

Solution Brief: Top 10 reasons to use MySQL HeatWave for MySQL Community Edition users

One MySQL cloud database service for transactions, real-time analytics, and machine learning—without ETL

Copyright © 2024, Oracle and/or its affiliates
Public

Introduction

MySQL is the world's most popular open source database. While its performance, reliability, and ease of use are well recognized, using MySQL Community Edition on-premises can present several challenges for organizations. In this brief, we will review those challenges, and subsequently consider how MySQL HeatWave addresses them.

Challenges of using MySQL Community Edition on-premises

Bottom-up adoption is very typical for MySQL. IT managers are often surprised to discover that MySQL has been downloaded thousands of times within their organization and that the database already powers numerous systems which are considered business-critical.

Indeed, developers, system administrators, or analysts facing an ad-hoc need frequently make the choice to develop an application based on MySQL (no procurement cycle, and they choose a database renowned for its performance, reliability, and ease of use). While such applications are typically not critical to the organization initially, this often changes quickly: as more and more people discover their value, rely on them, and possibly expand their scope, many applications built on MySQL become critical to one or more departments. Several questions tend to surface at that point, such as:

- How is data protected?
- How do we ensure regulatory compliance?
- What is our High Availability setup to ensure uptime?
- What is our backup policy?
- Can we get immediate professional technical support if needed?
- How do we ensure performance and scalability as the application/the number of users expands?
- Who's responsible for the administration of the database(s) and what happens if this person leaves?

In addition to risks, costs may also become an issue. While running MySQL Community Edition may appear free, the applications and databases obviously require hardware, storage, networking, and administration time. Manual administrative operations performed by different persons across all individual, siloed MySQL databases (often unidentified by IT) represent a high cost of operations, and hamper productivity.

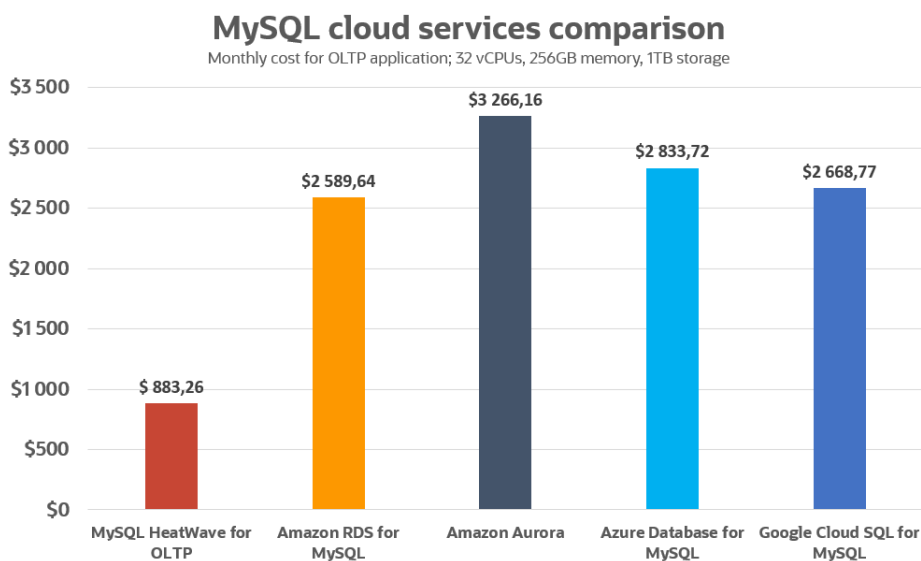
MySQL is optimized for transactional applications but is usually slow at running analytics queries. As a result, organizations using MySQL on-premises for OLTP typically need to move all their data to separate analytics databases via complex and time-consuming extract, transform, load (ETL) processes. This further increases costs; security and compliance risks also increase as data moves between data stores, and business leaders don't get real-time analytics, as the data is already stale by the time it's available for use in the separate analytics database.

MySQL Community Edition users run into the same issues when they want to build and train machine learning models using their MySQL data, as they need to move/ETL data from their MySQL database to a separate machine learning offering.

IT managers increasingly consider migrating their existing MySQL applications to the cloud to combat the issues mentioned above. A move to the cloud also enables their developers to build new MySQL-based applications with lower risks, costs, and improved productivity. In the next section, we will briefly review why the MySQL HeatWave database service represents the best choice for MySQL Community Edition users.

Top 10 reasons to use MySQL HeatWave for MySQL Community Edition users

1. **MySQL HeatWave is a fully managed cloud service:** customers improve productivity by automating time-consuming tasks such as high-availability management, patching, upgrades, and backup. They accelerate application development with the instant provisioning of resources.
2. **The only MySQL cloud service built, managed, and supported by the MySQL engineering team:** Developers can deliver modern, cloud-native database applications with immediate access to the latest features from the MySQL team, while other services may lag significantly behind. MySQL security patches are automatically applied to limit exposure to security vulnerabilities. Technical support is delivered 24/7 by MySQL experts, who have direct access to the MySQL development engineers.
3. **The only service built on MySQL Enterprise Edition,** to help ensure the highest levels of MySQL security and reliability with built-in, advanced features for encryption, data masking, authentication, audit, and a database firewall.
4. **100% compatible with MySQL on-premises** for a seamless transition to the cloud without changes to existing MySQL-based applications. No risk of lock-in as would be the case with other non-compatible or proprietary MySQL cloud services only available in the vendor's public cloud.
5. **Less expensive than other MySQL cloud services for OLTP applications:**



Up to 3.7X Savings over Amazon Aurora

For details of the comparison, see the blog [“MySQL cloud services cost comparison: who provides the best value?”](#)

6. **One MySQL database cloud service for transactions, real-time analytics, and machine learning (ML):** MySQL HeatWave is the only cloud database service that combines transactions, analytics, and machine learning services into one MySQL Database, delivering real-time, secure analytics without the complexity, latency, and cost of ETL duplication. You eliminate the cost and complexity of separate analytics database, ML, and ETL services. You avoid the latency and security risks of data movement between data stores.

MySQL HeatWave AutoML includes everything users need to build, train, deploy, and explain machine learning models within MySQL HeatWave, at no additional cost. With native, in-database machine learning in MySQL HeatWave, customers don't need to move data to a separate machine learning service. HeatWave AutoML automates the machine learning lifecycle, including algorithm selection, intelligent data sampling

for model training, feature selection, and hyperparameter optimization—saving data analysts and data scientists significant time and effort.

“One MySQL HeatWave database is simpler than two from AWS plus all the associated ETL tools and data movers—that’s a fact, not an opinion.”

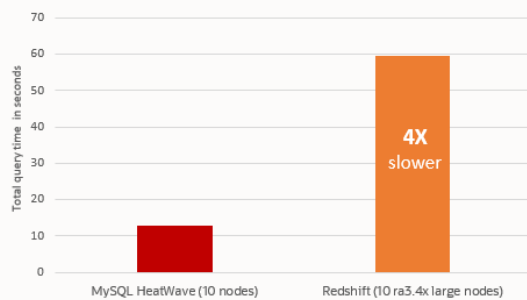
Bob Evans

Founder, Cloud Wars

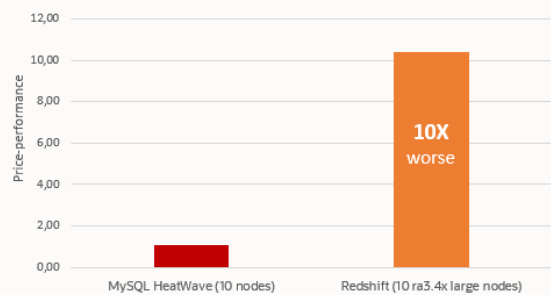
- 7. **Machine learning–powered automation:** MySQL Autopilot provides workload-aware, machine learning-powered automation of various aspects of the application lifecycle, including provisioning, data loading, query execution, and failure handling—increasing the productivity of developers and DBAs and helping to eliminate human errors. It also provides capabilities designed for OLTP workloads, which further improve MySQL HeatWave price performance compared to Amazon RDS and Aurora.
- 8. **Unmatched price-performance for analytics applications:** [As demonstrated by TPC-H benchmarks](#), MySQL HeatWave is 4X faster than Amazon Redshift with 10X better price-performance, 4X faster than Snowflake with 15X better price-performance, and 1,400X faster than Amazon Aurora with 2,200X better price-performance.

MySQL HeatWave vs. Amazon Redshift

Query Performance: 10 TB TPC-H

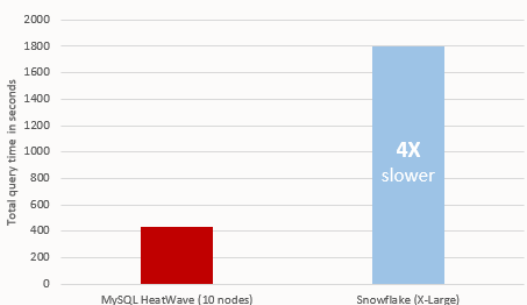


Price-performance: 10 TB TPC-H

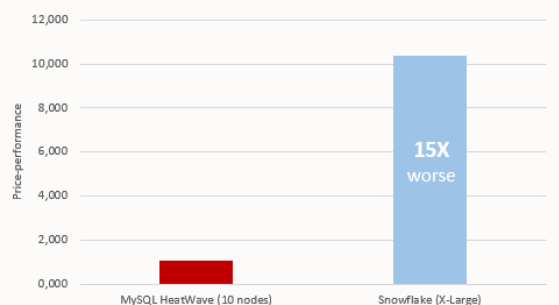


MySQL HeatWave vs. Snowflake

Query Performance: 10 TB TPC-H



Price-performance: 10 TB TPC-H



“MySQL HeatWave dramatically reduced our AWS Aurora and Redshift cost by more than 50%. We are no longer moving data around so now we have blazing fast, real-time insights with no effort. It's a dream come true.”

Pablo Lemos

Cofounder and CTO, Tetris.co

9. **HeatWave Lakehouse:** HeatWave Lakehouse enables users to half a petabyte of data in the object store—in a variety of file formats, such as CSV, Parquet, and export files from other databases. With HeatWave Lakehouse, MySQL HeatWave provides one service for transaction processing, **real-time analytics across data warehouses and data lakes**, and machine learning—without ETL across cloud services. Customers can query data in various formats in object storage, transactional data in MySQL databases, or a combination of both using standard SQL commands. Querying the data in object storage is as fast as querying the databases. As demonstrated by a [500 TB TPC-H benchmark](#), the query performance of MySQL HeatWave Lakehouse is 15X faster than Amazon Redshift, 18X faster than Snowflake, 18X faster than Databricks, and 35X faster than Google BigQuery. The load performance of MySQL HeatWave Lakehouse is 2X faster than Snowflake, 6X faster than Databricks, 8X faster than Google BigQuery, and 9X faster than Amazon Redshift.
10. **Ready for the distributed cloud:** You can deploy MySQL HeatWave natively on Oracle Cloud Infrastructure (OCI) and Amazon Web Service (AWS), or Azure via the [Oracle Database Service for Azure](#). You can replicate data from on-premises OLTP applications to MySQL HeatWave to get near real-time analytics without ETL. You can also use MySQL HeatWave in your data center with [OCI Dedicated Region](#).

“MySQL HeatWave on AWS fits perfectly into our data platform with 60X to 90X faster complex queries compared to AWS RDS and Aurora.”

Thomas Henz

Chief Executive Officer, Johnny Bytes

Conclusion

Running MySQL Community Edition on-premises has helped countless organizations solve their immediate business needs, however, it also poses several challenges, as described in this document. MySQL HeatWave addresses those challenges, enabling organizations to reduce the risks and hidden costs of multiple isolated and unidentified MySQL deployments across departments—while improving the productivity of developers, DBAs, and analysts. MySQL HeatWave eliminates the need for separate analytics databases, lakehouse, and ML services, as well as ETL processes. It helps you democratize machine learning, providing everything users need to build, train, deploy, and explain machine learning models within MySQL HeatWave—at no additional cost, and without the need for advanced data science expertise. Existing MySQL applications work with MySQL HeatWave without any changes.

Resources

- [Learn more about MySQL HeatWave](#)
- [MySQL HeatWave migration program](#)
- [Request a free MySQL HeatWave workshop](#)
- [Developer resources](#)
- [Try MySQL HeatWave for free](#)

Connect with us

Call +1.800.ORACLE1 or visit [oracle.com](https://www.oracle.com). Outside North America, find your local office at: [oracle.com/contact](https://www.oracle.com/contact).

 blogs.oracle.com

 facebook.com/oracle

 twitter.com/oracle

Copyright © 2024, Oracle and/or its affiliates. All rights reserved. This document is provided for information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained.

Oracle, Java, and MySQL are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners. Benchmark queries are derived from the TPC-H benchmark, but results are not comparable to published TPC-H benchmark results since they do not comply with the TPC-H specification.