
Heatwave Release Notes

Abstract

This document contains release notes for the changes in each release of HeatWave.

For additional HeatWave documentation, see [HeatWave User Guide](#).

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

This document contains release notes for the changes in each release of HeatWave.

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Changes in HeatWave

Changes in HeatWave 8.0.27 (Not yet released)

Version 8.0.27 has no release notes, or they have not been published because the product version has not been released.

Changes in HeatWave 8.0.26 (Not yet released)

Version 8.0.26 has no release notes, or they have not been published because the product version has not been released.

Changes in HeatWave 8.0.25 (2021-05-11, General Availability)

Functionality Added or Changed

- Support was added for `CAST()` of `ENUM` column values to `CHAR` or `VARCHAR` where the `ENUM` value is cast to a `FLOAT` value, as in the following example:

```
SELECT CAST(CAST(enum_col AS FLOAT) AS CHAR(3)) FROM tbl_name;
```

(Bug #32618454)

- Support was added for `SELECT DISTINCT` queries that order the result set by a column that is not defined in the `SELECT` list. For example, the following query can now be offloaded to HeatWave for execution:

```
SELECT DISTINCT a FROM t1 ORDER BY c DESC;
```

(Bug #32583856)

- Query plan statistics are now collected and stored in the statistics cache when a query is executed in HeatWave. When a new query shares query execution plan nodes with previously executed queries, the actual statistics collected from previously executed queries are used instead of estimated statistics, which results in better query execution plans.

The statistics cache is an LRU structure. When cache capacity is reached, the least recently used entries are evicted from the cache as new entries are added. The maximum number of entries permitted in the statistics cache is defined by the `rapid_stats_cache_max_entries` setting. The default maximum number of entries is 65536, which is enough to store statistics for 4000 to 5000 unique queries of medium complexity.

- Support was added for:
 - `CAST() AS YEAR`. Both variable-length and dictionary-encoded string columns values are supported.
 - The `FORMAT()` function. Variable-length-encoded string columns are not supported.

Changes in HeatWave 8.0.24 (2021-04-20, General Availability)

Functionality Added or Changed

- Comparison of different temporal type values is now supported. For example, a query that compares `DATE` values to `TIMESTAMP` values can now be offloaded to HeatWave. (Bug #32420986)
- Range operators on `VARLEN`-encoded string columns are now supported. For example, the following query, where `L_LINESTATUS` is a `VARLEN`-encoded string column, can now be offloaded to HeatWave:

```
SELECT COUNT(*) FROM lineitem WHERE L_LINESTATUS >= 1 and L_LINESTATUS <= 10;
```

(Bug #31721399)

- HeatWave now supports `INSERT ... SELECT` statements where the `SELECT` query is offloaded to HeatWave for accelerated execution, and the result set is inserted into a table on the MySQL Database Service instance. Offloading the `SELECT` query to HeatWave can reduce `INSERT ... SELECT` statement execution time. For more information, see [INSERT ... SELECT Statements](#).
- `VARLEN`-encoded columns are now supported as data placement keys. For information about the data placement feature, see [Defining Data Placement Keys](#).
- Failure handling was improved for queries involving unsupported internal data types. Such queries now exit with an error indicating that the internal data type of the query is not supported.

Changes in HeatWave 8.0.23-u2 (2021-03-15, General Availability)

Functionality Added or Changed

- Support was added for the following aggregate functions:
 - `STD()`
 - `STDDEV()`
 - `STDDEV_POP()`
 - `STDDEV_SAMP()`
 - `VAR_POP()`
 - `VAR_SAMP()`
 - `VARIANCE()`See [Aggregate Functions](#).
- HeatWave now uses a priority-based scheduling mechanism based on query cost estimates to schedule queries for execution. Previously, queries were executed in the order of arrival. The scheduling mechanism prioritizes short running queries over long running queries to reduce overall query execution wait times. For more information, see [Query Scheduling](#).

Changes in HeatWave 8.0.23-u1 (2021-02-09, General Availability)

Functionality Added or Changed

- String column encoding support was added for `TEXT`-type columns. See [Encoding String Columns](#).
- `UNION` and `UNION ALL` support was extended. The clauses are now supported at any location in a query that is permitted by MySQL.
- The following date and time functions are now supported:
 - `TO_SECONDS()`
 - `UNIX_TIMESTAMP()`
 - `FROM_UNIXTIME()`
 - `TIME_TO_SEC()`

See [Date and Time Functions](#).

The following date and time functions are now supported with `VARLEN`-encoded columns:

- `TO_DAYS()`
- `DAYOFYEAR()`
- `QUARTER()`
- `TO_SECONDS()`

See [Date and Time Functions](#).

The following string functions are now supported with `VARLEN`-encoded columns:

- `ORD()`
- `ASCII()`

See [String Functions and Operators](#).

`SET timezone = timezone` with the *timezone* value specified as an offset from UTC in the form of `[H]H:MM` and prefixed with a `+` or `-` is now supported with the `UNIX_TIMESTAMP()` and `FROM_UNIXTIME()` functions.

- Offset is now supported with the `LIMIT` clause:

```
SELECT * FROM tbl LIMIT offset,row_count;
```

The PostgreSQL syntax is also supported:

```
SELECT * FROM tbl LIMIT row_count OFFSET offset;
```

- New Performance Schema tables provide access to query and execution statistics:

- `performance_schema.rpd_exec_stats`
- `performance_schema.rpd_query_stats`

Changes to HeatWave Performance Schema tables:

- An `NDV` (Number of Distinct Values) column was added to the `performance_schema.rpd_columns` table.
- A `ROWS` column that shows the total number of rows in a table was added to the `performance_schema.rpd_tables` table.
- A `MEMORY_USAGE` column that shows node memory usage was added to the `performance_schema.rpd_columns` table.
- The `performance_schema.rpd_nodes` `DRAM` column was renamed to `MEMORY_TOTAL`. The `MEMORY_TOTAL` column shows the total memory allocated to a HeatWave node.

See [Performance Schema Tables](#).

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