Case Study
Daifuku Co., Ltd.

»SSD was used for mission-critical data that requires high performance and the conventional HDD was storing minimal accessed data to expand storage scalability. Automated tiering was the solution to these challenges. Fujitsu's proposal had a good balance of cost and performance.«

Yousuke Muroga, Chief of Business System Group, Information System Department, Daifuku Co., Ltd.

The customer

Country: Japan
Industry: Manufacturing (material handling)
Founded: 1937
Employees: 7,349 (March 31, 2014)
Website: www.daifuku.com

The challenge

- Solution for overnight batch processing delay
- Solution to simplify storage management on virtual environment
- Need actual storage performance check before decision making

The solution

- Storage automated tiering system using SSD and existing HDD
- Shared template from virtual infrastructure and storage resource pooling
- Fujitsu constructed infrastructure using SAP ERP and VMware vSphere at Fujitsu Trusted Cloud Square Kansai to measure the performance for actual operation

The customer

Material handling such as storing, transferring and sorting materials is essential in business settings. Daifuku is the world's leading material handling equipment manufacturer providing solutions for manufacturing, distribution, cleanroom, automotive, aviation and other industries. Daifuku group spreads its own production sites and offices in 20 countries and regions, and its non-Japan sales ratio exceeds more than 60%.

In its four-year business plan (2013-2016), Daifuku endeavors to evolve from a manufacturer of material handling systems to a Value Innovator that provides the best solutions for customers, backed by the expertise and technologies it has accumulated as a comprehensive manufacturer and integrator of material handling systems. For the further growth of the company, use of ICT is even more essential.

The challenge

"Our information system department supports entire ICT system of Daifuku group. Currently, we are focusing on the communication system services upgrade. For our global strategy, we are working on the implementation of a business system in Asia hub. SAP ERP system replacement was not only to countermeasure the system deterioration, but also to construct next generation virtual infrastructure for flexible and rapid service to meet changing demands, simple operations, and improve availability. Corresponding to increasing data was an urgent issue too," says Mr. Tabuchi Masashi, General Manager of Information System Department.

The solution

Fujitsu solutions to material handling companies vary depending on each company's manufacturing methods and its environment. In the case of Daifuku, where data of over one million products was handled constantly, they faced delays in finishing batch processing on time. "Overnight batch processing is supposed to finish by 7am before our online operation starts, but sometimes it used to take until the next afternoon. Therefore, improving hardware performance was essential to handle the increasing amount of data. We prioritized with storage capability that could accelerate I/O processing and improve efficiency in batch processing. The previous system RAID only provided up to 5,000 IOPS, and they required a storage that performs up to 35,000 IOPS using storage pool," says Mr. Yuuji Ikeda, Director of Infrastructure Group, Information System Department.

The benefit

- ETERNUS DX440 S2 was implemented for higher I/O performance. Storage automated tiering using SSD and existing HDD improved I/O performance largely while keeping the costs low. Batch process has shortened to half compared with the previous system
- Simplified management by creating shared template using pooling of storage resource with virtual infrastructure and ETERNUS SF Storage Cruiser. The templates ease the ERP implementation to overseas branches
- Fujitsu constructed infrastructure using SAP ERP and VMware vSphere at Fujitsu Trusted Cloud Square Kansai to measure the performance for actual operation. The result satisfied Daifuku's storage performance requirements and was able to confirm the turning point for infrastructure system operation on virtual environment

For the improvement of I/O performance and cost saving, Daifuku chose SSD and storage with automated tiering. "SSD was used for mission-critical data processing that requires high performance while the conventional HDD became for storing minimally accessed data to expand storage scalability. Automated tiering was the solution to these challenges. Fujitsu proposed a reasonable balance of cost and performance," says Mr. Yousuke Muroga from Chief of Business System Group, Information System Department.

Daifuku's storage performance requirement was achieved by maximizing storage capacity under a VMware environment configured with VMware para-virtualized SCSI adaptor for high throughput and low CPU that is suited to high-load working environments.

"Is 35,000 IOPS achievable in reality and not just a calculation? Fujitsu answered to such doubts. Implementing SAP ERP and VMware vSphere in the infrastructure of Fujitsu Trusted Cloud Square Kansai, measured whether its capability could handle our actual operations. Through the process, we observed that the result satisfied our storage requirements and we were able to check the turning point, it made us choose Fujitsu," says Mr. Yuuji Ikeda.

The benefit

Working with Fujitsu since June 2013, the construction progressed smoothly until the last phase when a big challenge was presented: "We needed to finish the data migration by the three-day holiday in March 2014, but we couldn't achieve it during the test run. Fujitsu worked with us on improving the efficiency of the migration and we made full use of its infrastructure know-how and storage tuning. In the end, we achieved completion within one and half days," says Mr. Yousuke Muroga.

The new system started operation on March 24th 2014 after the holiday. The system was configured on virtual infrastructure with 7 units of PC server PRIMERGY, and all servers including SAP ERP operated on this virtual infrastructure. ETERNUS DX440 S2 was selected as the storage. Virtual storage pool and storage automated tiering were run by storage management software, ETERNUS SF Storage Cruiser.

Products and services

- FUJITSU Storage ETERNUS DX440 S2 disk storage system
- FUJITSU Server PRIMERGY
- FUJITSU Storage ETERNUS SF Storage Cruiser
- FUJITSU Storage ETERNUS SF Storage Cruiser Optimization option
- FUJITSU Storage ETERNUS SF AdvancedCopy Manager
- VMware vSphere

High speed backup by advanced copy function OPC (One Point Copy) has improved business continuity as even if the system fails the data can still be recovered up to a day before the disaster.

With the implementation of FUJITSU Storage ETERNUS DX440 S2 as the new system, I/O performance improvement had a large impact to the customer's operation. "Monthly batch processing that used to take until noon the following day, now finishes at 3am, meaning 15 hours work is now shortened to 6 hours. The improved performance now creates more time for us to work on analysis, which was previously limited," says Mr. Yuuji Ikeda.

Operations became easier by storage pool grouping virtual infrastructure and ETERNUS SF Storage Cruiser resources. "It would be a problem if adding new virtual machines destroyed original RAID storage configuration, so Fujitsu proposed to us the idea of shared templates for easy operation management. When we develop infrastructure for ERP in oversea branches, the template has helped us to shorten the construction process from 2 months to 1 week," says Mr. Yousuke Muroga.

The storage automated tiering also improved effective usage of storage. "We maintain the performance by fixing SSD for the SAP ERP processing and reallocate other information systems from SSD to existing HDD by using storage automated tiering. In collaboration with Fujitsu, we are also planning to add flexibility on the SAP BW operation by distinguishing SSD for monthly process usage, and the existing HDD for allocation of other data. The design has completed," says Mr. Yuuji Ikeda.

Conclusion

The positive outcome is reflected in the reduced number of servers to less than a half, due to the virtualization of the overall system, and the improved availability and business continuity with VMware HA. Sharing his prospects Mr. Tabuchi says: "since this is all about mission-critical system, our first priority is stable operations. Then our next target is backup for remote offices to enhance measures for disasters. The strong relationship we have built with Fujitsu over 45 years since the host computer generation gave us confidence in Fujitsu as a reliable partner which provides customizing operations and ICT support globally."

Daifuku contributes to its customers and social reformation as a material handling company with the most advanced technology. Fujitsu will continue to support Daifuku as its business continues to support development of global industry, with capability and the latest technology.

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