



**CyberAgent**

CyberAgent's Ameba Miniaturizes  
Pigg Gaming Infrastructure

**FUSION-io**



## CyberAgent's Ameba Miniaturizes Pigg Gaming Infrastructure

*Japanese Internet giant adds Fusion-io to MySQL gaming platform, more than doubling performance and implementing a stable and scalable system with 88 fewer nodes to maintain.*

### 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.



#### SOLUTION FOCUS

- MySQL
- Web Scale

#### SUMMARY OF BENEFITS

- **3.5x faster query processing** than a disk-based MySQL system
- **2x+ higher performance** than 96 server KVS system from just 8 servers
- **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 ioDrives**

*"Over the last six months we have been using the ioDrive-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

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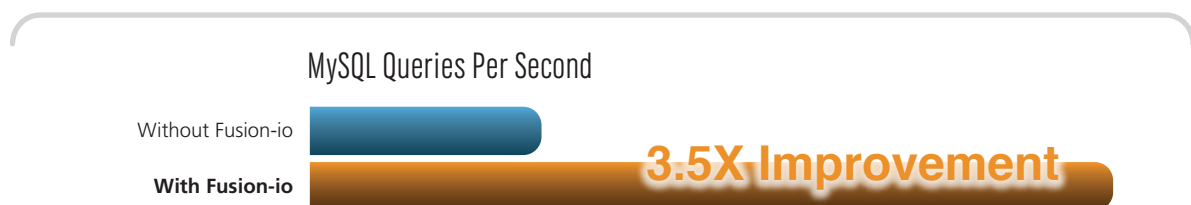
## The Solution

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 Fusion-io. After testing Fusion's ioDrives, Akihiro knew he had his solution.

### INNOVATING FOR GROWTH AND USER RETENTION

Ameba Pigg's existing database was a NoSQL Key-Value Store (KVS) database, composed of 100 custom-built machines, that was reaching its performance limit. On top of this, the custom servers were much less reliable, so continuing to scale out the system meant much more maintenance work. Akihiro's team decided an innovative new Fusion Powered MySQL system would deliver much better performance from far fewer standard, enterprise servers.

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



Akihiro said, "We estimate the ioDrive-based system can support between 80,000 to 100,000 queries per second before CPU bottlenecks 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."

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## 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 Fusion 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 ioDrives had been fully qualified by CyberAgent's OEM for enterprise use.

"Our OEM tests the servers and ioDrives for demanding environments," Akihiro said. "Server failure rates will be 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."

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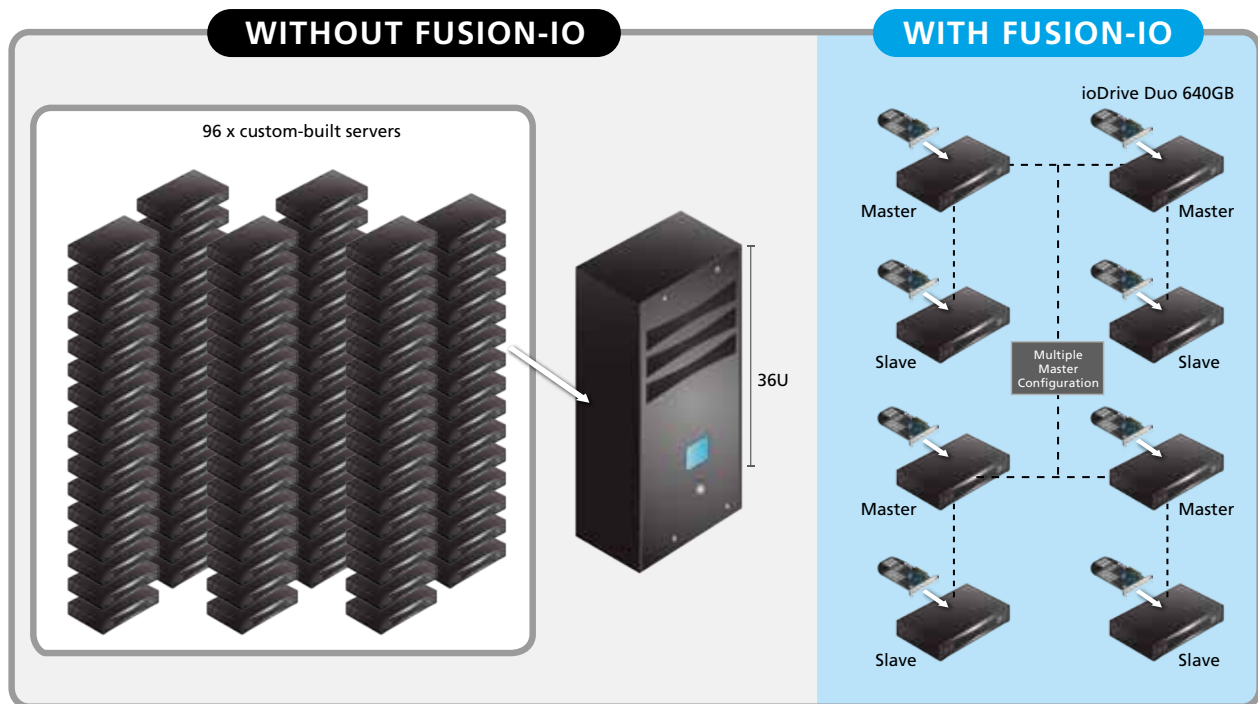
## Changes to the System

### SYSTEM BEFORE

- 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

### CHANGES TO SYSTEM

- 8 x 2U MySQL database servers HP DL380G6, Dual core Intel(R) Xeon® CPU L5520 @ 2.27GHz, 24GB RAM
- 1 x ioDrive Duo 640GB
- 4 x Master/Slave pairs in a Multiple Master configuration
- MySQL 5.0.91



Performance per rack unit (density)



Consolidated servers from 36U to 16U = 2.25 times. More than doubled performance.  $2.25 \times 2 = 4.5$  greater performance density.

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## Summary

Implementing Fusion-io gave CyberAgent's Ameba Pigg database the following benefits:

- **3.5x faster query processing** than a disk-based MySQL system
- **2x+ higher performance** than 96 server KVS system from just 8 servers
- **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 ioDrives

Akihiro couldn't be happier with the Fusion Powered system. He said, "Over the last six months we have been using the ioDrive-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 the Customer

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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