Microsemi
Power Matters.™

Microsemi Adaptec® Series 7 RAID Adapters
Improved Fault Tolerance, Easy Maintenance, and High Performance in High-Capacity Storage Servers

Founded in 1993, Plat'Home Co., Ltd. was the first company to bring the Linux operating system to Japan. The company introduced the first Linux server under its own brand in 1996, and has since become a leader in open-source OS-based servers, storage, networking, and security devices both as reseller and under its own brand.

Plat'Home's TrusSPS storage server series was developed to address growing demand from customers for high-performance, high-capacity storage servers. These customers, including research institutes and broadcasting companies, typically need systems with a large number of low-cost, high-capacity hard disk drives (HDDs) and performance specs that bring down the cost-per-GB.

"In addition to high performance and low cost-per-GB, our customers demand that our servers are stable," said Mr. Kazunori Yamazaki, an engineer for Plat'Home. "Failure rates must be as low as possible and the system must recover as quickly as possible after a failure."

Rogue Expander Firmware Update Causes Server Failure

First-generation TrusSPS storage server configurations connected the HDD and RAID adapter through a backplane expander, with each component being from a different vendor. Recently, however, the company was challenged with customer support and maintenance issues after a series of firmware updates to all three components caused installed servers to become unresponsive.

After extensive onsite testing of installed servers, Plat'Home traced the cause of the issue to the expander firmware update, which had taken place with no advance warning from the vendor. Plat'Home was eventually able to provide a solution, but the process took a considerable amount of time and resources and also inconvenienced the company's customers, marring Plat'Home's reputation.

In addition to providing the expander firmware fix for installed servers, Plat'Home had to install the fix in every unshipped server in its warehouse, which resulted in delivery and setup delays.

"In order to provide maximum uptime, it is critical that the server's components are compatible with each other," said Mr. Yamazaki. "We have seen firsthand how one flaw beyond our control, such as an unannounced firmware upgrade to one component, can render the server useless and damage our relationships with affected customers. The more components from different vendors that a server has, the greater the potential for compatibility issues, and the longer it takes to identify and correct any problems."

As if the compatibly issue wasn't enough, customers were also dissatisfied with the performance of the TrusSPS server. "We repeatedly received inquiries from customers asking what could be done to improve performance," said Mr. Yamazaki.

Mr. Yamazaki incorporated these experiences when planning Plat'Home's second generation server model, the TrusSPS2. Top priority was given to improving the server's fault-tolerance and maintainability. While an increase in performance was a secondary priority, Mr. Yamazaki knew that both issues needed to be solved simultaneously.

The company's found its solution with Series 7 6 Gbps RAID adapters.

Building Next-Generation Servers with Series 7

The Series 7 RAID adapter family features Microsemi's 24 port PM8015 RAID-on-Chip (ROC), which combines a x8 PCIe Gen3 interface with 6 Gbps SAS ports to enable a new generation of high-performance RAID adapters that are unmatched by any other ROC in the industry. Series 7 RAID adapters are available with 8, 16, or 24 native SAS/SATA ports, allowing direct connect to up to 24 HDDs without an expander.

Executive Summary

Challenge

An unannounced firmware update to the backplane expander used in Plat'Home's TrusSPS series servers caused widespread system failures. Locating the cause of the problem took substantial time and resources from Plat'Home and inconvenienced customers. The servers also suffered from performance issues.

Solution

Next-generation TrusSPS2 servers utilized Series 7 RAID adapters featuring 24 native ports to make an expander unnecessary.

Result

Adoption of Series 7 simplified TrusSPS2 server configurations, lowering failure rates and making maintenance much easier. Eliminating the expander also increased data transfer rates.

Plat'Home
TECHNOLOGY to serve you.

"The more components from different vendors that a server has, the greater the potential for performance and compatibility issues. Series 7 RAID adapters allowed us to eliminate backplane expanders and simplify our TrusSPS2 server configurations, lowering failure rates and improving data transfer rates."

—Mr. Kazunori Yamazaki, Engineer, Plat'Home Co., Ltd.

Microsemi Adaptec® Series 7 RAID Adapters
Improved Fault Tolerance, Easy Maintenance, and High Performance in High-Capacity Storage Servers

Series 7 adapters perform at up to 6.6 GB/s on sequential reads and up to 2.6 GB/s on sequential writes on parity RAID 5, more than doubling the performance of competing host-based RAID adapters.

With Series 7 RAID adapters, Plat'Home engineers were able to eliminate the expander from the backplane in the TrusSPS2 models, which significantly reduced compatibility issues and improved fault tolerance. As a bonus, data transfer speeds improved by about 40% compared to the company's first-generation TrusSPS models.

"We established clear specification requirements for our SPS2 servers and found that Microsemi Adaptec met those specifications," said Mr. Yamazaki. "Series 7 RAID adapters were the only ones that could connect many HDDs without an expander, which allowed for a simpler configuration and greatly improved reliability and maintainability." In a test of a RAID 6 configuration with 23 7,400 RPM HDDs, Plat'Home saw sequential read and write performance of 1 MB blocks to be 40%–50% better in the SPS2 compared to expander-based TrusSPS models. "The performance improvements tend to increase as the data block sizes become larger.
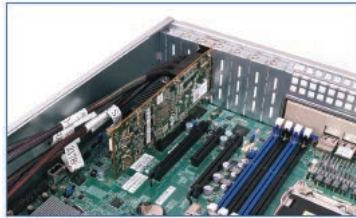
Customers who have elevated requirements, such as those in the broadcasting industry who routinely have file transfer sizes of 10 GB and 20 GB, will see even better performance gains," said Mr. Yamazaki.

Since the SPS2's introduction in May 2013, Plat'Home has fielded no complaints about failures or performance. "Many SPS2 customers had already adopted the first-generation TrusSPS models and were victims of the expander firmware issue, so they were viewing us with a critical eye," said Mr. Yamazaki. "These customers would contact us immediately if they found any issues with the SPS2. Since we have not heard from them, we are confident that the problems that we had on previous models have been eliminated."

Pleased with Microsemi Technical Support

"Our servers use products from several different companies, and Microsemi's technical support beats them all. We frequently cannot get answers to technical inquiries from other vendors, even in crucial situations like the firmware issue. In contrast, Microsemi is able to answer our questions and provide support during the product evaluation phase, which gives us a great deal of confidence in trusting our servers and our business to Microsemi."

Related Information

- Series 7 RAID Adapter product page: http://www.microsemi.com/products/storage/raid-adapters/series7

- Series 7 product brief: http://www.microsemi.com/document-portal/doc_download/135900-series-7-product-brief

- Series 7 compatibility report: http://www.microsemi.com/products/storage/compatibility/

For more information and specifications, please call, email, or visit our website.

Toll-free: 800-713-4133

sales.support@microsemi.com

http://www.microsemi.com

Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for aerospace & defense, communications, data center and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions, security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, California and has approximately 4,800 employees globally. Learn more at www.microsemi.com.

ESC-2161511. 1.0. 08/16