



NHN Entertainment Takes Gaming to the Next Level with OpenStack and NetApp

Gaming Is Serious Business

Video games are big business, especially mobile games. By 2017, mobile games are projected to generate more than \$40 billion in revenue worldwide, accounting for 38% of the global games market. Most of that growth in players and revenue is coming from the Asia Pacific (APAC) region. Gaming growth rates in APAC are expected to exceed 21.3%, bringing mobile gaming revenue in the region to \$24.3 billion—over half of the total global mobile games market.¹

NHN Corporation was formed in 2000 as the result of a merger between two South Korean companies: Hangame, the online gaming service arm of Hangame Communications, and Naver Corporation, a popular sponsored advertising portal. Over the next 13 years, NHN Corporation grew to become South Korea's leading IT company in the web portal and gaming industry. In 2013, to capitalize on the explosive gaming market, the company spun off its video game business. This new division, NHN Entertainment, is now the largest PC and mobile game development company in South Korea.

"I'm proud that I get to work in the gaming industry, which is at the core of Korean culture," says Seung-Yong Choi, Game Technology Project Manager for NHN Entertainment. "I am happiest when I see my five-year-old son playing a game that I helped create."

NHN Entertainment is leading the market with a fresh brand and innovative cloud platform, TOAST Cloud, which stands for "Toward Art, Science, Technology." With gaming growing faster than ever, the company saw an opportunity to extend its expertise as the leader in gaming and platform development by offering a unique, all-inclusive cloud platform for game developers and small businesses alike. The platform is enhanced by a full suite of services, including game publishing tools, mobile application analytics and promotion, and membership management and billing.

Building the Next Level of Gaming Cloud Services

NHN Entertainment started by building a state-of-the-art data center for its hosted cloud development platform. The company needed to provide the highest levels of security and performance with the ability to instantly scale to accommodate sudden increases in users.

To reduce the initial cost and risk of moving to the cloud, NHN Entertainment was drawn to OpenStack, the leader in open-source cloud computing. As a cloud service provider, NHN

Entertainment required a solid infrastructure foundation built on enterprise-class storage and data management capabilities. Without it, the company risked not being able to provide customers with the high performance and availability they needed to develop and deploy games and operate their businesses.

"Because we decided to go with commercial services based on OpenStack, we needed reliable service, stable performance, and fast troubleshooting," says Myeong-Jun Lee, Senior Engineer at NHN Entertainment. "NetApp provided an optimal solution for cloud services—especially with OpenStack."

Teaming for the Win

NHN Entertainment teamed with NetApp to create an OpenStack cloud platform that was built on NetApp storage. As a charter member of the OpenStack Foundation, NetApp has been involved with each OpenStack release, driving lower TCO and better value for existing applications as well as new "born-in-the-cloud" applications. NetApp's long history of integration with OpenStack and proven record in many cloud use cases gave NHN Entertainment the confidence to pursue an aggressive growth strategy.

Maintaining high service levels and round-the-clock availability of IT resources to a global customer base is key to NHN Entertainment's success.

Key Highlights

Challenge

Enable a new wave of innovation in gaming

Solution

OpenStack cloud platform based on the NetApp® clustered Data ONTAP® storage operating system

Results

- Drove industry innovation with an all-inclusive cloud platform designed specifically for game development, distribution, and play
- Enabled faster time to market for internal and external developers with open access to NHN Entertainment's cloud platform
- Laid the foundation for taking advantage of new B2B and financial technology opportunities

“We designed our gaming and IT infrastructure with global service in mind,” adds Choi. “For mobile games designed for a global market, we can see instant spikes due to simultaneous connections. OpenStack on NetApp gives us the scalability we need to meet unpredictable demands without the expense of overprovisioning resources.”

Resources can be provisioned on demand, helping developers distribute games faster than ever. In the past, it could take up to one week to provision a test server. Today, developers can spin up multiple space-efficient test environments in minutes at little cost.

“NetApp’s know-how and experience in OpenStack were a tremendous help,” says Lee. “We worked together as one team.”

Helping New Players Enter the Game

Today, NHN Entertainment is breaking down barriers to entry for game developers who no longer need to own or manage their own IT infrastructure. Developers can enter the gaming market faster with access to infrastructure and resources on demand through the cloud.

“TOAST Cloud was initially designed to support game services within the company rather than external services. We were making games like a start-up would, and along the way, we ended up creating the cloud service that we needed. We thought, ‘Wouldn’t it be helpful if similar start-up game companies or small businesses, like online shops—who are going through the same issues we experienced—could use this, too?’ That’s when we decided to offer it as a public platform,” explains Do-Min Paik, IT Service CIO at NHN Entertainment.

Game developers can depend on NHN Entertainment for instant, self-service access to IT resources on a platform built with the extreme demands of the gaming market in mind. Developers get the performance they need to build and host compute-intensive games. TOAST Cloud’s nonstop availability means that their customers don’t miss a minute of the action.

With TOAST Cloud, game developers can focus on innovation, without having to worry about platform preparation. It also provides advantages in game promotion, sales, and advertising. “TOAST Cloud offers many platforms for companies that specialize in games,” says Paik. “For example, it offers functions such as ranking, billing, and membership management. It also offers promotions, shopping, or cross-advertisements by connecting to other games. It’s a unique feature set that no other public cloud provider can offer.”

Planning the Next Move

NHN Entertainment’s OpenStack-based cloud is the foundation of an ambitious strategy leveraging the company’s expertise in gaming and IT services to diversify its portfolio and grow its business.

“We will continue to create and release competitive mobile games for the global market, and we’re also going to develop new lines of business



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Do-Min Paik, IT Service CIO, NHN Entertainment

that use our IT technical expertise and TOAST Cloud,” says Paik. “Our IT infrastructure and platform are the most important aspects of these online services. NetApp, which provides these platforms and infrastructure, is the partner we need in order to grow.”

About NHN Entertainment

NHN Entertainment is the largest PC and mobile game development company in South Korea and operates the popular online game portal Hangame. The company develops and provides online and mobile game software, including role-playing games (RPGs), mobile phone games, sports games, arcade games, puzzle games, and other gaming genres for people of all ages in Korea, Japan, China, and the U.S. With its new TOAST platform, the company is looking to expand its over 20 million member base in other countries around the globe.

About NetApp

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.

Changing the Game with Payco

NHN Entertainment is leveraging its cloud platform to pursue new business opportunities in financial technology. The company is using its expertise in online commerce to break into this growing industry with products such as Payco. Similar to Apple Pay, Payco is a mobile payment service that anyone can use online or offline. It eases payment processes, reduces fraud, and helps businesses meet stringent financial compliance regulations. And it even has implications in the gaming business.

“We’re going to introduce Payco in games,” says Paik. “If we can figure out game users’ spending patterns, then we can more successfully cross-promote our customers’ services. For example, we can drive game users to an online shopping mall or a webtoons site using promotion through Payco.”

¹ Global Mobile Game Confederation, *2015 Global Mobile Game Industry White Book*, 2015.