源码编译安装 MySQL 5.6.X 实践

目录

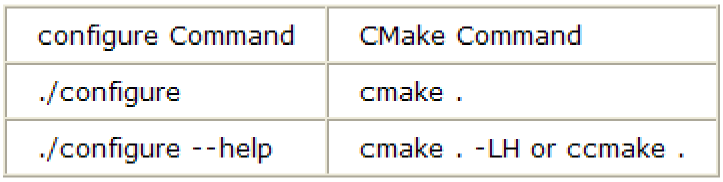
1 安装 cmake

MySQL 从 5.5 版本开始，通过./configure 进行编译配置方式已经被取消，取而代之的是 cmake 工具。

因此，我们首先要在系统中源码编译安装 cmake 工具。

```
# wget http://www.cmake.org/files/v2.8/cmake-2.8.7.tar.gz

# tar zxvf cmake-2.8.7.tar.gz

# cd cmake-2.8.7

# ./configure

# make

# make install
```

1.1 cmake 命令语法

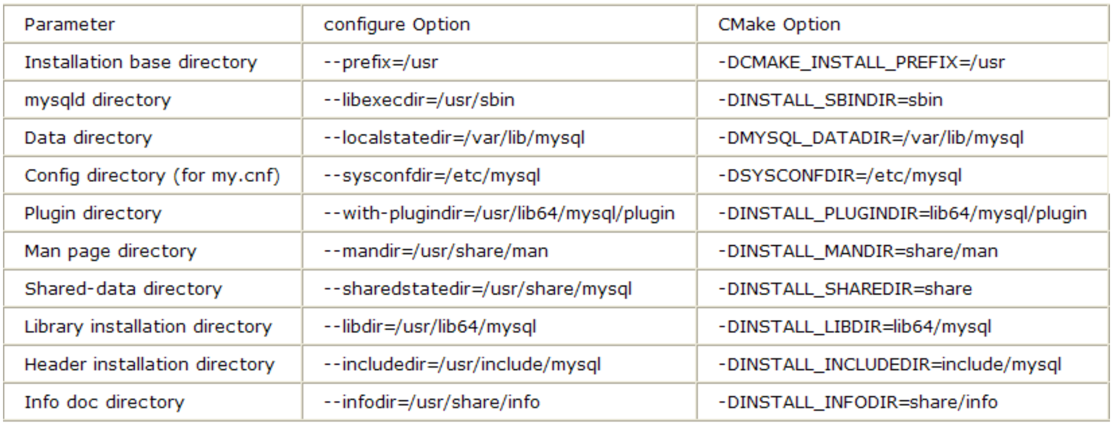


configure Command	CMake Command
./configure	cmake .
./configure --help	cmake . -LH or ccmake .

1.2 重新编译时，需要清除旧的对象文件和缓存信息

```
# make clean
# rm -f   CMakeCache.txt
```

1.3 安装选项



Parameter	configure Option	CMake Option
Installation base directory	--prefix=/usr	-DCMAKE_INSTALL_PREFIX=/usr
mysqld directory	--libexecdir=/usr/sbin	-DINSTALL_SBINDIR=sbin
Data directory	--localstatedir=/var/lib/mysql	-DMYSQL_DATADIR=/var/lib/mysql
Config directory (for my.cnf)	--sysconfdir=/etc/mysql	-DSYSCONFDIR=/etc/mysql
Plugin directory	--with-plugindir=/usr/lib64/mysql/plugin	-DINSTALL_PLUGINDIR=lib64/mysql/plugin
Man page directory	--mandir=/usr/share/man	-DINSTALL_MANDIR=share/man
Shared-data directory	--sharedstatedir=/usr/share/mysql	-DINSTALL_SHAREDIR=share
Library installation directory	--libdir=/usr/lib64/mysql	-DINSTALL_LIBDIR=lib64/mysql
Header installation directory	--includedir=/usr/include/mysql	-DINSTALL_INCLUDEDIR=include/mysql
Info doc directory	--infodir=/usr/share/info	-DINSTALL_INFODIR=share/info

CMAKE_INSTALL_PREFIX 值是安装的基本目录,其他 cmake 选项值是不包括前缀，是相对路径名，绝对路径包括 CMAKE_INSTALL_PREFIX 路径。如-DINSTALL_SBINDIR=sbin 的绝对路径是/usr/local/mysql/sbin

1.4 存储引擎选项

mysql 存储引擎是插件式的，因此插件控制选项可以指定那个存储引擎安装。

configure 编译插件选项--with-plugins=csv,myisam,myisammrg,heap,innobase,archive,blackhole 在 cmake 中没有直接对应的相同选项。对于 csv,myisam,myisammrg,heap 在 cmake 中是不需要明确指定存储引擎的名称，因为它们是强制性安装。

可以使用以下选择来安装 innodb,archive,blackhole 存储引擎

-DWITH_INNOBASE_STORAGE_ENGINE=1

-DWITH_ARCHIVE_STORAGE_ENGINE=1

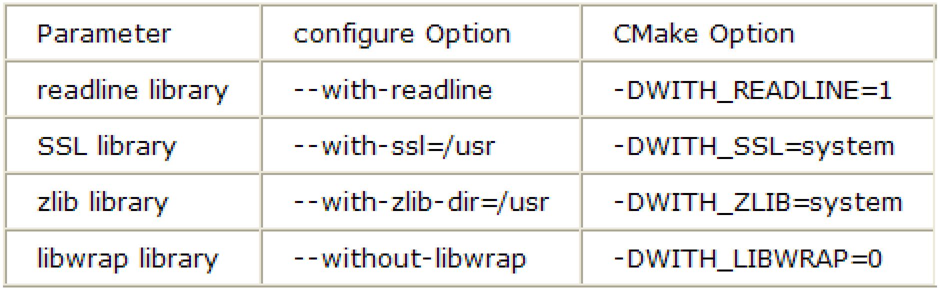
-DWITH_BLACKHOLE_STORAGE_ENGINE=1

（1 可以使用 on 代替）

如果既不是-DWITH_<ENGINE>_STORAGE_ENGINE 也不是-DWITHOUT_<ENGINE>_STORAGE_ENGINE 来指定存储引擎，该存储引擎将安装成共享模块式的。如果不是共享模块式的将排除在外。共享模块安装时必须使用 INSTALL PLUGIN 语句或--plugin-load 才可以使用。

有关插件的 CMake 的选项的其他信息，请查阅： http://forge.mysql.com/wiki/MySQL_Internals_Support_for_Plug-Ins

1.5 lib 库选项



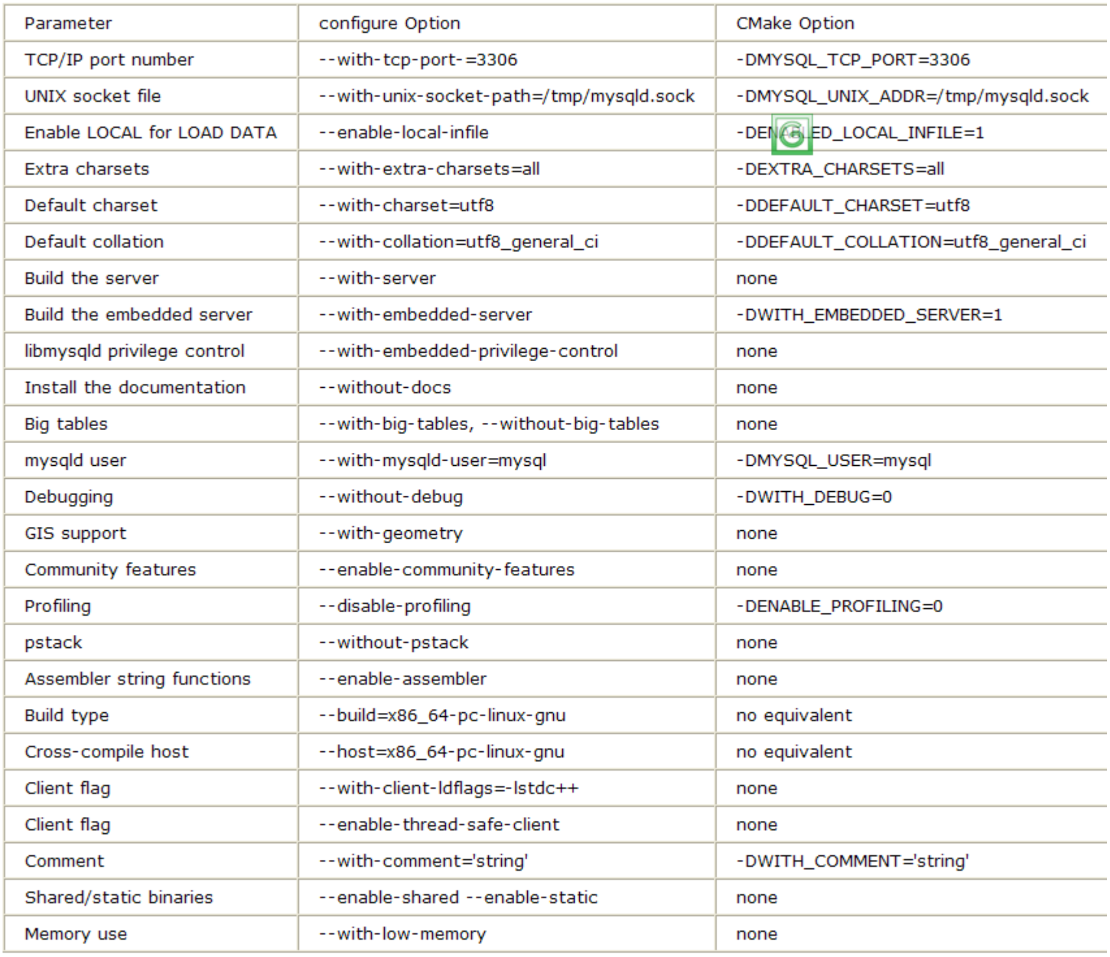
Parameter	configure Option	CMake Option
readline library	--with-readline	-DWITH_READLINE=1
SSL library	--with-ssl=/usr	-DWITH_SSL=system
zlib library	--with-zlib-dir=/usr	-DWITH_ZLIB=system
libwrap library	--without-libwrap	-DWITH_LIBWRAP=0

1.6 其他选项

之前 MySQL 的编译选项大多数都支持。新旧版本之间的安装选项映射成大写字母，删除选项前面破折号，中间字符间的破折号替换成下划线。如：

--with-debug => WITH_DEBUG=1

--with-embedded-server => WITH_EMBEDDED_SERVER



Parameter	configure Option	CMake Option
TCP/IP port number	--with-tcp-port-=3306	-DMYSQL_TCP_PORT=3306
UNIX socket file	--with-unix-socket-path=/tmp/mysqld.sock	-DMYSQL_UNIX_ADDR=/tmp/mysqld.sock
Enable LOCAL for LOAD DATA	--enable-local-infile	-DENABLED_LOCAL_INFILE=1
Extra charsets	--with-extra-charsets=all	-DEXTRA_CHARSETS=all
Default charset	--with-charset=utf8	-DDEFAULT_CHARSET=utf8
Default collation	--with-collation=utf8_general_ci	-DDEFAULT_COLLATION=utf8_general_ci
Build the server	--with-server	none
Build the embedded server	--with-embedded-server	-DWITH_EMBEDDED_SERVER=1
libmysqld privilege control	--with-embedded-privilege-control	none
Install the documentation	--without-docs	none
Big tables	--with-big-tables, --without-big-tables	none
mysqld user	--with-mysqld-user=mysql	-DMYSQL_USER=mysql
Debugging	--without-debug	-DWITH_DEBUG=0
GIS support	--with-geometry	none
Community features	--enable-community-features	none
Profiling	--disable-profiling	-DENABLE_PROFILING=0
pstack	--without-pstack	none
Assembler string functions	--enable-assembler	none
Build type	--build=x86_64-pc-linux-gnu	no equivalent
Cross-compile host	--host=x86_64-pc-linux-gnu	no equivalent
Client flag	--with-client-ldflags=-lstdc++	none
Client flag	--enable-thread-safe-client	none
Comment	--with-comment='string'	-DWITH_COMMENT='string'
Shared/static binaries	--enable-shared --enable-static	none
Memory use	--with-low-memory	none

1.7 调试配置过程

使用 configure 编译完将生成 config.log 和 config.status 文件。

使用 cmake 编译完在 CMakeFiles 目录下生成 CMakeError.log 和 CMakeOutput.log 文件。

1.8 第三方接口工具

在之前的版本，第三方工具从 MySQL 顶层源目录中读取源 configure.in 文件来确定 mysql 版本。如：对 5.5.7 - RC 版本的 AC_INIT 线看起来像这样：

```
AC_INIT([MySQL Server], [5.5.7-rc], [], [mysql])
```

现在的版本可以直接读取版本文件。如：如果版本是 5.5.8，文件看起来像这样的：

```
MYSQL_VERSION_MAJOR=5

MYSQL_VERSION_MINOR=5

MYSQL_VERSION_PATCH=8

MYSQL_VERSION_EXTRA=rc
```

如果源码包不是 GA 版，MYSQL_VERSION_EXTRA 的值将非空。如：对于一个发布 RC 版本是这样的： MYSQL_VERSION_EXTRA=rc

构建 5 位数字的版本号，使用下面公式：

```
MYSQL_VERSION_MAJOR*10000 + MYSQL_VERSION_MINOR*100 + MYSQL_VERSION_PATCH
```

2 验证安装依赖

通过 rpm –qa | grep name 的方式验证以下软件包是否已全部安装。

gcc* gcc-c++* autoconf* automake* zlib* libxml* ncurses-devel* libmcrypt* libtool*

通过 yum 安装示例

例:yum install gcc gcc-c++

例:yum install ncurses-devel

如果缺少相关的软件包，可通过 yum –y install 的方式在线安装，或直接从系统安装光盘中找到并通过 rpm –ivh 的方式安装。

3 安装前的系统设置

建立 mysql 安装目录及数据存放目录

```
# mkdir /usr/mysql5.5

# mkdir /usr/mysql5.5/data
```

创建用户和用户组

```
# groupadd mysql

# useradd -gmysql mysql
```

赋予数据存放目录权限

```
# chown mysql:mysql -R /opt/mysql5.5/data
```

4 正式开始安装(从 configure 更换为 cmake)

我相信大多数人都已经习惯了之前的 configure 方式，并且所使用的参数也是比较个性化的，换成 cmake 之后，这一方面会带来不少的麻烦。

还好，MySQL 的官方网站提供了二者的参数对照表，我们可以尽可能的保留之前的参数，来编译配置新的 MySQL 版本。

configure 与 cmake 参数对照指南：
http://forge.mysql.com/wiki/Autotools_to_CMake_Transition_Guide

以我自己为例，之前我一直使用的参数为：

```
./configure --prefix=/opt/mysql/ \
--sysconfdir=/opt/mysql/etc \
--localstatedir=/opt/mysql/data \
--with-tcp-port=3306 \
--with-unix-socket-path=/tmp/mysqld.sock \
--with-mysqld-user=mysql \
--enable-assembler \
--with-extra-charsets=all \
--enable-thread-safe-client \
--with-big-tables \
--with-readline \
--with-ssl \
--with-embedded-server \
--enable-local-infile \
--with-plugins=partition,innobase,myisammrg
```

经过与 cmake 的参数对照之后，去除掉已经被取消的参数（大多数是因为新版本已经默认启用），cmake 的参数配置如下：

```
cmake -DCMAKE_INSTALL_PREFIX=/opt/mysql \

-DSYSCONFDIR=/opt/mysql/etc \

-DMYSQL_DATADIR=/opt/mysql/data \
-DMYSQL_TCP_PORT=3306 \

-DMYSQL_UNIX_ADDR=/tmp/mysqld.sock \

-DMYSQL_USER=mysql \

-DEXTRA_CHARSETS=all \

-DWITH_READLINE=1 \

-DWITH_SSL=system \

-DWITH_EMBEDDED_SERVER=1 \

-DENABLED_LOCAL_INFILE=1 \

-DWITH_INNOBASE_STORAGE_ENGINE=1 \

-DWITHOUT_PARTITION_STORAGE_ENGINE=1
```

不带换行符的(只有一行)

4.1 参数： -DWITHOUT_PARTITION_STORAGE_ENGINE=1

在 64 位机器上编译不过，会出现如下错误:(64 位机器的浮点数运算上出错,导致找不着相应的函数)

```
libsql.a(handler.cc.o): In function `get_ha_partition(partition_info*)’:

/data/mysql-5.5.14/sql/handler.cc:269: undefined reference to `ha_partition::ha_partition(handlerton*, partition_info*)’

/data/mysql-5.5.14/sql/handler.cc:271: undefined reference to `ha_partition::initialize_partition(st_mem_root*)’

libsql.a(sql_partition_admin.cc.o): In function `Alter_table_truncate_partition_statement::execute(THD*)’:

/data/mysql-5.5.14/sql/sql_partition_admin.cc:165: undefined reference to `ha_partition::truncate_partition(Alter_info*, bool*)’

collect2: ld returned 1 exit status

make[2]: *** [sql/mysqld] Error 1

make[1]: *** [sql/CMakeFiles/mysqld.dir/all] Error 2

make: *** [all] Error 2
```

4.2 参数: -DWITH_SSL=bundled

自 mysql5.6.*及以后的版本都要默认带上此参数，否则编译不过 ,相关贴子:

https://github.com/santisaez/powerstack/issues/49

Use bundled SSL on CentOS-5

4.3 安装执行

```
# tar xvf mysql-5.5.10.tar.gz

# cd mysql-5.5.10

# cmake -DCMAKE_INSTALL_PREFIX=/usr/local/mysql5.5
-DSYSCONFDIR=/usr/local/mysql5.5/etc -DMYSQL_DATADIR=/usr/local/mysql5.5/data
-DMYSQL_TCP_PORT=3306 -DMYSQL_UNIX_ADDR=/usr/local/mysql5.5/mysqld.sock
-DMYSQL_USER=mysql -DDEFAULT_CHARSET=utf8 -DDEFAULT_COLLATION=utf8_general_ci
-DEXTRA_CHARSETS=all -DWITH_READLINE=1 -DWITH_SSL=system
-DWITH_EMBEDDED_SERVER=1 -DENABLED_LOCAL_INFILE=1
-DWITH_INNOBASE_STORAGE_ENGINE=1 -DWITH_SSL=bundled

#make

#make install
```

5 设置

```
#cd support-files/
```

拷贝配置文件:

```
#cp my-default.cnf /etc/my.cnf
```

设置开机自动启动

```
#cp mysql.server /etc/rc.d/init.d/mysqld
```

5.1 初始化数据库

```
#/usr/local/mysql5.5/scripts/mysql_install_db --defaults-file=/etc/my.cnf
--basedir=/usr/local/mysql5.5 --datadir=/usr/local/mysql5.5data --user=mysql
```

5.2 设置

#vi /etc/init.d/mysqld（编辑此文件，查找并修改以下变量内容：）

```
basedir=/usr/local/mysql5.5
datadir=/var/mysql5.5/data
```

加入启动项：

```
#chkconfig --add mysqld
#chkconfig --level 345 mysqld on
```

5.3 启动服务

```
#service mysqld start
```

如果文件夹：/usr/local/mysql5.5 是只读的，会报错:

```
…
…
2013-04-08 11:12:45 7886 [Note] IPv6 is not available.
2013-04-08 11:12:45 7886 [Note]     - '0.0.0.0' resolves to '0.0.0.0';
2013-04-08 11:12:45 7886 [Note] Server socket created on IP: '0.0.0.0'.
2013-04-08 11:12:45 7886 [ERROR] Can't start server : Bind on unix socket: Permission denied
2013-04-08 11:12:45 7886 [ERROR] Do you already have another mysqld server running on socket: /usr/local/mysql5.5/mysqld.sock ?
2013-04-08 11:12:45 7886 [ERROR] Aborting
…
2013-04-08 11:12:45 7886 [Note] InnoDB: Starting shutdown...
2013-04-08 11:12:47 7886 [Note] InnoDB: Shutdown completed; log sequence number 1626077
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'BLACKHOLE'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'PERFORMANCE_SCHEMA'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'ARCHIVE'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'CSV'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'MRG_MYISAM'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'MyISAM'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'MEMORY'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'sha256_password'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'mysql_old_password'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'mysql_native_password'
2013-04-08 11:12:47 7886 [Note] Shutting down plugin 'binlog'
2013-04-08 11:12:47 7886 [Note] /usr/local/mysql5.5/bin/mysqld: Shutdown complete

130408 11:12:47 mysqld_safe mysqld from pid file /usr/local/mysql5.5/data/zskw2.pid ended
```

解决办法：将/usr/local/mysql5.5 设为读写即可

…

5.4 设置密码

```
#/usr/local/mysql/bin/mysqladmin password [new-password]
```

6 数据库初始化

如果想让数据库可远程访问,必须在库中 mysql 下的 user 里存在如下用户

Host	user	password
%	root	xxx

7 附录

7.1 参考网址

http://www.centos.bz/2011/09/linux-compile-install-mysql-5-5-15-from-source/
http://blog.csdn.net/sunjingzhi/article/details/6671668
https://github.com/santisaez/powerstack/issues/49
http://heylinux.com/archives/993.html
http://www.mysqlops.com/2011/03/06/mysql_compile_reference.html
http://who0168.blog.51cto.com/253401/469898

7.2 所用 my.cnf

```
# Example MySQL config file for large systems.
#
# This is for a large system with memory = 512M where the system runs mainly
# MySQL.
#
# MySQL programs look for option files in a set of
# locations which depend on the deployment platform.
# You can copy this option file to one of those
# locations. For information about these locations, see:
# http://dev.mysql.com/doc/mysql/en/option-files.html
#
# In this file, you can use all long options that a program supports.
# If you want to know which options a program supports, run the program
# with the "--help" option.

# The following options will be passed to all MySQL clients
[client]
#password       = your_password
port            = 3306
#socket         = /var/lib/mysql/mysql.sock
socket          = /usr/local/mysql5.5/mysqld.sock
#character-set-server = utf8
# Here follows entries for some specific programs
# The MySQL server
[mysqld]
port		= 3306
#socket		= /var/lib/mysql/mysql.sock
socket		= /usr/local/mysql5.5/mysqld.sock
user=mysql

skip-external-locking
key_buffer_size = 256M
max_allowed_packet = 1M
table_open_cache = 256
sort_buffer_size = 1M
read_buffer_size = 1M
read_rnd_buffer_size = 4M
myisam_sort_buffer_size = 64M
thread_cache_size = 8
query_cache_size= 16M
# Try number of CPU's*2 for thread_concurrency
thread_concurrency = 8
#character-set-server = utf8
max_connections = 1000
# Don't listen on a TCP/IP port at all. This can be a security enhancement,
# if all processes that need to connect to mysqld run on the same host.
# All interaction with mysqld must be made via Unix sockets or named pipes.
# Note that using this option without enabling named pipes on Windows
# (via the "enable-named-pipe" option) will render mysqld useless!
#
#skip-networking

# Replication Master Server (default)
# binary logging is required for replication
log-bin=mysql-bin

# binary logging format - mixed recommended
binlog_format=mixed

# required unique id between 1 and 2^32 - 1
# defaults to 1 if master-host is not set
# but will not function as a master if omitted
server-id = 1



# Replication Slave (comment out master section to use this)
#
# To configure this host as a replication slave, you can choose between
# two methods :
#
# 1) Use the CHANGE MASTER TO command (fully described in our manual) -
#       the syntax is:
#
#       CHANGE MASTER TO MASTER_HOST=<host>, MASTER_PORT=<port>,
#       MASTER_USER=<user>, MASTER_PASSWORD=<password> ;
#
#       where you replace <host>, <user>, <password> by quoted strings and
#       <port> by the master's port number (3306 by default).
#
#       Example:
#
#       CHANGE MASTER TO MASTER_HOST='125.564.12.1', MASTER_PORT=3306,
#       MASTER_USER='joe', MASTER_PASSWORD='secret';
#
# OR
#
# 2) Set the variables below. However, in case you choose this method, then
#       start replication for the first time (even unsuccessfully, for example
#       if you mistyped the password in master-password and the slave fails to
#       connect), the slave will create a master.info file, and any later
#       change in this file to the variables' values below will be ignored and
#       overridden by the content of the master.info file, unless you shutdown
#       the slave server, delete master.info and restart the slaver server.
#       For that reason, you may want to leave the lines below untouched
#       (commented) and instead use CHANGE MASTER TO (see above)
#
# required unique id between 2 and 2^32 - 1
# (and different from the master)
# defaults to 2 if master-host is set
# but will not function as a slave if omitted
#server-id       = 2
#
# The replication master for this slave - required
#master-host     =   <hostname>
#
# The username the slave will use for authentication when connecting
# to the master - required
#master-user     =   <username>
#
# The password the slave will authenticate with when connecting to
# the master - required
#master-password =   <password>
#
# The port the master is listening on.
# optional - defaults to 3306
#master-port     =  <port>
#
# binary logging - not required for slaves, but recommended
#log-bin=mysql-bin
```

```
# Uncomment the following if you are using InnoDB tables
#innodb_data_home_dir = /var/lib/mysql
#innodb_data_file_path = ibdata1:10M:autoextend
#innodb_log_group_home_dir = /var/lib/mysql
# You can set .._buffer_pool_size up to 50 - 80 %
# of RAM but beware of setting memory usage too high
#innodb_buffer_pool_size = 256M
#innodb_additional_mem_pool_size = 20M
# Set .._log_file_size to 25 % of buffer pool size
#innodb_log_file_size = 64M
#innodb_log_buffer_size = 8M
#innodb_flush_log_at_trx_commit = 1
#innodb_lock_wait_timeout = 50

[mysqldump]
quick
max_allowed_packet = 16M

[mysql]
no-auto-rehash
# Remove the next comment character if you are not familiar with SQL
#safe-updates

[myisamchk]
key_buffer_size = 128M
sort_buffer_size = 128M
read_buffer = 2M
write_buffer = 2M

[mysqlhotcopy]
interactive-timeout
```