



# Citysearch Saves Over \$1 Million Using MySQL

Citysearch is a leading local search service, providing the most up-to-date information on businesses, from restaurants and retail, to travel and professional services. Citysearch allows users to make informed decisions about where to spend their time and money by delivering more than one million editorial reviews, user reviews and ratings of local businesses. The Citysearch web site receives over 10 million unique visitors each month. In the last 4 years, the number of page views at Citysearch site has grown 10x from 10 million page views per month to approximately 100 million per month.

Citysearch had been using Oracle to house most of their data. The locations database includes all business listings such as restaurants and related information including hours of operation, menus, and payment methods. As a result of the increased user base, the front end Oracle system could no longer keep up with the traffic coming from the Web site. The cost of upgrading the Oracle system to accommodate the growth in traffic would have been approximately \$1.5 million. By implementing replicated MySQL servers to handle the Web traffic and a terabyte of data, Citysearch was able to deliver an extremely high performance solution with 90% Total Cost of Ownership (TCO) savings.



*“MySQL has allowed us to save more than \$1 million in database licenses and hardware costs. At the same time, MySQL has significantly improved the performance of our site for our users.”*

**Shakeel Sorathia**  
Director of Engineering  
Citysearch



## Move to the LAMP Open Source Stack

Originally Citysearch invested in proprietary hardware and software. Oracle was their only database, and they relied on Sun hardware running Sun Solaris. Citysearch was using the same software and hardware for many different applications. This however, did not give them the flexibility to use the best tool for the job. When their existing legacy application reached its limit, Citysearch turned to open source technologies as an alternative. Specifically, the open source LAMP stack (Linux, Apache, MySQL, Perl/PHP/ Python) stack became the platform of choice.

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*“MySQL performance has been excellent. Compared to Oracle, the performance of MySQL is lightening fast.”*

**Shakeel Sorathia**

Director of Engineering  
Citysearch



### Cost Savings

As a result of choosing MySQL, CitySearch was able to save \$400,000 in Oracle licensing costs. Furthermore, by using the LAMP stack, Citysearch was able to move away from heavy duty, high cost hardware. Citysearch was running their database application on two 12-CPU Sun Solaris machines. In order to satisfy the demands of the growing site traffic, Citysearch needed to double their database capacity, in turn requiring them to double their hardware investment.

On the other hand, LAMP components are ideally suited to run on commodity hardware. Citysearch chose RedHat Linux, MySQL, and commodity Intel Xeon machines. The 20 IBM machines cost \$75,000, saving an estimated \$1 million needed for 2 additional 12-CPU Sun machines. Also, by using commodity hardware, Citysearch was able to save on annual hardware support contracts.

## High Performance & Scalability

### Replicating Data from Oracle to MySQL

Citysearch uses Oracle as their master to house their locations database. However, rather than extending their infrastructure using Oracle which would have been cost prohibitive, data is now replicated from Oracle to MySQL Master Servers in each data center. These MySQL Servers are the masters to a farm of 10 additional MySQL slaves in each data center. These slaves serve the 100 million pages delivered by Citysearch each month. While there are specific features in Oracle that Citysearch uses to create this data, it would not have been cost-effective for them to provide access to this data via Oracle. The technical implementation which required developing the replication capabilities, migrating the database tables, and rewriting some SQL statements took a part-time person less than 2 months to complete.



### Lightning Fast Performance

Citysearch also found that using the MyISAM storage engine to store and serve the data was lightning fast compared to Oracle. For simple queries, MySQL Server took milliseconds vs. seconds in Oracle. Creating the new replicated front-end application also reduced risk because it allowed them to leave the back-end application as-is, while their users benefit from improved performance and response time.

Citysearch selected MySQL for a number of reasons:

**Low Cost** – MySQL provides significant cost advantages over Oracle. Citysearch estimates they saved \$400,000 in Oracle licenses. Furthermore, Citysearch was able to scale out their infrastructure using commodity hardware at a fraction of the price that heavy duty hardware would have cost.

**Performance** – Citysearch found that MyISAM is the ideal storage engine for high-performance read-intensive applications. Citysearch also determined that MySQL performance was many times faster than Oracle. Currently, MySQL handles about 200 queries/second.

**Replication** – Using MySQL master-slave replication, Citysearch is able to cost-effectively provide the scalability and the high availability necessary to accommodate the exponentially growing traffic on the Web site.

**Reliability** – MySQL has been up and running consistently without failure since the architecture went live in April 2004.



## Technical Environment

<i>Hardware:</i>	IBM (2 Master, 20 Slaves)
<i>OS:</i>	Red Hat Linux
<i>CPU:</i>	2.4Ghz Intel Xeon
<i>RAM:</i>	4Gb
<i>Hard Disk:</i>	2 x 36Gb
<i>Database:</i>	MySQL Server
<i>Language:</i>	Perl
<i>Storage:</i>	Eon Store, 16 x 250Gb RAID5.
<i>Database Size:</i>	<ul style="list-style-type: none"><li>◆ 1Tb</li><li>◆ 120 million rows</li><li>◆ ~200 tables</li></ul>

## About MySQL

MySQL AB develops, markets, and supports the MySQL database server, the world's most popular open source database. With over five million active installations, MySQL has quickly become the core of many high-volume, business-critical applications.

Major corporations such as Yahoo!, Sony Pictures Lucent Technologies, Digital Entertainment, HP, Motorola, NASA, Xerox and Cisco rely on the ultra-fast, highly-reliable MySQL database. MySQL is available under the free software/ Open Source GNU general public license (GPL) or a non-GPL commercial license.

For more information about MySQL, please go to [www.mysql.com](http://www.mysql.com).



The World's Most Popular Open Source Database

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