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# MySQL Router 2.0 Release Notes

## Abstract

This document contains release notes for the changes in each release of MySQL Router 2.0.

For additional MySQL Router documentation, see <https://dev.mysql.com/doc/mysql-router/en/>.

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.

Document generated on: 2023-05-12 (revision: 26567)

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## Preface and Legal Notices

This document contains release notes for the changes in MySQL Router 2.0.

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## Changes in MySQL Router 2.0.4 (2016-11-23, General Availability)

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

### Functionality Added or Changed

- The unused `ip_from_addrinfo()` function was removed. (Bug #22811176)
- Windows support was added. Binaries are now available for download, and several Router command line options were added to configure a Windows service for MySQL Router.

The new command line options on Windows are `--install-service` (service starts automatically), `--install-service-manual` (service can be started manually), `--remove-service` (removes a service), and `--service` (starts a service). The service name is *MySQLRouter*.

For additional information about these options, see [Starting MySQL Router](#). (WL #9481)

### Bugs Fixed

- The RPATH for executable and shared libraries did not contain both the router library path and the router plugin library path. (Bug #24763533)
- The RPATH was incorrect in the executable for RPM builds. The `plugin_folder` path cannot be set to a value not present in the executable, and the paths should be used for variable interpolation, not to control where plugins are found. The error was similar to "Error: mysql\_protocol.so: cannot open shared object file: No such file or directory".

Additionally, the `INSTALL_LIBDIR` was incorrectly used, which also resulted in path related errors. (Bug #24669798, Bug #24695503)

- When writing packets read from the sender (client or server) to the receiver, if a single `write()` call did not write all requested data, the whole buffer was written in another attempt. Now, only the remaining part of the buffer gets written. (Bug #24578638)
- The SO version for **libmysqlharness** was 0, which is usually reserved for pre-release versions. The SO version was changed to 1, so the library file name changed from `libmysqlharness.so.0` to `libmysqlharness.so.1`. (Bug #24557123)
- On OS X, linking Router to Fabric would fail to function by default due to linking problems. (Bug #24527866, Bug #80376)
- The following syntax programs were not caught: defining a key in the DEFAULT section, and using option or section names that contained non-identifier characters. For example, spaces are not allowed in option names or section keys. (Bug #24372338)
- The read-write mode (which uses the first-available mode schedule) could reconnect to the first listed server (destination) after failing to connect to all listed servers. Instead, it now always behaves as documented, which is to not reconnect after all destinations failed to connect. If a reconnection is

desired, then use the read-only mode instead, which implements the round-robin schedule. (Bug #24367453)

- Backslashes in configuration definitions, such as file paths, could escape characters. (Bug #24360999)
- On OS X, Router could fail due to RPATH related issues. CMake now uses `-DWITH_STATIC=yes` for OS X when executing cmake for the binaries. (Bug #23507484)
- When handling large data sets, such as BLOBs, the connection routing plugin would terminate the connection with a write error. This is fixed by correctly setting the socket to blocking after it was set to nonblocking when requesting a connection from a MySQL server.

In addition, several related write calls now properly check for and report errors. (Bug #23183566)

- When the `max_connect_errors` variable was set to the maximum possible value (highest boundary value of 4294967295), connection errors would report the value as a negative value, such as -1. (Bug #22745790)
- There was inconsistent behavior with connection handling in relation to the `max_connections` setting. Now, the counter is incremented before the thread is spawned in the Routing plugin, because getting the server socket takes time and client connections could have been accepted after the max number of connections was reached. (Bug #22705168)
- An exception thrown inside a plugin would cause the process to be terminated unconditionally. (Bug #22546709, Bug #79983)

## Changes in MySQL Router 2.0.3 (2016-03-03, General Availability)

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

### Functionality Added or Changed

- Support was added for Solaris 11.2 and above, Fedora 22 and above, and OS X 10.10 and above. (Bug #22842993)
- Two new connection routing options were added:
  - `max_connect_errors`: similar to MySQL Server's `max_connect_errors` option, and defaults to 100
  - `client_connect_timeout`: similar to MySQL Server's `connect_timeout` option, and defaults to 9 (1 second less than MySQL Server's default)

(Bug #22020088)

### Bugs Fixed

- A configuration that contained empty destination values, such as `destinations=test,,,`, would cause Router to terminate with an uncaught exception. This condition now emits an error, such as "Configuration error: option destinations in [routing:foo]: empty address found in destination list". (Bug #22579989)
- When using non-alphanumeric characters in configuration variables, such as `destinations = {mysql@1}`, Router would terminate with an uncaught exception. (Bug #22572346)

- In certain network setups, for example when connected to a VPN, routing could fail starting with the error "Operation not supported". Error handling was added when setting up the service, which raises or logs errors. (Bug #22531942, Bug #79933)
- Starting Router without plugins (or a defined strategic plan) now emits a descriptive error that references the lack of plugins. For example, loading an empty configuration file now exits with an error. (Bug #22195343)
- Plugins now have access to the URI class, and `mysqlrouter::split_string` was added. (Bug #22134596)
- A `destinations` configuration length of more than 256 characters would cause Router to hang. (Bug #22104451)
- In some cases, the IPv6 address missed the square brackets around the IP address. For example, "[::]:7002" could be reported as ":::7002"; (Bug #22084430, Bug #78921)
- The `--help` text now outputs the MySQL Router version number. (Bug #22074209)
- Added a `lock_guard` when checking whether a server is quarantined or not, to prevent changes to the quarantine vector with reads. (Bug #22071169)
- Starting Router with spaces between the `destination` server addresses would report a configuration error. Now, whitespace is trimmed from the server addresses. (Bug #22062859)
- Uninstalling MySQL Router (`dpkg -r mysql-router`) left extra files behind. Now, only the configuration files remain. (Bug #22025434)
- When MySQL clients connected to Router and the configured back ends were not available, the generated error (such as "*ERROR 2013 (HY000): Lost connection to MySQL server at 'reading initial communication packet', system error: 0*") was unclear.

Now, when none of the back end servers are available, the client receives a message similar to those generated when MySQL clients connect to a host/port pair where MySQL Server is not running. For example, "*ERROR 2003 (HY000): Can't connect to MySQL server on '127.0.0.1' (61)*". (Bug #22020711, Bug #78836)

- When a client connected through Router, and it did not finish handshaking (or did it incorrectly), it would generate an error on the MySQL Server. For MySQL 5.6 and 5.7, after 100 times it would block the host where this clients came from. Because all clients appear as though they come from the same IP/Host in Router, one client misbehaving could have potentially blocked all other applications.

This only affected connections coming from the network and not from localhost, because MySQL Server does not register connection errors when connections come from localhost.

A workaround was to use localhost (meaning, MySQL Server on the same host as Router), or to set the `max_connect_errors` option to the highest possible value (on 64-bit this is  $2^{64}$ ). (Bug #22020088, Bug #78835)

- Several code improvements were made that were discovered from Valgrind generated reports. (Bug #21983406, Bug #78805)
- There was a memory leak in the fabric cache plugin. (Bug #21981758)

## Changes in MySQL Router 2.0.2 (2015-10-23, General Availability)

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

## Functionality Added or Changed

- Only one Fabric Cache section is allowed, when before multiple Fabric Cache sections were accepted. Specifying multiple Fabric Cache sections will now exit and display an error. (Bug #22069820)
- A sample configuration file and init script are now added to the `share/doc/` directory.  
The default configuration file (`mysqlrouter.ini`) location for the STANDALONE installation layout is now the current working directory. (Bug #22065149)
- Setting `bind_address` is no longer required, and it defaults to `127.0.0.1`. Also, if a port is not used in the definition, then `bind_port` is used. (Bug #22057234)
- A new `bind_port` configuration option was added. It is the default port used by `bind_address` if `bind_address` does not define a port. (Bug #22057234)
- The configuration file no longer accepts a password for the Fabric Cache plugin. Instead, MySQL Router prompts for the password at startup. (Bug #22024872, Bug #78842)
- The `wait_timeout` configuration option was removed. (Bug #22010993)
- Successful routes are now logged using the DEBUG level. Previously it was using the INFO log level. (Bug #22010923)
- For MySQL Harness, the CMake variable "HARNESS\_INSTALL\_LIBRARY\_DIR" was introduced to specify where libraries are installed. The default value is "lib". It can be set by projects using the Harness, such as MySQL Router. (Bug #21931849)
- The `README` text was updated, the build instructions now refer to the online documentation. (Bug #21901927)
- The [DEFAULT] section of the MySQL Router configuration file is now optional. Settings for this section include `config_folder`, `logging_folder`, `plugin_folder`, and `runtime_folder`.  
The default values are relative to the installation prefix. Appended paths are `etc/` for config, `run/` for runtime, and `lib/mysqlrouter` for plugin. Logging defaults to an empty value, so messages are sent to the console. (Bug #21900022, Bug #21935219, Bug #78557)
- Logger levels were added: FATAL, ERROR, WARNING, DEBUG, and INFO. The default value is INFO.  
Also, adding [logger] to the configuration file is now optional. INFO is the default behavior. (Bug #21899753, Bug #78555)

## Bugs Fixed

- The MySQL Router Fabric\_Cache plugin failed to function if Router was started before MySQL Fabric. In addition to this fix, the number of Fabric reconnect attempts is now displayed. (Bug #22045940)
- Starting connection routing without an available destination server would quarantine the destination server and Router would incorrectly exit on the next connection. (Bug #22042842)
- The commercial edition variant of the packages now report the correct license information. (Bug #22024494)
- When the router was started without starting the destination servers, and clients were trying to connect to the bind port, memory leaks were observed. (Bug #21981890)
- A memory leak occurred in MySQL Router with the Fabric Cache plugin when Router was started without MySQL Fabric running. (Bug #21981787)

- The Nagle algorithm for MySQL client connections is now disabled the same way it is disabled for the server connections. (Bug #21973979, Bug #78781)
- When the list of available managed servers in Fabric Cache was decreased, and the current position pointed to a managed server that was no longer in the list, then an unhandled exception was thrown. This problem could have occurred when promoting and demoting an HA Group in MySQL Fabric. (Bug #21972632)
- Socket connections are now properly closed after calling *shutdown()*, as to reclaim resources. (Bug #21972344, Bug #78771)
- Fixed the removal of servers from quarantine. MySQL Router now properly exits when reaching the end of the list, when all servers are in quarantine. (Bug #21962350, Bug #78742)
- After installing MySQL Router to a non-default location (such as, using **DCMAKE\_INSTALL\_PREFIX**), setting **LD\_LIBRARY\_PATH** to the new location had no effect, thus causing plugin usage to fail. (Bug #21944649, Bug #78702)
- Starting the router with an empty string for the group section could cause a crash. (Bug #21916963)
- When multiple cache configurations were configured for the same fabric setup, connecting a client to a routing service that used this configuration would cause a crash. (Bug #21916830)
- Passing `allow_primary_reads` to Fabric is now only allowed in read-only mode, when before it was also allowed in read-write mode. (Bug #21881850)
- Once the group is demoted and then promoted, all new connections to the routing service fail, as further changes to the group were disregarded after reaching 0 available destinations. (Bug #21881131, Bug #21880676)
- The `connect_timeout` and `max_connections` configuration options always used the default values, and did not use values defined in the configuration files. (Bug #21873666)
- Fixed persistent connections with MySQL Fabric. When reconnecting to MySQL Fabric with the Fabric Cache plugin, `mysql_ping()` usage was corrected to allow a persistent connection with MySQL Fabric when using the MySQL-RPC protocol. (Bug #21864126)
- The `read-write` mode would always check the first MySQL connection destination, even if it was reachable. It now preserves the status information in memory to skip unreachable destinations. (Bug #21847015)
- Configuration errors now cause MySQL Router to terminate and return exit code 1, when before exit code 0 was returned.

Previously, errors were directed to STDOUT instead of STDERR. (Bug #21771595)

## Changes in MySQL Router 2.0.1 (2015-09-18, Labs)

Initial public MySQL Router release, and published to <http://labs.mysql.com/>.

### Bugs Fixed

- Initial labs (alpha) release.

## Changes in MySQL Router 2.0.0 (Internal, Alpha)

### Bugs Fixed

- Initial internal release.