



Drecom Accelerates Anytime, Anywhere Gaming

Industry-leading mobile gaming company uses Fusion ioMemory™ solutions to ensure best-in-class mobile application performance with far less infrastructure.

Solution Focus

- MySQL
- Online Gaming

Summary of Benefits

- **20x lower** I/O wait time
- **20x faster** update queries
- **Eliminated service interruptions** to end-users, even under heavy traffic
- **Growth headroom** to support expanding product line
- **4:1 server consolidation**
- **Superior read and write performance symmetry**
- **Fast replication performance** that enables more reliable architectures
- **End-to-end solution support**

The Challenge

Drecom, an entertainment Web services provider, is the leading supplier of social gaming applications for mobile devices in Japan.

As business grew, IT Architect Yusuke Saito found Drecom's MySQL-based gaming platform struggled to keep up. Continuing Drecom's tradition of innovation, Yusuke began to design a new system that could overcome the following challenges:

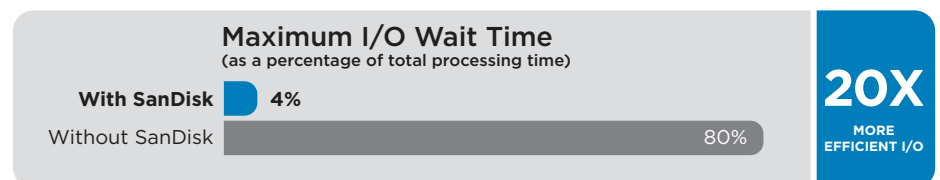
1. Maintain high gaming performance to ensure high user retention. Yusuke told us, "Our system has to scale to extremely high (almost on-demand) service, which is a big challenge. We needed a system with sufficient headroom to support unpredictable surges in popularity and continual addition of new applications."
2. Consolidate servers and minimize scale-out to keep costs low.
3. Provide enterprise reliability that Drecom could trust with its mission-critical data.

The Solution

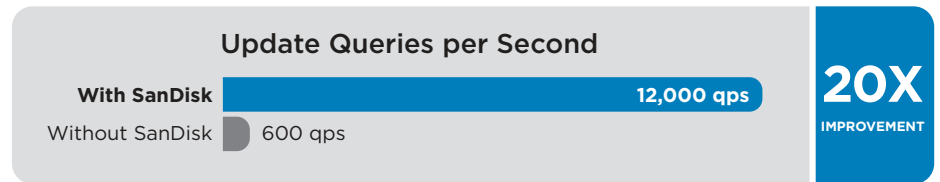
It was clear to Yusuke that the existing system could not scale to meet Drecom's performance needs without an architecture overhaul. He investigated an Infrastructure-as-a-Service (IAAS) cloud provider, but performance in testing was worse than Drecom's existing system, and their applications would have to compete with other customers for resources. Yusuke began researching solid-state technologies and, after a brief conversation with a SanDisk® representative, decided a Fusion ioMemory solution was what Drecom needed.

Maximum MySQL Performance

Before deploying the Fusion ioMemory™ ioDrive® devices into production, Drecom benchmarked a SanDisk-powered MySQL server against its disk-based production system. SanDisk's low-latency Fusion ioMemory tier kept server processors fed with data, completing I/O operations much faster. Yusuke verified this by comparing the I/O wait time between the two systems. The chart below shows that processes in the SanDisk-powered MySQL system spent a maximum of four percent of their time waiting on I/O, compared to 80 percent on a disk-based system.



This 20x improvement in processing efficiency translated into 20x faster query processing. The chart below shows how the Fusion ioMemory solution increased MySQL query processing from 600 update queries per second to 12,000 update queries per second.



“The ioDrive performance greatly lowered response times, which really improves the end-user experience. It also scales very well, so users no longer get ‘server busy messages’ when traffic is high or a game gets popular. We have plenty of headroom to continue adding new applications.”

Yusuke Saito,
IT Architect, Drecom

Most importantly, this performance directly improved Drecom’s business. Yusuke told us, “The ioDrive performance greatly lowered response times, which really improves the end-user experience. It also scales very well. Users no longer get ‘server busy messages’ when traffic is high or a game gets popular and we have plenty of headroom to continue adding new applications.”

Consolidation for Cost Efficiency

In addition to improving its end-user experience and its ability to continue expanding its application line, Drecom also achieved significant server consolidation. This greatly increased its ROI by lowering capital and operating costs.

Yusuke said, “We consolidated 75 percent of our servers. This decreases our total cost of ownership on servers, running costs, and density, while improving reliability. We think we can consolidate even more in the future.”

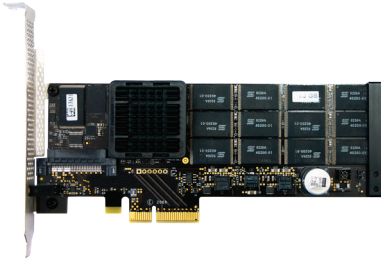
Superior Solid-State Technology

Yusuke chose the Fusion ioMemory solution because of its reliability and more symmetrical read and write performance. “The ioDrive devices have high read and write performance, with proven reliability in the world’s largest social networking environments,” he explained.

Fusion ioMemory also enabled Drecom to consider High Availability implementations that would not have been possible previously due to performance limitations. Yusuke said, “We are considering switching from asynchronous replication to semi-synchronous replication, which will improve our failover scenario. The ioDrive performance under a semi-synchronous replication load is 7,000 queries per second, which is easily sufficient for our workload.”

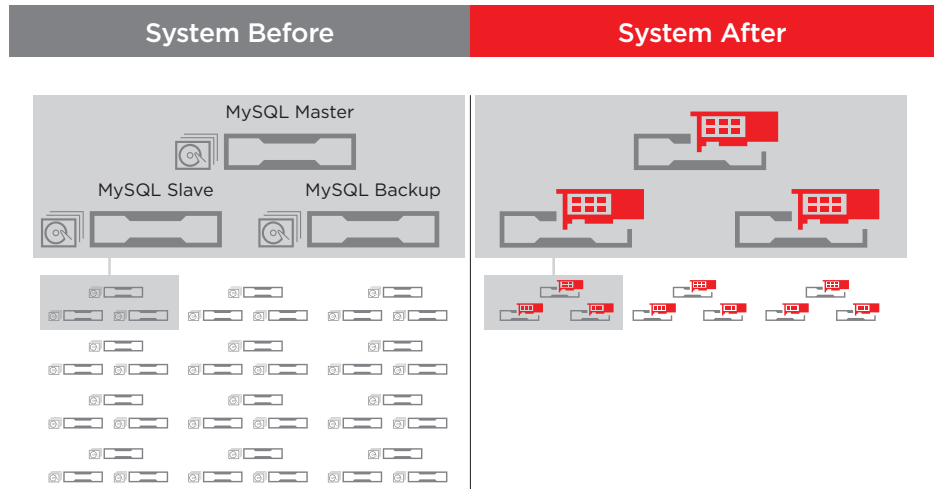
End-to-End Solution Support

Yusuke also noted that Drecom received impressive support throughout the process. “SanDisk’s experienced staff helped us a lot. They assisted us with procurement so we could deploy quickly, and provided technical guidance about other system bottlenecks so we could get the best performance from them.”



Fusion ioMemory™ ioDrive®

System Overview



12 x 1U MySQL Master servers, dual quad core Intel Xeon processors, 32GB RAM

- OS: Debian Gnu/Linux 6.0
- MySQL 5.5
- Hard disks: 6 x 15k SAS hard disks in a RAID10

12 x 1U MySQL Slave servers (same specs, asynchronous replication)

12 x 1U MySQL Cold Standby servers (same specs)

- Eliminated 9 of 12 Master, Slave, and Standby servers
- Moved database from hard disks to 2 ioDrive® 320GB devices in a RAID0
- Added 96GB RAM to each server

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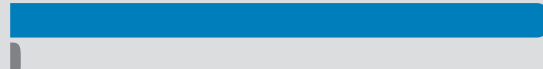
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Performance per Rack Unit

With SanDisk
Without SanDisk



80X
IMPROVEMENT

Consolidated servers from 36U to 9U = 4 times. Improved update query performance 20 times.
4*20 = 80 times greater performance density.

Summary

Implementing Fusion ioMemory gave DRECOM the following benefits:

- 20x lower I/O wait time
- 20x faster update queries
- Eliminated service interruptions to end-users, even under heavy traffic
- Growth headroom to support expanding product line
- 4:1 server consolidation
- Superior read and write performance symmetry
- Fast replication performance that enables more reliable architectures
- End-to-end solution support

About Drecom

Drecom is an entertainment-focused Web services provider with two divisions. Its Entertainment Web Service division provides social gaming applications and web services like smart phone content. Its Internet Marketing Solution division delivers targeted advertising for a variety of web-based content.

The performance results discussed herein are based on internal Drecom testing and use of Fusion ioMemory products. Results and performance may vary according to configurations and systems, including drive capacity, system architecture and applications.

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