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# **SWITCHING FROM MYSQL/ PERCONA TO MARIADB**

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# AGENDA

- Why MariaDB?
- When and Why switching from MySQL/Percona to MariaDB will be right for you
- Key features of MariaDB including extensive JSON support
- Various methods of switching over to MariaDB Server
- Steps that need to followed for switching to MariaDB
- Known errors while switching to MariaDB and their fixes
- Demo (MySQL/Percona to MariaDB Server)
- Usage of MariaDB Migration Assessment Tool for migrating to MariaDB

# WHY MARIADB?

- MariaDB Enterprise Server is built on MariaDB Community Server and, with the aid of MariaDB MaxScale database proxy, delivers best-in-class performance, data security, replication, clustering and high availability
- MariaDB Enterprise Server can scale from a single node to global scale, for any workload – from systems of record (OLTP) to analytics (OLAP), in any cloud: private, public, hybrid, or multi-cloud
- Customers choose MariaDB Enterprise Server because its secured version of MariaDB Community Server with enterprise reliability, stability and long-term support



# WHEN AND WHY SWITCHING TO MARIADB WILL BE RIGHT FOR YOU?

- **Right time to move (Reasons)**
  - Audit Plugin
  - High Availability
  - Performance and Scalability
  - Oracle Compatibility
- **Source (EOS October 2023)**
  - 5.7 Percona Server (GPL)
  - 5.7 MySQL community Server (GPL)
- **Target (EOS 16 July 2023 & 23 August 2024)**
  - 10.5-MariaDB-enterprise-log
  - 10.6-MariaDB-enterprise-log

Downgrade from MySQL 8.0 to MySQL 5.7, or from a MySQL 8.0 release to a previous MySQL 8.0 release, is not supported. From MySQL 8, this is no longer true. Any upgrade, even minor, is seen as irreversible. (This is valid for Percona Server for MySQL as well.) Source : <https://dev.mysql.com/doc/relnotes/mysql/8.0/en/>  
Source : <https://www.percona.com/blog/mysql-8-minor-version-upgrades-are-one-way-only/>

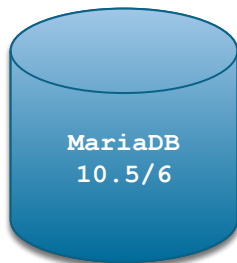
# KEY FEATURES OF MARIADB INCLUDING EXTENSIVE JSON SUPPORT

- MariaDB stores JSON as true text, not in binary format as MySQL
- MariaDB's JSON functions are much faster than MySQL's so there is no need to store in binary format, which would add complexity when manipulating JSON objects
- For the same reason, MariaDB's JSON data type is an alias for LONGTEXT
- There are few different ways to move the table to MariaDB:
  - From MariaDB 10.5.7, you can use the `mysql_json` plugin. Refer below link to know how MariaDB understand MySQL JSON  
<https://mariadb.org/making-mariadb-understand-mysql-json/>
  - Change the JSON column to type TEXT in MySQL, post which MariaDB can directly use the table without any need for a dump and restore



# THE VARIOUS METHODS FOR SWITCHING OVER TO MARIADB

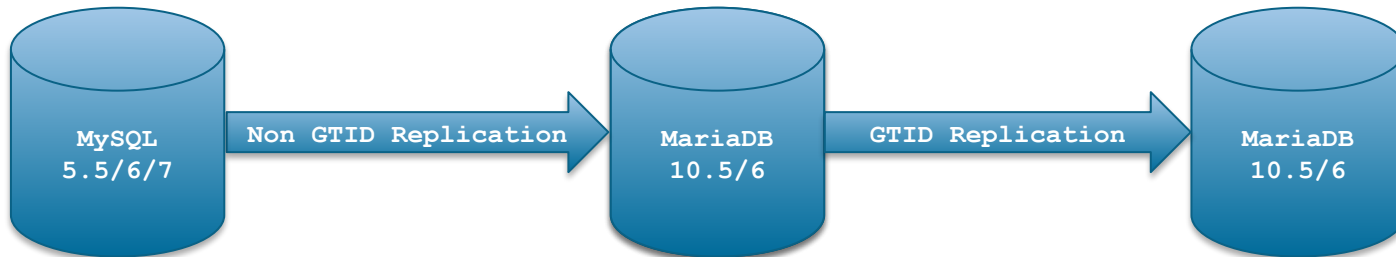
- In-Place Migration



- Using Non-GTID Replication



- Using Non-GTID and GTID based Replication



# STEPS NECESSARY FOR SWITCHING TO MARIADB

1. Take a cold backup MySQL/PXC nodes
2. Use this cold backup built standalone MySQL/Percona instance
3. ALTER tables with **JSON** datatype to **LONGTEXT**
4. ALTER the users using SHA256 password plugin to use MySQL native password
5. Remove partitions from all the tables
6. Uninstall all the non standard plugins including SHA256 and others
7. Uninstall MySQL/Percona binaries completely
8. Installation of MariaDB
9. Start MariaDB service (Error ??? it's probably due to some unsupported plugins)
10. Execute **mariadb-upgrade**
11. Look out for errors about sys schema and few tables (non-user DB) , ignore it for now
12. Connect to MariaDB and DROP DATABASE sys; and InnoDB Persistent Statistics tables
13. Restart MariaDB, it should start successfully





# COMMON ERRORS

## systemctl start mariadb

```
20XX-XX-XX 1:27:04 0 [ERROR] Missing system table mysql.roles_mapping; please run mysql_upgrade to create it
20XX-XX-XX 1:27:04 0 [ERROR] Incorrect definition of table mysql.event: expected column 'sql_mode' at position 14 to
have type .. found type
20XX-XX-XX 1:27:04 0 [ERROR] mariabdb: Event Scheduler: An error occurred when initializing system tables. Disabling the
Event Scheduler.
```

## mariadb-upgrade -u root -pXXXXXX

```
MariaDB upgrade detected
Phase 1/7: Checking and upgrading mysql database
Processing databases
Error : Column count of mysql.proc is wrong. Expected 21, found 20. Created with MariaDB 50741, now running 100518.
Please use mariadb-upgrade to fix this error
error : Corrupt
sys.host_summary_by_file_io
..
...
Error : Unknown column 'information_schema.INNOODB_METRICS.STATUS' in 'field list'
Error : View 'sys.metrics' references invalid table(s) or column(s) or function(s) or definer/invoker of view lack
rights to use them
error : Corrupt
sys.processlist
..
...
20XX-XX-XX 1:27:59 14 [ERROR] InnoDB: Column last_update in table `mysql`.`innodb_table_stats` is BINARY(4) NOT NULL but
should be INT UNSIGNED NOT NULL (flags mismatch).
20XX-XX-XX 1:27:59 14 [ERROR] InnoDB: Fetch of persistent statistics requested for table `sys`.`sys_config` but the
required system tables mysql.innodb_table_stats and mysql.innodb_index_stats are not present or have unexpected structure.
Using transient stats instead.
```



# COMMON ERRORS FIXES

```
mysql -u root -pxxxxxx
```

```
drop database sys;
```

## Error log

```
20XX-XX-XX 1:32:01 1 [ERROR] InnoDB: Column last_update in table `mysql`.`innodb_table_stats` is BINARY(4) NOT NULL but should be INT UNSIGNED NOT NULL (flags mismatch).  
20XX-XX-XX 1:32:01 1 [ERROR] InnoDB: Fetch of persistent statistics requested for table `mysql`.`gtid_slave_pos` but the required system tables mysql.innodb_table_stats and mysql.innodb_index_stats are not present or have unexpected structure. Using transient stats instead.
```

## Restart MariaDB Service after dropping few tables

```
drop table innodb_index_stats;  
drop table innodb_table_stats;  
drop table gtid_slave_pos;
```

```
systemctl restart mariadb
```

## Force upgrade and restart mariadb service

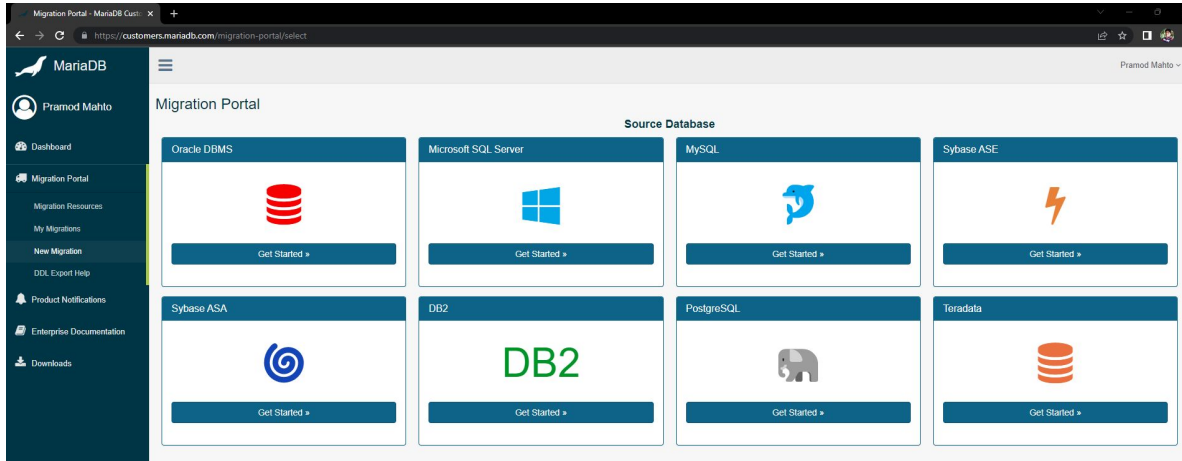
```
mysql_upgrade --force -u root -pxxxxxx  
systemctl restart mariadb
```



# DEMO (MYSQL 5.7 TO MARIADB 10.6)

# MARIADB MIGRATION ASSESSMENT TOOL

- Link <https://customers.mariadb.com/migration-portal/>
  - This tool will provide you with a report that will help you to evaluate and plan for your migration project. After answering a few questions and uploading your DDL in SQL format, you will receive an easy to read, portable report that provides you with all of the information you need to start your migration.



# NEXT STEPS

Check out these sources to learn more about MariaDB

- Watch our Introduction to MariaDB Migration Methodology [https://youtu.be/eTo\\_diz33x0](https://youtu.be/eTo_diz33x0)
- Download our white paper for a side-by-side feature comparison of MariaDB vs. MySQL <https://tinyurl.com/Comparison-of-MariaDB-MySQL>
- Download our white paper: Best practices to seamlessly migrate from MySQL to MariaDB <https://tinyurl.com/Migrate-MySQL-to-MariaDB>



MariaDB

**OPENWORKS**

**THANK YOU**



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## Learned in this session

- How to switchover to MariaDB from MySQL or Percona
- Benefits of moving over to MariaDB
- Achieving High Availability Solution with MariaDB after moving out from MySQL/Percona



# Closing CTAs

- Attend : May 10, 2023 8:00 AM-11:00 AM Workshop: Migrating to MariaDB, Step by Step
- Watch out (Introduction to MariaDB Migration Methodology)  
[https://youtu.be/eTo\\_diz33x0](https://youtu.be/eTo_diz33x0)
- Download white paper for A side-by-side feature comparison of MariaDB vs. MySQL:  
<https://tinyurl.com/Comparison-of-MariaDB-MySQL>
- Download white paper for Best practices to seamlessly migrate from MySQL to MariaDB: <https://tinyurl.com/Migrate-MySQL-to-MariaDB>