CentOS 6.5 MySQL 5.6 MHA高可用测试笔记

正常切换测试

马飞

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# 一、环境描述

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 主机名 | 操作系统 | IP地址 | 角色 | 数据库 |
| Manager | CentOS6.5 | 192.168.9.101 | Mha管理节点 |  |
| Master | CentOS6.5 | 192.168.9.102:3306 | Mha主节点 | MySQL5.6.22 |
| Slave | CentOS6.5 | 192.168.9.103:3306 | Mha备节点 | MySQL5.6.22 |
| Slave2 | CentOS6.5 | 192.168.9.104:3306 | Mha备节点 | MySQL5.6.22 |
|  |  | 192.168.9.120 | VIP |  |

主从复制相关用户：

|  |  |
| --- | --- |
| 用户名 | 口令 |
| mha | 123456 |
| myrpl | 123456 |

# 二、测试场景

* 线上mha集群做正常切换

# 三、测试日志

3.1主从库GTID一致时正常切换

### 3.1.1 实验环境

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| --- | --- |
| 主库 | 192.168.9.103/slave |
| 从库 | 192.168.9.104/slave2，192.168.9.102/master |
| VIP | 192.168.9.120（在主库上） |

### 3.1.2 实验步骤

|  |  |  |
| --- | --- | --- |
| 序号 | 操作节点 | 操作内容描述 |
| 1 | 主库，从库 | 查询主库、从库UUID及状态信息 |
| 2 | 主库：192.168.9.103 | 模拟大量并发操作  与此同时进行正常切换操作 |
| 3 | 主库：192.168.9.103/slave  从库：192.168.9.104/slave2  192.168.9.102/master | 查看mha是否进行了切换操作，观察主从状态及日志  新主库：192.168.9.102/master  从库：192.168.9.103/slave  故障主库：192.168.9.104/slave2 |

### 3.1.3 操作步骤

#### （1）查看主库master

|  |
| --- |
| #查看主库UUID  mysql> show global variables like 'server\_uuid';  +---------------+--------------------------------------+  | Variable\_name | Value |  +---------------+--------------------------------------+  | server\_uuid | 43790147-f874-11e7-ac51-000c2992078d |  +---------------+--------------------------------------+  1 row in set (0.00 sec)  #查看当前主库的GTID  mysql> show master status\G  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  File: mysql\_bin.000005  Position: 108226049  Binlog\_Do\_DB:  Binlog\_Ignore\_DB:  Executed\_Gtid\_Set: 43790147-f874-11e7-ac51-000c2992078d:1-388813,  92f6e6cb-f84f-11e7-ab62-000c291dadaa:1-23  mysql> select max(xh),count(0) from test.t01;  +---------+----------+  | max(xh) | count(0) |  +---------+----------+  | NULL | 0 |  +---------+----------+  #查询主库VIP  inet 192.168.9.103/24 brd 192.168.9.255 scope global eth0  inet 192.168.9.120/24 scope global secondary eth0 |

#### （2）查看从库slave2

|  |
| --- |
| mysql> show global variables like 'server\_uuid';  +---------------+--------------------------------------+  | Variable\_name | Value |  +---------------+--------------------------------------+  | server\_uuid | 8d9a99f0-f89c-11e7-ad58-000c293e10f6 |  +---------------+--------------------------------------+  1 row in set (0.00 sec)  #登陆从库查看GTID  mysql> show slave status\G  Executed\_Gtid\_Set: 43790147-f874-11e7-ac51-000c2992078d:1-388813,  92f6e6cb-f84f-11e7-ab62-000c291dadaa:1-23  mysql> select max(xh),count(0) from test.t01;  +---------+----------+  | max(xh) | count(0) |  +---------+----------+  | NULL | 0 |  +---------+----------+  1 row in set (0.00 sec) |

#### （3）查看从库master

|  |
| --- |
| #登陆从库slave2查看当前数据库的UUID  mysql> show global variables like 'server\_uuid';  +---------------+--------------------------------------+  | Variable\_name | Value |  +---------------+--------------------------------------+  | server\_uuid | 92f6e6cb-f84f-11e7-ab62-000c291dadaa |  +---------------+--------------------------------------+  #登陆从库查看GTID  mysql> show slave status\G  Executed\_Gtid\_Set: 43790147-f874-11e7-ac51-000c2992078d:1-388813,  92f6e6cb-f84f-11e7-ab62-000c291dadaa:1-23  mysql> select max(xh),count(0) from test.t01;  +---------+----------+  | max(xh) | count(0) |  +---------+----------+  | NULL | 0 |  +---------+----------+  1 row in set (0.00 sec) |

#### （4）正常切换前准备工作

|  |
| --- |
| #查看mha进程状态  [root@manager bin]# supervisorctl status  mha:mha\_testdbapp\_3306 RUNNING pid 14463, uptime 11:16:56  #检查当前同步是否正常  [root@manager bin]# sh /home/dba/mha/bin/check\_rpl.sh 3306 testdbapp  #停止mha-helper  [root@manager bin]# supervisorctl stop mha:mha\_testdbapp\_3306  mha:mha\_wxytest2\_3308: stopped |

#### （5）主库模拟大量事务

#登陆主库: 192.168.9.103/slave，执行以下脚本

|  |
| --- |
| #客户端: 模拟主库产生100000个事务  use test  mysql> call p\_ins\_t02(1,100000); |

#### （6）正常切换

|  |
| --- |
| #在线切换（第五步事务还在进行中）  [root@manager bin]# sh /home/dba/mha/bin/switch\_over.sh 3306 testdbapp  切换日志：    #主库正在执行的事务被mha杀掉了,上述附件切换日志中有记录。  mysql> call p\_ins\_t02(1,100000);  ERROR 2013 (HY000): Lost connection to MySQL server during query |

#### （7）切换后检查主从关系

#主库：192.168.9.102/master

|  |
| --- |
| #查看VIP是否在主库上  [root@master ~]# ip addr  inet 192.168.9.102/24 brd 192.168.9.255 scope global eth0  inet 192.168.9.120/24 scope global secondary eth0  #查看主库读写状态  mysql> show variables like '%read\_only%';  +------------------+-------+  | Variable\_name | Value |  +------------------+-------+  | innodb\_read\_only | OFF |  | read\_only | OFF |  | tx\_read\_only | OFF |  +------------------+-------+  #查看主库主从状态  mysql> show master status\G  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  File: mysql\_bin.000004  Position: 113602470  Binlog\_Do\_DB:  Binlog\_Ignore\_DB:  Executed\_Gtid\_Set: 43790147-f874-11e7-ac51-000c2992078d:1-404279,  92f6e6cb-f84f-11e7-ab62-000c291dadaa:1-23  mysql> show slave status\G  Empty set (0.00 sec)  #查看主库表中数据量  mysql> select max(xh),count(0) from test.t01;  +---------+----------+  | max(xh) | count(0) |  +---------+----------+  | 15466 | 15466 |  +---------+----------+  1 row in set (0.00 sec) |
|  |

#从库：192.168.9.103/slave

|  |
| --- |
| #查看从库读写状态  mysql> show variables like '%read\_only%';  +------------------+-------+  | Variable\_name | Value |  +------------------+-------+  | innodb\_read\_only | OFF |  | read\_only | ON |  | tx\_read\_only | OFF |  +------------------+-------+  #查看从库主从复制状态  mysql> show slave status\G  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Slave\_IO\_State: Waiting for master to send event  Master\_Host: 192.168.9.102  Master\_User: myrpl  Master\_Port: 3306  Connect\_Retry: 60  Master\_Log\_File: mysql\_bin.000004  Read\_Master\_Log\_Pos: 113602470  Relay\_Log\_File: mysql3306-relay-bin.000002  Relay\_Log\_Pos: 408  Relay\_Master\_Log\_File: mysql\_bin.000004  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: 113602470  Relay\_Log\_Space: 616  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: 91023306  Master\_UUID: 92f6e6cb-f84f-11e7-ab62-000c291dadaa  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 the slave I/O thread to update it  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: 43790147-f874-11e7-ac51-000c2992078d:1-404279,  92f6e6cb-f84f-11e7-ab62-000c291dadaa:1-23  Auto\_Position: 1  1 row in set (0.00 sec)  mysql> select max(xh),count(0) from test.t01;  +---------+----------+  | max(xh) | count(0) |  +---------+----------+  | 15466 | 15466 |  +---------+----------+ |

#从库：192.168.9.104/slave2

|  |
| --- |
| #查看从库读写状态  mysql> show variables like '%read\_only%';  +------------------+-------+  | Variable\_name | Value |  +------------------+-------+  | innodb\_read\_only | OFF |  | read\_only | ON |  | tx\_read\_only | OFF |  +------------------+-------+  3 rows in set (0.00 sec)  #查看从库主从复制状态  mysql> show slave status\G  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Slave\_IO\_State: Waiting for master to send event  Master\_Host: 192.168.9.102  Master\_User: myrpl  Master\_Port: 3306  Connect\_Retry: 60  Master\_Log\_File: mysql\_bin.000004  Read\_Master\_Log\_Pos: 113602470  Relay\_Log\_File: mysql3306-relay-bin.000002  Relay\_Log\_Pos: 408  Relay\_Master\_Log\_File: mysql\_bin.000004  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: 113602470  Relay\_Log\_Space: 616  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: 91023306  Master\_UUID: 92f6e6cb-f84f-11e7-ab62-000c291dadaa  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 the slave I/O thread to update it  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: 43790147-f874-11e7-ac51-000c2992078d:1-404279,  92f6e6cb-f84f-11e7-ab62-000c291dadaa:1-23  Auto\_Position: 1  1 row in set (0.00 sec)  mysql> select max(xh),count(0) from test.t01;  +---------+----------+  | max(xh) | count(0) |  +---------+----------+  | 15466 | 15466 |  +---------+----------+  1 row in set (0.01 sec) |

#### （8）正常切换后工作

|  |
| --- |
| #启动mha-helper  [root@manager bin]# supervisorctl start mha:mha\_testdbapp\_3306  mha:mha\_testdbapp\_3306: started  #查看mha进程状态  [root@manager bin]# supervisorctl status  mha:mha\_testdbapp\_3306 RUNNING pid 37626, uptime 0:00:19  #检查当前同步是否正常  [root@manager bin]# sh /home/dba/mha/bin/check\_rpl.sh 3306 testdbapp |

### 3.1.4 实验结论

主库在有事务正在发生中，mha可以进行正常切换，当主库有正在执行的事务时,mha会将正在执行的事务杀掉，然后进行后续切换操作。具体切换过程详见上文切换日志。

主库模拟进行100000个事务，实际只执行了15466个事务。

切换后的mha集群主从情况：

|  |  |
| --- | --- |
| 主库 | 192.168.9.102/master |
| 从库 | 192.168.9.103/slave，192.168.9.104/slave2 |
| VIP | 192.168.9.120（在主库上） |