approach permits multiple backups to be performed within a few seconds without any performance degradation. In addition, the provisioning technology allows instances to be created quickly through instant replication of specific data, rather than through the replication of all data.

Realizing scalability through operational efficiency

By providing scalability through the storage service catalog and the NetApp clustered Data ONTAP OS, NetApp improves efficiency and scalability for companies that use OpenStack cloud

services. To satisfy the various types of Service Level Agreements (SLAs) that customers request, OpenStack can be configured to classify various types of volumes. This feature promotes easy management and provisioning through the policy-based storage catalog service.

NetApp technologies support the easy movement of data and workloads in a multcloud environment in accordance with the OpenStack philosophy of encouraging the reusability of business applications in the cloud.

Increasing efficiency and performance

NetApp FlexClone, a powerful data replication tool, is used with OpenStack to immediately replicate data volumes and datasets to a virtual copy, improving productivity and saving storage space without any performance degradation.

By using FlexClone technology, NHN Entertainment can immediately replicate any data volume or dataset without requiring additional storage capacity or having to wait. In addition, FlexClone creates all the necessary replicas to improve productivity, minimize overhead, and save space.

In a traditional virtualized environment, storage efficiency is maximized by deduplicating the OS images. Similarly, NetApp volume-based deduplication technology can be used as the OS template (Glance) storage to maximize disk

“The NetApp Data ONTAP operating system is exceptional in terms of operational usability and data management, and has proven its excellence through many cloud use cases. NetApp was the ideal vendor, from a time-to-market perspective.”

Eun-cheol Jung

Engineer, System Operation Team, NHN Entertainment

usage by deduplicating the same OS images in an OpenStack environment.

Enhancing data protection

NetApp Snapshot software in the OpenStack cloud solution improves data protection. With its powerful and innovative in-time replication technology, Snapshot software protects data while using a minimal amount of storage space and without any performance degradation.

NHN Entertainment has established effective data protection policies for instant backup and recovery based on Snapshot technology provisions. NHN Entertainment can now replicate its file system in time and use the replica to protect any data, whether it is just one file or the entire disaster recovery system. This feature can also be used while an application is running. No matter what

the volume size of the NetApp system is, a Snapshot replica can be created within seconds.

Achieving scalability

NHN Entertainment has adopted clustered Data ONTAP, a unified scale-out storage platform that responds to customers' changing needs while reducing the risks and costs of the cloud. This technology enables storage maintenance, hardware lifecycle operations, and software upgrades without interrupting business operations. It also establishes a foundation to meet the SLAs required in a cloud environment.

NetApp clustered Data ONTAP simultaneously supports multiple protocols and configures various types of storage devices, for example SSD, SAS, or SATA. With this infrastructure, customers can easily meet their myriad requirements.

SOLUTION COMPONENTS

FlexPod Environment

NetApp FAS8020 (10 nodes)
storage systems

NetApp clustered Data ONTAP

NetApp Software

NetApp deduplication

NetApp FlexClone technology

NetApp Snapshot technology

Environment

Cloud computing: OpenStack

Protocols

NFS

CIFS

iSCSI

FC



Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

www.netapp.com

© 2015 NetApp, Inc. All rights reserved. No portions of this document may be reproduced without prior written consent of NetApp, Inc. Specifications are subject to change without notice. NetApp, the NetApp logo, Data ONTAP, FlexClone, FlexPod, and Snapshot are trademarks or registered trademarks of NetApp, Inc. in the United States and/or other countries. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such. A current list of NetApp trademarks is available on the web at www.netapp.com/us/legal/netapptmlist.aspx. CSS-6840-0615

Follow us on: