

Démarrage de MySQL

Le démarrage se fait via simple.sh

Faire un show engines:

```
SHOW ENGINES \G;
***** 1. row *****
    Engine: FEDERATED
    Support: NO
    Comment: Federated MySQL storage engine
Transactions: NULL
    XA: NULL
    Savepoints: NULL
***** 2. row *****
    Engine: MEMORY
    Support: YES
    Comment: Hash based, stored in memory, useful for temporary tables
Transactions: NO
    XA: NO
    Savepoints: NO
***** 3. row *****
    Engine: InnoDB
    Support: DEFAULT
    Comment: Supports transactions, row-level locking, and foreign keys
Transactions: YES
    XA: YES
    Savepoints: YES
***** 4. row *****
    Engine: PERFORMANCE_SCHEMA
    Support: YES
    Comment: Performance Schema
Transactions: NO
    XA: NO
    Savepoints: NO
***** 5. row *****
    Engine: MyISAM
```

```

Support: YES
Comment: MyISAM storage engine
Transactions: NO
XA: NO
Savepoints: NO
***** 6. row *****
Engine: MRG_MYISAM
Support: YES
Comment: Collection of identical MyISAM tables
Transactions: NO
XA: NO
Savepoints: NO
***** 7. row *****
Engine: BLACKHOLE
Support: YES
Comment: /dev/null storage engine (anything you write to it disappears)
Transactions: NO
XA: NO
Savepoints: NO
***** 8. row *****
Engine: CSV
Support: YES
Comment: CSV storage engine
Transactions: NO
XA: NO
Savepoints: NO
***** 9. row *****
Engine: ARCHIVE
Support: YES
Comment: Archive storage engine
Transactions: NO
XA: NO
Savepoints: NO
9 rows in set (0.00 sec)

```

Faire un show tables afin de voir les détails d'une tables:

```

mysql> SHOW table status \G;
***** 1. row *****
Name: titi

```

```
Engine: InnoDB
Version: 10
Row_format: Dynamic
Rows: 0
Avg_row_length: 0
Data_length: 16384
Max_data_length: 0
Index_length: 0
Data_free: 0
Auto_increment: NULL
Create_time: 2020-06-16 21:03:06
Update_time: NULL
Check_time: NULL
Collation: utf8mb4_0900_ai_ci
Checksum: NULL
Create_options:
Comment:
1 row in set (0.00 sec)
```

Faire un

```
CREATE TABLE t2 (i INT NOT NULL) ENGINE = CSV;
Query OK, 0 rows affected (0.05 sec)
```

Et vérifier que le fichier est bien là:

```
/home/pilou/Formation/simpleinit/data/t1
```

Rajoutons une ligne et remarquons qu'il faut bien flusher les tables si on veut que cela fasse qq chose:

```
mysql> select * from t2;
+---+
| i |
+---+
| 4 |
+---+
1 row in set (0.00 sec)
```

```
mysql> flush tables;
Query OK, 0 rows affected (0.06 sec)

mysql> select * from t2;
+---+
| i |
+---+
| 4 |
| 5 |
+---+
2 rows in set (0.01 sec)
```

Le moteur de stockage peut être changer dynamiquement par défaut:

```
SET default_storage_engine=MYISAM;
```

On vérifie que MYISAM n'est pas transactionnel:

```
mysql> begin;
Query OK, 0 rows affected (0.00 sec)

mysql> insert into testisam values(3);
Query OK, 1 row affected (0.01 sec)

mysql> rollback;
Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> select * from testisam;
+-----+
| i     |
+-----+
|    3 |
+-----+
1 row in set (0.00 sec)
```

Il est possible de modifier le storage engine de la table

```
mysql> ALTER TABLE testisam ENGINE = InnoDB;
Query OK, 1 row affected (0.07 sec)
Records: 1 Duplicates: 0 Warnings: 0
```

mysql tuner

```
[--] Status: +ARCHIVE +BLACKHOLE +CSV -FEDERATED +InnoDB +MEMORY +MRG_MYISAM +MyISAM
+PERFORMANCE_SCHEMA
>default-storage-engine=InnoDB
>disabled_storage_engines="MyISAM, BLACKHOLE, FEDERATED, ARCHIVE, CSV"

[--] Data in CSV tables: 0B (Tables: 1)
[--] Data in InnoDB tables: 49.0K (Tables: 4)
[OK] Total fragmented tables: 0

----- Analysis Performance Metrics
-----
[--] innodb_stats_on_metadata: OFF
[OK] No stat updates during querying INFORMATION_SCHEMA.

----- Security Recommendations
-----
[--] Skipped due to unsupported feature for MySQL 8

----- CVE Security Recommendations
-----
[OK] NO SECURITY CVE FOUND FOR YOUR VERSION

----- Performance Metrics
-----
[--] Up for: 54s (22 q [0.407 qps], 15 conn, TX: 56K, RX: 1K)
[--] Reads / Writes: 100% / 0%
[--] Binary logging is enabled (GTID MODE: OFF)
[--] Physical Memory      : 2.9G
[--] Max MySQL memory     : 9.8G
[--] Other process memory: 0B
[--] Total buffers: 168.0M global + 65.1M per thread (151 max threads)
151 est max_connections. 168M read_buffer_size + sort_buffer_size + join_buffer_size

[--] P_S Max memory usage: 72B
[--] Galera GCache Max memory usage: 0B
[OK] Maximum reached memory usage: 298.3M (9.97% of installed RAM)
```

```
[!!] Maximum possible memory usage: 9.8G (334.35% of installed RAM)
[!!] Overall possible memory usage with other process exceeded memory
[OK] Slow queries: 0% (0/22)
[OK] Highest usage of available connections: 1% (2/151)
[OK] Aborted connections: 0.00% (0/15)
[!!] name resolution is active : a reverse name resolution is made for each new connection and
can reduce performance
[--] Query cache have been removed in MySQL 8
[OK] Sorts requiring temporary tables: 0% (0 temp sorts / 2 sorts)
[!!] Joins performed without indexes: 1
[OK] Temporary tables created on disk: 0% (0 on disk / 5 total)
[OK] Thread cache hit rate: 86% (2 created / 15 connections)
[OK] Table cache hit rate: 64% (145 open / 224 opened)
[OK] table_definition_cache(2000) is upper than number of tables(315)
[OK] Open file limit used: 0% (2/8K)
[OK] Table locks acquired immediately: 100% (4 immediate / 4 locks)
[OK] Binlog cache memory access: 0% (0 Memory / 0 Total)
```

----- Performance schema

```
-----
[--] Memory used by P_S: 72B
[--] Sys schema is installed.
```

----- ThreadPool Metrics

```
-----
[--] ThreadPool stat is disabled.
```

----- MyISAM Metrics

```
-----
[--] MyISAM Metrics are disabled on last MySQL versions.
```

----- InnoDB Metrics

```
-----
[--] InnoDB is enabled.
[--] InnoDB Thread Concurrency: 0
[OK] InnoDB File per table is activated
[OK] InnoDB buffer pool / data size: 128.0M/49.0K
[!!] Ratio InnoDB log file size / InnoDB Buffer pool size (75 %): 48.0M * 2/128.0M should be
equal to 25%
[OK] InnoDB buffer pool instances: 1
```

```
[--] Number of InnoDB Buffer Pool Chunk : 1 for 1 Buffer Pool Instance(s)
[OK] Innodb_buffer_pool_size aligned with Innodb_buffer_pool_chunk_size &
Innodb_buffer_pool_instances
[OK] InnoDB Read buffer efficiency: 94.02% (13442 hits/ 14297 total)
[OK] InnoDB Write log efficiency: 97.67% (630 hits/ 645 total)
[OK] InnoDB log waits: 0.00% (0 waits / 15 writes)
```

----- AriaDB Metrics

```
-----
[--] AriaDB is disabled.
```

----- TokuDB Metrics

```
-----
[--] TokuDB is disabled.
```

----- XtraDB Metrics

```
-----
[--] XtraDB is disabled.
```

----- Galera Metrics

```
-----
[--] Galera is disabled.
```

----- Replication Metrics

```
-----
[--] Galera Synchronous replication: NO
[--] No replication slave(s) for this server.
[--] Binlog format: ROW
[--] XA support enabled: ON
[--] Semi synchronous replication Master: Not Activated
[--] Semi synchronous replication Slave: Not Activated
[--] This is a standalone server
```

----- Recommendations

General recommendations:

```
Control warning line(s) into /home/pilou/Formation/simpleinit/mysqld.log file
Control error line(s) into /home/pilou/Formation/simpleinit/mysqld.log file
MySQL was started within the last 24 hours - recommendations may be inaccurate
Reduce your overall MySQL memory footprint for system stability
```

Dedicate this server to your database for highest performance.

Configure your accounts with ip or subnets only, then update your configuration with skip-name-resolve=1

We will suggest raising the 'join_buffer_size' until JOINS not using indexes are found.

See <https://dev.mysql.com/doc/internals/en/join-buffer-size.html>

(specially the conclusions at the bottom of the page).

Before changing innodb_log_file_size and/or innodb_log_files_in_group read this:

<https://bit.ly/2TcGgtU>

Variables to adjust:

*** MySQL's maximum memory usage is dangerously high ***

*** Add RAM before increasing MySQL buffer variables ***

join_buffer_size (> 256.0K, or always use indexes with JOINS)

innodb_log_file_size should be (=16M) if possible, so InnoDB total log files size equals to 25% of buffer pool size.

https://wiki.deimos.fr/MysqITuner:_Optimiser_votre_serveur_MySQL.html#Patch_mysqltuner

<https://www.mysqlcalculator.com/>

<https://www.percona.com/blog/2016/05/03/best-practices-for-configuring-optimal-mysql-memory-usage/>

My.ini sample

```
# MySQL Server Instance Configuration File
# -----
# Generated by the MySQL Server Instance Configuration Wizard
#
#
# Installation Instructions
# -----
#
# On Linux you can copy this file to /etc/my.cnf to set global options,
# mysql-data-dir/my.cnf to set server-specific options
# (@localstatedir@ for this installation) or to
# ~/.my.cnf to set user-specific options.
#
# On Windows you should keep this file in the installation directory
# of your server (e.g. C:\Program Files\MySQL\MySQL Server X.Y). To
```

```
# make sure the server reads the config file use the startup option
# "--defaults-file".
#
# To run run the server from the command line, execute this in a
# command line shell, e.g.
# mysqld --defaults-file="C:\Program Files\MySQL\MySQL Server X.Y\my.ini"
#
# To install the server as a Windows service manually, execute this in a
# command line shell, e.g.
# mysqld --install MySQLXY --defaults-file="C:\Program Files\MySQL\MySQL Server X.Y\my.ini"
#
# And then execute this in a command line shell to start the server, e.g.
# net start MySQLXY
#
#
# Guildlines for editing this file
# -----
#
# In this file, you can use all long options that the program supports.
# If you want to know the options a program supports, start the program
# with the "--help" option.
#
# More detailed information about the individual options can also be
# found in the manual.
#
#
# CLIENT SECTION
# -----
#
# The following options will be read by MySQL client applications.
# Note that only client applications shipped by MySQL are guaranteed
# to read this section. If you want your own MySQL client program to
# honor these values, you need to specify it as an option during the
# MySQL client library initialization.
#
[client]

port=3306

[mysql]
```

```
default-character-set=latin1
```

```
# SERVER SECTION
```

```
# -----  
#
```

```
# The following options will be read by the MySQL Server. Make sure that  
# you have installed the server correctly (see above) so it reads this  
# file.
```

```
#
```

```
[mysqld]
```

```
# The TCP/IP Port the MySQL Server will listen on  
port=3306
```

```
#Path to installation directory. All paths are usually resolved relative to this.  
basedir="C:/Program Files/MySQL/MySQL Server 5.1/"
```

```
#Path to the database root  
datadir="C:/ProgramData/MySQL/MySQL Server 5.1/Data/"
```

```
# The default character set that will be used when a new schema or table is  
# created and no character set is defined  
character-set-server=latin1
```

```
# The default storage engine that will be used when create new tables when  
default-storage-engine=INNODB
```

```
# Set the SQL mode to strict  
sql-mode="STRICT_TRANS_TABLES,NO_AUTO_CREATE_USER,NO_ENGINE_SUBSTITUTION"
```

```
# The maximum amount of concurrent sessions the MySQL server will  
# allow. One of these connections will be reserved for a user with  
# SUPER privileges to allow the administrator to login even if the  
# connection limit has been reached.
```

```
max_connections=100
```

```
# Query cache is used to cache SELECT results and later return them
```

```
# without actual executing the same query once again. Having the query
# cache enabled may result in significant speed improvements, if your
# have a lot of identical queries and rarely changing tables. See the
# "Qcache_lowmem_prunes" status variable to check if the current value
# is high enough for your load.
```

```
# Note: In case your tables change very often or if your queries are
# textually different every time, the query cache may result in a
# slowdown instead of a performance improvement.
```

```
query_cache_size=0
```

```
# The number of open tables for all threads. Increasing this value
# increases the number of file descriptors that mysqld requires.
```

```
# Therefore you have to make sure to set the amount of open files
# allowed to at least 4096 in the variable "open-files-limit" in
# section [mysqld_safe]
```

```
table_cache=256
```

```
# Maximum size for internal (in-memory) temporary tables. If a table
# grows larger than this value, it is automatically converted to disk
# based table This limitation is for a single table. There can be many
# of them.
```

```
tmp_table_size=205M
```

```
# How many threads we should keep in a cache for reuse. When a client
# disconnects, the client's threads are put in the cache if there aren't
# more than thread_cache_size threads from before. This greatly reduces
# the amount of thread creations needed if you have a lot of new
# connections. (Normally this doesn't give a notable performance
# improvement if you have a good thread implementation.)
```

```
thread_cache_size=8
```

```
**** MyISAM Specific options
```

```
# The maximum size of the temporary file MySQL is allowed to use while
# recreating the index (during REPAIR, ALTER TABLE or LOAD DATA INFILE.
# If the file-size would be bigger than this, the index will be created
# through the key cache (which is slower).
```

```
myisam_max_sort_file_size=100G
```

```
# If the temporary file used for fast index creation would be bigger
# than using the key cache by the amount specified here, then prefer the
# key cache method. This is mainly used to force long character keys in
# large tables to use the slower key cache method to create the index.
myisam_sort_buffer_size=410M
```

```
# Size of the Key Buffer, used to cache index blocks for MyISAM tables.
# Do not set it larger than 30% of your available memory, as some memory
# is also required by the OS to cache rows. Even if you're not using
# MyISAM tables, you should still set it to 8-64M as it will also be
# used for internal temporary disk tables.
key_buffer_size=354M
```

```
# Size of the buffer used for doing full table scans of MyISAM tables.
# Allocated per thread, if a full scan is needed.
read_buffer_size=64K
read_rnd_buffer_size=256K
```

```
# This buffer is allocated when MySQL needs to rebuild the index in
# REPAIR, OPTIMIZE, ALTER table statements as well as in LOAD DATA INFILE
# into an empty table. It is allocated per thread so be careful with
# large settings.
sort_buffer_size=256K
```

```
*** INNODB Specific options ***
```

```
# Use this option if you have a MySQL server with InnoDB support enabled
# but you do not plan to use it. This will save memory and disk space
# and speed up some things.
#skip-innodb
```

```
# Additional memory pool that is used by InnoDB to store metadata
# information. If InnoDB requires more memory for this purpose it will
# start to allocate it from the OS. As this is fast enough on most
# recent operating systems, you normally do not need to change this
# value. SHOW INNODB STATUS will display the current amount used.
innodb_additional_mem_pool_size=15M
```

```
# If set to 1, InnoDB will flush (fsync) the transaction logs to the
# disk at each commit, which offers full ACID behavior. If you are
# willing to compromise this safety, and you are running small
# transactions, you may set this to 0 or 2 to reduce disk I/O to the
# logs. Value 0 means that the log is only written to the log file and
# the log file flushed to disk approximately once per second. Value 2
# means the log is written to the log file at each commit, but the log
# file is only flushed to disk approximately once per second.
```

```
innodb_flush_log_at_trx_commit=1
```

```
# The size of the buffer InnoDB uses for buffering log data. As soon as
# it is full, InnoDB will have to flush it to disk. As it is flushed
# once per second anyway, it does not make sense to have it very large
# (even with long transactions).
```

```
innodb_log_buffer_size=7M
```

```
# InnoDB, unlike MyISAM, uses a buffer pool to cache both indexes and
# row data. The bigger you set this the less disk I/O is needed to
# access data in tables. On a dedicated database server you may set this
# parameter up to 80% of the machine physical memory size. Do not set it
# too large, though, because competition of the physical memory may
# cause paging in the operating system. Note that on 32bit systems you
# might be limited to 2-3.5G of user level memory per process, so do not
# set it too high.
```

```
innodb_buffer_pool_size=686M
```

```
# Size of each log file in a log group. You should set the combined size
# of log files to about 25%-100% of your buffer pool size to avoid
# unneeded buffer pool flush activity on log file overwrite. However,
# note that a larger logfile size will increase the time needed for the
# recovery process.
```

```
innodb_log_file_size=343M
```

```
# Number of threads allowed inside the InnoDB kernel. The optimal value
# depends highly on the application, hardware as well as the OS
# scheduler properties. A too high value may lead to thread thrashing.
```

```
innodb_thread_concurrency=10
```

```

#
# FromDual configuration file template for MySQL, Galera Cluster, MariaDB and Percona Server
# Location: %MYCNF%
# This template is intended to work with MySQL 5.7 and newer and MariaDB 10.0 and newer
# Get most recent updated from here:
# https://www.fromdual.com/mysql-configuration-file-sample
#

[client]

port                = %PORT%                # default 3306
socket              = %SOCKET%              # Use mysqld.sock on
Ubuntu, conflicts with AppArmor otherwise

[mysql]

no_auto_rehash
max_allowed_packet = 16M
prompt             = '\u@\h [\d]> '        # 'user@host [schema]> '
default_character_set = utf8                # Possibly this setting
is correct for most recent Linux systems

[mysqldump]

max_allowed_packet = 16M

[mysqld_safe]
# Becomes sooner or later
obsolete with systemd

open_files_limit = 8192                    # You possibly have to
adapt your O/S settings as well
user              = mysql
log-error         = %INSTANCEDIR%/log/%UNAME%_%INSTANCE%_error.log # Adjust
AppArmor configuration: /etc/apparmor.d/local/usr.sbin.mysqld

[mysqld]

```

```

# Connection and Thread variables

port = %PORT% # default 3306
socket = %SOCKET% # Use mysqld.sock on
Ubuntu, conflicts with AppArmor otherwise
basedir = %BASEDIR%
datadir = %DATADIR%
# tmpdir = '%INSTANCEDIR%/tmp'
# innodb_tmpdir = '%INSTANCEDIR%/tmp' # MySQL 5.7

max_allowed_packet = 16M
default_storage_engine = InnoDB
# explicit_defaults_for_timestamp = 1 # MySQL 5.6, test
carefully! This can have an impact on application.
# disable_partition_engine_check = true # Since MySQL 5.7.17 to
5.7.20. To get rid of nasty message in error log

# character_set_server = utf8mb4 # For modern
applications, default in MySQL 8.0
# collation_server = utf8mb4_general_ci

max_connections = 151 # Values < 1000 are
typically good
max_user_connections = 145 # Limit one specific
user/application
thread_cache_size = 151 # Up to max_connections
makes sense

# Query Cache (does not exist in MySQL 8.0 any more!)

# query_cache_type = 1 # Set to 0 to avoid
global QC Mutex
# query_cache_size = 32M # Avoid too big (>
128M) QC because of QC clean-up lock!

# Session variables

```

```

sort_buffer_size                = 2M                                # Could be too big for
many small sorts
tmp_table_size                  = 32M                                # Make sure your
temporary results do NOT contain BLOB/TEXT attributes

read_buffer_size                = 128k                             # Resist to change this
parameter if you do not know what you are doing
read_rnd_buffer_size            = 256k                             # Resist to change this
parameter if you do not know what you are doing
join_buffer_size                = 128k                             # Resist to change this
parameter if you do not know what you are doing

# Other buffers and caches

table_definition_cache          = 1400                            # As big as many tables
you have
table_open_cache                = 2000                            # connections x
tables/connection (~2)
table_open_cache_instances      = 16                               # New default in 5.7

# MySQL error log

log_error                       = %INSTANCEDIR%/log/%UNAME%_%INSTANCE%_error.log # Adjust
AppArmor configuration: /etc/apparmor.d/local/usr.sbin.mysqlld
# log_timestamps                = SYSTEM                            # MySQL 5.7, equivalent
to old behaviour
log_warnings                    = 2                               # MySQL 5.6, equivalent
to log_error_verbosity = 3
# log_error_verbosity            = 3                               # MySQL 5.7, equivalent
to log_warnings = 2, MariaDB does NOT support this!
innodb_print_all_deadlocks      = 1
# wsrep_log_conflicts            = 1                               # for Galera only!

# Slow Query Log

slow_query_log_file             = %INSTANCEDIR%/log/%UNAME%_%INSTANCE%_slow.log # Adjust
AppArmor configuration: /etc/apparmor.d/local/usr.sbin.mysqlld
slow_query_log                  = 0

```

```

log_queries_not_using_indexes = 0 # Interesting on
developer systems!
long_query_time = 0.5
min_examined_row_limit = 100

# General Query Log

general_log_file = %INSTANCEDIR%/log/%UNAME%_%INSTANCE%_general.log # Adjust
AppArmor configuration: /etc/apparmor.d/local/usr.sbin.mysql
general_log = 0

# Performance Schema

# performance_schema = ON # for MariaDB 10
releases
performance_schema_consumer_events_statements_history_long = ON # MySQL 5.6/MariaDB 10
and newer

# Binary logging and Replication

server_id = %SERVERID% # Must be set on MySQL
5.7 and newer if binary log is enabled!
log_bin = %INSTANCEDIR%/binlog/%UNAME%_%INSTANCE%_binlog #
Locate outside of datadir, adjust AppArmor configuration:
/etc/apparmor.d/local/usr.sbin.mysql
# master_verify_checksum = ON # MySQL 5.6
binlog_cache_size = 1M
binlog_stmt_cache_size = 1M
max_binlog_size = 128M # Make bigger for high
traffic to reduce number of files
sync_binlog = 1 # Set to 0 or higher to
increase write performance
expire_logs_days = 5 # We will survive easter
holidays
binlog_format = ROW # Use MIXED if you want
to experience some troubles
# binlog_row_image = MINIMAL # Since 5.6
# auto_increment_increment = 2 # For Master/Master

```

```

set-ups use 2 for both nodes
# auto_increment_offset          = 1                      # For Master/Master
set-ups use 1 and 2

# Slave variables

log_slave_updates                = 1                      # Use if Slave is used
for Backup and PiTR
read_only                        = 0                      # Set to 1 to prevent
writes on Slave
# super_read_only                = 0                      # Set to 1 to prevent
writes on Slave for users with SUPER privilege. Since 5.7, not in MariaDB
# skip_slave_start               = 1                      # To avoid start of
Slave thread
# relay_log                      = %UNAME%_%INSTANCE%_relay-bin
# relay_log_info_repository      = table                 # MySQL 5.6
# master_info_repository        = table                 # MySQL 5.6
# slave_load_tmpdir             = '%INSTANCEDIR%/tmp'

# Crash-safe replication Master

# binlog_checksum                = CRC32                  # default
# sync_binlog                    = 1                      # default since 5.7.6,
but slow!
# innodb_support_xa              = 1                      # default, depracted
since 5.7.10

# Crash-safe replication Slave

# master_info_repository         = TABLE
# relay_log_info_repository      = TABLE
# relay_log_recovery             = 1
# sync_relay_log_info            = 1
# relay_log_purge                = 1                      # default
# slave_sql_verify_checksum      = 1                      # default

# GTID replication

```

```

# gtid_mode = ON # Master and Slave
# enforce_gtid_consistency = 1 # Master and Slave

# log_bin = %INSTANCEDIR%/binlog/%UNAME%_%INSTANCE%_binlog # In 5.6
also on Slave
# log_slave_updates = 1 # In 5.6 also on
Slave

# Security variables

# local_infile = 0 # If you are security
aware
# secure_auth = 1 # If you are security
aware
# sql_mode =
TRADITIONAL, ONLY_FULL_GROUP_BY, NO_ENGINE_SUBSTITUTION, STRICT_ALL_TABLES, NO_ZERO_IN_DATE, NO_ZER
O_DATE, ERROR_FOR_DIVISION_BY_ZERO, NO_AUTO_CREATE_USER # Be careful changing this afterwards
# skip_name_resolve = 0 # Set to 1 if you do
not trust your DNS or experience problems
# secure_file_priv = '%INSTANCEDIR%/tmp' # chmod 750, adjust
AppArmor configuration: /etc/apparmor.d/local/usr.sbin.mysqld

# MyISAM variables

key_buffer_size = 8M # Set to 25 - 33 % of RAM
if you still use MyISAM
myisam_recover_options = 'BACKUP, FORCE'
# disabled_storage_engines = 'MyISAM, MEMORY' # MySQL 5.7, do NOT
during/before mysql_upgrade, good for Galera!

# MEMORY variables

max_heap_table_size = 64M # Should be greater or
equal to tmp_table_size

# InnoDB variables

```

```

innodb_strict_mode          = ON
# innodb_file_format_check  = 1                # Desupported in MySQL
8.0
# innodb_file_format        = Barracuda        # For dynamic and
compressed InnoDB tables, default in 5.7
innodb_buffer_pool_size    = 128M             # Go up to 80% of your
available RAM
innodb_buffer_pool_instances = 8              # Bigger if huge InnoDB
Buffer Pool or high concurrency

innodb_file_per_table      = 1                # Is the recommended way
nowadays
# innodb_flush_method       = 0_DIRECT        # 0_DIRECT is sometimes
better for direct attached storage
# innodb_write_io_threads   = 8              # If you have a strong
I/O system or SSD
# innodb_read_io_threads    = 8              # If you have a strong
I/O system or SSD
# innodb_io_capacity        = 1000           # If you have a strong
I/O system or SSD

innodb_flush_log_at_trx_commit = 2            # 1 for durability, 0 or
2 for performance
innodb_log_buffer_size     = 8M              # Bigger if
innodb_flush_log_at_trx_commit = 0
innodb_log_file_size       = 256M           # Bigger means more write
throughput but longer recovery time

# Since MariaDB 10.0 and
MySQL 5.6
innodb_monitor_enable = all                 # Overhead < 1% according
to PeterZ/Percona

# Galera specific MySQL parameter

# default_storage_engine   = InnoDB          # Galera only works with
InnoDB
# innodb_flush_log_at_trx_commit = 2        # Durability is achieved
by committing to the Group

```

```

# innodb_autoinc_lock_mode      = 2                # For parallel applying
# binlog_format                  = row                # Galera only works with
RBR
# query_cache_type               = 0                # Use QC with Galera only
in a Master/Slave set-up
# query_cache_size               = 0

# WSREP parameter

# wsrep_on                       = on                # Only MariaDB >= 10.1
# wsrep_provider                 = /usr/lib/galera/libgalera_smm.so # Location of Galera
Plugin on Ubuntu ?
# wsrep_provider                 = /usr/lib64/galera-3/libgalera_smm.so # Location of Galera
Plugin on CentOS 7
# wsrep_provider                 = none                # Start mysqld without
Galera
# wsrep_provider_options         = 'gcache.size = 1G'    # Depends on you
workload, WS kept for IST

# wsrep_cluster_name             = "My cool Galera Cluster" # Same Cluster name for
all nodes
# wsrep_cluster_address          = "gcomm: //192.168.0.2,192.168.0.3" # Start other nodes
like this

# wsrep_node_name                = "Node A"           # Unique node name
# wsrep_node_address             = 192.168.0.1         # Our address where
replication is done
# wsrep_node_incoming_address    = 10.0.0.1           # Our external
interface where application comes from
# wsrep_sync_wait                = 1                   # If you need really
full-synchronous replication (Galera 3.6 and newer)
# wsrep_slave_threads            = 16                  # 4 - 8 per core, not
more than wsrep_cert_deps_distance

# wsrep_sst_method               = rsync                # SST method (initial
full sync): mysqldump, rsync, rsync_wan, xtrabackup-v2
# wsrep_sst_auth                 = sst:secret          # Username/password for
sst user
# wsrep_sst_receive_address       = 192.168.2.1        # Our address where to
receive SST

```

```

# Group Replication parameter

# default_storage_engine          = InnoDB                # Group Replication
only works with InnoDB

# server_id                       = %SERVERID%           # Should be different
on all 3 nodes

# log_bin                         = %INSTANCEDIR%/binlog/%UNAME%_%INSTANCE%_binlog # Locate
outside of datadir, adjust AppArmor configuration: /etc/apparmor.d/local/usr.sbin.mysql

# binlog_format                   = ROW

# binlog_checksum                 = NONE                 # not default!

# gtid_mode                       = ON

# enforce_gtid_consistency        = ON

# master_info_repository         = TABLE

# relay_log_info_repository       = TABLE

# log_slave_updates              = ON

# slave_parallel_workers          = <n>                  # 1-2/core, max. 10

# slave_preserve_commit_order     = ON

# slave_parallel_type             = LOGICAL_CLOCK

# transaction_write_set_extraction = XXHASH64

# loose-group_replication_group_name = "$(uuidgen)"      # Must be the same on
all nodes

# loose-group_replication_start_on_boot = OFF

# loose-group_replication_local_address = "192.168.0.1"

# loose-group_replication_group_seeds = "192.168.0.1,192.168.0.2,192.168.0.3" # All
nodes of Cluster

# loose-group_replication_bootstrap_group = OFF

# loose-group_replication_single_primary_mode = FALSE      # = multi-primary

```

Revision #6

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