
MySQL 9.5 Release Notes

Abstract

This document contains release notes for the changes in MySQL 9.5. For information about changes in a different version of MySQL, see the release notes for that version.

For additional MySQL 9.5 documentation, see the [MySQL 9.5 Reference Manual](#), which includes an overview of features added in MySQL 9.5 ([What Is New in MySQL 9.5](#)), and discussion of upgrade issues that you may encounter while [upgrading](#).

MySQL platform support evolves over time; please refer to <https://www.mysql.com/support/supportedplatforms/database.html> for the latest updates.

Updates to these notes occur as new product features are added, so that everybody can follow the development process. If a recent version is listed here that you cannot find on the download page (<https://dev.mysql.com/downloads/>), the version has not yet been released.

The documentation included in source and binary distributions may not be fully up to date with respect to release note entries because integration of the documentation occurs at release build time. For the most up-to-date release notes, please refer to the online documentation instead.

For legal information, see the [Legal Notices](#).

For help with using MySQL, please visit the [MySQL Forums](#), where you can discuss your issues with other MySQL users.

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Preface and Legal Notices

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Account Management Notes

- MySQL now supports enhanced role management with the introduction of a new option, [activate_mandatory_roles](#).

If [activate_all_roles_on_login](#) is enabled, [activate_mandatory_roles](#) is ignored, and both mandatory and granted roles are activated. If [activate_all_roles_on_login](#) is disabled and [activate_mandatory_roles](#) is enabled, mandatory roles are activated in addition to any default roles associated with the account.

If neither are activated, only the account's default roles are activated.

[activate_mandatory_roles](#) is enabled by default. (WL #16597)

Audit Log Notes

- Fixed an issue related to audit log strategy. (Bug #38223011)
- Improved performance related to adding multiple [general_sql_command.str](#) fields to an Enterprise Audit filter. (Bug #38053242)
- Fixed an issue related to [audit_log_read](#) performance. (Bug #36281295, Bug #38275868)

Authentication Notes

- **Security Enhancement:** The default value of [caching_sha2_password_digest_rounds](#) is increased to 10,000. (WL #16974)
- Under certain circumstances, the keyring component could not read the configuration file if the configured data directory path was shorter than the default path. (Bug #38078884)
- General-Purpose Keyring Functions did not handle invalid parameters correctly. (Bug #38055488)

Binary Logging

- **Important Change:** The default value for the [binlog_transaction_dependency_history_size](#) server system variable has been increased from 25000 to 1000000 (one million). This variable's maximum value has also been increased, from 1000000 to 10000000 (ten million).

This change should not have any immediate effect on existing setups.

See the description of [binlog_transaction_dependency_history_size](#) for further information. (WL #16439)

Compilation Notes

- **Solaris:** Clang and GCC now can be used for compiling MySQL on Solaris. (Bug #30562248)
- OpenSSL 3 is now used on Solaris. (Bug #38193362)
- Upgraded the bundled googletest library to version 1.17. (Bug #38152017)
- Upgraded the bundled libbacktrace library to the latest version (April 2025). (Bug #38151970)
- MySQL Server now bundles libzip and provides CMAKE options to choose between the bundled or system library when compiling the server. (Bug #38109824)

- The minimum required version of CMAKE is now 3.17.5, for supported platforms. (Bug #38090672)
- Compiler warnings were logged when building MySQL Server with GCC 15. (Bug #37721464)

Component Notes

- The `MYSQL_OPTION.OPTION_USAGE.OPTION_NAME` field used a different character set than `PERFORMANCE_SCHEMA.MYSQL_OPTION.OPTION_NAME`.

As of this release, the `CLUSTER_ID`, `SERVER_ID`, and `OPTION_NAME` fields of `MYSQL_OPTION.OPTION_USAGE` use `utf8mb4_general_ci` instead of `ascii`. (Bug #38230424)
- The `sql_errno()` method in the `mysql_command_error_info` service returned 0 when a command failed, instead of the appropriate error code. (Bug #38178087)
- The server plugin system variable flag `PLUGIN_VAR_NOSYSVAR` was not processed properly. Variables defined with this flag were displayed when they should be hidden. (Bug #37654916)
- Errors were not handled correctly when using the keyring UDF plugin and executing specific queries with the `keyring_key_generate` function. (Bug #37501458)
- Telemetry component introduces a secret decoding service. This enables you to create your own secret-decoding service for OpenTelemetry.

The following system and status variables were added:

- `telemetry.otel_exporter_otlp_traces_secret_headers`
- `telemetry.otel_exporter_otlp_metrics_secret_headers`
- `telemetry.otel_exporter_otlp_logs_secret_headers`
- `telemetry.resource_provider`
- `telemetry.secret_provider`
- `telemetry.run_level`

(WL #16647)

Configuration Notes

- **Microsoft Windows:** If the MySQL Server was configured as a process, not as a service, the Configurator's **Starting the server** step could take a long time to complete due to delays in detecting when the server was ready to receive connections. (Bug #38068649)
- **Microsoft Windows:** Shared Memory connections, `--enable-shared-memory=true`, failed when they were the only enabled protocol during server configuration. (Bug #38068619)
- **Microsoft Windows:** It was not possible to create usernames with escaped characters, using single or double quotes, during new server configuration. (Bug #37459624)
- **Microsoft Windows:** When upgrading, for example from version 9.1.0 to 9.2.0, using a non-default port, such as `3307`, messages could be generated indicating a connection issue to port `3306`, even if the server configuration is correct and the upgrade is successful. Errors were returned similar to the following:

```
Can't connect to MySQL server on 'localhost:3306'
(10061)
```

(Bug #37459255)

- **Microsoft Windows:** The CLI help for MySQL Configurator now correctly displays the list of supported values for configurable server options. (Bug #37458648)
- `--config-type` Configurator CLI option did not accept any values. (Bug #38068684)

Connection Management Notes

- Connection control now supports exempting unknown users from delay criteria, introducing a new system variable `component_connection_control.exempt_unknown_users` that allows administrators to configure whether failed connection attempts without user credentials should be penalized. This enhancement improves the component's ability to handle legitimate connection attempts from load balancers, ensuring better server availability while maintaining effectiveness in thwarting brute force attacks. A new status variable `Component_connection_control_exempted_unknown_users` provides insights into the number of exempted connections.

See (xref linkend="to-fill") for more information. (WL #17037)

Deprecation and Removal Notes

- The `group_replication_allow_local_lower_version_join` system variable, deprecated in MySQL 8.4.0, has now been removed. (WL #16019)
- The `replica_parallel_type` system variable, deprecated in MySQL 8.0.29, has now been removed. (WL #13955)
- The `SCRAM-SHA-1` authentication method for SASL LDAP authentication is now deprecated, and subject to removal in a future version of MySQL. You are encouraged to use `SCRAM-SHA-256` instead.

As part of this work, the default value for the `authentication_ldap_sasl_auth_method_name` system variable has been changed to `SCRAM-SHA-256`; the value `SCRAM-SHA-1` is now deprecated.

For further information, see [LDAP Pluggable Authentication](#). (WL #17022, WL #17034)

- The following deprecated plugins are removed in this release:
 - `semisync_master` replaced by `semisync_source`.
 - `semisync_slave` replaced by `semisync_replica`.

(WL #16801)

SQL Function and Operator Notes

- Fixed an issue related to executing certain UPDATE statements. (Bug #37590580)

References: This issue is a regression of: Bug #31562881.

InnoDB Notes

- **Important Change:** The default value for `innodb_log_writer_threads` is now determined in part by whether binary logging is enabled, as shown here:

```
if (log_bin = OFF)
{
  if ([number of logical CPUs] <= 4)
  {
    innodb_log_writer_threads = OFF
  }
  else
```

```

{
  innodb_log_writer_threads = ON
}
}
else
{
  if ([number of logical CPUs] <= 32)
  {
    innodb_log_writer_threads = OFF
  }
  else
  {
    innodb_log_writer_threads = ON
  }
}
}

```

When binary logging is disabled (`log_bin` is `OFF`), the default is determined as it was in MySQL 9.4 and earlier.

This change does not affect the variable's configured value, if set.

For further information, see the description of `innodb_log_writer_threads` in the MySQL documentation; see also [Optimizing InnoDB Redo Logging](#). (WL #16999)

- **InnoDB:** The `dict_stats_analyze_index()` function could discard optimal index-based access paths, resulting in suboptimal performance for large tables when empty index statistics are read concurrently or an error leads to empty index statistics.

Our thanks to Casa Zang and the Tencent team for the contribution. (Bug #33472935)

- Creating a thread for parallel scan may fail, resulting in assertion failures when it fell back to single-thread mode. Errors were returned similar to the following:

```
Assertion failure: row0pread.h:306:active >= n_threads
```

(Bug #38325137)

- Under certain circumstances, a virtual index rollback could fail on 32-bit builds of MySQL Server. (Bug #38167527)
- The `mlog read_1_bytes` comment now accurately reflects a byte size of 1 byte, rather than 2 bytes.

Our thanks to Jeong Geun Lee for the contribution. (Bug #38001828)

- If the buffer pool was very large, it could lead to a large number of chunks required by each buffer pool instance, which could fail if the operating system was unable to allocate the required memory.

As of this release, this allocation is checked to ensure it is allocated correctly. (Bug #37994397)

- Fixed an issue relating to modifying the internal FTS configuration. (Bug #37792010)
- Fixed an issue related to the purge coordinator.

Our thanks to Yin Peng and the Tencent team for the contribution. (Bug #37628911)

- Fixed an issue related to virtual indexes. (Bug #37602657)
- MySQL Server could behave unpredictably when simultaneously optimizing and updating a table. (Bug #37324137)
- If the row size exceeded the maximum allowed size due to `innodb_strict_mode=OFF`, confusing warning messages similar to "Cannot add field" could appear in certain situations, such as selecting from a table or dropping a column.

The `dict_stats_analyze_index()` function in could discard optimal index-based access paths, resulting in suboptimal performance for large tables when empty index statistics are read concurrently or an error return leads to empty index statistics.

Under certain, rare circumstances, a race condition was possible during a purge operation. (Bug #32679024)

- # JavaScript Programs

- For more information, see [MLE Component Memory and Thread Usage](#). (WL #17033)

JSON Notes

- Parsing very-large, high-precision float numbers in exponential notation, such as `5.00000000000000004e36`, in a JSON column could result in a checksum verification error. (Bug #38033684)
- Large TIME values inserted into a TIME column became smaller when converted to JSON. (Bug #37458212)
- Fixed an issue related to handling JSON key values in the `mysql.user.user_attribute` column when using the `ALTER USER` statement with a JSON attribute containing a blank or `null` key-value pair. (Bug #31067575)

JSON Duality Views

- ```
Assertion `nullptr != dynamic_cast<Target>(arg)' failed.
```

(Bug #38187473)

- [INSERT](#) statements for a JSON Duality View that included an [AUTO\\_INCREMENT](#) column were rejected even if the column was not part of a join condition. (Bug #38179925)
- JSON Duality Views exhibited inconsistent behavior with DML queries and SELECT queries when the [derived\\_merge=off](#) optimizer hint was used. (Bug #38175557)
- Executing a JSON Duality Views UPDATE statement could result in the server closing unexpectedly. Errors were returned similar to the following:

```
Address not mapped to object
```

(Bug #38084877)

## Keyring Notes

- [component\\_keyring\\_kmip](#) or [keyring\\_okv](#) now support [SECRET](#) key types on Oracle Key Vault (OKV) server 21.10, or higher. (WL #17090)
- The [keyring\\_okv](#) plugin is deprecated and replaced by the [keyring\\_kmip](#) component, enabling secure communication with Key Management Interoperability Protocol (KMIP) 1.1-compatible products such as Oracle Key Vault, Gemalto SafeNet KeySecure Appliance, Townsend Alliance Key Manager, and Entrust KeyControl. (WL #16524)

## MySQL Programs

- This version includes the MySQL Diagnostic Monitor (mysqldm), a new client tool designed to collect server diagnostic information. To supply to Oracle Support for efficient issue resolution, for example. The mysqldm client tool runs a predefined set of queries on the server, storing the results in JSON format, and provides options for customizing the output directory, number of iterations, and delay between iterations. (WL #16973)

## Optimizer Notes

- Sorting with row IDs could produce incorrect results when the result came from a hash join reading a table in the temptable engine, where the temporary table is large enough to be stored on disk. (Bug #38418831)
- Queries with cyclic joins and equi-join predicates referencing the same tables could exhibit unnecessary complexity during planning due to non-equality predicates not being pushed to existing cycle edges. (Bug #38211194)
- Queries using semi join with materialization may return incorrect results due to a missing condition.

Our thanks to Jingqi Tian and the team at Alibaba. (Bug #38110792)

- Fixed an issue related to query execution. (Bug #37847144)
- Separate evaluation functions for [DATE](#) and [DATETIME](#) values have been introduced, utilizing distinct classes for these data types to optimize server performance. (Bug #37743288)
- Optimizer could call [EstimateEqualPredicateSelectivity](#) multiple times for the same join condition in a simple join query. (Bug #36714667)
- Fixed an issue relating to SQL queries involving correlated scalar subqueries and JSON tables. (Bug #36684370)
- Queries using prepared statements to retrieve time type data did not always return expected results, regardless of whether precision was specified. (Bug #36065557)

- Using `WHERE IN (NULL, 'xx:xx:xx.xxxxxx')`; on a `TIME` column returned an empty set, whereas using `WHERE IN ('xx:xx:xx.xxxxxx')` returned the expected results. (Bug #35500028)
- Using the `IN()` operator with `TIME` columns could return an empty set when a value is matched if the list contains `NULL` or empty strings. (Bug #34188599)
- The default values of the following system variables have changed:
  - `explain_format`: changed from `TRADITIONAL` to `TREE`
  - `explain_json_format_version`: changed from 1 to 2.

(WL #17039)

## Packaging Notes

- For platforms on which OpenSSL libraries are bundled, the linked OpenSSL library for MySQL Server has been updated to version 3.0.17. For more information, see [OpenSSL 3.0 Series Release Notes](#). (Bug #38457056)
- MySQL Server RPM installation on Fedora 42 could fail due to conflicts with MariaDB 11.8 packages. Errors were returned similar to the following:

```
file /usr/bin/mysqld conflicts between mysql-community-server-8.4.7
and mariadb11.8-server-3:11.8.3, file
/usr/share/man/man1/mysql.1.gz conflicts between mysql-community-
client-8.4.7 and mariadb11.8, file
/usr/lib/systemd/system/mysqld.service conflicts between mysql-
community-server-8.4.7 and mariadb11.8-server
```

(Bug #38384844)

- MySQL Server now supports side-by-side installations of different innovation and LTS releases. (Bug #38104701)

## Performance Schema Notes

- Invalid temporal values in the binary protocol were silently adjusted when `SQL_MODE` was set to a non-strict value. As of this release, such values are rejected with an error. (Bug #38352728)
- The following telemetry system variables were enabled by default, resulting in connection failures and log spamming:

- `telemetry.log_enabled`
- `telemetry.metrics_enabled`
- `telemetry.trace_enabled`

As of this release, these variables are disabled by default. (Bug #38345446, Bug #38347061)

- The default values for the following telemetry endpoint system variables, such as `http://localhost:4318/v1/traces`, caused log spamming and were defined using `http` instead of `https`:

- `telemetry.otel_exporter_otlp_logs_endpoint`
- `telemetry.otel_exporter_otlp_metrics_endpoint`
- `telemetry.otel_exporter_otlp_traces_endpoint`

As of this release, these variables have no default value. (Bug #38133218)

- Connections waiting on the connection control plugin were not displayed in the [performance\\_schema.processlist](#) table. (Bug #38043683)
- Queries with the same [SQL\\_DIGEST](#) could produce identical summaries, even if they had distinct characteristics, such as differing [ORDER BY](#) clauses. The digest computation has been improved to better distinguish between these queries. (Bug #31103386)

## Pluggable Authentication

- Client-server handshake errors occurred during authentication with the [authentication\\_oci](#) plugin, when using the `--default-auth` parameter, if the server and client's default authentication methods were different on first connection. Errors were returned similar to the following:

```
An error occurred during the client server handshake.
```

(Bug #37092159)

## Replication Notes

- MySQL Replication supports enhanced security features with encryption now being enabled for all replication connections by default. With this configuration change, the default value of the [SOURCE\\_SSL](#) option in the [CHANGE REPLICATION SOURCE TO](#) Statement has been changed to `1`, the default value of the [group\\_replication\\_ssl\\_mode](#) variable has been changed to [REQUIRED](#), and the default value of the [group\\_replication\\_recovery\\_use\\_ssl](#) variable has been changed to [ON](#).

For more information, see [Replication Security](#). (WL #16438)

- To enable enhanced replication capabilities by default, the default values of [gtid\\_mode](#) has been changed to [ON](#). Additionally, the default value of [enforce\\_gtid\\_consistency](#) has been changed from [ON](#).

For more information, see [Replication with Global Transaction Identifiers](#). (WL #8602)

## Spatial Data Support

- Geometry functions now support the inclusion of CRS URN in implicit JSON representation, ensuring that spatial reference system information is preserved when converting geometries to GeoJSON. This enhancement enables accurate representation and updating of geometry values in JSON duality views. It also affects the [ST\\_AsGeoJSON](#) function with options 2 and 4, which now always includes a CRS URN. With this update, GeoJSON resulting from an implicit conversion from a geometry type will have an extra "crs" attribute, providing a more comprehensive and accurate geometric representation.

See [Spatial GeoJSON Functions](#) for more information. (WL #16929)

## sys Schema Notes

- Errors encountered by the [sys.ps\\_trace\\_thread](#) stored procedure were not handled properly.

Our thanks to Artem Avetian for the contribution. (Bug #34537707)

- The sys schema stored procedure, [revoke\\_schema\\_privileges\\_from\\_all\\_accounts\\_except\(\)](#) is now installed by default. This procedure enables you to revoke privileges on a schema, for all users, except for a defined list of exceptions.

See [The revoke\\_schema\\_privileges\\_from\\_all\\_accounts\\_except\(\) Procedure](#) for more information. (WL #16996)

## Thread Pool Notes

- MySQL Thread Pool now supports automatic hardware-based configuration, allowing it to detect the underlying server hardware and set optimal defaults for better performance. The plugin automatically adjusts its settings based on the number of VCPUs available on the system, and users can still make changes when needed. Additionally, the plugin automatically validates and correct misconfigured parameters, and logs warnings when values are auto-corrected.

The following system variables are affected:

- `thread_pool_size`
- `thread_pool_max_transactions_limit`
- `thread_pool_query_threads_per_group`
- `thread_pool_algorithm`
- `thread_pool_max_unused_threads`

(WL #16621)

## Bugs Fixed

- Logical clock handling for `CREATE ... SELECT` statements has been improved to ensure accurate logical clock values in the replica relay log. (Bug #38383106)
- The server sometimes processed table references incorrectly. (Bug #38001000)