



MySQL 5.1 Configuration Files & Options Part I

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About Pythian



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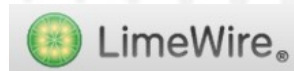
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- Expertise:

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- 24/7/365 global remote support for DBA and consulting, systems administration, special projects or emergency response



What you can use this info for

- Files, purpose, known issues
- System and status variables
- Tuning
- Includes Persona variables

Included/not included

- Up to MySQL 5.1.41
- Includes Percona variables (5.1.36)
- Does not include InnoDB plugin variables

Directories

- basedir
 - /app/mysql-5.1.29-rc-linux-x86_64/
- datadir
 - /app/mysql/data
- tmpdir
 - /tmp

Directories

- language
 - /app/mysql-5.1.29-rc-linux-x86_64/share/mysql/english/
- plugin_dir
 - /app/mysql-5.1.29-rc-linux-x86_64/lib/mysql/plugin

Configuration Files

- In order:
 - /etc/my.cnf
 - /etc/mysql/my.cnf
 - \$SYSCONFDIR/my.cnf
 - (--sysconfdir option to compiling)

Configuration Files (2)

- In order (still):
 - `$MYSQL_HOME/my.cnf`
 - Server options `[mysqld]` `[safe_mysqld]` directives
 - `--defaults-extra-file`
 - `~/.my.cnf`
 - User options `[client]` directive
 - commandline

Summary: Configuration Files

- Just use `/etc/my.cnf` or `/etc/mysql/my.cnf`
- and optionally `~/.my.cnf` if you want to store passwords, but secure the file!

Other Files

- File extensions used by MySQL
 - .index .MYI .MYD .TRG .TRN .ibd .info .frm
- db.opt
- Slave information
 - master.info
 - relay-log.info
- Recommend: turn on log-slave-updates on all machines

Version

- Version (5.1.37-1ubuntu5-log)
 - version_comment (Ubuntu)
 - version_compile_machine (x86_64)
 - version_compile_os (debian-linux-gnu)
- License (GPL)

Basics

- `div_precision_increment` (4)
 - Default precision value
 - 4, so $1/11=0.0909$
- `lower_case_table_names` (1)
- `lower_case_file_system` (OFF)

Basics

- hostname (sea1tpmysql03s1)
- port (3306)
- socket (/tmp/mysql.sock)
- pid file (/app/mysql/data/sea1tpmysql03s1.pid)
- protocol version (10)
 - client/server mysql protocol

Basics

- storage_engine (InnoDB)
 - also table_type
- time_zone (SYSTEM)
- system_time_zone (PDT)
- timestamp (124101315)
 - used mostly in replication
 - affects CURRENT_TIMESTAMP(), NOW()
 - only affects SYSDATE() if sysdate-is-now is set

Basics

- Queries
- Questions
- Uptime
- Uptime_since_flush_status

Connections

- max_connections (5000)
 - Max_used_connections (50)

- Threads_connected (33)
 - Threads_running (2)

Threads

- Connections (439049)
- Threads_created (50)
- Threads_cached (17)
 - thread_cache_size (48)

When a thread is slow to launch

- `slow_launch_time` (2)
- `Slow_launch_threads` (0)

Aborted connects/clients

- Aborted_clients (9)
- Aborted_connects (57932)
 - max_connect_errors (100)
 - FLUSH HOSTS
 - connect_timeout

Per-user limits

- `max_tmp_tables` (32)
 - not used yet
- `max_user_connections` (0)

Security

- `old_passwords` (OFF)
- `secure_auth` (ON)
- `skip_show_database` (OFF)
- `secure_file_priv`

Initial SQL

- `init_connect`
 - String to execute when cxn is made
- `init_file`
 - File to execute when cxn is made
- `init_slave`
 - String to execute when slave cxn is made

Query Cache

- query_cache_type (ON)
 - have_query_cache (YES)
- query_cache_size (128M)
 - Qcache_total_blocks (64,428)
 - Qcache_free_blocks (15,348)
 - Qcache_free_memory (44.1M)
- Qcache_queries_in_cache (20,536)

Query Cache Usage

- `query_cache_limit` (4M)
- `Qcache_not_cached` (14,000,166)
- `Qcache_lowmem_prunes` (18,290,939)
 - Defragment with `FLUSH QUERY CACHE`
 - `query_cache_min_res_unit` (4096) can be decreased if results are very small

Query Cache Usage

- Qcache_hits (15,399,458)
- Qcache_inserts (26,947,349)
- Com_select (40,947,868)
 - Query cache hit % = 39.69%

Query Cache Other

- `query_cache_wlock_invalidate` (OFF)

Errors/Warnings

- `error_count` (0)
- `warning_count` (0)
- `max_error_count` (64)

Character sets

- `character_sets_dir`
 - `/app/mysql-5.1.29-rc-linux-x86_64/share/mysql/charsets)`
- `character_set_`
 - `client (utf8)`
 - `results (utf8)`
 - `server (utf8)`
 - `database (utf8)`
 - `filesystem(binary)`
 - `system (utf8)`
 - `connection (utf8)`

Collations

- collation_
 - server (utf8_general_ci)
 - database (utf8_general_ci)
 - connection (utf8_general_ci)

Locale information

- `default_week_format` (0)
- `lc_time_names` (en_US)

Logs

- log_output (FILE, TABLE)
- General
- Slow query
- Error
- Binary

General Log

- `general_log` (OFF)
 - `log` (OFF)
- `general_log_file` (/app/mysql/data/sea1tpmysql03s1.log)
- `sql_log_off` (OFF)

Slow Query Log

- `slow_query_log` (ON)
 - `log_slow_queries` (ON)
- `slow_query_log_file` (`/app/mysql/data/sea1tpmysql03s1-slow.log`)
- `Slow_queries` (649)

What gets logged as a slow query

- `long_query_time` (0.5)
- `log_queries_not_using_indexes` (OFF)
- `min_examined_row_limit` (0)

Error Logging

- log_error (/app/mysql/data/sea1tpmysql03s1.err)
- log_warnings (1)
 - sql_notes (ON)

Binary Logging

- log_bin (ON)
 - sql_log_bin (ON), sql_log_update (ON)
- max_binlog_size (1G)
- binlog_format (MIXED)
 - mysqlbinlog --base64-output=DECODE-ROWS
- expire_logs_days (7)

Binary Log Cache

- `binlog_cache_size` (2M)
- `Binlog_cache_use` (3,924,856)
- `Binlog_cache_disk_use` (23)

Replication and Binary Logging

- `server_id` (1)
- `log_slave_updates` (ON)
- `sync_binlog` (1)
- `sync_frm` (ON)

Determinism and Replication

- insert_id (0)
- last_insert_id (0)
- identity (0)
- rand_seed1, rand_seed2

Slave Registration

- Optional, used for SHOW SLAVE HOSTS
 - report_host
 - report_port (3306)
 - report_user
 - report_password

Relay Logs

- relay_log, relay_log_index
- relay_log_info_file (relay_log.info)
- max_relay_log_size (0)
 - relay_log_space_limit (0)
 - relay_log_purge (ON)

Master/Master Replication Settings

- `auto_increment_offset` (1)
- `auto_increment_increment` (1)

Slave Settings

- `slave_skip_errors (1061,1062)`
- `slave_net_timeout (60)`
- `slave_transaction_retries (10)`

More Slave Settings

- `slave_exec_mode` (STRICT)
- `slave_load_tmpdir` (/tmp)
- `slave_compressed_protocol` (OFF)

Slave Status Variables

- Slave_open_temp_tables (0)
- Slave_retried_transactions (0)
- Slave_running (ON)

Slave Session Variables

- `sql_slave_skip_counter` (0)
- `sql_warnings` (OFF)

Do and Ignore

- binlog-do-db – don't use
- binlog-ignore-db – don't use
- replicate-do-db – don't use
- replicate-ignore-db – don't use
- replicate-do-table – don't use
- replicate-ignore-table
- replicate-ignore-wild-table

Remember

- `init_slave`

Other Binary Log Variables

- `max_binlog_cache_size`
 - max is supposed to be 4G
 - Appears as $>17,000,000,000$ G
 - bug, fixed by 5.1.31

Stored Routines

- `max_sp_recursion_depth` (0)
- `automatic_sp_privileges` (ON)
- `log_bin_trust_function_creators` (OFF)
- `log_bin_trust_routine_creators` (OFF)

Temporary Tables

- Per-thread
 - tmp_table_size (128M)
 - max_heap_table_size (128M)
- Created_tmp_tables (2,017,444)
- Created_tmp_disk_tables (13,746)

Memory Settings

(not storage engine dependent)

- `join_buffer_size` (128k)
- `read_rnd_buffer_size` (28M)
- `max_prepared_stmt_count` (16382)
- `preload_buffer_size` (32768)

Memory Settings

(not storage engine dependent)

- `query_alloc_block_size` (8192)
- `query_prealloc_size` (8192)
- `thread_stack` (192k)

Table Definition Cache

- `table_definition_cache` (256)
- `Open_table_definitions` (181)
- `Opened_table_definitions` (465)

Sorting Variables

- Sort_range (2,105,552)
- Sort_rows (12,161,270)
- Sort_scan (1,539,997)

Bad Handler Status

- Handler_read_first (1704010)
- Handler_read_rnd (1354665)
 - read_buffer_size (2M)
- Handler_read_rnd_next (2637167797)

Good Handler Status

- Handler_read_key (177,713,296)
- Handler_read_next (235,042,485)
- Handler_read_prev (0)

Sorting System Variables

- `sort_buffer_size` (56M)
 - `Sort_merge_passes` (0)
- `max_sort_length` (1024)

Join Buffer

- `join_buffer_size` (56M)
- `Select_full_join` (1)
- `Select_scan` (2888498)

Joining

- max_join_size (4,294,967,295)
 - sql_max_join_size
- sql_big_selects (ON)
- Select_range_check (0)

Join Status Variables

- `Select_full_range_join (0)`
- `Select_range (808,772)`

Profiling

- `have_community_features` (YES)
- `profiling` (OFF)
 - per-session
- `profiling_history_size` (15)

Optimizer

- optimizer_prune_level (1)
- optimizer_search_depth (62)
- optimizer_switch (5.1.34)

Optimization

- `max_seeks_for_key` (1.84E+019)
- `max_length_for_sort_data` (1024)
- `Last_query_cost` (0)

Optimization

- `range_alloc_block_size` (4k)
- `sql_select_limit` (1.84E+019)

SQL Behavior

- `sql_auto_is_null` (ON)
- `sql_mode`
(PIPES_AS_CONCAT,ANSI_QUOTES,
IGNORE_SPACE,ORACLE,NO_KEY_OPTIONS,
NO_TABLE_OPTIONS,NO_FIELD_OPTIONS,
NO_AUTO_CREATE_USER)
- `sql_quote_show_create` (ON)

SQL Behavior

- `sql_safe_updates` (OFF)
 - also called `i-am-a-dummy`
- `updatable_views_with_limit` (YES)
- `new` (OFF)
- `old` (OFF)

Functions

- `have_compress` (YES)
 - Unrelated to Compression (OFF)
- `have_crypt` (YES)
- `local_infile` (ON)

Features

- `read_only` (OFF)
- `have_dynamic_loading` (YES)
- `have_partitioning` (YES)

Features

- `event_scheduler` (OFF)
- `have_geometry` (YES)
- `have_rtree_keys` (YES)
- `have_symlink` (YES)

Other Variables

- `locked_in_memory` (OFF)
- `bulk_insert_buffer_size` (8 Mb)
- `group_concat_max_len` (1024)
- `Created_tmp_files` (40)

Variables not covered

- SSL:
 - have_ssl
 - have_openssl
 - Ssl_ and ssl_
- Prepared_stmt_cnt (0)
- engine_condition_pushdown (OFF)
- Most Com_ and Handler_

Variables That Are Not Useful

- `big_tables` (OFF)
 - `sql_big_tables`
- `old_alter_table` (OFF)
- `pseudo_thread_id` (0)

Not used/Not useful

- multi_range_count (256)
- table_lock_wait_timeout (50)
- rpl_recovery_rank (0)
- Rpl_status (NULL)

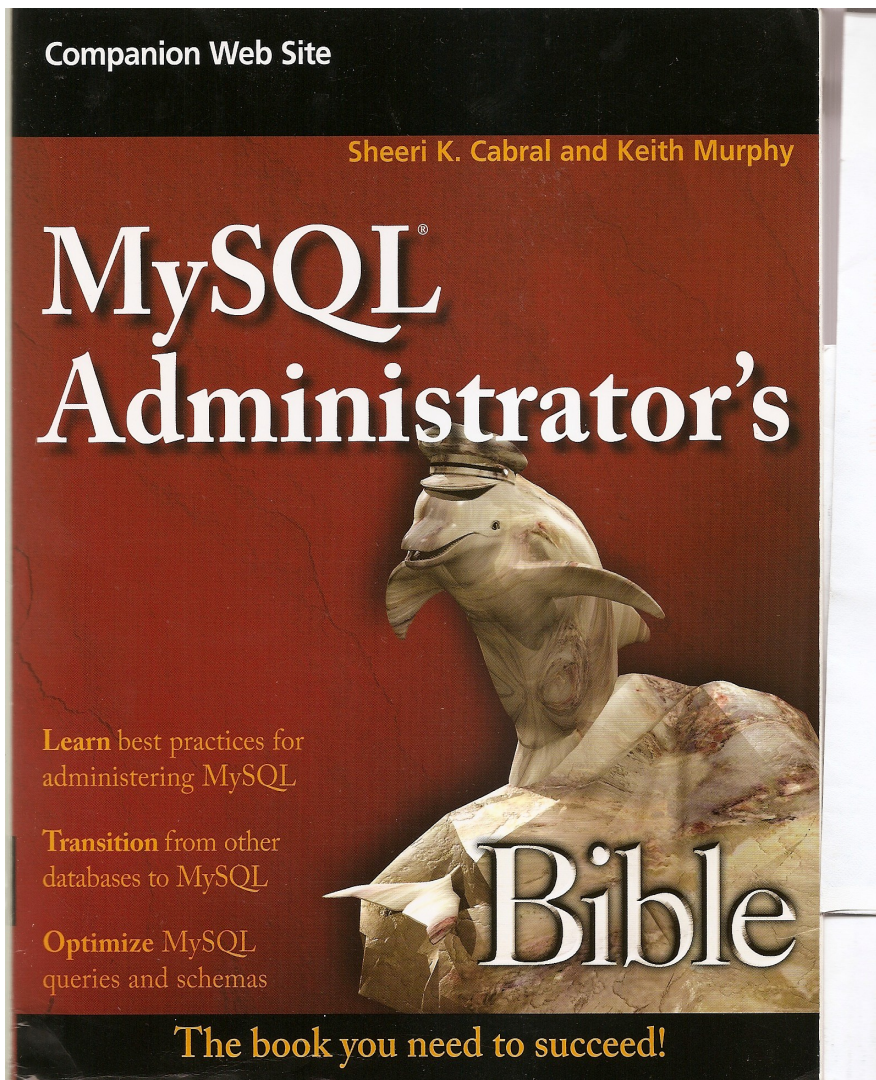
These variables are not used

- `time_format (%H:%i:%s)`
- `date_format (%Y-%m-%d)`
- `datetime_format (%Y-%m-%d %H:%i:%s)`
- `innodb_file_io_threads (4)`
 - used on Windows only

Mostly Unused Variables

- log_tc_size (24Kb)
 - not shown in SHOW GLOBAL VARIABLES
- Tc_log_max_pages_used (0)
- Tc_log_page_size (0)
- Tc_log_page_waits (5)

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