MGR

#####　　架构图:

######　相关版本：

```sql
-- 高可用 简易部署 读写分离 自动容灾 7*24
MySQL 8.0.28
ProxySQL 2.5.2
Keepalived 2
```

MySQL 安装略过 ..

#####　主要参数：

```sql
plugin_load_add='group_replication.so'
skip_replica_start=ON
loose-group_replication_group_name="aaaaaaaa-aaaa-aaaa-aaaa-aaaaaaaaaabc"
loose-group_replication_start_on_boot=off
loose-group_replication_member_weigth = 40 #权重
loose-group_replication_local_address="172.18.100.59:60001"
loose-group_replication_group_seeds="172.18.100.59:60001,172.18.100.59:60002,172.18.100.59:60003"
group_replication_bootstrap_group=off #引导作用
binlog_checksum=none

-- 该参数作用注册 ip node, 部署过程中 error log 会有显著提示，测试多实例 mgr 没有这个问题
group_replication_ip_allowlist="172.18.100.59,172.18.100.60.."

-- node2 node3 修改对应参数 loose-group_replication_local_address、server_id
```

```sql
-- node1 节点 引导 注册 开组复制
mysql> SET SQL_LOG_BIN=0;
```

```
ERROR 2013 (HY000): Lost connection to MySQL server during query
No connection. Trying to reconnect...
Enter password:
Connection id:    8
Current database: *** NONE ***
Query OK, 0 rows affected (5.96 sec)
mysql> CREATE USER rpl_user@'%' IDENTIFIED WITH mysql_native_password
BY '2&Ru@bbMT';
Query OK, 0 rows affected (0.05 sec)
mysql> GRANT REPLICATION SLAVE ON *.* TO rpl_user@'%';
Query OK, 0 rows affected (0.00 sec)
mysql> GRANT BACKUP_ADMIN ON *.* TO rpl_user@'%';
Query OK, 0 rows affected (0.00 sec)
mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)
mysql> SET GLOBAL group_replication_bootstrap_group=ON;
Query OK, 0 rows affected (0.00 sec)
mysql> START GROUP_REPLICATION USER='rpl_user', PASSWORD='2&Ru@bbMT';
Query OK, 0 rows affected (1.25 sec)
mysql> SET GLOBAL group_replication_bootstrap_group=OFF;
Query OK, 0 rows affected (0.00 sec)
mysql> SELECT * FROM performance_schema.replication_group_members;
+---------------------------+--------------------------------------+--
-------------+-------------+--------------+-------------+-------------
---+----------------------------+
| CHANNEL_NAME              | MEMBER_ID                            |
MEMBER_HOST       |  MEMBER_PORT  |  MEMBER_STATE  |  MEMBER_ROLE  |
MEMBER_VERSION | MEMBER_COMMUNICATION_STACK |
+---------------------------+--------------------------------------+--
-------------+-------------+--------------+-------------+-------------
---+----------------------------+
| group_replication_applier | ecdd0685-2077-11ee-b4ec-0050568a1004 |
dingjia-mysql |         4406 | ONLINE        | PRIMARY      | 8.0.28
| XCom                       |
+---------------------------+--------------------------------------+--
-------------+-------------+--------------+-------------+-------------
---+----------------------------+
1 row in set (0.00 sec)
```

```sql
-- node2 节点 启动组复制 即可，如
SET SQL_LOG_BIN=0;
CREATE USER rpl_user@'%' IDENTIFIED WITH mysql_native_password BY
```

'2&Ru@bbMT';
GRANT REPLICATION SLAVE ON *.* TO rpl_user@'%';
GRANT BACKUP_ADMIN ON *.* TO rpl_user@'%';
FLUSH PRIVILEGES;
SET SQL_LOG_BIN=1;
CHANGE REPLICATION SOURCE TO SOURCE_USER='rpl_user', SOURCE_PASSWORD='2&Ru@bbMT' FOR CHANNEL 'group_replication_recovery';
START GROUP_REPLICATION USER='rpl_user', PASSWORD='2&Ru@bbMT';
SELECT * FROM performance_schema.replication_group_members;

-- ERROR slave SQL thread aborted(MY-010584),主库 SHOW VARIABLES LIKE '%GTID%', 获取 gtid_executed slave : reset master; SET GLOBAL GTID_PURGED='SELECT @@gtid_executed'; START GROUP_REPLICATION;即可

-- 组复制
mysql> SELECT * FROM performance_schema.replication_group_members;
+---------------------------+--------------------------------------+--
-------------+-------------+--------------+-------------+-------------
---+----------------------------+
| CHANNEL_NAME | MEMBER_ID |
MEMBER_HOST | MEMBER_PORT | MEMBER_STATE | MEMBER_ROLE |
MEMBER_VERSION | MEMBER_COMMUNICATION_STACK |
+---------------------------+--------------------------------------+--
-------------+-------------+--------------+-------------+-------------
---+----------------------------+
| group_replication_applier | 37720249-207c-11ee-b7ee-0050568a1004 |
dingjia-mysql | 4407 | ONLINE | SECONDARY | 8.0.28
| XCom |
| group_replication_applier | 38954200-207f-11ee-9bc6-0050568a1004 |
dingjia-mysql | 4408 | ONLINE | SECONDARY | 8.0.28
| XCom |
| group_replication_applier | ecdd0685-2077-11ee-b4ec-0050568a1004 |
dingjia-mysql | 4406 | ONLINE | PRIMARY | 8.0.28
| XCom |
+---------------------------+--------------------------------------+--
-------------+-------------+--------------+-------------+-------------
---+----------------------------+
3 rows in set (0.00 sec)
```

##### 读写分离：

######  ProxySQL
```

```sql
-- 在主节点创建个视图：sys.gr_member_routing_candidate_status mgr 状态信息视图 获取 read 状态
-- MySQL 8.0.28
https://github.com/sysown/proxysql/issues/3406
-- 在 MGR 主节点创建监控用户用于 ProxySQL 监控数据库状态：
create user 'monitor'@'%' identified by '2&Ru@bbMT';
grant select on sys.* to 'monitor'@'%';
grant SUPER, REPLICATION CLIENT on *.* to 'monitor'@'%';
-- 在 MGR 主节点创建用户，用于 ProxySQL 访问：
create user 'proxysql'@'%' identified by '2&Ru@bbMT';
grant all PRIVILEGES on *.* to 'proxysql'@'%';
ALTER USER 'proxysql'@'%' IDENTIFIED WITH mysql_native_password BY '2&Ru@bbMT'; # ProxySQL 2 版本是不支持 MySQL8 chaing 插件、要还原到 mysql_native_password;否则会报错
flush privileges;
 -- mysql_servers 添加后端节点：
    insert into mysql_servers(hostgroup_id,hostname,port,weight,max_connections,max_replication_lag,comment) values (10,'172.18.100.59',4406,1,3000,10,'mgr_node1');
    insert into mysql_servers(hostgroup_id,hostname,port,weight,max_connections,max_replication_lag,comment) values (10,'172.18.100.59',4407,1,3000,10,'mgr_node2');
    insert into mysql_servers(hostgroup_id,hostname,port,weight,max_connections,max_replication_lag,comment) values (10,'172.18.100.59',4408,1,3000,10,'mgr_node3');
    load mysql users to runtime; #加载到 runtime
    load mysql servers to runtime;
    load mysql query rules to runtime;
    load mysql variables to runtime;
    load admin variables to runtime;
    save mysql users to disk; #保存到磁盘
    save mysql servers to disk;
    save mysql query rules to disk;
    save mysql variables to disk;
    save admin variables to disk;
    -- 加载生效;
     -- 设置监控用户账户密码：
     set mysql-monitor_username='monitor';
     set mysql-monitor_password='2&Ru@bbMT';
     -- 加载生效 ..
```

-- 设置提供访问的用户:

insert into mysql_users(username,password,active,default_hostgroup,transaction_persistent)values('proxysql','2&Ru@bbMT',1,10,1); #password 最好在 MYSQL 端进行加密、insert 加密后的密码;

-- 配置 mysql_group_replication_hostgroups 表:

insert into mysql_group_replication_hostgroups(writer_hostgroup,backup_writer_hostgroup,reader_hostgroup,offline_hostgroup,active,max_writers,writer_is_also_reader,max_transactions_behind) values(10,20,30,40,1,1,0,0);

-- 加载生效 ..

-- 设置读写分离规则:

insert into mysql_query_rules(rule_id,active,match_digest,destination_hostgroup,apply)values(1,1,'^SELECT.*FOR UPDATE$',10,1);

insert into mysql_query_rules(rule_id,active,match_digest,destination_hostgroup,apply)values(2,1,'^SELECT',30,1);

-- 加载生效 ..

-- 查看后端节点健康状态:

mysql> SELECT * FROM monitor.mysql_server_connect_log ORDER BY time_start_us DESC LIMIT 10 ; #连接相关

```
+---------------+------+------------------+-------------------------+---------------+
| hostname      | port | time_start_us    | connect_success_time_us | connect_error |
+---------------+------+------------------+-------------------------+---------------+
| 172.18.100.59 | 4407 | 1689151652696888 | 1744                    | NULL          |
| 172.18.100.59 | 4408 | 1689151652180348 | 1499                    | NULL          |
| 172.18.100.59 | 4406 | 1689151651663945 | 1708                    | NULL          |
| 172.18.100.59 | 4408 | 1689151592730732 | 1755                    | NULL          |
| 172.18.100.59 | 4407 | 1689151592196949 | 1692                    | NULL          |
| 172.18.100.59 | 4406 | 1689151591663216 | 1818                    | NULL          |
| 172.18.100.59 | 4406 | 1689151532900533 | 1943                    | NULL          |
```

```
| 172.18.100.59 | 4407 | 1689151532281604 | 1701                       |
NULL          |
| 172.18.100.59 | 4408 | 1689151531662635 | 1753                       |
NULL          |
| 172.18.100.59 | 4408 | 1689151472982004 | 1664                       |
NULL          |
+---------------+------+------------------+----------------------------
+---------------+
10 rows in set (0.00 sec)

mysql> SELECT * FROM monitor.mysql_server_ping_log ORDER BY
time_start_us DESC LIMIT 10;
+---------------+------+------------------+----------------------+---
---------+
| hostname      | port | time_start_us    | ping_success_time_us |
ping_error |
+---------------+------+------------------+----------------------+---
---------+
| 172.18.100.59 | 4407 | 1689151721473719 | 355                  |
NULL       |
| 172.18.100.59 | 4406 | 1689151721473698 | 398                  |
NULL       |
| 172.18.100.59 | 4408 | 1689151721473519 | 514                  |
NULL       |
| 172.18.100.59 | 4407 | 1689151711472959 | 365                  |
NULL       |
| 172.18.100.59 | 4408 | 1689151711472950 | 334                  |
NULL       |
| 172.18.100.59 | 4406 | 1689151711472740 | 486                  |
NULL       |
| 172.18.100.59 | 4408 | 1689151701472446 | 302                  |
NULL       |
| 172.18.100.59 | 4407 | 1689151701472405 | 367                  |
NULL       |
| 172.18.100.59 | 4406 | 1689151701472304 | 403                  |
NULL       |
| 172.18.100.59 | 4406 | 1689151691471949 | 297                  |
NULL       |
+---------------+------+------------------+----------------------+---
---------+
10 rows in set (0.00 sec)

  -- MGR 配置
 mysql> select * from mysql_group_replication_hostgroups\G;
```

```
*************************** 1. row ***************************
       writer_hostgroup: 10 #写组
backup_writer_hostgroup: 20 #后备写组
       reader_hostgroup: 30 #读组
      offline_hostgroup: 40 #下线组
                 active: 1  #是否启用
            max_writers: 1  #最多的写节点个数
  writer_is_also_reader:  0    #决定一个节点升级为写节点(放进writer_hostgroup)后是否仍然保留在 reader_hostgroup 组中提供读服务。如果mgr 多主模式需要设置为1
max_transactions_behind: 0  #该字段决定最多延后写节点多少个事务
                comment: NULL # 注释
1 row in set (0.00 sec)

 -- MGR 相关的监控指标
 mysql> select * from mysql_server_group_replication_log desc limit 10;
+---------------+------+------------------+------------------+---------+-----------+--------------------+-------+
| hostname      | port | time_start_us    | success_time_us  | viable_candidate | read_only | transactions_behind | error |
+---------------+------+------------------+------------------+---------+-----------+--------------------+-------+
| 172.18.100.59 | 4406 | 1689151626312091 | 2109             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151631312369 | 1807             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151636313207 | 1568             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151641312579 | 2501             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151646312607 | 1385             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151651313157 | 1536             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151656312860 | 1769             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151661312742 | 1502             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151666313273 | 1501             | YES     | NO        | 0                  | NULL  |
| 172.18.100.59 | 4406 | 1689151671313478 | 1565             | YES     | NO        | 0                  | NULL  |
+---------------+------+------------------+------------------+---------+-----------+--------------------+-------+
```

```
10 rows in set (0.00 sec)

  -- MGR 相关状态
  mysql>  select  hostgroup_id,hostname,port,status,max_replication_lag
from runtime_mysql_servers;
 +--------------+---------------+------+--------+---------------------
+
 | hostgroup_id | hostname      | port | status | max_replication_lag
|
 +--------------+---------------+------+--------+---------------------
+
 | 10           | 172.18.100.59 | 4406 | ONLINE | 10                  |
 | 30           | 172.18.100.59 | 4407 | ONLINE | 10                  |
 | 30           | 172.18.100.59 | 4408 | ONLINE | 10                  |
 +--------------+---------------+------+--------+---------------------
+
 3 rows in set (0.00 sec)

  -- 读写分离测试 读走的 30 组也就是只读组 07、08 只读组
  [root@172-18-100-162 ~]# for i in `seq 1 10`; do mysql -uproxysql -p
-h172.18.100.162       -P6033       -e       'select       *       from
performance_schema.global_variables where variable_name="server_id";' ;
done  | grep server
 Enter password:
 server_id       594408
 Enter password:
 server_id       594407
 Enter password:
 server_id       594407
 Enter password:
 server_id       594408
 Enter password:
 server_id       594407
 Enter password:
 server_id       594408
 Enter password:
 server_id       594407
 Enter password:
 server_id       594408
 Enter password:
 server_id       594408
 Enter password:
 server_id       594407
```

ProxySQL mysql_users 相关:

mysql_users.password 都支持明文密码格式和 hash 加密的密码格式：8x 版本 无函数 password(),利用 ProxySQL admin-hash_passwords --1.2.3 引入；select @@admin-hash_passwords; 为 true 时，执行 LOAD MYSQL USERS TO RUNTIME 会自动将密码进行 hash 处理并存储到 RUNTIME 数据结构中。

```sql
#注意：admin-hash_passwords 是以 admin-开头的变量，不是 mysql-开头。这是因为它影响的是 Admin 接口的行为。
 这个细节很重要，因为修改该变量后要使其生效，你要执行的是 LOAD ADMIN VARIABLES TO RUNTIME，而不是 LOAD MYSQL VARIABLES TO RUNTIME。
```

mysql_users 表中的密码不会自动 hash。但要对内存数据库、磁盘数据库中 mysql_users 中的密码进行 hash 也很容易。只需从 RUNTIME 数据结构中拷贝到内存数据库或磁盘数据库中即可。

例:

```sql
mysql> insert into mysql_users(username,password,active,default_hostgroup,transaction_persistent)values('us_tuser','Uq8wmtQ%j',1,10,1); #插入明文密码
Query OK, 1 row affected (0.00 sec)

mysql> SELECT username,password FROM mysql_users;
+----------+-------------------------------------------+
| username | password                                  |
+----------+-------------------------------------------+
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| us_tuser | Uq8wmtQ%j                                 |
+----------+-------------------------------------------+
3 rows in set (0.00 sec)

mysql> LOAD MYSQL USERS TO RUNTIME; #保存在 runtime 层时已经被 hash 过,内存 mysql_users 仍是明文，所以执行 SAVE MYSQL USERS FROM RUNTIME;
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT username,password FROM mysql_users;
```

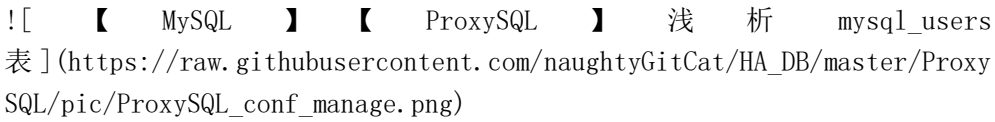
```
+----------+-------------------------------------------+
| username | password                                  |
+----------+-------------------------------------------+
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| us_tuser | Uq8wmtQ%j                                 |
+----------+-------------------------------------------+
3 rows in set (0.00 sec)

mysql> select username,password from  runtime_mysql_users;
+----------+-------------------------------------------+
| username | password                                  |
+----------+-------------------------------------------+
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| us_tuser | *8D50808522F58FB064FAB95D7A51C38569CB2BC0 |
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| us_tuser | *8D50808522F58FB064FAB95D7A51C38569CB2BC0 |
+----------+-------------------------------------------+
4 rows in set (0.00 sec)

mysql> SAVE MYSQL USERS FROM RUNTIME; # mysql_users 修改为hash密码 最后保存在磁盘持久化 SAVE MYSQL USERS TO DISK;
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT username,password FROM mysql_users;
+----------+-------------------------------------------+
| username | password                                  |
+----------+-------------------------------------------+
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| us_tuser | *8D50808522F58FB064FAB95D7A51C38569CB2BC0 |
| proxysql | *79C738910E52ED019AE7296D40471ADCB7B83F68 |
| us_tuser | *8D50808522F58FB064FAB95D7A51C38569CB2BC0 |
+----------+-------------------------------------------+
4 rows in set (0.00 sec)
# 明文存储的密码查询的时候只有一个，但是hash后的密码存储后查询的时候会显示两个
```

配置补充:

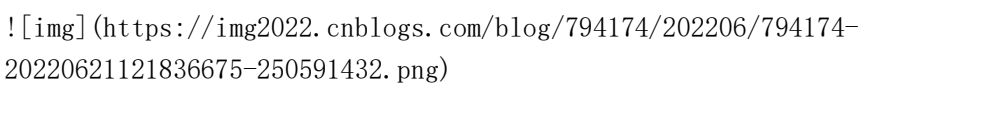
```sql
#从内存加载到运行环境中
LOAD MYSQL USERS TO RUNTIME;
#从内存保存到磁盘文件中
```

```
SAVE MYSQL USERS TO DISK;
#从运行环境下载到内存中
SAVE MYSQL USERS TO MEMORY;
#从磁盘文件加载到内存中
LOAD MYSQL USERS TO MEMORY;
```

配置管理简图:



从上到下是`SAVE XXX TO XXX;` 从下到上是`LOAD XXX FROM XXX;`



高可用切换测试:

```sql
[root@dingjia-mysql ~]# systemctl stop mgr1

-- proxysql log #综下所述含义就是4406 挂了之后把原本10组移到了40组且转变为了不可用、4407提升了10组
2023-07-13 14:24:18 [INFO] Dumping current MySQL Servers structures for hostgroup 40
2023-07-13 14:24:18 [INFO] Dumping mysql_servers: HG 40
+-----+----------+------+------+--------+--------+-----+-----------+---------+-----+---------+---------+-------------+
| hid | hostname | port | gtid | weight | status | cmp | max_conns | max_lag | ssl | max_lat | comment | mem_pointer |
+-----+----------+------+------+--------+--------+-----+-----------+---------+-----+---------+---------+-------------+
+-----+----------+------+------+--------+--------+-----+-----------+---------+-----+---------+---------+-------------+
2023-07-13 14:24:43 MySQL_Monitor.cpp:3744:gr_report_fetching_errs(): [ERROR] Got error. mmsd 0x7f1c44249d80 , MYSQL 0x7f1c495bc300 , FD 40 : Server shutdown in progress
2023-07-13 14:24:43 MySQL_HostGroups_Manager.cpp:5095:update_group_replication_set_offline(): [WARNING] Group Replication: setting host 172.18.100.59:4406 offline because: Server shutdown in progress
2023-07-13 14:24:43 [INFO] Dumping current MySQL Servers structures for
```

```
hostgroup ALL
HID: 10 , address: 172.18.100.59 , port: 4407 , gtid_port: 0 , weight: 1 , status: ONLINE , max_connections: 3000 , max_replication_lag: 10 , use_ssl: 0 , max_latency_ms: 0 , comment: mgr_node2
HID: 20 , address: 172.18.100.59 , port: 4406 , gtid_port: 0 , weight: 1 , status: ONLINE , max_connections: 3000 , max_replication_lag: 10 , use_ssl: 0 , max_latency_ms: 0 , comment: mgr_node1
HID: 30 , address: 172.18.100.59 , port: 4408 , gtid_port: 0 , weight: 1 , status: ONLINE , max_connections: 3000 , max_replication_lag: 10 , use_ssl: 0 , max_latency_ms: 0 , comment: mgr_node3
2023-07-13 14:24:43 [INFO] Dumping mysql_servers: ALL
+-----+---------------+------+------+--------+--------+-----+---------
--+---------+-----+---------+-----------+-----------------+
| hid | hostname      | port | gtid | weight | status | cmp | max_conns
| max_lag | ssl | max_lat | comment   | mem_pointer     |
+-----+---------------+------+------+--------+--------+-----+---------
--+---------+-----+---------+-----------+-----------------+
| 10  | 172.18.100.59 | 4407 | 0    | 1      | 0      | 0   | 3000
| 10      | 0   | 0       | mgr_node2 | 139759376911776 |
| 30  | 172.18.100.59 | 4408 | 0    | 1      | 0      | 0   | 3000
| 10      | 0   | 0       | mgr_node3 | 139759376911136 |
| 20  | 172.18.100.59 | 4406 | 0    | 1      | 0      | 0   | 3000
| 10      | 0   | 0       | mgr_node1 | 139759376911616 |
+-----+---------------+------+------+--------+--------+-----+---------
--+---------+-----+---------+-----------+-----------------+
2023-07-13 14:24:43 [INFO] Dumping mysql_servers_incoming
+--------------+---------------+------+-----------+--------+--------+-
-------------+-----------------+----------------------+---------+-------
---------+-----------+
| hostgroup_id | hostname      | port | gtid_port | weight | status |
compression  |  max_connections  |  max_replication_lag  |  use_ssl  |
max_latency_ms | comment   |
+--------------+---------------+------+-----------+--------+--------+-
-------------+-----------------+----------------------+---------+-------
---------+-----------+
| 10           | 172.18.100.59 | 4407 | 0         | 1      | 0      |
0            | 3000            | 10                   | 0       | 0
| mgr_node2 |
| 30           | 172.18.100.59 | 4408 | 0         | 1      | 0      |
0            | 3000            | 10                   | 0       | 0
| mgr_node3 |
| 40           | 172.18.100.59 | 4406 | 0         | 1      | 0      |
0            | 3000            | 10                   | 0       | 0
| mgr_node1 |
```

```
+--------------+---------------+------+-----------+--------+--------+-
------------+-----------------+---------------------+---------+-------
---------+-----------+
2023-07-13 14:24:43 [INFO] Dumping mysql_servers LEFT JOIN
mysql_servers_incoming
+-----------------+--------------+---------------+------+
| mem_pointer     | hostgroup_id | hostname      | port |
+-----------------+--------------+---------------+------+
| 139759376911616 | 20           | 172.18.100.59 | 4406 |
+-----------------+--------------+---------------+------+
2023-07-13 14:24:43 MySQL_HostGroups_Manager.cpp:1656:commit():
[WARNING] Removed server at address 139759376911616, hostgroup 20,
address 172.18.100.59 port 4406. Setting status OFFLINE HARD and
immediately dropping all free connections. Used connections will be
dropped when trying to use them
2023-07-13 14:24:43 [INFO] Dumping mysql_servers JOIN
mysql_servers_incoming
+--------------+---------------+------+-----------+--------+--------+-
------------+-----------------+---------------------+---------+-------
---------+-----------+-------------+-----------+--------+--------+----
---------+-----------------+---------------------+---------+----------
------+-----------+
| hostgroup_id | hostname      | port | gtid_port | weight | status |
compression | max_connections | max_replication_lag | use_ssl |
max_latency_ms | comment   | mem_pointer | gtid_port | weight | status
| compression | max_connections | max_replication_lag | use_ssl |
max_latency_ms | comment   |
+--------------+---------------+------+-----------+--------+--------+-
------------+-----------------+---------------------+---------+-------
---------+-----------+-------------+-----------+--------+--------+----
---------+-----------------+---------------------+---------+----------
------+-----------+
| 40           | 172.18.100.59 | 4406 | 0         | 1      | 0      |
0            | 3000            | 10                  | 0       | 0
| mgr_node1 | 0           | 0         | 1      | 0      | 0          |
3000            | 10                  | 0       | 0              |
mgr_node1 |
+--------------+---------------+------+-----------+--------+--------+-
------------+-----------------+---------------------+---------+-------
---------+-----------+-------------+-----------+--------+--------+----
---------+-----------------+---------------------+---------+----------
------+-----------+
2023-07-13 14:24:43 [INFO] Creating new server in HG 40 :
172.18.100.59:4406 , gtid_port=0, weight=1, status=0
```

```
2023-07-13 14:24:43 [INFO] Dumping current MySQL Servers structures for hostgroup ALL
HID: 10 , address: 172.18.100.59 , port: 4407 , gtid_port: 0 , weight: 1 , status: ONLINE , max_connections: 3000 , max_replication_lag: 10 , use_ssl: 0 , max_latency_ms: 0 , comment: mgr_node2
HID: 20 , address: 172.18.100.59 , port: 4406 , gtid_port: 0 , weight: 1 , status: OFFLINE_HARD , max_connections: 3000 , max_replication_lag: 10 , use_ssl: 0 , max_latency_ms: 0 , comment: mgr_node1
HID: 30 , address: 172.18.100.59 , port: 4408 , gtid_port: 0 , weight: 1 , status: ONLINE , max_connections: 3000 , max_replication_lag: 10 , use_ssl: 0 , max_latency_ms: 0 , comment: mgr_node3
HID: 40 , address: 172.18.100.59 , port: 4406 , gtid_port: 0 , weight: 1 , status: ONLINE , max_connections: 3000 , max_replication_lag: 10 , use_ssl: 0 , max_latency_ms: 0 , comment: mgr_node1
2023-07-13 14:24:43 [INFO] Dumping mysql_servers: ALL

-- 原主要重新 change 开启组复制即可
```

经测试 ProxySQL+MGR 确实比 MGR 单实例拥有高的并发处理、详情见后期。