

For additional information, see [Grant Table Concurrency](#).

Features Deprecated in MySQL 8.0

The following features are deprecated in MySQL 8.0 and may be removed in a future series. Where alternatives are shown, applications should be updated to use them.

For applications that use features deprecated in MySQL 8.0 that have been removed in a higher MySQL series, statements may fail when replicated from a MySQL 8.0 source to a higher-series replica, or may have different effects on source and replica. To avoid such problems, applications that use features deprecated in 8.0 should be revised to avoid them and use alternatives when possible.

- The `utf8mb3` character set is deprecated. Please use `utf8mb4` instead.
- Because `caching_sha2_password` is the default authentication plugin in MySQL 8.0 and provides a superset of the capabilities of the `sha256_password` authentication plugin, `sha256_password` is deprecated; expect it to be removed in a future version of MySQL. MySQL accounts that authenticate using `sha256_password` should be migrated to use `caching_sha2_password` instead.
- The `validate_password` plugin has been reimplemented to use the server component infrastructure. The plugin form of `validate_password` is still available but is now deprecated; expect it to be removed in a future version of MySQL. MySQL installations that use the plugin should make the transition to using the component instead. See [Section 6.4.3.3, “Transitioning to the Password Validation Component”](#).
- The `ENGINE` clause for the `ALTER TABLESPACE` and `DROP TABLESPACE` statements is deprecated.
- The `PAD_CHAR_TO_FULL_LENGTH` SQL mode is deprecated.
- `AUTO_INCREMENT` support is deprecated for columns of type `FLOAT` and `DOUBLE` (and any synonyms). Consider removing the `AUTO_INCREMENT` attribute from such columns, or convert them to an integer type.
- The `UNSIGNED` attribute is deprecated for columns of type `FLOAT`, `DOUBLE`, and `DECIMAL` (and any synonyms). Consider using a simple `CHECK` constraint instead for such columns.
- `FLOAT(M, D)` and `DOUBLE(M, D)` syntax to specify the number of digits for columns of type `FLOAT` and `DOUBLE` (and any synonyms) is a nonstandard MySQL extension. This syntax is deprecated.
- The `ZEROFILL` attribute is deprecated for numeric data types, as is the display width attribute for integer data types. Consider using an alternative means of producing the effect of these attributes. For example, applications could use the `LPAD()` function to zero-pad numbers up to the desired width, or they could store the formatted numbers in `CHAR` columns.
- For string data types, the `BINARY` attribute is a nonstandard MySQL extension that is shorthand for specifying the binary (`_bin`) collation of the column character set (or of the table default character set if no column character set is specified). In MySQL 8.0, this nonstandard use of `BINARY` is ambiguous because the `utf8mb4` character set has multiple `_bin` collations, so the `BINARY` attribute is deprecated; expect support for it to be removed in a future version of MySQL. Applications should be adjusted to use an explicit `_bin` collation instead.

The use of `BINARY` to specify a data type or character set remains unchanged.

- The nonstandard C-style `&&`, `||`, and `!` operators that are synonyms for the standard SQL `AND`, `OR`, and `NOT` operators, respectively, are deprecated. Applications that use the nonstandard operators should be adjusted to use the standard operators.