MySQL Cluster

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

"MySQL Cluster Carrier Grade Edition is a product of high quality, extremely robust and meets our demands in terms of performance and high availability. We evaluated shared-disk clustered databases but the cost would have been at least 10x more."

Alain Chastagner
Systems Manager, Alcatel-Lucent

"Since deploying MySQL Cluster as our eCommerce database, we have had continuous uptime with linear scalability enabling us to exceed our most stringent SLAs"

Sean Collier
CIO & COO, Shopatron Inc.

Whether you're racing to introduce a new service, or trying to manage an avalanche of data in real time, your database has to be scalable, fast and highly available to meet ever-changing market conditions and stringent SLAs.

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. It 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. Its real-time design delivers consistent, millisecond response latency with the ability to service tens of thousands of transactions per second. Support for in-memory and 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 your most unpredictable workloads.

Low TCO

MySQL Cluster requires no additional infrastructure, such as shared storage, and runs on a range of commodity hardware and OS platforms, making it the most open and cost-effective database solution for mission critical applications anywhere.

HIGHLIGHTS

- 99.999% Availability
- Sub-Second Fail-Over
- Self Healing Recovery
- Real-Time Performance
- Dynamic, On-Line Scalability
- Automatic Load Balancing
- Flexible Data Access
- Low TCO

Proven Deployments

The benefits of MySQL Cluster have been realized in the most demanding data management environments in the telecommunications, web, finance and government sectors, for the likes of Alcatel-Lucent, Cisco, Ericsson, Juniper, Shopatron, Telenor, UTStarcom and the United States Navy.

Together with Sun's global training, consulting and technical support services, MySQL Cluster can help ensure the success of your next mission-critical service with greater speed, lower cost, and less risk.

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TARGET APPLICATIONS

- AAA / RADIUS / Diameter Data Stores
- Application Servers
- Data Stores for LDAP Directories
- DNS/DHCP for Broadband Access
- eCommerce Databases
- IMS Services
- Intelligent Network Nodes
- Location Based Services
- Message Stores and Queues
- Mobile Content Delivery
- On-Line Application Stores and Portals
- On-Line Gaming
- Payment Gateways
- Presence Management
- Service Delivery Platforms
- Soft-Switches
- Subscriber Databases (HLR / HSS)
- VoIP, IPTV & Video on Demand
- Web Session Management

99.999% Availability

The architecture of MySQL Cluster is designed for 99.999% availability, eliminating both planned and unplanned downtime. It achieves this via a distributed, shared-nothing architecture and synchronous replication of data which automatically propagates transaction information to all appropriate database nodes and replicas.

Sub-Second Failover & Recovery

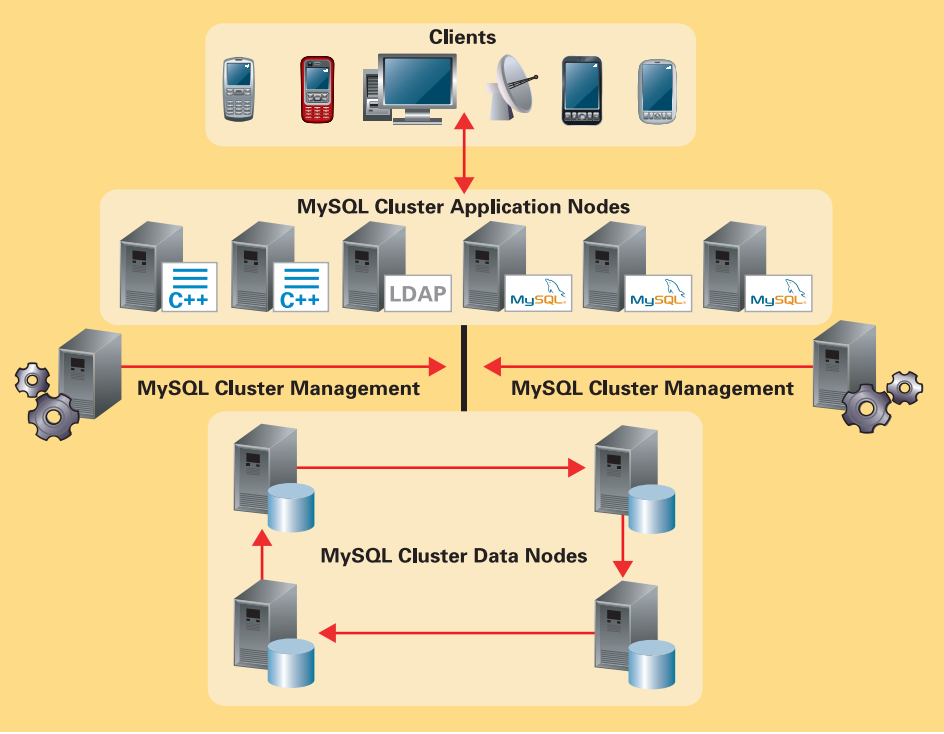
Any failures are detected instantly and control is automatically failed over to other nodes in the cluster, without interrupting service to the clients. Plus, MySQL Cluster database nodes are able to automatically restart, recover, and dynamically reconfigure themselves in case of failures. The MySQL Cluster self-healing features are completely transparent to all applications.

To further support continuous operation, MySQL Cluster allows nodes to be added dynamically to running clusters, on-line updates to live database schema, in addition to upgrades and maintenance of the underlying hardware & software infrastructure of the cluster.

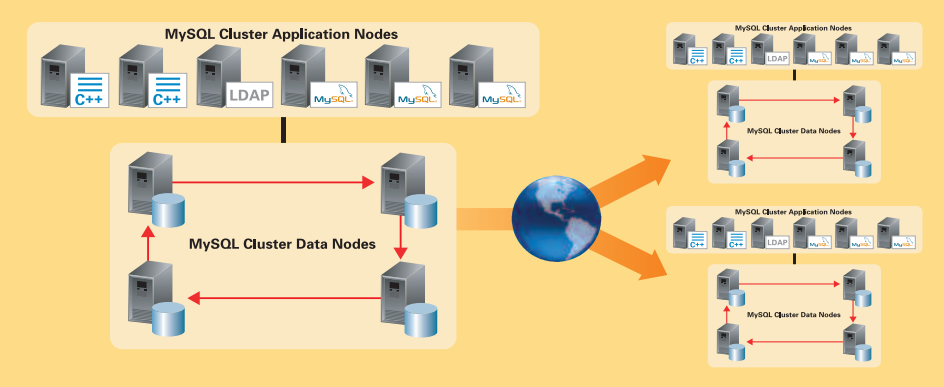
Geographic Replication

The ability to withstand site failures by replicating clusters across multiple remote locations is an important capability for many deployments. Geographic Replication is available as an option with MySQL Cluster Carrier Grade Edition (CGE), and ideally suited to those organizations with multiple data centers.

Through these capabilities, MySQL Cluster is able to eliminate both planned maintenance and unplanned downtime in order to support your most mission critical applications.



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



Geographic Replication delivers 99.999% cluster availability across remote locations

Real-Time Performance

With its real time design, MySQL Cluster provides the response time and throughput needed to meet the needs of the most demanding telecommunications, web and enterprise applications. MySQL Cluster limits I/O bottlenecks by asynchronously writing transaction logs to disk, thereby achieving predictable response times in just a few milli-seconds, while also handling tens of thousands of transactions per second, without compromising reliability or availability.

Dynamic, Linear Scalability

To support growth in users, data and transactions, MySQL Cluster provides a cost-effective way to scale both processing and data storage. With support for up to 255 nodes, MySQL Cluster users can start small and make incremental investments as services scale up and requirements increase. Simply add cluster nodes on-line to support increases in concurrent users and transactions, or to expand data capacity. Plus MySQL Cluster enhances flexibility by supporting disk-based data for space-intensive objects such as BLOBs.

To further enhance scalability, MySQL cluster lets developers and DBAs refine access through user-defined partitioning, thus allowing data to be efficiently accessed on a single node, without the need for inter-communication within the cluster to perform a transaction or a look-up.

Using these capabilities, organizations have been able to quickly and cost effectively achieve linear scalability to support the rapid adoption of new services, without having to re-architect the underlying database solution.

Flexible Data Access

Application developers can easily integrate new and legacy applications using their preferred database-independent method. MySQL Cluster CGE provides multiple data access methods that work together. These include SQL, native APIs (C and C++), Java, LDAP, and Web Services.

This allows developers to select the data access method that best fits there development and application requirements. It also allows a single instance of MySQL Cluster to service a range of applications that previously would have required their own local database.

Key Features of MySQL Cluster Carrier Grade Edition

- Real-Time Transactional Database
- ACID Compliant
- Distributed Shared Nothing Architecture
- Online Addition of Nodes
- On-Line Maintenance & Schema Updates
- Automatic Synchronous Replication
- Sub-Second Fail-Over and Self Healing Recovery
- In-Memory and Disk-Based Data Storage
- Online Backup
- Data and Index Cache
- Configurable Checkpoints
- SQL Access
- Native NDB API Access (C/C++)
- User-Defined Partitioning
- Geographical Replication
- Data Store for LDAP Directories

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The World's Most Popular Open Source Database

Open Source Economics

MySQL Cluster is an open source high availability database solution that allows developers to download and start building their next generation services without the usual costs and time-to-market delays associated with adopting proprietary clustered databases.

24x7 technical support services, consulting services and affordable licensing for MySQL Cluster are all available at a fraction of the cost of proprietary solutions.

Services and Support

MySQL provides extensive consulting, training and technical support services to ensure the success of any mission-critical database project. Through millions of successful customer deployments, MySQL has established a proven track record of supporting its customers, lowering risks and maximizing return on investment. Our support teams are ready to assist in the development, deployment, and management of MySQL applications.

Sample List of MySQL Cluster Customers

Alcatel-Lucent
AT&T Wireless
Cisco
Deutsche Telekom
Ericsson
France Telecom
HP
Italtel
Juniper Networks
M1
Mapion
Motorola
Paggo
Plusnet
Shopatron
SPEECH DESIGN
T-Mobile
Telenor
Toto-Lotto Niedersachsen
University of California Berkeley
US Navy
UTStarcom
Zillow
8x8 Inc

System Requirements per MySQL Cluster Data Node (Recommended)

OS	Linux (Red Hat, SuSE), Solaris *Note: Mac OS X & Microsoft Windows for Development Only*
CPU	Intel & AMD x86, Sun UltraSPARC
Memory	16GB+ RAM (1GB Minimum)
HDD	18GB+ (3GB Minimum)
Network	Gigabit Ethernet. For 8 nodes or more, dedicated MySQL Cluster Interconnect, e.g. SCI, recommended for maximum scalability

Learn More

Visit **www.mysql.com/cluster** for additional resources, including whitepapers, on-demand webinars and customer case studies.

To learn more about how MySQL Cluster is used by Network Equipment Manufacturers, ISVs and Communications Service Providers, visit **www.mysql.com/communications**

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.

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