

在 mastera 上已经配置好数据库

```
mysql> show databases;
+-----+
| Database          |
+-----+
| information_schema |
| db01              |
| db02              |
| mysql             |
| performance_schema |
| sys               |
+-----+
6 rows in set (0.13 sec)
```

首先做数据库全库导出

```
mysqldump -A -uroot -p'Gmcc#123' > /tmp/mysql.all.sql
```

每个 mysql 都启动起来：

```
systemctl start mysqld
```

将导出文件导入

```
for i in 130 131 132 ;do scp /tmp/mysql.all.sql root@192.168.45.$i:/tmp; done
for i in 130 131 132 ;do ssh root@192.168.45.$i "mysql -uroot -p'Gmcc#123' < /tmp/mysql.all.sql"; done
```

修改配置文件：

```
[root@mastera ~]# cat /etc/my.cnf
```

```
[mysqld]
```

```
# innodb_buffer_pool_size = 128M
character_set_server=utf8
init_connect='SET NAMES utf8'
gtid_mode = ON
enforce_gtid_consistency = 1
```

These are commonly set, remove the # and set as required.

```
basedir = /opt/mysql
datadir = /opt/mysql/mysqldata
```

```
port = 3306
server_id = 1
socket = /var/lib/mysql/mysql.sock

log-bin=/opt/mysql/master-binlog
log-bin-index=/opt/mysql/mysql-binlog
sql_mode=NO_ENGINE_SUBSTITUTION,STRICT_TRANS_TABLES
[client]
default-character-set=utf8
```

```
[root@masterb ~]# vi /etc/my.cnf
[mysqld]
```

```
# innodb_buffer_pool_size = 128M
character_set_server=utf8
init_connect='SET NAMES utf8'
gtid_mode = ON
enforce_gtid_consistency = 1
```

```
basedir = /opt/mysql
datadir = /opt/mysql/mysqldata
port = 3306
server_id = 2
socket = /var/lib/mysql/mysql.sock
```

```
log-bin=/opt/mysql/slave-binlog
log-bin-index=/opt/mysql/mysql-binlog
sql_mode=NO_ENGINE_SUBSTITUTION,STRICT_TRANS_TABLES
[client]
default-character-set=utf8
```

```
[root@slavea ~]# vi /etc/my.cnf
[mysqld]
```

```
character_set_server=utf8
init_connect='SET NAMES utf8'
```

```
gtid_mode = ON
enforce_gtid_consistency = 1
```

These are commonly set, remove the # and set as required.

```
basedir = /opt/mysql
datadir = /opt/mysql/mysqldata
port = 3306
server_id = 3
master-info-repository=TABLE
relay-log-info-repository=TABLE
```

```
socket = /var/lib/mysql/mysql.sock
log-bin=/opt/mysql/master-binlog
log-bin-index=/opt/mysql/mysql-binlog
sql_mode=NO_ENGINE_SUBSTITUTION,STRICT_TRANS_TABLES
[client]
default-character-set=utf8
```

重启 mysql 服务：

```
for i in 130 131 132 ;do ssh root@192.168.45.$i "systemctl restart mysqld";done
```

mastera 上操作

```
mysql -uroot -pGmcc#123
grant replication slave on *.* to slave@192.168.45.130 identified by 'Gmcc#123';
grant replication slave on *.* to slave@192.168.45.131 identified by 'Gmcc#123';
grant replication slave on *.* to slave@192.168.45.132 identified by 'Gmcc#123';
grant replication slave on *.* to slave@192.168.45.129 identified by 'Gmcc#123';
```

在 masterb 上面 change master:

```
mysql> change master to
master_host="192.168.45.129",master_user="slave",master_password="Gmcc#123",master_auto_position=1;
mysql> start slave;
mysql> show slave status\G;
```

```
***** 1. row *****
```

```
Slave_IO_State: Waiting for master to send event
```

Master_Host: 192.168.45.129
Master_User: slave
Master_Port: 3306
Connect_Retry: 60
Master_Log_File: master-binlog.000003
Read_Master_Log_Pos: 1342
Relay_Log_File: masterb-relay-bin.000002
Relay_Log_Pos: 1563
Relay_Master_Log_File: master-binlog.000003
Slave_IO_Running: Yes
Slave_SQL_Running: Yes
Replicate_Do_DB:
Replicate_Ignore_DB:
Replicate_Do_Table:
Replicate_Ignore_Table:
Replicate_Wild_Do_Table:
Replicate_Wild_Ignore_Table:
Last_Errno: 0
Last_Error:
Skip_Counter: 0
Exec_Master_Log_Pos: 1342
Relay_Log_Space: 1772
Until_Condition: None
Until_Log_File:
Until_Log_Pos: 0
Master_SSL_Allowed: No
Master_SSL_CA_File:
Master_SSL_CA_Path:
Master_SSL_Cert:
Master_SSL_Cipher:
Master_SSL_Key:
Seconds_Behind_Master: 0
Master_SSL_Verify_Server_Cert: No
Last_IO_Errno: 0
Last_IO_Error:
Last_SQL_Errno: 0
Last_SQL_Error:
Replicate_Ignore_Server_Ids:
Master_Server_Id: 1

```
Master_UUID: ebc5dafa-6fbd-11e7-ab6a-000c295e46a3
Master_Info_File: /opt/mysql/mysqlldata/master.info
SQL_Delay: 0
SQL_Remaining_Delay: NULL
Slave_SQL_Running_State: Slave has read all relay log; waiting for more updates
Master_Retry_Count: 86400
Master_Bind:
Last_IO_Error_Timestamp:
Last_SQL_Error_Timestamp:
Master_SSL_Crl:
Master_SSL_Crlpath:
Retrieved_Gtid_Set: ebc5dafa-6fbd-11e7-ab6a-000c295e46a3:1-4
Executed_Gtid_Set: ebc5dafa-6fbd-11e7-ab6a-000c295e46a3:1-4
Auto_Position: 1
Replicate_Rewrite_DB:
Channel_Name:
Master_TLS_Version:
1 row in set (0.00 sec)
```

```
ERROR:
No query specified
```

```
-----
#在 master 上面 change master :
change                                     master                               to
master_host="192.168.45.130",master_user="slave",master_password="Gmcc#123",master_auto_position=1;
mysql> start slave;
Query OK, 0 rows affected (0.01 sec)
```

```
mysql> show slave status \G;
***** 1. row *****
Slave_IO_State: Waiting for master to send event
Master_Host: 192.168.45.130
Master_User: slave
Master_Port: 3306
Connect_Retry: 60
Master_Log_File: slave-binlog.000005
Read_Master_Log_Pos: 154
Relay_Log_File: mastera-relay-bin.000002
Relay_Log_Pos: 373
```

Relay_Master_Log_File: slave-binlog.000005
Slave_IO_Running: Yes
Slave_SQL_Running: Yes
Replicate_Do_DB:
Replicate_Ignore_DB:
Replicate_Do_Table:
Replicate_Ignore_Table:
Replicate_Wild_Do_Table:
Replicate_Wild_Ignore_Table:
Last_Errno: 0
Last_Error:
Skip_Counter: 0
Exec_Master_Log_Pos: 154
Relay_Log_Space: 582
Until_Condition: None
Until_Log_File:
Until_Log_Pos: 0
Master_SSL_Allowed: No
Master_SSL_CA_File:
Master_SSL_CA_Path:
Master_SSL_Cert:
Master_SSL_Cipher:
Master_SSL_Key:
Seconds_Behind_Master: 0
Master_SSL_Verify_Server_Cert: No
Last_IO_Errno: 0
Last_IO_Error:
Last_SQL_Errno: 0
Last_SQL_Error:
Replicate_Ignore_Server_Ids:
Master_Server_Id: 2
Master_UUID: 54515095-7861-11e7-863d-000c29c67787
Master_Info_File: /opt/mysql/mysqldata/master.info
SQL_Delay: 0
SQL_Remaining_Delay: NULL
Slave_SQL_Running_State: Slave has read all relay log; waiting for more updates
Master_Retry_Count: 86400
Master_Bind:
Last_IO_Error_Timestamp:

```
Last_SQL_Error_Timestamp:
      Master_SSL_Crl:
      Master_SSL_Crlpath:
      Retrieved_Gtid_Set:
      Executed_Gtid_Set: ebc5dafa-6fbd-11e7-ab6a-000c295e46a3:1-4
      Auto_Position: 1
      Replicate_Rewrite_DB:
      Channel_Name:
      Master_TLS_Version:
1 row in set (0.00 sec)
```

ERROR:
No query specified

mysql>

----- 测试 -----

在 a 插入数据

```
mysql> insert into db01.t1 set id=16;
Query OK, 1 row affected (0.01 sec)
```

在 masterb 上查询

```
mysql> select * from db01.t1;
```

```
+-----+-----+
| id    | name  |
+-----+-----+
| 10    | zhang |
| 3     | NULL  |
| 4     | NULL  |
| 5     | NULL  |
| 6     | NULL  |
| 7     | NULL  |
| 8     | NULL  |
| 9     | NULL  |
| 11    | NULL  |
| 12    | NULL  |
| 13    | NULL  |
| 14    | NULL  |
| 15    | NULL  |
```

```
| 16 | NULL |
+-----+-----+
14 rows in set (0.00 sec)
```

在 slavea 上操作

```
change master to
master_host="192.168.45.129",master_user="slave",master_password="Gmcc#123",master_log_file='master-
binlog.000003',master_log_pos=2011 for channel 'mastera';
change master to
master_host="192.168.45.130",master_user="slave",master_password="Gmcc#123",master_log_file='slave-
binlog.000005',master_log_pos=306 for channel 'masterb';
```

mysql> show slave status \G;

```
***** 1. row *****
Slave_IO_State:
  Master_Host: 192.168.45.129
  Master_User: slave
  Master_Port: 3306
  Connect_Retry: 60
  Master_Log_File: master-binlog.000003
  Read_Master_Log_Pos: 2011
  Relay_Log_File: slavea-relay-bin-mastera.000001
  Relay_Log_Pos: 4
  Relay_Master_Log_File: master-binlog.000003
  Slave_IO_Running: No
  Slave_SQL_Running: Yes
  Replicate_Do_DB:
  Replicate_Ignore_DB:
  Replicate_Do_Table:
  Replicate_Ignore_Table:
  Replicate_Wild_Do_Table:
  Replicate_Wild_Ignore_Table:
  Last_Errno: 0
  Last_Error:
  Skip_Counter: 0
  Exec_Master_Log_Pos: 2011
  Relay_Log_Space: 154
  Until_Condition: None
```



```

        Until_Log_File:
        Until_Log_Pos: 0
Master_SSL_Allowed: No
Master_SSL_CA_File:
Master_SSL_CA_Path:
Master_SSL_Cert:
Master_SSL_Cipher:
Master_SSL_Key:
Seconds_Behind_Master: NULL
Master_SSL_Verify_Server_Cert: No
        Last_IO_Errno: 1593
        Last_IO_Error: Fatal error: The slave I/O thread stops because master and slave have equal MySQL
server UUIDs; theseUUIDs must be different for replication to work.
        Last_SQL_Errno: 0
        Last_SQL_Error:
Replicate_Ignore_Server_Ids:
        Master_Server_Id: 1
        Master_UUID:
        Master_Info_File: mysql.slave_master_info
        SQL_Delay: 0
        SQL_Remaining_Delay: NULL
Slave_SQL_Running_State: Slave has read all relay log; waiting for more updates
        Master_Retry_Count: 86400
        Master_Bind:
Last_IO_Error_Timestamp: 170809 16:29:58
Last_SQL_Error_Timestamp:
        Master_SSL_Crl:
        Master_SSL_Crlpath:
Retrieved_Gtid_Set:
Executed_Gtid_Set:
        Auto_Position: 0
Replicate_Rewrite_DB:
        Channel_Name: mastera
Master_TLS_Version:
***** 2. row *****
        Slave_IO_State: Waiting for master to send event
        Master_Host: 192.168.45.130
        Master_User: slave
        Master_Port: 3306

```

Connect_Retry: 60
Master_Log_File: slave-binlog.000005
Read_Master_Log_Pos: 306
Relay_Log_File: slavea-relay-bin-masterb.000002
Relay_Log_Pos: 323
Relay_Master_Log_File: slave-binlog.000005
Slave_IO_Running: Yes
Slave_SQL_Running: Yes
Replicate_Do_DB:
Replicate_Ignore_DB:
Replicate_Do_Table:
Replicate_Ignore_Table:
Replicate_Wild_Do_Table:
Replicate_Wild_Ignore_Table:
Last_Errno: 0
Last_Error:
Skip_Counter: 0
Exec_Master_Log_Pos: 306
Relay_Log_Space: 539
Until_Condition: None
Until_Log_File:
Until_Log_Pos: 0
Master_SSL_Allowed: No
Master_SSL_CA_File:
Master_SSL_CA_Path:
Master_SSL_Cert:
Master_SSL_Cipher:
Master_SSL_Key:
Seconds_Behind_Master: 0
Master_SSL_Verify_Server_Cert: No
Last_IO_Errno: 0
Last_IO_Error:
Last_SQL_Errno: 0
Last_SQL_Error:
Replicate_Ignore_Server_Ids:
Master_Server_Id: 2
Master_UUID: 54515095-7861-11e7-863d-000c29c67787
Master_Info_File: mysql.slave_master_info
SQL_Delay: 0

```

SQL_Remaining_Delay: NULL
Slave_SQL_Running_State: Slave has read all relay log; waiting for more updates
Master_Retry_Count: 86400
Master_Bind:
Last_IO_Error_Timestamp:
Last_SQL_Error_Timestamp:
Master_SSL_Crl:
Master_SSL_Crlpath:
Retrieved_Gtid_Set:
Executed_Gtid_Set:
Auto_Position: 0
Replicate_Rewrite_DB:
Channel_Name: masterb
Master_TLS_Version:
2 rows in set (0.01 sec)

```

其中 chanela 有报错：

Last_IO_Errno: 1593

Last_IO_Error: Fatal error: The slave I/O thread stops because master and slave have equal MySQL server UUIDs; theseUUIDs must be different for replication to work

```

mysql> select uuid();
+-----+
| uuid() |
+-----+
| 0be56c48-7cdd-11e7-92e1-000c290d28e4 |
+-----+
1 row in set (0.00 sec)

```

/opt/mysql/mysqldata/auto.cnf 的 uuid 修改和查询出来的 uuid 一致，

stop slave;

systemctl restart mysqld

start slave;

问题解决

在 slaveb 上操作

```

change master to
master_host="192.168.45.129",master_user="slave",master_password="Gmcc#123",master_log_file='master-

```

```
binlog.000003',master_log_pos=2011 for channel 'mastera';
change                                     master
master_host="192.168.45.130",master_user="slave",master_password="Gmcc#123",master_log_file='slave-
binlog.000005',master_log_pos=306 for channel 'masterb';
```

to

```
mysql> start slave;
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> show slave status\G;
```

```
***** 1. row *****
Slave_IO_State:
  Master_Host: 192.168.45.129
  Master_User: slave
  Master_Port: 3306
  Connect_Retry: 60
  Master_Log_File: master-binlog.000003
  Read_Master_Log_Pos: 2011
  Relay_Log_File: slaveb-relay-bin-mastera.000001
  Relay_Log_Pos: 4
  Relay_Master_Log_File: master-binlog.000003
  Slave_IO_Running: No
  Slave_SQL_Running: Yes
  Replicate_Do_DB:
  Replicate_Ignore_DB:
  Replicate_Do_Table:
  Replicate_Ignore_Table:
  Replicate_Wild_Do_Table:
  Replicate_Wild_Ignore_Table:
  Last_Errno: 0
  Last_Error:
  Skip_Counter: 0
  Exec_Master_Log_Pos: 2011
  Relay_Log_Space: 154
  Until_Condition: None
  Until_Log_File:
  Until_Log_Pos: 0
  Master_SSL_Allowed: No
  Master_SSL_CA_File:
  Master_SSL_CA_Path:
```

```

    Master_SSL_Cert:
    Master_SSL_Cipher:
    Master_SSL_Key:
    Seconds_Behind_Master: NULL
Master_SSL_Verify_Server_Cert: No
    Last_IO_Errno: 1593
    Last_IO_Error: Fatal error: The slave I/O thread stops because master and slave have equal MySQL
server UUIDs; theseUUIDs must be different for replication to work.
    Last_SQL_Errno: 0
    Last_SQL_Error:
Replicate_Ignore_Server_Ids:
    Master_Server_Id: 1
    Master_UUID:
    Master_Info_File: mysql.slave_master_info
    SQL_Delay: 0
    SQL_Remaining_Delay: NULL
    Slave_SQL_Running_State: Slave has read all relay log; waiting for more updates
    Master_Retry_Count: 86400
    Master_Bind:
Last_IO_Error_Timestamp: 170809 16:42:30
Last_SQL_Error_Timestamp:
    Master_SSL_Crl:
    Master_SSL_Crlpath:
    Retrieved_Gtid_Set:
    Executed_Gtid_Set:
    Auto_Position: 0
Replicate_Rewrite_DB:
    Channel_Name: mastera
    Master_TLS_Version:
***** 2. row *****
    Slave_IO_State: Waiting for master to send event
    Master_Host: 192.168.45.130
    Master_User: slave
    Master_Port: 3306
    Connect_Retry: 60
    Master_Log_File: slave-binlog.000005
    Read_Master_Log_Pos: 306
    Relay_Log_File: slaveb-relay-bin-masterb.000002
    Relay_Log_Pos: 323

```

Relay_Master_Log_File: slave-binlog.000005
Slave_IO_Running: Yes
Slave_SQL_Running: Yes
Replicate_Do_DB:
Replicate_Ignore_DB:
Replicate_Do_Table:
Replicate_Ignore_Table:
Replicate_Wild_Do_Table:
Replicate_Wild_Ignore_Table:
Last_Errno: 0
Last_Error:
Skip_Counter: 0
Exec_Master_Log_Pos: 306
Relay_Log_Space: 539
Until_Condition: None
Until_Log_File:
Until_Log_Pos: 0
Master_SSL_Allowed: No
Master_SSL_CA_File:
Master_SSL_CA_Path:
Master_SSL_Cert:
Master_SSL_Cipher:
Master_SSL_Key:
Seconds_Behind_Master: 0
Master_SSL_Verify_Server_Cert: No
Last_IO_Errno: 0
Last_IO_Error:
Last_SQL_Errno: 0
Last_SQL_Error:
Replicate_Ignore_Server_Ids:
Master_Server_Id: 2
Master_UUID: 54515095-7861-11e7-863d-000c29c67787
Master_Info_File: mysql.slave_master_info
SQL_Delay: 0
SQL_Remaining_Delay: NULL
Slave_SQL_Running_State: Slave has read all relay log; waiting for more updates
Master_Retry_Count: 86400
Master_Bind:
Last_IO_Error_Timestamp:

```
Last_SQL_Error_Timestamp:
      Master_SSL_Crl:
      Master_SSL_Crlpath:
      Retrieved_Gtid_Set:
      Executed_Gtid_Set:
      Auto_Position: 0
      Replicate_Rewrite_DB:
      Channel_Name: masterb
      Master_TLS_Version:
```

2 rows in set (0.00 sec)

ERROR:
No query specified

mysql>

----- 测试整个复制-----

在 mastera 上插入数据在其他节点都可以查到数据

```
mysql> insert into db01.t1 set id=100;
Query OK, 1 row affected (0.01 sec)
```

----- 安装 mysql.proxy -----

```
yum install gcc* lua lua-devel libevent libevent-devel glib2 glib2-devel pkgconfig mariadb-devel flex
```

```
wget ftp://mysql.cdpa.nsysu.edu.tw/Unix/Database/MySQL/Downloads/MySQL-Proxy/mysql-proxy-0.8.5.tar.gz
tar xf mysql-proxy-0.8.5.tar.gz
cd mysql-proxy-0.8.5
```

```
./configure --prefix=/usr/local/mysql-proxy
make
make install
```

```
[root@linhai bin]# cd /usr/local/mysql-proxy/
[root@linhai mysql-proxy]# ls
```

```
bin include lib libexec share
[root@linhai mysql-proxy]# cd bin
[root@linhai bin]# ls
mysql-binlog-dump  mysql-mysam-dump  mysql-proxy
```

主从节点都给 134 赋权

```
grant all on db01.* to 'mysql-proxy'@192.168.45.133 identified by 'Gmcc#123';
```

```
[root@linhai bin]# ./mysql-proxy -P 192.168.45.133:3306 -b 192.168.45.129:3306 -b 192.168.45.130:3306 -r
192.168.45.131:3306 -r 192.168.45.132:3306 &
```

```
[1] 12430
```

```
[root@linhai bin]# 2017-08-10 00:45:47: (critical) plugin proxy 0.8.5 started
```

```
[root@linhai bin]#
```

```
[root@linhai bin]# netstat -antup |grep 3306
```

```
tcp          0      0 192.168.45.133:3306  0.0.0.0:*        LISTEN      12430/./mysql-proxy
```

测试：

```
mysql -u'mysql-proxy' -p'Gmcc#123' -h192.168.45.133
```

```
[root@linhai ~]# mysql -u'mysql-proxy' -p'Gmcc#123' -h192.168.45.133
```

Welcome to the MariaDB monitor. Commands end with ; or \g.

Your MySQL connection id is 15

Server version: 5.7.14-log Source distribution

Copyright (c) 2000, 2016, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
MySQL [(none)]> show databases;
```

```
+-----+
| Database          |
+-----+
| information_schema |
| db01              |
+-----+
```

2 rows in set (0.09 sec)

```
MySQL [(none)]> select * from db01.t1;
```

```
+-----+-----+
```


id	name
10	zhang
3	NULL
4	NULL
5	NULL
6	NULL
7	NULL
8	NULL
9	NULL
11	NULL
12	NULL
13	NULL
14	NULL
15	NULL
16	NULL
100	NULL
200	NULL

16 rows in set (0.01 sec)

MySQL [(none)]> insert into db01.t1 set id=300;
Query OK, 1 row affected (0.08 sec)

MySQL [(none)]> select * from db01.t1;

id	name
10	zhang
3	NULL
4	NULL
5	NULL
6	NULL
7	NULL
8	NULL
9	NULL
11	NULL
12	NULL
13	NULL

14	NULL
15	NULL
16	NULL
100	NULL
200	NULL
300	NULL

+-----+-----+

17 rows in set (0.00 sec)

去到 slaveb 上查询记录：

[root@slaveb ~]# mysql -uroot -p

Enter password:

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 8

Server version: 5.7.14-log Source distribution

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> select * from db01.t1;

id	name
10	zhang
3	NULL
4	NULL
5	NULL
6	NULL
7	NULL
8	NULL
9	NULL
11	NULL
12	NULL
13	NULL

	14		NULL	
	100		NULL	
	200		NULL	
	300		NULL	

+-----+-----+

15 rows in set (0.00 sec)

mysql>