MySQL Cluster Powers Leading Mobile Media Publishing Platform

Mobile Web Publishing

Database: MySQL Cluster

OS: CentOS Linux

Hardware: Dell PowerEdge
Servers

"By building our infrastructure on MySQL Cluster, go2 has achieved a more stable environment, improved our user experience and now have the ability to efficiently scale our platform with the growth of the mobile web"

Dan Smith
Co-Founder and CEO
go2 Media

go2 Media Overview

go2 Media (www.go2.com) publishes the largest entertainment guide on the mobile web. Using a network of over seventy editors across the United States, go2 Media creates recommendations of the best local and national entertainment for their target audience; urban users aged between 18 and 34 years. Updated daily, the guide covers everything from movies, concerts, sports events, and a restaurant guide combined with tools like directions, weather and contact details. Social networking features are also included, enabling users to share their plans with friends and colleagues via their preferred platform, i.e. Twitter, Facebook, SMS or Send to Friend.

Most users access go2 Media via their regular cell phone or their smart-phone, and some access go2 via their PC. go2 renders content dynamically, so that users have a viewing experience that is optimized to their device. The site is free to its consumers, with revenue generated from advertising placements. go2 Media content is distributed by all of the major wireless carriers in the US who provide access to the go2 platform from their mobile internet sites and decks. Major publishers such as CBS and NBC Universal publish content from the go2 Media guide on their mobile sites.

With rapid adoption of the mobile web and the provision of high-quality local content, go2 Media has experienced a rapid growth in their audience over the past year, and they now attract 4+ million monthly unique visitors, 30+ million monthly mobile web impressions and 20+ million annual unique users accessing more than one million dynamic content pages. Nielsen Media rates m.go2.com in the top 20 mobile content sites.

The Business Challenge

The phenomenal growth of go2 Media's audience and content created some unique challenges that the Engineering team had to address in their technology and infrastructure design.
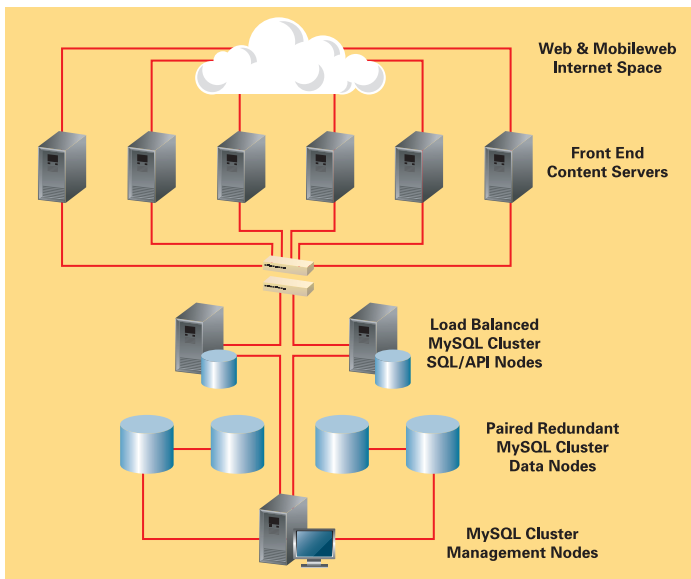
Through market research and testing, go2 Media understood that as page load times increase on mobile devices, then the drop out rate accelerated significantly as users sought out alternative sites.

go2 Media had to ensure page load times remained low, but at the same time, they had to support massive levels of scalability to meet demands for growth. While mobile networks and devices have become much faster and more functional, they remain constrained in their total bandwidth and processing power. As a result, the entire processing load of content formatting and delivery has to be performed by go2 Media's IT infrastructure, resulting in the need to re-architect their platforms to meet increasing demand.

Recognizing that user satisfaction was more than just a function of response times, go2 Media also began to investigate ways to more fully personalize the user experience with technologies that enabled them to contextually relate content to a user's preferences and previous browsing behavior. By personalizing the user experience, go2 Media wanted to deliver a mobile advertising performance rate that was three times higher than the industry average.

To further enhance user experience, the wireless carriers providing access to go2.com demanded very stringent Service Level Agreements (SLAs) with a minimum of 99.999% availability delivered by a carrier-grade platform. This meant go2 Media had to architect their infrastructure for high availability with automated sub-second fail-over times to ensure continuous service availability.

go2 Media had to address these challenges with a solution that enabled them to keep their costs low. They had already built out much of their infrastructure on open source components, including the Linux operating system, Apache web server, PHP scripting environment, Apache Lucene search and retrieval library and Memcached distributed memory caching system. As a result, go2 Media knew that open source technologies could provide a potential solution to the business challenges they faced.

Web & Mobileweb Internet Space

Front End Content Servers

Load Balanced MySQL Cluster SQL/API Nodes

Paired Redundant MySQL Cluster Data Nodes

MySQL Cluster Management Nodes

"MySQL Cluster has enabled us to meet our demands for scalability, performance and continuous uptime, at a much lower cost than proprietary technologies. We would be dead in the water without it"

Richard McCluskey
Senior Engineer, go2 Media

The MySQL Cluster Solution

Session management has always been critical to their users' experience, and go2 Media had initially deployed an NFS (Network File System) based solution. However, it was struggling to keep pace with demand, especially as sessions were stored for a minimum of three months to ensure that even occasional users were able to quickly access content of interest.

In addition to scalability issues, the need to store richer session data to support user personalization led go2 Media to consider relational databases as a potential alternative to their existing NFS-based session management system.

go2 Media investigated a range of database options including PostgreSQL and Microsoft SQL Server. The high upfront costs of implementation, coupled with the inability of regular database designs to efficiently manage and process millions of session files which were as small as 3.5KB, lead go2 Media to consider MySQL.

go2 Media had already used the MySQL Server in a number of internal projects, and had also received recommendations from industry peers that MySQL Cluster would meet their specific requirements. As a result, they downloaded MySQL Cluster and began detailed evaluations and prototyping, secure in the knowledge that they would not be forced into expensive licensing agreements, should they proceed with production deployment.

go2 Media made extensive use of expertise from the MySQL community, through forums, mailing lists, blogs and Twitter in order to locate best practices. This expertise enabled them to accelerate their development efforts, while at the same time, reducing costs.

Due to MySQL Cluster's distributed architecture, go2 Media was able to scale the database across low cost commodity server hosts. The shared-nothing design of MySQL Cluster meant that it did not require shared storage, so go2 Media were able to further reduce up-front implementation costs by eliminating the need to invest in SANs (Storage Area Networks) or other networked storage devices. By deploying MySQL Cluster, go2 Media only had to fund scalability as and when business demands justified it, and not take risks with costly up-front investments that significantly boosted capital and operating spend, ahead of any revenue returns.

Furthermore, with no single point of failure coupled and self-healing recovery, go2 Media were able to achieve the 99.999% levels of availability demanded by their content distribution partners and carriers.

By caching the most recent users session data in Memcached and MySQL Cluster's in-memory storage, the back-end infrastructure has been easily able to keep pace with the demand for low response times. go2 Media also persist older session data, along with user preferences and browsing behavior to disk-based data tables maintained by MySQL Cluster, with a total of 300GB allocated to table spaces.

With its multi-master, parallel architecture, MySQL Cluster is able to maintain the highest levels of both read and write performance, currently peaking at 1,100 queries per second into the database, with expectations of keeping pace with the 300%, six monthly growth rates being experienced by go2 Media.

"go2 Media has been a leader in the mobile publishing space since 1998. We've more than doubled our traffic and reach in recent months and expect to sustain our continued 20% monthly growth curve moving forward", says Dan Smith, CEO of go2 Media. "To stay ahead of the curve we recognized the need for some fundamental improvements in our infrastructure. By building on MySQL Cluster, go2 has achieved a more stable environment, improved user experience and personalization, and had the ability to efficiently scale our platform with the growth of the mobile web."

go2 Media and MySQL Cluster Solution Overview

- The mobile web's leading on-line entertainment guide, growing at 300% every 6 months

- Needed to scale infrastructure to support growth while maintaining ultra fast response times and meet more demanding SLAs from wireless operators

- To further differentiate their services, go2 Media wanted to store richer user session data and preferences

- Evaluated a range of database options, and found proprietary alternatives were too expensive and did not deliver the performance required

- go2 Media had built out the rest of their infrastructure on open source software, so decided to extend this to their database

- MySQL Cluster allowed go2 Media to freely develop and test their applications without the usual constraints of proprietary software

- MySQL Cluster provided the availability and performance needed on low cost servers, and without the expense of shared storage

- MySQL Cluster allows go2 Media to able to scale only when the business demands it, avoiding large up-front and risky investment costs

The Future with MySQL

go2 Media relies on MySQL Cluster to meet the performance, availability and scalability needs of their content delivery services. By persisting session state, preferences and historical browsing behavior, MySQL Cluster has also enabled go2 Media to deliver a new generation of highly personalized services to their users, and targeted advertising to their media partners.

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.
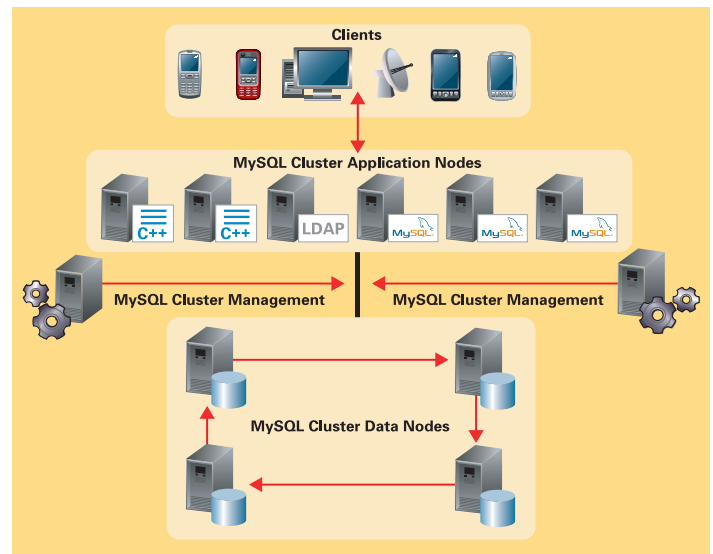
Linear Scalability

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.

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

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

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**

To learn more about MySQL in the Telecommunications industry, go to **www.mysql.com/communications**

The World's Most Popular Open Source Database