MariaDB

MARIADB ENTERPRISE PLATFORM VS. MYSQL ENTERPRISE EDITION

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INTRODUCTION

MariaDB and MySQL are two of the most popular open-source relational databases in the world. MariaDB was created as a fork of MySQL by its founder, Michael "Monty" Widenius, to ensure open and transparent development following Oracle's acquisition of MySQL. Since then, MariaDB and MySQL have evolved into separate databases with distinct features, and some similar features having different implementations.

MariaDB maintains a high level of compatibility with the MySQL protocol and MySQL clients, and has replaced MySQL in several leading Linux distributions, including Debian, Ubuntu, Fedora, Red Hat Enterprise Linux/CentOS, SUSE Linux Enterprise Server/ openSUSE and OpenBSD/FreeBSD.

However, MariaDB and MySQL have different product strategies and visions. For example, MariaDB is committed to a pluggable storage engine architecture, while MySQL focuses on InnoDB as its primary storage engine. MariaDB combines multiple storage engines to support a wide range of use cases, with each engine optimized for a specific workload. Additionally, MariaDB actively encourages community participation and contributions.

MariaDB storage engines include

- InnoDB, the default storage engine, is a general transaction storage engine, and the best choice in many cases.

- MyRocks enables greater compression than InnoDB and reduces write amplification, providing flash storage with improved endurance and enhanced overall throughput. It is well suited for write heavy workloads.

- Aria is an enhancement of MyISAM, has a small footprint and allows for easy copying between systems, making it ideal in read heavy environments.

- MyISAM also has a small footprint and allows for easy copying between systems. As an improved version of MyISAM, Aria is usually recommended as a replacement.

- Spider uses partitioning to provide data sharding across multiple servers.

- ColumnStore utilizes a massively parallel distributed data architecture and is designed for big data scaling to process petabytes of data.

- Memory contents are stored in memory rather than on disk. It is best used for read-only caches of data from other tables or temporary work areas.

- S3 is a read only storage engine and enables the ability to archive MariaDB tables in Amazon S3, or any third-party public or private cloud that implements S3 API, but still have them accessible for reading in MariaDB.

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SOFTWARE

MariaDB and MySQL both have enterprise offerings: MariaDB Enterprise Platform and MySQL Enterprise Edition. These enterprise offerings include software components that are not available to the community, the backporting of stable features to older versions of the enterprise edition, and a combination of plugins and additional tools.

This white paper compares the enterprise offerings of MariaDB and MySQL, covering their full suite of features and capabilities.

Components

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Database	MariaDB Enterprise Server	MySQL Database
Database router/proxy	MariaDB MaxScale	MySQL Router
Backup/restore	MariaDB Enterprise Backup	MySQL Enterprise Backup
Monitoring	SQL Diagnostics Manager	MySQL Monitor
SQL IDE	SQLyog	MySQL Workbench

Enterprise Features

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Application Time Period Tables	Yes	No
Auditing	MariaDB Enterprise Audit	MySQL Enterprise Audit
Clustering	MariaDB Enterprise Cluster	MySQL Group Replication
Data masking	MariaDB MaxScale	MySQL Enterprise Data Masking
Encryption functions	MariaDB MaxScale	MySQL Enterprise Encryption
Federation	MariaDB Enterprise Federation	No
HashiCorp Vault plugin	Yes	Yes
PAM/LDAP authentication	Yes	MySQL Enterprise Security
System versioned tables	Yes	No
Thread pool	Yes	MySQL Enterprise Thread Pool

COMPARISON

This white paper compares MariaDB Enterprise Platform 2025 and MySQL Enterprise Edition. The comparison is made across five categories: development, scalability and performance, high availability, disaster recovery and security. It highlights some of the features and capabilities they have in common, but focuses on the differences between them. After comparing features in these standard enterprise categories, the most unique features in each database are covered.

Development

JSON

MariaDB and MySQL both support JSON and implement many of the same JSON functions. However, whereas MySQL stores JSON documents as binary objects, MariaDB stores them as strings.

> **Note:**
> If MariaDB Enterprise Platform is configured to replicate from MySQL as part of a migration process, statement-based replication must be used if any of the MySQL tables being replicated contain JSON columns.

Standard functions

MySQL supports most of the nine JSON functions defined in standard SQL (SQL:2016). MariaDB has implemented all of the standard SQL functions for JSON.

> **Note:**
> SQL:2016 defines the IS JSON syntax to ensure that JSON columns contain valid JSON documents, but MariaDB and MySQL implemented `JSON_VALID` instead.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
JSON_ARRAY	Yes	Yes
JSON_ARRAYAGG	Yes	Yes
JSON_EXISTS	Yes	No
JSON_OBJECT	Yes	Yes
JSON_OBJECT_AGG	Yes	Yes
JSON_QUERY	Yes	No
JSON_TABLE	Yes	Yes
JSON_VALUE	Yes	Yes

Common functions

In addition to the standard SQL functions for JSON, MariaDB and MySQL both support many of the same utility functions for working with JSON documents.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
JSON_ARRAY_APPEND	JSON_LENGTH	JSON_SEARCH
JSON_ARRAY_INSERT	JSON_MERGE	JSON_SCHEMA_VALID
JSON_CONTAINS	JSON_MERGE_PATCH	JSON_SET
JSON_CONTAINS_PATH	JSON_MERGE_PRESERVE	JSON_TYPE
JSON_DEPTH	JSON_OVERLAP	JSON_UNQUOTE
JSON_EXTRACT	JSON_QUOTE	JSON_VALID
JSON_INSERT	JSON_REMOVE	ST_asGeo_JSON
JSON_KEYS	JSON_REPLACE	ST_GemFromGeoJSON

Differentiating functions

However, there are some functions available in MariaDB that are not in MySQL and vice versa.

> **Note:**
> MariaDB's JSON_DETAILED function and MySQL's JSON_PRETTY function both format JSON documents to make them easier to read.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
JSON_COMPACT	Yes	No
JSON_DETAILED	Yes	JSON_PRETTY
JSON_EQUALS	Yes	No
JSON_LOOSE	Yes	No
JSON_NORMALIZE	Yes	No
JSON_PRETTY	JSON_DETAILED	No
JSON_SCHEMA_VALIDATION_REPORT	Yes	No
JSON_ARRAY_INTERSECT	Yes	No
JSON_EXISTS	Yes	No
JSON_FILTER_KEYS	Yes	No
JSON_KEY_VALUE	Yes	No

	MariaDB Enterprise Platform	MySQL Enterprise Edition
`JSON_OBJECT_FILTER_KEYS`	Yes	No
`JSON_OBJECT_TO_ARRAY`	Yes	No
`JSON_OBJECTAGG`	Yes	No
`JSON_QUERY`	Yes	No

SQL

MariaDB and MySQL both support standard SQL, but MariaDB has implemented much more.

Schema

Regarding database objects, MariaDB offers additional table types that are unavailable in MySQL.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Sequences	Yes	No
Generated columns	Yes	Yes
Invisible columns	Yes	Yes
Temporal tables	Yes	No
Bi-temporal table	Yes	No
System versioned tables	Yes	No
Application time period tables	Yes	No
Views	Yes	Yes

Indexes

MariaDB and MySQL both support standard indexes, but MySQL 8 also added support for descending, functional and invisible indexes. MariaDB Enterprise Platform supports up to 128 indexes, compared to the MySQL limit of 62 indexes.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Descending	Yes	Yes
Functional	Yes	Yes
Invisible	No, supported by ignored indexes	Yes

Queries

MariaDB and MySQL both support a lot of standard SQL. MySQL 8 made progress in catching up with MariaDB by adding common table expressions (CTEs) and window functions, as well as introducing INTERSECT and EXCEPT set operators, which were first introduced in MariaDB 10.3.

Furthermore, they both offer extended support in various areas. MariaDB 10.5 improved its support for CTEs by adding support for CYCLE, while MySQL 8 improved its support for rollups by adding GROUPING and allowing WITH ROLLUP to be used with ORDER BY.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
VALUES (table value constructors)	Yes	Yes
UNION [ALL|DISTINCT] (set operators)	Yes	Yes
INTERSECT [ALL|DISTINCT] (set operators)	Yes	Yes
EXCEPT [ALL|DISTINCT] (set operators)	Yes	No
WITH ROLLUP (rollups)	Yes	Yes
WITH ROLLUP ORDER BY (rollups)	No	Yes
GROUPING (rollups)	No	Yes
OVER and WINDOW (window functions)	Yes	Yes
LATERAL (lateral derived table)	No	Yes
WITH [RECURSIVE] (common table expressions)	Yes	Yes
WITH [RECURSIVE] CYCLE (common table expressions)	Yes	No

Aggregate functions

MariaDB and MySQL both support many of the same out-of-the-box aggregate functions. However, MariaDB supports correlation and linear regression functions, while MySQL does not.

Standard deviation and variance

	MariaDB Enterprise Platform	MySQL Enterprise Edition
STD	Yes	Yes
STDDEV	Yes	Yes
STDDEV_POP	Yes	Yes
STDDEV_SAMP	Yes	Yes
VARIANCE	Yes	Yes
VAR_POP	Yes	Yes
VAR_SAMP	Yes	Yes

Correlation and linear regression

	MariaDB Enterprise Platform	MySQL Enterprise Edition
CORR	Yes	No
COVAR_POP	Yes	No
COVAR_SAMP	Yes	No
REGR_AVGX	Yes	No
REGR_AVGY	Yes	No
REGR_COUNT	Yes	No
REGR_INTERCEPT	Yes	No
REGR_R2	Yes	No
REGR_SLOPE	Yes	No
REGR-SXX	Yes	No
REGR_SXY	Yes	No
REGR_SYY	Yes	No

Window functions

MariaDB and MySQL both support many of the same out-of-the-box windows functions. However, MariaDB supports inverse distribution functions as well, while MySQL does not.

Value

	MariaDB Enterprise Platform	MySQL Enterprise Edition
FIRST_VALUELAG	Yes	Yes
FIRST_VALUELEAD	Yes	Yes
NTH_VALUE	Yes	Yes

Ranking

	MariaDB Enterprise Platform	MySQL Enterprise Edition
CUME_DIST	Yes	Yes
DENSE_RANKNTILE	Yes	Yes
DENSE_RANKRANK	Yes	Yes
ROW_NUMBER	Yes	Yes

Inverse distribution

	MariaDB Enterprise Platform	MySQL Enterprise Edition
`MEDIAN`	Yes	No
`PERCENTILE_CONT`	Yes	No
`PERCENTILE_DISC`	Yes	No

Scalability and performance

MariaDB and MySQL both support basic scalability and performance features (e.g., table partitioning and compression). However, MariaDB offers more advanced features through MaxScale (a database proxy/query router) and Spider, a transparent sharding storage engine.

MaxScale performs transparent read/write splitting and adaptive load balancing. Additionally, MaxScale can cache query results in Redis to reduce database workload and improve query performance.

Spider enables transparent sharding and/or parallel query, allowing MariaDB to utilize multiple database instances and/or multiple CPU cores per database instance to execute queries with linear scalability.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Table/row compression	Yes	Yes
Column compression	Yes	No
Log compression	Yes	Yes
Partitioning	Yes	Yes
Parallel query	Yes	No
Query result caching via Redis	Yes	No
Read/write splitting	Yes	Yes
Casual reads	Yes	Yes
Sharding	Yes	Yes

High availability

MariaDB and MySQL both support replication (asynchronous and semi-synchronous), but MariaDB includes automatic failover for high availability, while the MySQL core product does not. However, both MariaDB and MySQL can provide continuous availability with multi-master clustering and dynamic query routing.

MariaDB multi-master clustering is based on a robust, mature and proven solution that has been used in production for years. MySQL introduced group replication in an earlier major release (MySQL 5.7). Still, it lacks advanced clustering features, such as full state transfer for adding new database instances, automatic rejoin for recovered database instances and streaming replication for handling large transactions.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Replication (async and semi-sync)	Yes	Yes
Replication with automatic failover	Yes	No
Multi-master clustering	Yes	Yes
Connection migration	Yes	Yes
Session restore	Yes	Yes
Transaction replay	Yes	Yes

Disaster recovery

MariaDB and MySQL both support online backups and point-in-time restore.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Online backups	Yes	Yes
Full, incremental and partial backups	Yes	Yes
Online partial restore	Yes	Yes
Encrypted backups	Yes	Yes
Compressed backups	Yes	Yes
Point-in-time restore	Yes	Yes
Point-in-time rollback	Yes	Yes

Security

MariaDB and MySQL provide many of the same enterprise security features, but their implementations differ. MariaDB offers more advanced features for database and data protection.

Encryption

MariaDB and MySQL both support the same core encryption features, including Hashicorp Vault plugins for external key management.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Encrypted tables and logs	Yes	Yes
External key management	Yes	Yes
Encrypted connections	Yes	Yes
Reload SSL/TLS context	Yes	Yes

Authentication

MariaDB and MySQL both support the same core authentication features.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
PAM/LDAP/Kerberos/NTLM authentication	Yes	Yes
User/group mapping	Yes	Yes
Password expiration	Yes	Yes
Password reuse policies	Yes	Yes
Password strength validation	Yes	Yes
Account locking	Yes	Yes

Authorization

MariaDB and MySQL support the same core authorization features.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Roles	Yes	Yes
Privileges	Yes	Yes
Partial revokes	Yes	Yes
User resource limits	Yes	Yes

Auditing

MariaDB and MySQL both support auditing, but with some differences. MariaDB can write to a file or to the syslog. MySQL can only write to a file, but supports JSON and XML formats, whereas MariaDB uses a CSV format. In addition, MySQL supports audit log compression and encryption. System versioned tables in MariaDB enable auditing of changes to tables by storing a history of changed and deleted data.

With MariaDB, queries should not be logged for tables containing personally identifiable information (PII) or sensitive PII (SPII), such as passwords, since audit log data is written in an unencrypted format. When audit data is mission-critical, it should be subject to controls, data protection, data retention and highly available storage as are used for other mission-critical data.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
File output – CSV format	Yes	No
File output – JSON format	No	Yes
File output – XML format	No	Yes
Syslog output	Yes	No

	MariaDB Enterprise Platform	MySQL Enterprise Edition
JSON filter/rule definitions	Yes	Yes
Custom events	Yes	Yes
Encryption	No	Yes
Compressions	No	Yes

Database and data protection

MariaDB provides a broad range of advanced database and data protection features. This includes dynamic data masking to conceal sensitive and/or personally identifiable information in query results, as well as query throttling and query result limiting to safeguard the database against denial-of-service (DoS) attacks. These features are made available in MariaDB Enterprise Platform through MaxScale.

	MariaDB Enterprise Platform	MySQL Enterprise Edition
Dynamic data masking	Yes	Yes
Dynamic data obfuscation	Yes	Yes
Database firewall	Yes	Yes
Query throttling	Yes	Yes
Query result limiting	Yes	Yes

MYSQL UNIQUE FEATURES

MySQL Document Store

MySQL Document Store expands MySQL's JSON support with the MySQL X Protocol and X DevAPI. The X DevAPI allows developers to store JSON documents in collections rather than tables, and to read and write JSON documents via CRUD operations instead of SQL queries.

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MARIADB UNIQUE FEATURES

Temporal tables

MariaDB supports all three types of temporal tables defined in the SQL standard: system-versioned tables, application-time period tables and bitemporal tables.

With system-versioned tables, the database creates a new row whenever its data is modified, maintaining a complete version history of every row. It enables DBAs and/or applications to query table data from a previous point in time. With application-time period tables, applications specify the start and end time for when a row is valid.

MySQL does not natively support temporal tables.

Oracle Database compatibility

MariaDB tables can be created using Oracle Database data types, and can execute stored procedures written in Oracle PL/SQL. Oracle Database compatibility simplifies migration to MariaDB, enabling DBAs to "lift and shift" Oracle Database tables, packages and stored procedures. In addition, MariaDB supports Oracle Database syntax for sequences.

Although Oracle owns both MySQL and Oracle Database, they are not inherently compatible, as they are not interchangeable.

Vector search

MariaDB Enterprise Platform integrates vector search directly into its core database engine. This unlocks powerful new capabilities, allowing you to build sophisticated AI-driven applications using Retrieval-Augmented Generation (RAG) systems, semantic search and recommendation engines.

By eliminating the need for separate vector databases, MariaDB Enterprise Platform streamlines your data infrastructure, allowing you to leverage the combined effect of traditional SQL operations and vector embeddings. By consolidating vector and relational data management, MariaDB Enterprise Platform simplifies development, enhances performance and reduces costs, making it a cost-effective solution for organizations looking to harness the full potential of AI.

Federation

The MariaDB Enterprise Federation plugin can access tables in other databases through MariaDB. Unlike similar plugins for MySQL, it is not limited to remote MariaDB databases. It accesses remote databases, open source or proprietary, using standard ODBC connections.

MySQL Federation refers to the use of the FEDERATED storage engine in MySQL, which allows a local MySQL server to access tables on a remote MySQL server as if they were local tables. It does not provide access to other database types.

Columnar storage format

The MariaDB ColumnStore plugin enables MariaDB to utilize a columnar storage format and massively parallel processing for interactive, ad hoc analytics on massive datasets, eliminating the need for a separate data warehouse for analytics. However, MariaDB is not limited to using one storage format or the other. MariaDB schemas can utilize row tables for transaction processing and columnar tables for analytics, or store data in both row and columnar formats, enabling it to support applications that require smart transactions (i.e., hybrid transactional/analytical processing).

MySQL does not natively offer a full-fledged columnar storage engine as a built-in option.

Date format

The `DATE_FORMAT` function can now print the current time zone abbreviation and the current time zone offset from UTC.

MySQL converts TIMESTAMP values from the current time zone to UTC for storage, and back from UTC to the current time zone for retrieval. By default, the current time zone for each connection is set to the server's time zone.

Shrinking InnoDB system tablespace

When MariaDB starts up, unused InnoDB tablespace can be reclaimed, reducing the file size. This is enabled by adding the `:autoshrink` attribute to the `innodb_data_file_path` system variable.

To reclaim space in MySQL after significant data deletions, you would perform a manual OPTIMIZE TABLE operation.

MariaDB Cloud

MariaDB Cloud (formerly SkySQL) is a fully managed database-as-a-service (DBaaS)that offers two robust architectures: provisioned for consistent performance and serverless for on-demand elastic scaling. Built on the full power of MariaDB Server, the platform delivers mission-critical resilience, integrated AI and multicloud freedom right out of the box. We handle the underlying operational complexity so you can focus on what matters most: building your next great application.

MariaDB Cloud streamlines the development of AI applications by integrating high-performance vector search and developer tooling directly into the database. This unified approach eliminates the complexity and cost of a fragmented data stack. It is designed to ensure uptime and resilience. It combines an advanced, self-healing architecture with intelligent, automated failover, enabling zero-downtime recovery, to protect your database from both small-scale failures and large-scale outages.

For applications with spiky or unpredictable traffic, MariaDB Cloud offers a serverless model designed for automatic, on-demand scaling. It is the ideal architecture for production workloads, such as e-commerce and payment processing, as well as for cost-effective development and testing. Outstanding application performance starts with a database that delivers both raw speed and the ability to scale under load. MariaDB Cloud is engineered to provide both, with the high throughput and elastic scalability needed to power demanding services.

BENEFITS SUMMARY

Benefits of MariaDB Enterprise Platform

- Temporal tables
- Oracle database compatibility
- Federation
- Vector search
- Columnar storage format
- Sequences
- WITH [RECURSIVE] CYCLE
- Correlation and linear regression functions
- Inverse distribution functions
- Column compression
- Parallel query
- Query result caching via Redis
- Read/write splitting

- Casual reads
- Sharding
- Replication with automatic failover
- Connection migration
- Session restore
- Transaction replay
- Point in time rollback
- Dynamic data masking
- Query throttling
- Query result limiting
- Partitioning and date format enhancements
- Autoshrinking of system tablespace

Benefits of MySQL Enterprise Edition

- MySQL Document Store
- JSON schema validation
- Function, descending and invisible indexes
- Rollups with grouping and ordering
- Password reuse policies
- Partial revokes
- JSON/XML audit log formats
- Audit log encryption and compression
- Custom audit events

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CONCLUSION

MariaDB and MySQL originated from the same source but have evolved into distinct databases in recent years. MySQL 8 has caught up to MariaDB in several areas, but MariaDB continues to innovate and release updates at a much faster pace than MySQL. While MySQL has incrementally improved its transactional capabilities, MariaDB has expanded to support data warehousing/analytics, too.

For enterprise organizations looking to embrace open source and migrate off of proprietary databases such as Oracle Database, Microsoft SQL Server and IBM Db2, MariaDB Enterprise Platform provides the most powerful and most capable enterprise open source alternative, complete with Oracle Database compatibility, columnar storage for scalable, high-performance analytics and powerful high availability capabilities.