MySQL Cluster Helps Mapion to Improve its User Experience

Online Web Application

OS: Sun Solaris

Hardware : Sun Servers

Database: MySQL Cluster

"In January 2009 the new customer management system for Mapion Mobile went live, with downtime reduced to near zero"

Mr Koji Kozono
Technology Development Dept.,
Mapion Service Development Group

Mapion Company Overview

Mapion Co., Ltd, is Japan's leading provider of online map services. The company offers the Mapion online map; navigation tools and directions delivered to users' mobile phones with Mapion Mobile; and provides its Mapion BB service for broadband users.

Headquartered in Tokyo, Japan, Mapion Co. Ltd delivers Japan's leading online map search service, with over 700,000 page views per day, and over 200 enterprise customers. Mapion's shareholders include Toppan, NTT East, Dentsu, Yahoo Japan, and Sharp.

The company's online map service enables users to search for addresses as well as gain access to navigation information such as directions for driving and public transport routes. The fee-based service for mobile users, Mapion Mobile, sends maps and directions direct to users' mobile phones, while the Mapion BB broadband service offers more detailed maps, which smoothly and instantaneously refresh as the user navigates around the displayed map.

To remain competitive, it is critical for Mapion to consistently innovate and improve the detail in its maps and the services it provides. To deliver a unique map search service, Mapion decided to develop the image generation for its maps rather than relying on a third party map data provider. However data generation for its new maps requires tens of millions of files, placing strain on existing IT infrastructure. With its new map search service offerings and in-house image generation, the company needed a stable system, minimal downtime, and the scalability to handle an anticipated large increase in users without deterioration in response time.

Customer Challenges

- Improve the user experience for its online map service
- Reduce downtime for the Mapion Mobile customer management system
- Simplify management of Mapion BB application updates
- Provide support for a complex systems environment to minimize downtime

The MySQL Cluster Database Solution

Mapion standardized its systems environment on Sun, running Solaris 10 Operating system and deploying Sun servers, Sun StorageTek 9985V system for storage, and Solaris Containers to improve performance in its data center. Mapion Mobile leveraged MySQL Cluster Database to create a database with 99.999% availability; while Mapion BB deployed open source technology using the Sun GlassFish Enterprise Server to reduce application management time.

In 2008 Mapion relocated its data center due to increasing power consumption needs. “The previous data center was operating near the limit of its power capacity, making it difficult to introduce additional servers even though we had the equipment footprint available. And with map information services in constant evolution, it was inevitable that we would need to expand the system,” says Mr. Atsushi Murata, manager of Mapion Technology Development Department, Mapion.

Mapion saw the data center relocation as an opportunity to commence a full scale upgrade of the hardware, software and operating system supporting its map information services. Solaris 10 Operating System was deployed, along with Solaris Containers to ensure effective use of available resources for map image generation. Mapion adopted Sun GlassFish Enterprise Server, as its application server, and MySQL Cluster, a real-time database for mission-critical applications, for Mapion Mobile.

Mapion standardized its hardware environment in its new data center on a Sun platform, deploying 18 Sun Fire X4150 servers, 3 Sun Blade 6000 modular systems, 3 Sun Blade X6250 servers, 1 Sun Blade T6320 server, and the Sun StorageTek 9985V system for storage consolidation and virtualization. By consolidating its IT infrastructure on Sun, Mapion is able to benefit from simplified support and maintenance, leading to reduced costs. The company is running Solaris 10 Operating System and Solaris Containers to consolidate multiple applications on one system and increase utilization rates. Solaris Containers provide a one application per server environment while consolidating those applications onto shared hardware resources. For Mapion's users, the result is a significant reduction in the time required for image generation when displaying maps.

“With its variety of commands for enhanced server management, Solaris 10 Operating System offers efficient monitoring of the system, which eases the workload of the systems administrator, while running Solaris Containers makes effective use of system resources. CPUs with low utilization rates, including those servers supporting online services, can be diverted to the image generation process. An operation performed by a dedicated machine, which had previously taken one month to complete, can now be finished in less than ten days,” says Mr. Yukio Hasegawa, Manager, Mapion Technology Development Department, Operational Technology Group, Mapion.

“Some databases supported clusters when we previously reviewed our database technology, but they were hard to operate and would have increased costs substantially. MySQL Cluster Database had made it possible to construct a highly available system while keeping costs down”

Mr. Takashi Ando
Database Engineer
Mapion Technology Development Department

In addition to updating its data center, Mapion wanted to renew its customer management system for Mapion Mobile, its fee-based online map service for mobile devices. Due to the service operating as a fee-based model, the customer management system behind Mapion Mobile must be available 24/7 or Mapion risked losing customers to its competitors.

“The server lease was about to expire, and the existing MySQL 3.1 database was providing a consistent service, but with Mapion Mobile being a fee-based service, we wanted a new system that would further reduce downtime,” explains Mr. Takashi Ando, a database engineer in the Mapion Technology Development Department, Service Development Group, Mapion.

Mapion had considered database clustering in the past to improve availability but at the time few databases supported the technology. However with the recent decision to update the customer management system, Mapion found that new open source software was available through the MySQL Cluster database.

Mapion adopted the MySQL Cluster database because of its ability to support Mapion's mission-critical application requirements of 99.999% availability through its 'shared-nothing' distributed architecture, with no single point of failure. This is coupled with automatic data partitioning and load balancing, which allows almost unlimited database scalability for the company. Mr. Takashi Ando comments, "Some databases supported clusters when we previously reviewed our data-base technology, but they were hard to operate and would have increased costs substantially. We found ourselves in a completely different situation when planning the introduction of the new system. MySQL Cluster Database had made it possible to construct a highly available system while keeping costs down."

"In January 2009 the new customer management system for Mapion Mobile went live, with downtime reduced to near zero," confirms Mr Koji Kozono, from the Technology Development Department, Service Development Group, Mapion.

Mapion leveraged Sun's open source technology for its Mapion BB map service for broadband users, deploying the Sun GlassFish Enterprise Server, an open source application server that provides the foundation for Mapion to develop and deploy next generation applications.

With the previous servers utilized by Mapion BB, application updates had to be applied to each server, which required the servers to be taken out of service while the updates were made. The dynamic clustering available with the Sun GlassFish Enterprise Server means that it is now possible to run batch application deployment and updates, substantially reducing the workload while also maintaining availability.

Sun GlassFish Enterprise Server has provided Mapion with a cost-effective platform for developing and delivering applications. Mr. Hasegawa comments, "Switching the application server to GlassFish has resulted in a substantial reduction in the operational management workload. It offers easy-to-use functions which are indispensable in day-to-day operations, including batch deployment to multiple application servers."

By standardizing its IT infrastructure on a Sun platform, Mapion enjoys unified support from SunSpectrum Support that maintains the smooth operation of the system, substantially reducing costs arising from resolving problems. For Mapion's mission-critical applications, consistent operation and rapid and comprehensive support are essential. The solution offered by Sun supports the entire system including open source software, operating system and hardware and provides both consistency and security for business operations through IT cost reduction and enterprise class support.

Business Results Overview

- Improved user experience from faster generation of map images
- Achieved 99.999% availability for Mapion Mobile services through database clustering
- Reduced management time and achieved high availability for the Mapion BB broadband service
- Ensured unified support for system issues and high availability of its online services
- Reduced power usage through virtualization in the data center

MySQL Cluster

The Leading Open Source, High Availability Database for Real-Time, Mission Critical Applications

MySQL Cluster is the industry's only true real-time database that combines the flexibility of a high availability relational database with the low TCO of open source.

Carrier Grade Availability

MySQL Cluster features a "shared-nothing" distributed architecture with no single point of failure to assure 99.999% availability, allowing you to meet your most demanding mission-critical application requirements.

High Throughtput and Low Latency

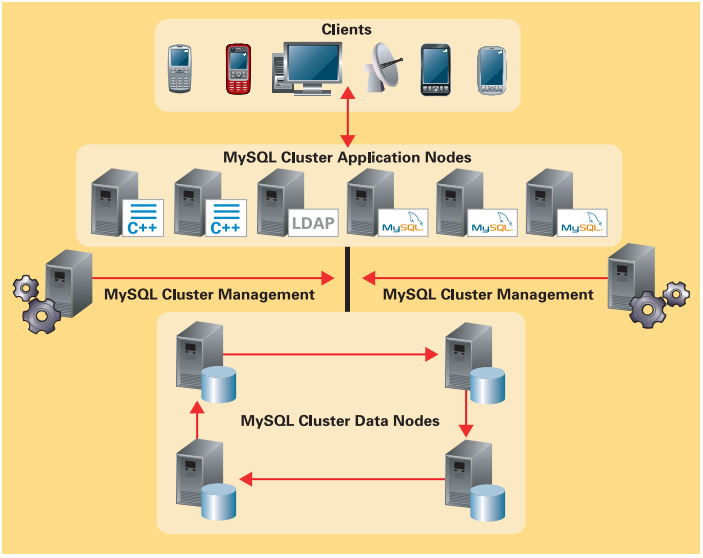
MySQL Cluster's real time design delivers consistent, millisecond response times with the ability to service tens of thousands of transactions per second.

Linear Scalability

Support for disk based data, automatic data partitioning with load balancing and the ability to add nodes to a running cluster with zero downtime allows almost unlimited database scalability to handle the most unpredictable web-based workloads.

MySQL Cluster Target Applications:

- AAA / RADIUS / Diameter Data Stores
- Application Servers
- Data Store for LDAP Directories
- DNS/DHCP for Broadband
- eCommerce
- Mobile Content Delivery
- On-Line application stores and portals
- Payment Gateways
- Service Delivery Platforms
- Subscriber Databases
- VoIP, IPTV & Video on Demand
- Web Session Stores



The MySQL Cluster architecture has been designed for 99.999% availability and delivers massive read/write scalability

About MySQL

MySQL is the most popular open source database software in the world. Many of the world's largest and fastest-growing organizations use MySQL to save time and money powering their high-volume Web sites, critical business systems, communications networks, and commercial software. At **www.mysql.com**, Sun provides corporate users with premium subscriptions and services, and actively supports the large MySQL open source developer community.

For more information, go to **www.mysql.com/cluster**

MySQL Sun microsystems

The World's Most Popular Open Source Database