



CyberAgent's Ameba Miniaturizes Gaming Infrastructure

Japanese Internet giant adds SanDisk® to MySQL gaming platform, more than doubling performance and gaining a stable and scalable system with 88 fewer nodes to maintain.

Solution Focus

- MySQL
- Web Scale

Summary of Benefits

- **3.5x faster query processing** than a disk-based MySQL system
- 8 servers delivering **2x+ higher performance** than a 96-server KVS system
- **2.25:1** rack space consolidation
- **Stable and reliable**
- **Predictable and linearly scalable performance**
- **Immediate 100% ROI** on savings for minimal upgrade
- **OEM supported** servers and Fusion ioMemory™ ioDrive® cards

The Challenge

CyberAgent is one of Japan's largest Internet and media companies. It maintains a social network platform called Ameba, which hosts its popular Metaverse game, called "Ameba Pigg," where users create an avatar and live a virtual life.

As an Internet leader, CyberAgent tasked Ameba Pigg Infrastructure Engineer, Akihiro Kuwano, to pioneer a new architecture that would overcome the following challenges:

- 1. Retaining users.** A single second of load time, when it interferes with game play, can prompt gamers to stop playing a game. Ameba Pigg's database had to handle millions of daily requests, including peak loads in the morning and evening of 60,000 queries per second, without perceptible slowdown.
- 2. Scalability.** Ameba Pigg was experiencing tremendous growth. Akihiro needed to design a system that could continue to scale as its popularity grew.
- 3. Cost efficiency.** Traditional scale-out systems carried significant and continually growing capital and operating costs. The new system had to grow performance without corresponding increases in costs.

It seemed a daunting task, but Akihiro knew he could find a solution.

The Solution

Akihiro told his OEM sales representative that Ameba Pigg's extremely high-volume traffic patterns required the lowest possible latencies for top performance. The representative pointed him to SanDisk's Fusion ioMemory™ solutions. After testing the Fusion ioMemory ioDrive® cards, Akihiro knew he had his solution.

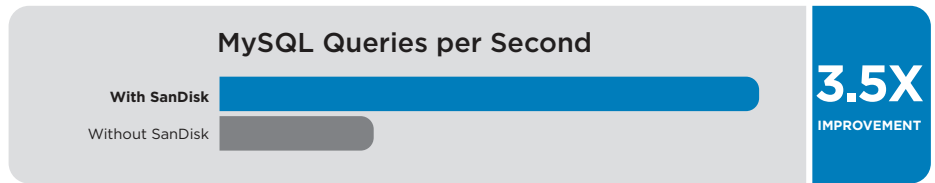
Innovating for Growth and User Retention

Ameba Pigg's existing database was a MySQL Key-Value Store (KVS) database composed of 100 custom-built machines. It was reaching its performance limit. On top of this, the custom servers were not very reliable, so continuing to scale out the system meant much more maintenance work. Akihiro's team decided a new SanDisk-powered MySQL system would deliver much better performance using far fewer standard enterprise servers.

Akihiro's team tested the performance of the ioDrive cards by comparing a single disk-based MySQL database server against a single SanDisk-powered MySQL server. The disk-based server achieved 10,000 queries per second, while the SanDisk-powered server increased the database load capacity to 35,000 queries per second.

“Over the last six months of using the ioDrive card-based system, our site traffic has doubled and we still haven’t seen any performance problems. Scaling performance will be easy, and we have immediate plans to purchase more Master/Slave pairs to support continued growth.”

Akihiro Kuwano
Infrastructure Engineer
CyberAgent



Akihiro said, “We estimate the ioDrive card-based system can support between 80,000 to 100,000 queries per second before CPU bottlenecks start to limit performance. We have doubled the number of users on our application without any performance slowdown. We no longer worry about gamers losing interest due to poor performance.”

Scalability and Reliability

While performance was critical to user retention, the system also had to scale as the game’s popularity grew. It also had to deliver enterprise reliability under 24x7x365 loads.

The SanDisk-powered system made this easy. It delivered the following:

- **Linear scalability.** Additional servers scaled load predictably and linearly, making it easy to accommodate rapid growth.

Akihiro told us, “The system is very simple and provides a stable base where we can easily add more servers or upgrade processors to increase performance.”

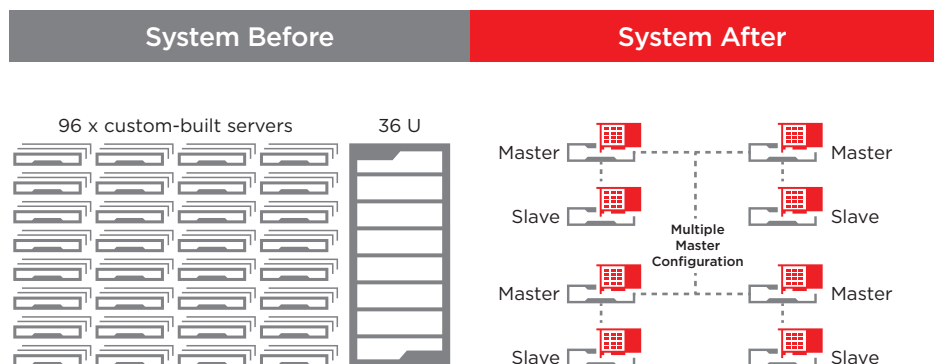
- **Enterprise tested and supported hardware.** Both servers and ioDrive cards had been fully qualified by CyberAgent’s OEM for enterprise use.

“Our OEM tests the servers and ioDrive cards for demanding environments,” Akihiro said. “Server failure rates are much lower than we’ve experienced with our custom-built servers.”

- **Fully redundant architecture.** The new system consisted of a Multi-Master MySQL architecture with master/slave pairs.

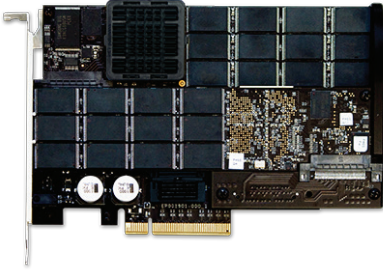
Akihiro said, “The new system is much more reliable and easier to maintain. We haven’t experienced a single server or drive failure, which was an unfortunately common occurrence with our KVS system.”

System Overview

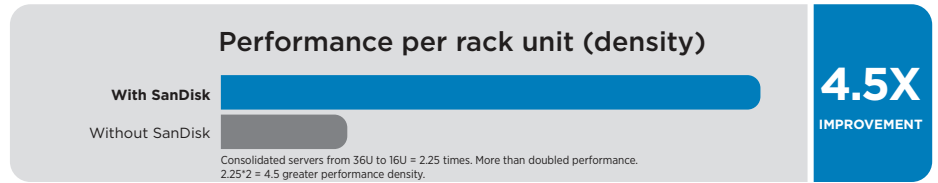


- 96 x Custom-built servers, Intel® Atom™ CPU 330 @ 1.60GHz, 2GB RAM
- 16 servers per 6U rack space
- OS: CentOS5.4
- Application: In house KVS with MySQL 5.0.91 for the datastore

- 8 x HP DL380G6 MySQL database servers, Dual-core Intel(R) Xeon® CPU L5520 @ 2.27GHz, 24GB RAM
- 1 x ioDrive Duo 640GB card per server
- 4 x Master/Slave pairs in a Multiple Master configuration
- MySQL 5.0.91



Fusion ioMemory™ - ioDrive® Duo



Summary

Implementing Fusion ioMemory solutions gave CyberAgent's Ameba Pigg database the following benefits:

- 3.5x faster query processing than a disk-based MySQL system
- 8 servers delivering 2x+ higher performance than a 96-server KVS system
- 2.25:1 rack space consolidation
- Stable and reliable
- Predictable and linearly scalable performance
- Immediate 100% ROI on savings for minimal upgrade
- OEM supported servers and ioDrive cards

Akihiro couldn't be happier with the SanDisk-powered system. He said, "Over the last six months of using the ioDrive card-based system, our site traffic has doubled and we still haven't seen any performance problems. Scaling performance will be easy and we have immediate plans to purchase more Master/Slave pairs to support continued growth."

About CyberAgent

CyberAgent America is a leading developer of social games and online entertainment communities. As a fully owned subsidiary of Tokyo based CyberAgent, CyberAgent America utilizes extensive networks and over 11 years of experience in the Japanese internet industry to bring Japanese internet services into popular social media destinations online, helping users worldwide connect online and create real experiences. By taking advantage of synergies between the companies within the CyberAgent group, CyberAgent America leads the way for Japanese Internet services' international expansion.

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The performance results discussed herein are based on internal CyberAgent 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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