MySQL Shell 8.4 Release Notes

Abstract

This document contains release notes for the changes in MySQL Shell 8.4.

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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Preface and Legal Notices

This document contains release notes for the changes in MySQL Shell 8.4.

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Changes in MySQL Shell 8.4.2 (Skipped, LTS Release)

This version was skipped to align the version number with the MySQL Server 8.4.2 release.

Changes in MySQL Shell 8.4.1 (2024-07-01, LTS Release)

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)

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)

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.

- 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)
- Under certain circumstances, the Upgrade Checker utility's reserved keywords check did not generate warnings for the `FULL` and `INTERSECT` keywords. (Bug #114423, Bug #36424093)
- Fixed an issue with non-ASCII character handling in the Upgrade Checker utility's `schemaInconsistency` check.

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

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)
- 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)

Changes in MySQL Shell 8.4.0 (2024-04-30, LTS Release)

Important

AdminAPI no longer supports MySQL 5.7. Any AdminAPI command run against that version will return an error.

Deprecation and Removal Notes

- The helper command, `--dba=enableXProtocol`, is deprecated and subject to removal in a future release. (Bug #36380502)
- AdminAPI no longer uses the deprecated Group Replication system variable, `group_replication_allow_local_lower_version_join`. (Bug #36187059)
- The following functionality, deprecated in previous releases, was removed in this release:
  - The following command line arguments:
    - `--ssl`
    - `--node`
    - `--classic`
    - `--sqln`
    - `--import`
    - `--recreate-schema`
    - `--dbuser`. The corresponding API attribute, `dbUser` was also removed.
    - `--dbpassword`. The corresponding API attribute, `dbPassword` was also removed.
    - `-n` and `-c` were removed from the `\connect` command.
    - `--fido-register-factor`. The plugins `authentication_fido` and `authentication_fido_client` are no longer packaged with MySQL Shell.
  - The following functions:
    - `arrayDelete()` and `merge()` were removed from `CollectionModify`.

  - `skip()` was removed from `CollectionFind`.
  - `getWarningCount()` was removed from `BaseResult`.
  - `getAffectedItemCount()` was removed from `Result`.
  - `getAffectedRowCount() and nextDataSet() were removed from SqlResult .`
  - `query()` was removed from `ClassicSession`.

  The `ociParManifest` and `ociParExpireTime` options were removed from the Dump utilities. (WL #11816, WL #15955)

- The following, deprecated in previous releases, have been removed from AdminAPI:
  - Commands:
    - `dba.configureLocalInstance()`
    - `cluster.checkInstanceState()`
  - Options:
    - `ipWhitelist` was removed from all commands which contained it.
    - `connectToPrimary` was removed from `dba.getCluster()`.
    - `clearReadOnly` was removed from all commands which contained it.
    - `failoverConsistency` was removed from all commands which contained it.
    - `multiMaster` was removed from `dba.createCluster()`.
    - `groupSeeds` was removed from all commands which contained it.
    - `memberSslMode` was removed from *`cluster`*`.addInstance()` and `cluster.rejoinInstance()`.
    - `queryMembers` was removed from *`cluster`*`.status()`.
    - `user` and `password` were removed from all commands which contained them.
    - `interactive` was removed from all commands which contained it.
    - `waitRecovery` was removed from all commands which contained it.
    - `updateTopologyMode` was removed from *`cluster`*`.rescan()`.

  (WL #15870)

AdminAPI Added or Changed Functionality

- As of MySQL 8.4.0, the default value of `group_replication_consistency` is changed from `EVENTUAL` to `BEFORE_ON_PRIMARY_FAILOVER`. As a result, the corresponding option in the AdminAPI, `consistency` was updated for MySQL 8.4.0 or higher. For previous versions, the default remains `EVENTUAL`. (Bug #36057775)

- Cloning version compatibility checks for donor and recipient instances are relaxed. As of this release, with certain conditions, only the major and minor version numbers need to match, the patch number is now disregarded.

  The following conditions apply:

  - Only version 8.0.17, or higher, can perform cloning.
  - If both versions are 8.0.37, or higher, only the major and minor versions are required to match.
  - If the version is 8.0.17, or higher, and less than 8.0.37, major, minor, and patch numbers must match.

  (Bug #36054489)

- InnoDB Cluster Read Replicas now support certificate-based authentication.

  The following changes were made to the *`cluster`*`.addReplicaInstance()` method:

  - The option `certSubject` was added. This option specifies the certificate subject of the instance, used if the Cluster's `memberAuthType` is `CERT_SUBJECT` or `CERT_SUBJECT_PASSWORD`.
  - The method now uses the Cluster's `memberSslMode` value to configure the authentication type of the Read Replica's replication channel.
  - The method performs a connectivity check, using the configured `memberSslMode` before updating the topology.
  - If the Cluster's `memberAuthType` is `CERT_SUBJECT` or `CERT_SUBJECT_PASSWORD`, the method verifies the server's certificate.

  `cluster``.options()` was updated to return `certSubject` in the `topology` array. (WL #16123)

- As of this release, MySQL Router exposes its configuration in the Cluster metadata for all routers bootstrapped against it. This information is stored as JSON in the Cluster metadata schema and can be accessed by the MySQL Shell operation, *`object`*`.routerOptions()` for Cluster, ClusterSet, and ReplicaSets.

  See Working with a Cluster's Routers.

  The operation *`object`*`.routingOptions()` is deprecated and scheduled for removal in a future release. (WL #15954)

AdminAPI Bugs Fixed

- 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)

- If the primary instance of a Replica Cluster was changed, attempting to remove that Cluster from the Cluster set failed with the following error:

```
ERROR: Error enabling automatic super_read_only management at secondary:port:
MySQL Error 3910 (HY000): The function 'group_replication_enable_member_action' failed.
Member must be the primary or OFFLINE.
```

(Bug #36400360)

- If AdminAPI operations were run against an unsupported version of MySQL, an error was returned. The error did not contain sufficient information.

  As of this release, the error returned contains information on the minimum and maximum versions of MySQL supported by the current version of AdminAPI. (Bug #36338711)

- *`clusterSet`*`.setPrimaryCluster` and *`replicaSet`*`.setPrimaryCluster` invoked `FLUSH TABLES WITH READ LOCK` when `dryRun` was enabled. These operations no longer invoke that statement for dry runs. (Bug #36314520)

- *`cluster`*`.setRoutingOption()` accepted the address as the router name instead of the properly qualified router identifier, *`address::router_name`*.

  As of this release, the router identifier is properly validated. (Bug #36267549)

- When adding a Read Replica to a cluster which belonged to a ClusterSet, it was possible to specify a replication source which was an instance of the primary or Replica Cluster. This could be done using the `replicationSources` parameter.

  As of this release, a check is added which prohibits replication sources which do not belong to the Cluster where the command was run to be used as a Read Replica's replication sources.

  This check was also added for the `cloneDonor` parameter of `rejoinInstance()`, `createReplicaCluster()`, and `addReplicaInstance()`.

  Also, when calling `setInstanceOption()` with the `replicationSources` parameter, the source is checked to ensure it is not a Read Replica, the same instance, has a valid state, is reachable, and belongs to the correct Cluster. (Bug #36229274)

- It was possible to remove a Cluster member, in a ClusterSet, which belonged to another Cluster. This could result in an unrecoverable ClusterSet.

  As of this release, the instance targeted for removal is checked to ensure it is a member of the Cluster from which the command is run. (Bug #36229123)

- Attempting to use `dba.rebootClusterFromCompleteOutage()` with a Read Replica as seed, resulted in an error similar to the following:

  ```
  Dba.rebootClusterFromCompleteOutage: Group replication does not seem to be active in instance 'd
  ```

  As of this release, the error message provides useful information on what has happened and how to fix it. (Bug #36225607)

- `dba.createReplicaSet` with `adoptFromAR:true` could fail if the host and port values returned were not properly configured on the target instance. The error returned did not provide useful information.

  As of this release, if the target instance does not have properly configured host and port values, it is ignored and the user is informed. (Bug #36201015)

- The system variable `binlog_transaction_dependency_tracking` was deprecated in MySQL 8.0.35 and 8.2.0 and was removed in MySQL 8.4.0. As of MySQL 8.4.0, the server uses the `WRITESET` behavior by default and it is no longer verified or set by the AdminAPI for MySQL 8.4.0.

  The behavior is unchanged for previous versions of MySQL. (Bug #36057800)

- An error should have been returned when `certIssuer`, `certSubject`, `replicationSslMode`, and any value of `certIssuer` other than `PASSWORD` were used when adopting a Cluster or ReplicaSet using `adoptFromGR=true`. Instead, the invalid options were ignored.

  As of this release, `dba.createCluster()` and `dba.createReplicaSet()` validate these options and return an error if they are used with `adoptFromGR=true`. (Bug #36029413)

- Running `Cluster.rejoinInstance()` on an instance in ERROR state, resulted in errors stating that Group Replication settings cannot be changed while Group Replication is running.

  As of this release, running `Cluster.rejoinInstance()` on an instance in ERROR state, automatically stops Group Replication before proceeding with the rejoin process. (Bug #35387205)

- AdminAPI no longer retrieves information from the following tables on MySQL 8.4, or higher:

  - `mysql.slave_master_info`
  - `mysql.slave_relay_log_info`

  The information which was retrieved from those tables is now retrieved from the Performance Schema.

  

  Note

  Behavior is unchanged on instances older than MySQL 8.4.

  (Bug #32091724)

Utilities Added or Changed Functionality

- A new entry, `dbObjectType`, is added to the Upgrade Checker utility's JSON output. It contains the type of `dbObject` which caused the check failure.

  See JSON Output from the Upgrade Checker Utility. (Bug #36394895)

- The Upgrade Checker now recommends an upgrade path for older versions. For example, if run against MySQL 5.7, it recommends upgrading to MySQL 8.0 before attempting an upgrade to MySQL 8.4. (Bug #36359408)

- It is now possible to skip the default upgrade check when running a dump utility with `ocimds:true`, using the `skipUpgradeChecks` option.

  See Options for Dump Control. (Bug #36227750)

- The `util.loadDump()` summary is enhanced to show the time required for each stage, and throughput progress now includes rows per second. (Bug #36197620)

- It is now possible to specify the level of compression for gzip and zstd on the `exportTables` and dump utilities.

  - `gzip`: Compression level can be set from 0 to 9. Default compression level is 1. For example:

    ```
    "compression": "gzip;level=4"
    ```

  - `zstd`: Compression level can be set from 1 to 22. Default compression level is 1. For example:

    ```
    "compression": "zstd;level=15"
    ```

(Bug #36050770)

- A new check is added to the upgrade checker utility, `deprecatedRouterAuthMethod`. This checks for deprecated or invalid authentication methods in use by MySQL Router internal accounts. (Bug #36004507)
- The Upgrade Checker check, `orphanedRoutines`, is renamed `orphanedObjects` and includes support for orphaned events. (Bug #31335863)
- The following options were added to the upgrade checker utility.
  - `include`: comma-separated list of checks to perform.
  - `exclude`: comma-separated list of checks to ignore.
  - `list`: returns a list of all checks which apply to the current configuration.

  See Utility Checks. (WL #15974)
- The upgrade check, `partitionsWithPrefixKeys`, is added to the Upgrade Checker utility. This checks for columns with index prefixes as part of a table's partitioning key. This was deprecated in MySQL 8.0.21 and removed in MySQL 8.4. The check is enabled by default for any upgrade from a version prior to MySQL 8.4.0 to MySQL 8.4.0 or higher. (WL #16159)
- The following checks were added to the Upgrade Checker utility:
  - `removedSysVars`: Checks for system variables which are in use in the source but were removed in the target version. Meaning the system variables are set on the source with non-default values.
  - `sysVarsNewDefaults`: Checks for system variables with different default values in the target version.
  - `sysvarAllowedValues`: Checks system variables for valid values.
  - `invalidPrivileges`: Checks for user privileges that will be removed.
  - `pluginUsage`: Checks for deprecated or removed plugins.

  (WL #16135)

Utilities Bugs Fixed

- Under certain circumstances, `util.loadDump()` could fail while executing the final stage, the postamble SQL file. The connection to the server was lost.

  As of this release, if the connection was lost, it is retried. However, statements which are not idempotent are not retried, nor are statements which load data. (Bug #36381849)
- Under certain circumstances, MySQL Shell could close unexpectedly while computing checksum values. (Bug #36323625)
- Improved the performance of the upgrade checker utility on MySQL 5.7 instances containing thousands of schemas and tables. (Bug #36223266)
- Under certain circumstances, a copy operation could stop responding while scanning the target instance for metadata. (Bug #36221818)

- The dump utilities included the MySQL HeatWave Service-reserved username `oracle-cloud-agent` resulting in the following error:

```
User 'oracle-cloud-agent'@'localhost' is using an unsupported
authentication plugin 'auth_socket' (fix this with 'skip_invalid_accounts' compatibility option)
```

  The following users are now excluded when loading to, or dumping from, an MySQL HeatWave Service instance:

  - ocidbm
  - oracle-cloud-agent
  - rrhhuser

  (Bug #36159820)

- Loading a dump on Windows platforms failed if `sql_mode` was set to `STRICT_ALL_TABLES`. The following error was returned:

```
ERROR 1231 (42000): Variable 'wait_timeout' can't be set to the value of '31536000'
```

  The load utility attempted to set a maximum value for `wait_timeout` which is not permitted on Windows platforms. (Bug #36119568)

- Under certain circumstances dump and load operations could fail with CURL errors `Connection reset by peer`.

  As of this release, the operations are retried in the event of CURL errors `CURLE_SSL_CONNECT_ERROR (35)` and `CURLE_SEND_ERROR (55)`. (Bug #36022084, Bug #36201255)

- When `util.dumpInstance()` was run with `ocimds:true`, the upgrade checker utility ran on the entire instance even if schema or table filtering was enabled on the `util.dumpInstance()` operation.

  As of this release, the upgrade checker utility only runs on the schemas or tables being dumped. (Bug #35891996)

- The upgrade checker utility did not check for the presence of columns partitioned with temporal types which used non-standard temporal delimiters. As a result, the upgrade could fail or tables could be inaccessible after the upgrade. Non-standard delimiters were deprecated in MySQL 8.0.29.

  As of this release, the upgrade checker checks for such delimiters. (Bug #113050, Bug #36004848)

- The upgrade checker utility did not check for all old temporal types. Under certain circumstances, this could result in an upgrade failure. (Bug #112991, Bug #36029331)

Functionality Added or Changed

- MySQL Shell's default mode is changed from `js` (JavaScript) to `sql` in this release.

  

  Note

  As of this release, to execute JavaScript code from the command line, you must add the `--js` option to your command. For example:

```
mysqlsh user@host:3306 --js -e "println(session)"
```

(Bug #36348763)

- MySQL Shell's help command (`\help` or `\?`) now supports autocomplete. (Bug #36340752)
- Output for the `thread --locks` report now includes information on metadata locks. Also, information on table handles, mutexes, data locks, and RWlocks was added to the `thread --raw-locks` report. (Bug #36055675)
- The V8 JavaScript engine used by MySQL Shell was updated to version 12.0.267.8. (WL #15948)

Bugs Fixed

- MySQL Shell returned a socket-specific connection message to the localhost although the connection was TCP and to a remote host. This occurred if a socket path was specified either in the configuration file or on the command line.

  As of this release, the transport to use is determined by the right-most parameter on the command line. (Bug #112115, Bug #35751281)