



## Success Story

# NetApp EF550 Dramatically Enhances Web Pages to Support Heavy Traffic



### KEY HIGHLIGHTS

#### Industry

Entertainment

#### The Challenge

Accelerate web page performance during periods of heavy traffic from users around the world; enhance disk storage performance.

#### The Solution

Deploy a NetApp® EF-Series storage system.

#### Benefits

- Improved display response time by up to four times
- Achieved faster e-commerce product searches, thereby enabling a better customer shopping experience
- Enabled more secure storage infrastructure with NetApp's services

### Customer Profile

Toei Animation delivers a number of popular products around the world. Toei Animation Co., Ltd., with its corporate philosophy of becoming “a leader in products that provide dreams and aspirations to children all over the world,” has been creating animated films and TV programs for more than half a century. The company has produced more than 10,000 titles including Dragon Ball, Sailor Moon, One Piece, and Pretty Cure, among other world-class hits.

In addition to publishing and selling these animation products through various media such as television, theater, DVD/Blu-ray discs, the Internet, and mobile devices, Toei also runs a licensing business for character products including toys, clothing, stationery, and food as well as event management for character shows, and musicals.

### The Challenge

Toei Animation provides an information page for each product and operates an e-commerce website, Toei Animation Online Shop, that sells its character goods to fans around the world, from young children to adults. These online services are provided by the server virtualization infrastructure that Toei Animation built

and operates. The infrastructure operates approximately 40 virtualization servers, including servers that host the corporate website and individual production pages, as well as back-end application and database servers. The infrastructure provided more than enough performance when the server virtualization technologies were first introduced in 2007. However, with increased usage coming from both domestic and international markets, response times were impacted—especially during peak periods.

Mr. Kazutaka Sado, Chief Manager, Contents Business Department, Toei Animation Co., Ltd. says, “Traffic on the website surged when information related to new releases was uploaded.” This was particularly evident when the web pages for the film version of Dragon Ball Z: Battle of Gods were released nationwide in March 2013. As soon as the content was updated, a massive number of users from around the world tried to access it, making it difficult to connect to the website. It was the moment when Toei Animation realized that there were many worldwide fans of hits such as Dragon Ball.

The website for Toei's online shop also experiences considerable fluctuations in the number of users. Demand surged

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when rare items, such as limited-edition figures were released. This hampered the customers' shopping experience.

## The Solution

### Adopting all-flash storage to address the storage bottleneck

Toei Animation has been upgrading its system to a faster network, upgrading high-performance servers and updating applications over the last three to four years. The company wanted to create an environment in which worldwide fans can always access the website without any stress; however, the final challenge it faced was insufficient storage system performance.

Mr. Hirofumi Tooda, Manager, Information Systems Department, Toei Animation Co., Ltd., describes the company's infrastructure: “Our server virtualization infrastructure consists of several physical servers and one storage system. Servers are connected to the storage system through SAN switches [8Gbps Fibre Channel], which provide stable and high throughput. As workloads for the virtualization servers increased, the existing disk storage became overloaded with massive I/O from the servers.”

While the server virtualization infrastructure helped with flexible resource allocation and reduced operational loads, overloading on some virtualization servers was likely to affect other servers. In recent years, the quality of service (QoS) provided by virtualization solutions or storage itself has shown that technology addresses

such challenges. However, the company opted to depend on all-flash storage, which provides better performance without relying on the QoS.

Mr. Sado explains: “Our company regularly maintains approximately 10 web pages of current and soon-to-be released products. Each product has its own website strategy and approach, making it difficult to balance the workload by sharing resources and adjusting when to update the content. Predicting traffic for each type of content and web page is also difficult. Real time analysis and QoS configuration cannot respond to fluctuations in access. Therefore, we made a decision to cope with massive surges in traffic through all-flash storage instead of controlling performance with QoS.”

Mr. Tooda also says, “A disk drive [HDD] has many moving parts making it prone to physical failure in the long run. On the other hand, all-flash storage is a much more robust base on SSD. Flash's superior and robust performance provided a strong impetus for us to migrate to all-flash storage.”

### Adopting the NetApp EF550 all-flash array as new storage

Toei Animation has been using NetApp products (IBM System Storage N series) for its server virtualization infrastructure and business system storage. It recently deployed more systems in its film production department. The NetApp products deployed in the computer graphics department successfully support the

transfer of large amounts of data through the 40Gbps high-speed network. Toei Animation is confident in NetApp products as they have never experienced an operational failure in the many years of using NetApp products. For this reason without hesitation, Toei Animation decided to adopt the NetApp EF550 all-flash array. In addition, the NetApp EF550 also received high praise for its excellent cost performance.

Mr. Sado describes why the company chose NetApp: “In recent years, a variety of small to large vendors released all-flash storage products and a wide range of options are available now. However, the continuity of vendors and product line-up needs to be ensured for any long-term use. We have many animation products that our fans have loved for more than 10 years. The continuous operation of these products' web pages is vital. This time we selected NetApp products that have an impeccable track record in our operations. Although the NetApp EF550 is a new product line, it was only natural for us to select it because it is part of the NetApp brand.”

## Business Benefits

### Applying the existing operation mode and migrating storage with ease

Toei Animation tested a full-scale model borrowed from a system integrator (Marubeni Information Systems Co., Ltd.) for one week before making the decision to start using the NetApp EF550. The company tested the model for its ease of installation and configuration and carefully checked performance

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under conditions equivalent to those in the production environment. The server virtualization solution Live Migration (VMware® Storage vMotion®) was used to migrate the existing disk storage to the test model, copying image files on the virtualization servers non-disruptively. Based on favorable test results, the company officially deployed the production model in September 2014 and migrated to a server virtualization infrastructure with the new integrated storage based on the NetApp EF550.

“I asked the system integrator to install and wire the NetApp EF550, but I did everything else including the SAN switch reconfiguration and initial setup of the NetApp EF550. I tried to make it as simple as possible, so the existing disk storage was just switched to the NetApp EF550. This allows us to apply the existing operations mode and there is no need to learn a new method. It is very important for us to minimize our operating costs because our IT administrators support everything from servers to PCs. In the long run, new staff orientation will be streamlined and handover work can be smoother,” says Mr. Tooda.

## Improving web page display response time three to four times compared with that of conventional methods

Display response time was dramatically improved after switching to the NetApp EF550. According to measurement results from Google Analytics, display response time improved three to four times. Access latency had been 30 to 40 milliseconds on average and 100 to 300 milliseconds during high access loads with conventional disk storage, but now it is consistently less than 1 millisecond with the NetApp EF550. This change has had a noticeable effect on Toei Animation’s web pages.

“For example, every Sunday morning when four programs are on the air, traffic on our website surges, but since switching to NetApp EF550, access is as smooth as during normal traffic periods. Even during limited-edition launches we now have far fewer delays in product searches and purchases on the e-commerce website, so our customers can enjoy a comfortable shopping experience,” explains Mr. Sado.

The NetApp EF550 is backed up by enhanced maintenance capabilities compared with those of competitors’ all-flash array products. The maintenance

## SOLUTION COMPONENTS

**NetApp Products**  
NetApp EF550 flash array

service period for the NetApp EF550’s built-in SSD is up to five years, so the company can exchange drives for no cost not only if a failure occurs, but also if the maximum erase count is reached or if an end-of-life alert is issued. Toei Animation highly values the level of security NetApp all-flash products provide and is considering the deployment of NetApp all-flash arrays for a big data analysis system in the future.

“Some animation products are more popular overseas than in Japan. We believe that analyzing this trend in detail will lead to new business opportunities. These days, big data is essential to advanced marketing activities and the Information Systems department needs to provide a strong support structure for such activities. We expect to dramatically increase the speed of analysis by moving the storage environment for our big data system to NetApp all-flash products,” says Mr. Tooda.



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