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# MySQL Shell 9.0 Release Notes

## Abstract

This document contains release notes for the changes in MySQL Shell 9.0.

For additional MySQL Shell documentation, see <http://dev.mysql.com/>.

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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## Table of Contents

Preface and Legal Notices .....	1
Changes in MySQL Shell 9.0.0 (2024-07-01, Innovation Release) .....	3

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## Changes in MySQL Shell 9.0.0 (2024-07-01, Innovation Release)

- [AdminAPI Added or Changed Functionality](#)
- [AdminAPI Bugs Fixed](#)
- [Utilities Added or Changed Functionality](#)
- [Utilities Bugs Fixed](#)
- [Functionality Added or Changed](#)
- [Bugs Fixed](#)

### AdminAPI Added or Changed Functionality

- InnoDB ReplicaSet locking has been updated and simplified; no longer requiring multiple per-instance locks.  
See [InnoDB ReplicaSet Locking](#). (Bug #35913824)
- It is now possible to dissolve a ClusterSet, partially or completely, using the following methods:
  - `clusterSet.dissolve()`: dissolves the ClusterSet completely by stopping replication between each replica and primary Cluster and removing any metadata related to the ClusterSet. Each cluster of the ClusterSet is also dissolved.
  - The `dissolve` option of `clusterSet.removeCluster()`: removes the specified Cluster from the ClusterSet, enabling it to function as a standalone Cluster.  
See [Dissolving a ClusterSet](#). (Bug #108373, Bug #34564242, WL #15378)
- It is now possible to execute SQL on all reachable members of a Cluster, ClusterSet, or ReplicaSet, using `.execute()`.  
See [Executing SQL on Topologies](#). (WL #15820)

### AdminAPI Bugs Fixed

- MySQL Shell closed unexpectedly when calling certain AdminAPI functions on EL7 platforms. (Bug #36651010)
- `dba.reboot_cluster_from_complete_outage()` disabled `super_read_only` on the primary member of an INVALIDATED Cluster. As a result, clients continued to perform updates and introduce errant transactions.

As of this release, `dba.reboot_cluster_from_complete_outage()` enables `super_read_only` on the primary member and disables the Group Replication action `mysql_disable_super_read_only_if_primary`. (Bug #36562916)

- If an attempt to create a Replica Cluster failed due to a timeout and the revert also failed due to a timeout, the Replica Cluster could be left in an inconsistent state; ONLINE, but not associated with the ClusterSet's metadata. This specific issue was caused by low values for `wait_timeout` and `interactive_timeout`.

The following changes were made:

- `wait_timeout` is checked and, if set to a value lower than the default of 8 hours, is set to 8 hours.
- `Cluster.rescan()` is extended with a new option, `repairMetadata` which can be enabled to resolve inconsistencies in the Cluster's metadata.
- `Cluster.dissolve()` can now be used on Clusters in this inconsistent state.

(Bug #36495756)

- The documentation for [Rescanning a Cluster](#) did not make clear that while `group_replication_transaction_size_limit` is set to the maximum value in Replica Clusters, the original value is stored in the metadata schema and is restored by `Cluster.rescan()` in the event of a switchover or failover. This overwrites any user-defined value set on the Replica Cluster.

The documentation is updated with this information. (Bug #36494958)

- Recent enhancements enabled MySQL Router to expose its configuration and defaults in the metadata schema. However, the `remove_router_metadata` function was not updated to properly clean this data.

Also, the `router_options()` function filtered the common options from the default options list. (Bug #36276246)

- `reboot_cluster_from_complete_outage()` failed for a Replica Cluster if Group Replication was stopped and the replication channel reset. This failure was caused by the absence of the recovery user.

As of this release, `reboot_cluster_from_complete_outage()` always recreates the recovery user. (Bug #35181181)

## Utilities Added or Changed Functionality

- The following check was added to the Upgrade Checker utility:
  - `foreignKeyReferences`: Checks for foreign keys referencing non-unique and partial indexes.(Bug #36553868)
- The following Upgrade Checker utility sysvar checks have been combined into a single check, `sysvars`:
  - `sysVarsNewDefaults`
  - `sysvarAllowedValues`
  - `removedSysVars`

See [Utility Checks](#). (WL #16262)

- The following utilities now support Instance and Resource Principal authentication on Oracle Cloud Infrastructure:

- `util.dumpInstance()`
- `util.dumpSchemas()`
- `util.dumpTables()`
- `util.loadDump()`
- `util.exportTable()`
- `util.importTable()`

Each utility is extended with a new option, `ociAuth`, which enables you to specify one of the following Oracle Cloud Infrastructure authentication types:

- `api_key`
- `instance_principal`
- `resource_principal`
- `security_token`

See [MySQL Shell Utilities](#). (WL #15884)

## Utilities Bugs Fixed

- The formatting of the report returned by the Upgrade Checker utility's `invalidPrivilege` check is improved in this release. Instead of returning a message for each user, the users are grouped with the message. (Bug #36613895)
- As of this release, all failed connections to the supported object storage platforms are retried three times, with a 1 second delay between retries.

If a failure occurs 10 minutes after the connection was created, the delay is changed to an exponential back-off strategy:

- First delay: 3-6 seconds
- Second delay: 18-36 seconds
- Third delay: 40-80 seconds

(Bug #36597063, Bug #36256053)

References: See also: Bug #35396788.

- `restrict_fk_on_non_standard_key`, introduced in MySQL 8.4.0, prohibits creation of foreign keys which reference only part of a composite key when enabled. This system variable is enabled by default on MySQL HeatWave Service and resulted in errors loading dumps which contained such keys when detected by the Upgrade Checker utility's `foreignKeyReferences` check.

As of this release, a new compatibility option is added the dump utilities, `force_non_standard_keys`. This disables checks for non-standard foreign keys, and cause the loader to set the session value of `restrict_fk_on_non_standard_key` to OFF. (Bug #36553849)

- Primary keys defined on an `ENUM` column were reported as missing for dumps with `ocimds:true`. This was caused by a fix in an earlier version which instructed the dump utility to ignore primary keys or unique indexes which contain one or more `ENUM` columns when selecting an index for chunking.

As of this release, information about the index selected for chunking and whether the table has a primary key is separated. (Bug #36493316)

References: See also: Bug #35180061.

- As of this release, the Schema Dump utility uses the `JSON` output format for its generated `EXPLAIN` plans. This was done for compatibility reasons. (Bug #36470302)
- It was not possible to run the Upgrade Checker utility against an MySQL HeatWave Service DB System. An error was returned relating to missing `RELOAD` privileges. `RELOAD` is not granted to MySQL HeatWave Service users.

`RELOAD` is not required by the Upgrade Checker when run against MySQL HeatWave Service DB Systems, it is only required against MySQL 5.7.x. As such, the requirement is removed in this release. (Bug #36361159)

- The Upgrade Checker utility did not validate the value of the `configPath` parameter.

As of this release, the value of `configPath` is validated before running the upgrade checks. (Bug #36332625)

- The Upgrade Checker utility behaved inconsistently in the absence of certain privileges. Sometimes returning an error and sometimes attempting to run its checks. (Bug #36332031)
- The Upgrade Checker utility's `sysvarAllowedValues` did not take into account empty strings as valid values for certain variables, such as `ssl_cipher`, resulting in false negative errors in the report. (Bug #36298612)
- It was not possible to use the Copy utilities with certain MySQL-compatible databases. SQL syntax errors were returned. (Bug #36297963)
- `util.collect_diagnostics()` failed with an `AttributeError` when run against an InnoDB Cluster on which the Group Replication plugin was uninstalled from one or more members. The utility attempted to retrieve values for Group Replication system variables which did not exist because the plugin was uninstalled.

Thanks to Ioannis Androulidakis for the contribution. (Bug #114707, Bug #36589677)

- Fixed an issue with non-ASCII character handling in the Upgrade Checker utility's `schemaInconsistency` check.

Thanks to Daniel Lenski for the contribution. (Bug #114127, Bug #36340714)

## Functionality Added or Changed

- The `mysql_native_password` client plugin is now bundled with MySQL Shell. (Bug #36610756)
- MySQL Shell supports the `VECTOR` type introduced in MySQL 9.0.

(Bug #36252107, Bug #36253120)

- In previous versions, if neither port nor protocol were specified in the connection string, MySQL Shell automatically used the X Protocol. As of this release:

- If neither port nor protocol are specified, the default is Classic Protocol.
- If port is specified but protocol is not, the default is Classic Protocol.

In either case, if Classic Protocol fails, X Protocol is attempted instead. (WL #16317)

- The `shell` global object is extended with `register_Sql_Handler`, a function which enables you to register a custom SQL handler. This handler can execute pre-processing steps for the given SQL statements and extend the supported SQL statements with non-standard SQL. (WL #15949)

## Bugs Fixed

- MySQL Shell closed unexpectedly if a native Python object was passed to a Python plugin function. (Bug #36502096)
- MySQL Shell did not prompt for a password if `-p` was specified on the command line without an argument. (Bug #36433418)
- Under certain circumstances, a password prompt was not returned although no password was provided on the command line or defined in a configuration file. (Bug #36422502, Bug #36422492)
- `--no-password` did not work if a password was defined in the server's configuration file or if it was provided earlier in the command line. (Bug #36422408)
- Auto-complete was not available in the `\sql` command. (Bug #36420389)
- If `logSql` was set to `ERROR`, MySQL Shell logged the SQL without filtering for unsafe statements. As of this release, the pattern defined in `logSql.ignorePatternUnsafe` is used to filter unsafe SQL from the log.

Also, the pattern which triggered the filter is logged. (Bug #36014067)

- Special characters, such as tab or newline, were not supported in utility calls from the command line. For example, in the following command, `\t` was not properly handled:

```
> mysqlsh root@localhost -- util import-table sample_us.tsv --schema=test --table=samples --fieldsTermi
```

(Bug #34887426)

- Upgrading MySQL Shell 8.0.35, or higher, on Windows platforms, resulted in multiple installations instead of overwriting the existing installation. (Bug #113732, Bug #36259270)

