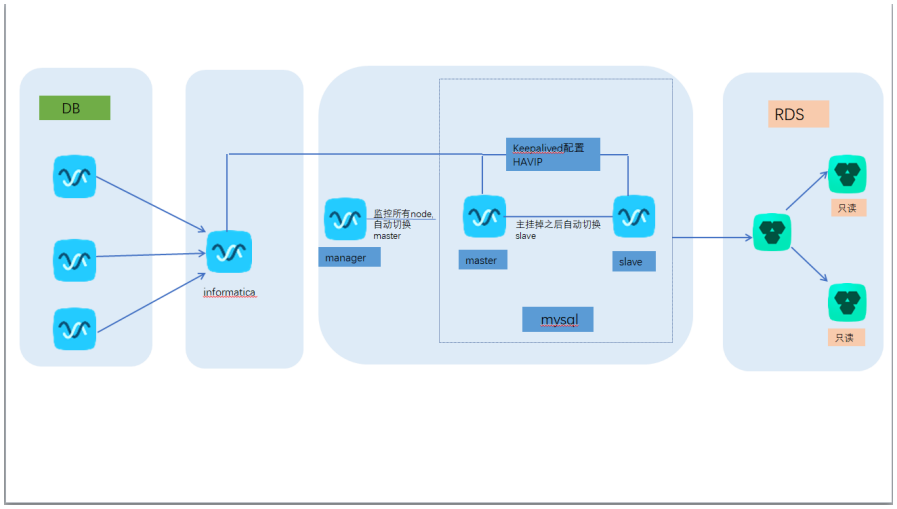
友邦自建MySQL高可用故障转移测试报告.v.19.05.13

架构图



测试明细

1 主库故障后，MHA以及VIP是否能完成故障自动转移

2 VIP自动转移成功后，对于DTS迁移任务是否会有影响

3 故障切换后的重构测试

前提

MHA集群搭建成功（一主一从）

测试MHA是否正常

```
[root@iZzm0cl1fi1hbmgaxze2enZ masterha]# masterha_check_repl
--conf=/etc/masterha/app1.cnf
Wed May  8 15:08:32 2019 - [warning] Global configuration file
/etc/masterha_default.cnf not found. Skipping.
Wed May  8 15:08:32 2019 - [info] Reading application default configuration
from /etc/masterha/app1.cnf..
Wed May  8 15:08:32 2019 - [info] Reading server configuration from
/etc/masterha/app1.cnf..
Wed May  8 15:08:32 2019 - [info] MHA::MasterMonitor version 0.56.
Wed May  8 15:08:33 2019 - [info] GTID failover mode = 1
Wed May  8 15:08:33 2019 - [info] Dead Servers:
Wed May  8 15:08:33 2019 - [info] Alive Servers:
Wed May  8 15:08:33 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Wed May  8 15:08:33 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Wed May  8 15:08:33 2019 - [info] Alive Slaves:
Wed May  8 15:08:33 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Wed May  8 15:08:33 2019 - [info]     GTID ON
Wed May  8 15:08:33 2019 - [info]     Replicating from
10.200.63.169(10.200.63.169:3306)
Wed May  8 15:08:33 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Wed May  8 15:08:33 2019 - [info] Current Alive Master:
10.200.63.169(10.200.63.169:3306)
Wed May  8 15:08:33 2019 - [info] Checking slave configurations..
Wed May  8 15:08:33 2019 - [info] Checking replication filtering settings..
Wed May  8 15:08:33 2019 - [info]  binlog_do_db= , binlog_ignore_db=
Wed May  8 15:08:33 2019 - [info]  Replication filtering check ok.
Wed May  8 15:08:33 2019 - [info] GTID (with auto-pos) is supported.
Skipping all SSH and Node package checking.
Wed May  8 15:08:33 2019 - [info] Checking SSH publickey authentication
settings on the current master..
Wed May  8 15:08:33 2019 - [info] HealthCheck: SSH to 10.200.63.169 is
reachable.
Wed May  8 15:08:33 2019 - [info]
10.200.63.169(10.200.63.169:3306) (current master)
 +--10.200.63.167(10.200.63.167:3306)

Wed May  8 15:08:33 2019 - [info] Checking replication health on
10.200.63.167..
Wed May  8 15:08:33 2019 - [info]  ok.
Wed May  8 15:08:33 2019 - [warning] master_ip_failover_script is not
defined.
Wed May  8 15:08:33 2019 - [warning] shutdown_script is not defined.
Wed May  8 15:08:33 2019 - [info] Got exit code 0 (Not master dead).

MySQL Replication Health is OK.
```

启动MHA后，查看日志，MHA搭建成功

```
Mon May 13 15:32:22 2019 - [info] MHA::MasterMonitor version 0.56.
Mon May 13 15:32:23 2019 - [info] GTID failover mode = 1
Mon May 13 15:32:23 2019 - [info] Dead Servers:
Mon May 13 15:32:23 2019 - [info] Alive Servers:
Mon May 13 15:32:23 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Mon May 13 15:32:23 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Mon May 13 15:32:23 2019 - [info] Alive Slaves:
Mon May 13 15:32:23 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:32:23 2019 - [info]     GTID ON
Mon May 13 15:32:23 2019 - [info]     Replicating from
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:32:23 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:32:23 2019 - [info] Current Alive Master:
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:32:23 2019 - [info] Checking slave configurations..
Mon May 13 15:32:23 2019 - [info] Checking replication filtering settings..
Mon May 13 15:32:23 2019 - [info]  binlog_do_db= , binlog_ignore_db=
Mon May 13 15:32:23 2019 - [info]  Replication filtering check ok.
Mon May 13 15:32:23 2019 - [info] GTID (with auto-pos) is supported.
Skipping all SSH and Node package checking.
Mon May 13 15:32:23 2019 - [info] Checking SSH publickey authentication
settings on the current master..
Mon May 13 15:32:24 2019 - [info] HealthCheck: SSH to 10.200.63.167 is
reachable.
Mon May 13 15:32:24 2019 - [info]
10.200.63.167(10.200.63.167:3306) (current master)
 +--10.200.63.169(10.200.63.169:3306)

Mon May 13 15:32:24 2019 - [info] Checking master_ip_failover_script
status:
Mon May 13 15:32:24 2019 - [info]   /scripts/master_ip_failover
--command=status --ssh_user=root --orig_master_host=10.200.63.167
--orig_master_ip=10.200.63.167 --orig_master_port=3306


IN SCRIPT TEST====systemctl stop keepalived==systemctl start keepalived===

Checking the Status of the script.. OK
Mon May 13 15:32:24 2019 - [info]  OK.
Mon May 13 15:32:24 2019 - [warning] shutdown_script is not defined.
Mon May 13 15:32:24 2019 - [info] Set master ping interval 1 seconds.
Mon May 13 15:32:24 2019 - [warning] secondary_check_script is not defined.
It is highly recommended setting it to check master reachability from two
or more routes.
Mon May 13 15:32:24 2019 - [info] Starting ping health check on
10.200.63.167(10.200.63.167:3306)..
Mon May 13 15:32:24 2019 - [info] Ping(SELECT) succeeded, waiting until
MySQL doesn't respond..
```

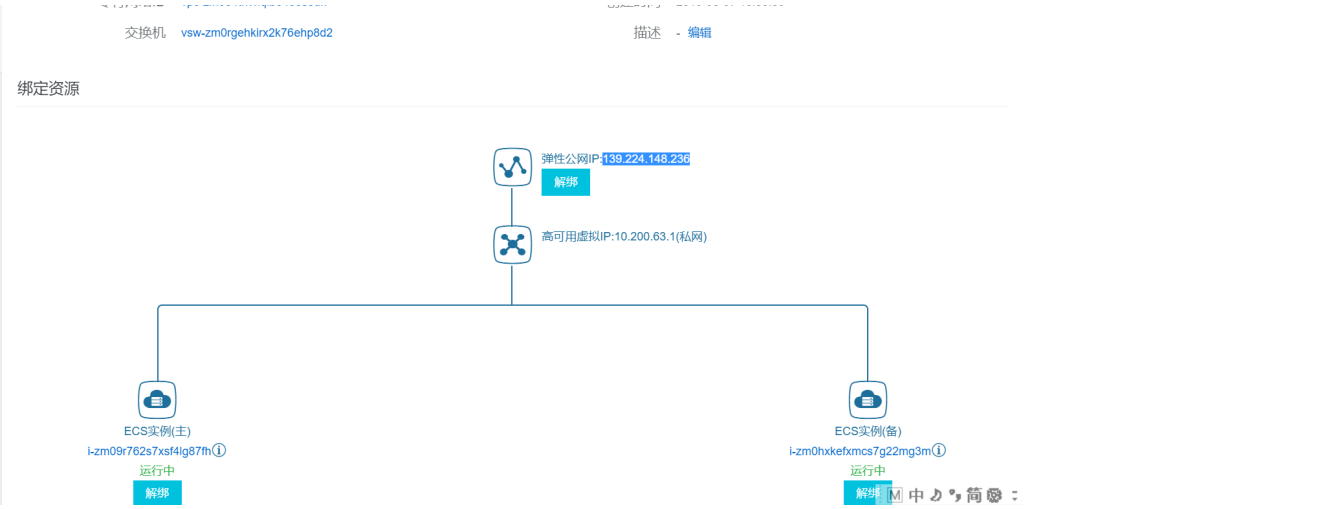
keepalive安装成功

查看 keepalived 是否正常

```
[root@iZzm09r762s7xsf4lg87fhZ install]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state
UP qlen 1000
    link/ether 00:16:3e:00:06:19 brd ff:ff:ff:ff:ff:ff
    inet 10.200.63.167/23 brd 10.200.63.255 scope global dynamic eth0
       valid_lft 309464622sec preferred_lft 309464622sec
    inet 10.200.63.1/32 scope global eth0:havip
       valid_lft forever preferred_lft forever



[root@iZzm0hxkefxmcs7g22mg3mZ install]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state
UP qlen 1000
    link/ether 00:16:3e:00:0a:f9 brd ff:ff:ff:ff:ff:ff
    inet 10.200.63.169/23 brd 10.200.63.255 scope global dynamic eth0
       valid_lft 310160395sec preferred_lft 310160395sec
```



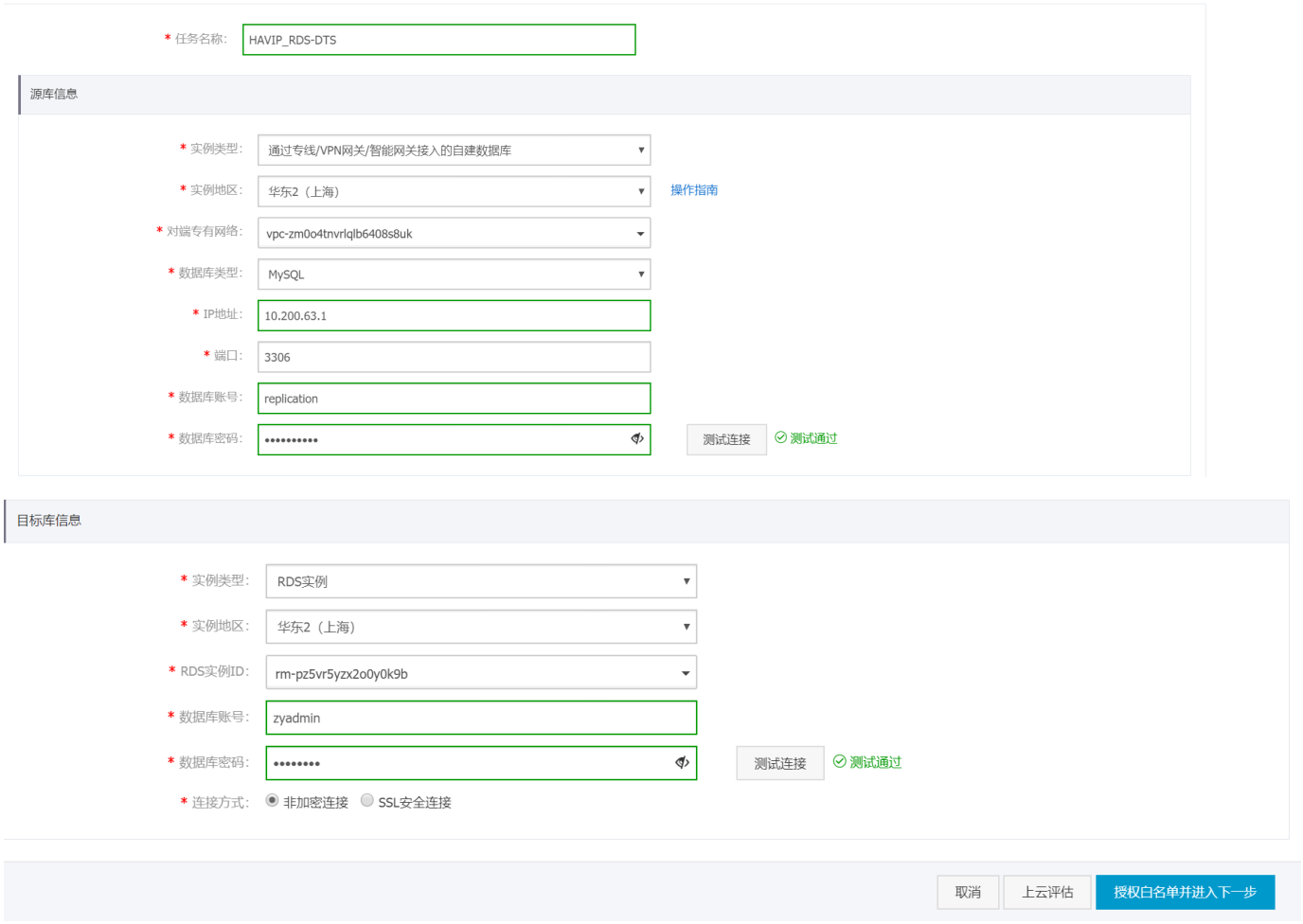
HAVIP到RDS的DTS迁移部署

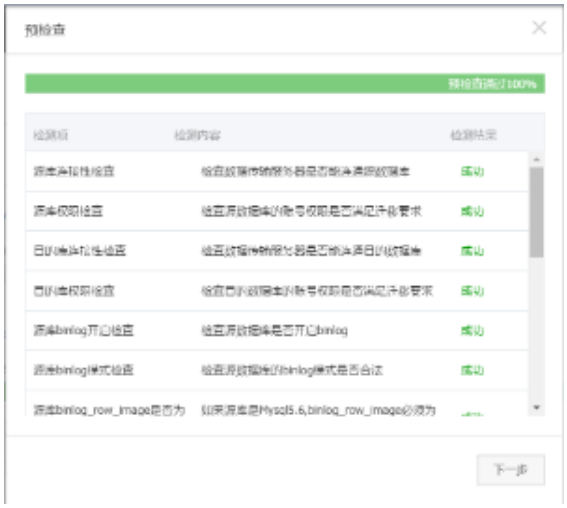
说明：由于源端是HAVIP，无法定位到具体的实例，所以想要通过内网进行传输，DTS配置时需要选择高速通道打通

想要使用高速通道的话需要源和目标为不同的VPC且高速通道打通的VPC

具体信息如下：

产品	地域	VPC
HAVIP	华东2	vpc-zm0o4tnvrlqlb6408s8uk SH-VPC-SHARE
MySQL所在ECS实例	华东2	vpc-zm0o4tnvrlqlb6408s8uk SH-VPC-SHARE
RDS	华东 2	vpc-zm088hsf91f73mkzj2cjd SH-VPC-Transfer





测试

测试内容

- 主库故障，MHA是否可以成功切换、MHA是否能控制Keepalived的VIP进行切换
- MHA以及VIP切换后对于RDS的影响（VIP切换后新的数据是否能正确同步到RDS）

测试步骤

测试MHA以及VIP切换

```
#


[root@iZzm0hxkefxmcs7g22mg3mZ ~]# /etc/init.d/mysqld stop
Shutting down MySQL.....                                   [  OK  ]
#


Mon May 13 15:39:30 2019 - [warning] Got error on MySQL select ping: 2006
(MySQL server has gone away)
```

```
Mon May 13 15:39:30 2019 - [info] Executing SSH check script: exit 0
Mon May 13 15:39:30 2019 - [info] HealthCheck: SSH to 10.200.63.167 is
reachable.
Mon May 13 15:39:31 2019 - [warning] Got error on MySQL connect: 2003
(Can't connect to MySQL server on '10.200.63.167' (111))
Mon May 13 15:39:31 2019 - [warning] Connection failed 2 time(s)..
Mon May 13 15:39:32 2019 - [warning] Got error on MySQL connect: 2003
(Can't connect to MySQL server on '10.200.63.167' (111))
Mon May 13 15:39:32 2019 - [warning] Connection failed 3 time(s)..
Mon May 13 15:39:33 2019 - [warning] Got error on MySQL connect: 2003
(Can't connect to MySQL server on '10.200.63.167' (111))
Mon May 13 15:39:33 2019 - [warning] Connection failed 4 time(s)..
Mon May 13 15:39:33 2019 - [warning] Master is not reachable from health
checker!
Mon May 13 15:39:33 2019 - [warning] Master
10.200.63.167(10.200.63.167:3306) is not reachable!
Mon May 13 15:39:33 2019 - [warning] SSH is reachable.
Mon May 13 15:39:33 2019 - [info] Connecting to a master server failed.
Reading configuration file /etc/masterha_default.cnf and
/etc/masterha/app1.cnf again, and trying to connect to all servers to check
server status..
Mon May 13 15:39:33 2019 - [warning] Global configuration file
/etc/masterha_default.cnf not found. Skipping.
Mon May 13 15:39:33 2019 - [info] Reading application default configuration
from /etc/masterha/app1.cnf..
Mon May 13 15:39:33 2019 - [info] Reading server configuration from
/etc/masterha/app1.cnf..
Mon May 13 15:39:34 2019 - [info] GTID failover mode = 1
Mon May 13 15:39:34 2019 - [info] Dead Servers:
Mon May 13 15:39:34 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Mon May 13 15:39:34 2019 - [info] Alive Servers:
Mon May 13 15:39:34 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Mon May 13 15:39:34 2019 - [info] Alive Slaves:
Mon May 13 15:39:34 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:39:34 2019 - [info]     GTID ON
Mon May 13 15:39:34 2019 - [info]     Replicating from
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:39:34 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:39:34 2019 - [info] Checking slave configurations..
Mon May 13 15:39:34 2019 - [info] Checking replication filtering settings..
Mon May 13 15:39:34 2019 - [info]  Replication filtering check ok.
Mon May 13 15:39:34 2019 - [info] Master is down!
Mon May 13 15:39:34 2019 - [info] Terminating monitoring script.
Mon May 13 15:39:34 2019 - [info] Got exit code 20 (Master dead).
Mon May 13 15:39:34 2019 - [info] MHA::MasterFailover version 0.56.
Mon May 13 15:39:34 2019 - [info] Starting master failover.
Mon May 13 15:39:34 2019 - [info]
Mon May 13 15:39:34 2019 - [info] * Phase 1: Configuration Check Phase..
Mon May 13 15:39:34 2019 - [info]
Mon May 13 15:39:35 2019 - [info] GTID failover mode = 1
Mon May 13 15:39:35 2019 - [info] Dead Servers:
```

```
Mon May 13 15:39:35 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Mon May 13 15:39:35 2019 - [info] Checking master reachability via
MySQL(double check)...
Mon May 13 15:39:35 2019 - [info]  ok.
Mon May 13 15:39:35 2019 - [info] Alive Servers:
Mon May 13 15:39:35 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Mon May 13 15:39:35 2019 - [info] Alive Slaves:
Mon May 13 15:39:35 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:39:35 2019 - [info]     GTID ON
Mon May 13 15:39:35 2019 - [info]     Replicating from
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:39:35 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:39:35 2019 - [info] Starting GTID based failover.
Mon May 13 15:39:35 2019 - [info]
Mon May 13 15:39:35 2019 - [info] ** Phase 1: Configuration Check Phase
completed.
Mon May 13 15:39:35 2019 - [info]
Mon May 13 15:39:35 2019 - [info] * Phase 2: Dead Master Shutdown Phase..
Mon May 13 15:39:35 2019 - [info]
Mon May 13 15:39:35 2019 - [info] Forcing shutdown so that applications
never connect to the current master..
Mon May 13 15:39:35 2019 - [info] Executing master IP deactivation script:
Mon May 13 15:39:35 2019 - [info]   /scripts/master_ip_failover
--orig_master_host=10.200.63.167 --orig_master_ip=10.200.63.167
--orig_master_port=3306 --command=stopssh --ssh_user=root


IN SCRIPT TEST====systemctl stop keepalived==systemctl start keepalived===

Disabling the VIP on old master: 10.200.63.167
Mon May 13 15:39:36 2019 - [info]  done.
Mon May 13 15:39:36 2019 - [warning] shutdown_script is not set. Skipping
explicit shutting down of the dead master.
Mon May 13 15:39:36 2019 - [info] * Phase 2: Dead Master Shutdown Phase
completed.
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] * Phase 3: Master Recovery Phase..
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] * Phase 3.1: Getting Latest Slaves
Phase..
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] The latest binary log file/position on
all slaves is mybinlog.000028:2806
Mon May 13 15:39:36 2019 - [info] Retrieved Gtid Set:
dc602e0e-754b-11e9-9237-00163e000619:4-14
Mon May 13 15:39:36 2019 - [info] Latest slaves (Slaves that received relay
log files to the latest):
Mon May 13 15:39:36 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:39:36 2019 - [info]     GTID ON
Mon May 13 15:39:36 2019 - [info]     Replicating from
```

```
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:39:36 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:39:36 2019 - [info] The oldest binary log file/position on
all slaves is mybinlog.000028:2806
Mon May 13 15:39:36 2019 - [info] Retrieved Gtid Set:
dc602e0e-754b-11e9-9237-00163e000619:4-14
Mon May 13 15:39:36 2019 - [info] Oldest slaves:
Mon May 13 15:39:36 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:39:36 2019 - [info]     GTID ON
Mon May 13 15:39:36 2019 - [info]     Replicating from
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:39:36 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] * Phase 3.3: Determining New Master
Phase..
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] Searching new master from slaves..
Mon May 13 15:39:36 2019 - [info]  Candidate masters from the configuration
file:
Mon May 13 15:39:36 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:39:36 2019 - [info]     GTID ON
Mon May 13 15:39:36 2019 - [info]     Replicating from
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:39:36 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:39:36 2019 - [info]  Non-candidate masters:
Mon May 13 15:39:36 2019 - [info]  Searching from candidate_master slaves
which have received the latest relay log events..
Mon May 13 15:39:36 2019 - [info] New master is
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:39:36 2019 - [info] Starting master failover..
Mon May 13 15:39:36 2019 - [info]
From:
10.200.63.167(10.200.63.167:3306) (current master)
 +--10.200.63.169(10.200.63.169:3306)

To:
10.200.63.169(10.200.63.169:3306) (new master)
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] * Phase 3.3: New Master Recovery Phase..
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info]  Waiting all logs to be applied..
Mon May 13 15:39:36 2019 - [info]   done.
Mon May 13 15:39:36 2019 - [info] Getting new master's binlog name and
position..
Mon May 13 15:39:36 2019 - [info]  mybinlog.000005:762280
Mon May 13 15:39:36 2019 - [info]  All other slaves should start
replication from here. Statement should be: CHANGE MASTER TO
MASTER_HOST='10.200.63.169', MASTER_PORT=3306, MASTER_AUTO_POSITION=1,
```

```
MASTER_USER='slave', MASTER_PASSWORD='xxx';
Mon May 13 15:39:36 2019 - [info] Master Recovery succeeded.
File:Pos:Exec_Gtid_Set: mybinlog.000005, 762280,
48c10a24-3fbe-11e9-81ef-00163e000619:7-10,
dc602e0e-754b-11e9-9237-00163e000619:4-14,
eb66648c-46ee-11e9-b21a-00163e000af9:1-6,
ee072971-754c-11e9-8c9b-00163e000af9:1-133
Mon May 13 15:39:36 2019 - [info] Executing master IP activate script:
Mon May 13 15:39:36 2019 - [info]   /scripts/master_ip_failover
--command=start --ssh_user=root --orig_master_host=10.200.63.167
--orig_master_ip=10.200.63.167 --orig_master_port=3306
--new_master_host=10.200.63.169 --new_master_ip=10.200.63.169
--new_master_port=3306 --new_master_user='mha_mon'
--new_master_password='123'


IN SCRIPT TEST====systemctl stop keepalived==systemctl start keepalived===

Disabling the VIP on old master: 10.200.63.167
Mon May 13 15:39:36 2019 - [info]  OK.
Mon May 13 15:39:36 2019 - [info] Setting read_only=0 on
10.200.63.169(10.200.63.169:3306)..
Mon May 13 15:39:36 2019 - [info]  ok.
Mon May 13 15:39:36 2019 - [info] ** Finished master recovery successfully.
Mon May 13 15:39:36 2019 - [info] * Phase 3: Master Recovery Phase
completed.
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] * Phase 4: Slaves Recovery Phase..
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] * Phase 4.1: Starting Slaves in
parallel..
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] All new slave servers recovered
successfully.
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] * Phase 5: New master cleanup phase..
Mon May 13 15:39:36 2019 - [info]
Mon May 13 15:39:36 2019 - [info] Resetting slave info on the new master..
Mon May 13 15:39:36 2019 - [info]  10.200.63.169: Resetting slave info
succeeded.
Mon May 13 15:39:36 2019 - [info] Master failover to
10.200.63.169(10.200.63.169:3306) completed successfully.
Mon May 13 15:39:36 2019 - [info]

----- Failover Report -----

app1: MySQL Master failover 10.200.63.167(10.200.63.167:3306) to
10.200.63.169(10.200.63.169:3306) succeeded

Master 10.200.63.167(10.200.63.167:3306) is down!

Check MHA Manager logs at
```

```
iZzm0cl1fi1hbmgaxze2enZ:/masterha/app1/manager.log for details.

Started automated(non-interactive) failover.
Invalidated master IP address on 10.200.63.167(10.200.63.167:3306)
Selected 10.200.63.169(10.200.63.169:3306) as a new master.
10.200.63.169(10.200.63.169:3306): OK: Applying all logs succeeded.
10.200.63.169(10.200.63.169:3306): OK: Activated master IP address.
10.200.63.169(10.200.63.169:3306): Resetting slave info succeeded.
Master failover to 10.200.63.169(10.200.63.169:3306) completed
successfully.
Mon May 13 15:39:36 2019 - [info] Sending mail..
```

```
Option new_slave_hosts requires an argument
Unknown option: conf
```

从日志中可以看出

1 首先宣布原先的主 10.200.63.167 已经down掉。

2 重新选择10.200.63.169为新的主。

3 原先的主10.200.63.169 的VIP已经无法正常使用，从而VIP完成故障转移。

验证VIP是否已正常切换

查看

```
# 10.200.63.167

[root@iZzm09r762s7xsf4lg87fhZ install]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state
UP qlen 1000
    link/ether 00:16:3e:00:06:19 brd ff:ff:ff:ff:ff:ff
    inet 10.200.63.167/23 brd 10.200.63.255 scope global dynamic eth0
       valid_lft 309463684sec preferred_lft 309463684sec


[root@iZzm09r762s7xsf4lg87fhZ install]# systemctl status keepalived
 keepalived.service - LVS and VRRP High Availability Monitor
   Loaded: loaded (/usr/lib/systemd/system/keepalived.service; disabled;
vendor preset: disabled)
   Active: inactive (dead)

May 09 15:14:06 iZzm09r762s7xsf4lg87fhZ Keepalived_vrrp[24315]: Sending
gratuitous ARP on eth0 for 10.200.63.1
May 09 15:14:06 iZzm09r762s7xsf4lg87fhZ Keepalived_vrrp[24315]: Sending
gratuitous ARP on eth0 for 10.200.63.1
May 09 15:14:06 iZzm09r762s7xsf4lg87fhZ Keepalived_vrrp[24315]: Sending
gratuitous ARP on eth0 for 10.200.63.1
May 09 15:14:06 iZzm09r762s7xsf4lg87fhZ Keepalived_vrrp[24315]: Sending
gratuitous ARP on eth0 for 10.200.63.1
May 13 15:39:35 iZzm09r762s7xsf4lg87fhZ Keepalived[24313]: Stopping
May 13 15:39:35 iZzm09r762s7xsf4lg87fhZ systemd[1]: Stopping LVS and VRRP
High Availability Monitor...
May 13 15:39:35 iZzm09r762s7xsf4lg87fhZ Keepalived_vrrp[24315]:
VRRP_Instance(VI_1) sent 0 priority
May 13 15:39:35 iZzm09r762s7xsf4lg87fhZ Keepalived_vrrp[24315]:
VRRP_Instance(VI_1) removing protocol VIPs.
May 13 15:39:35 iZzm09r762s7xsf4lg87fhZ Keepalived_healthcheckers[24314]:
Stopped
May 13 15:39:36 iZzm09r762s7xsf4lg87fhZ systemd[1]: Stopped LVS and VRRP
```

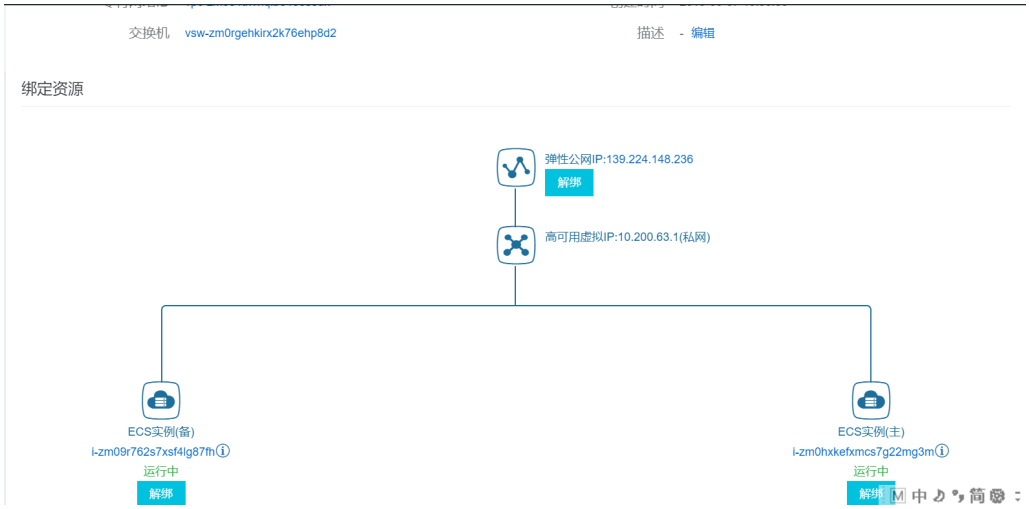
```
High Availability Monitor.



# 10.200.63.169

[root@iZzm0hxkefxmcs7g22mg3mZ install]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state
UP qlen 1000
    link/ether 00:16:3e:00:0a:f9 brd ff:ff:ff:ff:ff:ff
    inet 10.200.63.169/23 brd 10.200.63.255 scope global dynamic eth0
```

```
       valid_lft 310159409sec preferred_lft 310159409sec
    inet 10.200.63.1/32 scope global eth0:havip
       valid_lft forever preferred_lft forever
```



以上信息可以得出

1 原主的10.200.63.167 的 Keepalived 已经被关闭，且VIP已经在新主 10.200.63.169上生效

2 查看HAVIP控制台，10.200.63.169 已经成为新的主

测试DTS数据同步

现有数据

```
10.200.63.167
root@MySQL-01 15:20:  [chuchu]> show tables;
+------------------+
| Tables_in_chuchu |
+------------------+
| list1            |
| list2            |
+------------------+
2 rows in set (0.00 sec)


10.200.63.169
root@MySQL-01 15:20:  [chuchu]> show tables;
+------------------+
| Tables_in_chuchu |
+------------------+
| list1            |
| list2            |
+------------------+
2 rows in set (0.00 sec)




RDS
mysql>show tables;
+---------------------------+
| Tables_in_chuchu          |
+---------------------------+
| list1                     |
| list2                     |
+---------------------------+
[2]3 ms.
```

向新主10.200.63.169 中写入数据

```
root@MySQL-01 15:43:  [(none)]> use chuchu;
Database changed
root@MySQL-01 15:43:  [chuchu]> create table list3(id int,name char(10));
Query OK, 0 rows affected (0.02 sec)

root@MySQL-01 15:43:  [chuchu]> insert into list3
values(1,'jnj'),(2,'bxuigug');
Query OK, 2 rows affected (0.00 sec)
Records: 2  Duplicates: 0  Warnings: 0

root@MySQL-01 15:43:  [chuchu]> create table list4(id int,name char(10));
Query OK, 0 rows affected (0.02 sec)
```

```
root@MySQL-01 15:43:  [chuchu]> insert into list4
values(1,'vyycy'),(2,'ygyggu');
Query OK, 2 rows affected (0.00 sec)
Records: 2  Duplicates: 0  Warnings: 0

root@MySQL-01 15:44:  [chuchu]> show tables;
+------------------+
| Tables_in_chuchu |
+------------------+
| list1            |
| list2            |
| list3            |
| list4            |
+------------------+
4 rows in set (0.00 sec)


# RDS
mysql>show tables
+----------------------------+
| Tables_in_chuchu           |
+----------------------------+
| list1                      |
| list2                      |
| list3                      |
| list4                      |
+----------------------------+
[4]2 ms.


mysql>select * from list3;
+--------------+----------------+
| id           | name           |
+--------------+----------------+
|            1 | jnj            |
|            2 | bxuigug        |
+--------------+----------------+
[2]3 ms.
mysql>select * from list4;
+--------------+----------------+
| id           | name           |
+--------------+----------------+
|            1 | vyycy          |
```

```
|            2 | ygyggu         |
+--------------+----------------+
[2]3 ms.
```

测试成功

重构测试

```
down10.200.63.167 10.200.63.169MHA
pos
10.200.63.167

# 167
[root@iZzm09r762s7xsf4lg87fhZ install]# /etc/init.d/mysqld start
Starting MySQL..                                           [  OK  ]

root@MySQL-01 15:48:  [chuchu]> show tables;
+------------------+
| Tables_in_chuchu |
+------------------+
| list1            |
| list2            |
+------------------+
2 rows in set (0.00 sec)

# posmybinlog.000005:762280

root@MySQL-01 15:48:  [chuchu]> change master to
master_host='10.200.63.169',master_user='slave',master_password='abc123',
    -> MASTER_LOG_FILE='mybinlog.000005',MASTER_LOG_POS=762280;
Query OK, 0 rows affected, 2 warnings (0.02 sec)

root@MySQL-01 15:50:  [chuchu]> start slave;
Query OK, 0 rows affected (0.00 sec)


root@MySQL-01 15:51:  [chuchu]> show slave status\G;
*************************** 1. row ***************************
               Slave_IO_State: Waiting for master to send event
                  Master_Host: 10.200.63.169
                  Master_User: slave
                  Master_Port: 3306
                Connect_Retry: 60
              Master_Log_File: mybinlog.000005
          Read_Master_Log_Pos: 763207
               Relay_Log_File: iZzm09r762s7xsf4lg87fhZ-relay-bin.000002
                Relay_Log_Pos: 1246
        Relay_Master_Log_File: mybinlog.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: 763207
              Relay_Log_Space: 1471
              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: 10
                  Master_UUID: ee072971-754c-11e9-8c9b-00163e000af9
             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: ee072971-754c-11e9-8c9b-00163e000af9:134-137
            Executed_Gtid_Set: 48c10a24-3fbe-11e9-81ef-00163e000619:1-15,
dc602e0e-754b-11e9-9237-00163e000619:1-14,
eb66648c-46ee-11e9-b21a-00163e000af9:1-4:161-171,
ee072971-754c-11e9-8c9b-00163e000af9:134-137
                Auto_Position: 0
         Replicate_Rewrite_DB:
                 Channel_Name:
           Master_TLS_Version:
1 row in set (0.00 sec)

ERROR:
No query specified
```

```
#
root@MySQL-01 15:51:  [chuchu]> show tables;
+------------------+
| Tables_in_chuchu |
+------------------+
| list1            |
| list2            |
| list3            |
| list4            |
+------------------+
4 rows in set (0.00 sec)

root@MySQL-01 15:51:  [chuchu]> select * from list3;
+------+---------+
| id   | name    |
+------+---------+
|    1 | jnj     |
|    2 | bxuigug |
+------+---------+
2 rows in set (0.00 sec)

root@MySQL-01 15:52:  [chuchu]> select * from list4;
+------+--------+
| id   | name   |
+------+--------+
|    1 | vyycy  |
|    2 | ygyggu |
```

```
+------+--------+
2 rows in set (0.00 sec)
```

重构成功

现在 10.200.63.169为主，10.200.63.167为从

再次故障测试

测试步骤

主库故障，MHA故障切换

```
10.200.63.169


Mon May 13 15:54:34 2019 - [info] MHA::MasterMonitor version 0.56.
Mon May 13 15:54:35 2019 - [info] GTID failover mode = 1
Mon May 13 15:54:35 2019 - [info] Dead Servers:
Mon May 13 15:54:35 2019 - [info] Alive Servers:
Mon May 13 15:54:35 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Mon May 13 15:54:35 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Mon May 13 15:54:35 2019 - [info] Alive Slaves:
Mon May 13 15:54:35 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:54:35 2019 - [info]     GTID ON
Mon May 13 15:54:35 2019 - [info]     Replicating from
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:54:35 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:54:35 2019 - [info] Current Alive Master:
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:54:35 2019 - [info] Checking slave configurations..
Mon May 13 15:54:35 2019 - [info] Checking replication filtering settings..
Mon May 13 15:54:35 2019 - [info]  binlog_do_db= , binlog_ignore_db=
Mon May 13 15:54:35 2019 - [info]  Replication filtering check ok.
Mon May 13 15:54:35 2019 - [info] GTID (with auto-pos) is supported.
Skipping all SSH and Node package checking.
Mon May 13 15:54:35 2019 - [info] Checking SSH publickey authentication
settings on the current master..
Mon May 13 15:54:35 2019 - [info] HealthCheck: SSH to 10.200.63.169 is
reachable.
Mon May 13 15:54:35 2019 - [info]
10.200.63.169(10.200.63.169:3306) (current master)
 +--10.200.63.167(10.200.63.167:3306)

Mon May 13 15:54:35 2019 - [info] Checking master_ip_failover_script
status:
Mon May 13 15:54:35 2019 - [info]   /scripts/master_ip_failover
--command=status --ssh_user=root --orig_master_host=10.200.63.169
--orig_master_ip=10.200.63.169 --orig_master_port=3306
```

```
IN SCRIPT TEST====systemctl stop keepalived==systemctl start keepalived===

Checking the Status of the script.. OK
Mon May 13 15:54:35 2019 - [info]  OK.
Mon May 13 15:54:35 2019 - [warning] shutdown_script is not defined.
Mon May 13 15:54:35 2019 - [info] Set master ping interval 1 seconds.
Mon May 13 15:54:35 2019 - [warning] secondary_check_script is not defined.
It is highly recommended setting it to check master reachability from two
or more routes.
Mon May 13 15:54:35 2019 - [info] Starting ping health check on
10.200.63.169(10.200.63.169:3306)..
Mon May 13 15:54:35 2019 - [info] Ping(SELECT) succeeded, waiting until
MySQL doesn't respond..




# 10.200.63.169


[root@iZzm0hxkefxmcs7g22mg3mZ install]# /etc/init.d/mysqld stop
Shutting down MySQL.............                           [  OK  ]


Mon May 13 15:58:01 2019 - [warning] Got error on MySQL select ping: 2006
(MySQL server has gone away)
Mon May 13 15:58:01 2019 - [info] Executing SSH check script: exit 0
Mon May 13 15:58:01 2019 - [info] HealthCheck: SSH to 10.200.63.169 is
reachable.
Mon May 13 15:58:02 2019 - [warning] Got error on MySQL connect: 2003
(Can't connect to MySQL server on '10.200.63.169' (111))
Mon May 13 15:58:02 2019 - [warning] Connection failed 2 time(s)..
Mon May 13 15:58:03 2019 - [warning] Got error on MySQL connect: 2003
(Can't connect to MySQL server on '10.200.63.169' (111))
Mon May 13 15:58:03 2019 - [warning] Connection failed 3 time(s)..
Mon May 13 15:58:04 2019 - [warning] Got error on MySQL connect: 2003
(Can't connect to MySQL server on '10.200.63.169' (111))
Mon May 13 15:58:04 2019 - [warning] Connection failed 4 time(s)..
Mon May 13 15:58:04 2019 - [warning] Master is not reachable from health
checker!
Mon May 13 15:58:04 2019 - [warning] Master
10.200.63.169(10.200.63.169:3306) is not reachable!
Mon May 13 15:58:04 2019 - [warning] SSH is reachable.
Mon May 13 15:58:04 2019 - [info] Connecting to a master server failed.
Reading configuration file /etc/masterha_default.cnf and
/etc/masterha/app1.cnf again, and trying to connect to all servers to check
server status..
Mon May 13 15:58:04 2019 - [warning] Global configuration file
/etc/masterha_default.cnf not found. Skipping.
Mon May 13 15:58:04 2019 - [info] Reading application default configuration
from /etc/masterha/app1.cnf..
```

```
Mon May 13 15:58:04 2019 - [info] Reading server configuration from
/etc/masterha/app1.cnf..
Mon May 13 15:58:05 2019 - [info] GTID failover mode = 1
Mon May 13 15:58:05 2019 - [info] Dead Servers:
Mon May 13 15:58:05 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Mon May 13 15:58:05 2019 - [info] Alive Servers:
Mon May 13 15:58:05 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Mon May 13 15:58:05 2019 - [info] Alive Slaves:
Mon May 13 15:58:05 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:58:05 2019 - [info]     GTID ON
Mon May 13 15:58:05 2019 - [info]     Replicating from
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:58:05 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:58:05 2019 - [info] Checking slave configurations..
Mon May 13 15:58:05 2019 - [info] Checking replication filtering settings..
Mon May 13 15:58:05 2019 - [info]  Replication filtering check ok.
Mon May 13 15:58:05 2019 - [info] Master is down!
Mon May 13 15:58:05 2019 - [info] Terminating monitoring script.
Mon May 13 15:58:05 2019 - [info] Got exit code 20 (Master dead).
Mon May 13 15:58:05 2019 - [info] MHA::MasterFailover version 0.56.
Mon May 13 15:58:05 2019 - [info] Starting master failover.
Mon May 13 15:58:05 2019 - [info]
Mon May 13 15:58:05 2019 - [info] * Phase 1: Configuration Check Phase..
Mon May 13 15:58:05 2019 - [info]
Mon May 13 15:58:06 2019 - [info] GTID failover mode = 1
Mon May 13 15:58:06 2019 - [info] Dead Servers:
Mon May 13 15:58:06 2019 - [info]   10.200.63.169(10.200.63.169:3306)
Mon May 13 15:58:06 2019 - [info] Checking master reachability via
MySQL(double check)...
Mon May 13 15:58:06 2019 - [info]  ok.
Mon May 13 15:58:06 2019 - [info] Alive Servers:
Mon May 13 15:58:06 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Mon May 13 15:58:06 2019 - [info] Alive Slaves:
Mon May 13 15:58:06 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:58:06 2019 - [info]     GTID ON
Mon May 13 15:58:06 2019 - [info]     Replicating from
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:58:06 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:58:06 2019 - [info] Starting GTID based failover.
Mon May 13 15:58:06 2019 - [info]
Mon May 13 15:58:06 2019 - [info] ** Phase 1: Configuration Check Phase
completed.
Mon May 13 15:58:06 2019 - [info]
Mon May 13 15:58:06 2019 - [info] * Phase 2: Dead Master Shutdown Phase..
Mon May 13 15:58:06 2019 - [info]
Mon May 13 15:58:06 2019 - [info] Forcing shutdown so that applications
never connect to the current master..
Mon May 13 15:58:06 2019 - [info] Executing master IP deactivation script:
Mon May 13 15:58:06 2019 - [info]   /scripts/master_ip_failover
```

```
--orig_master_host=10.200.63.169 --orig_master_ip=10.200.63.169
--orig_master_port=3306 --command=stopssh --ssh_user=root


IN SCRIPT TEST====systemctl stop keepalived==systemctl start keepalived===

Disabling the VIP on old master: 10.200.63.169
Mon May 13 15:58:08 2019 - [info]  done.
Mon May 13 15:58:08 2019 - [warning] shutdown_script is not set. Skipping
explicit shutting down of the dead master.
Mon May 13 15:58:08 2019 - [info] * Phase 2: Dead Master Shutdown Phase
completed.
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] * Phase 3: Master Recovery Phase..
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] * Phase 3.1: Getting Latest Slaves
Phase..
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] The latest binary log file/position on
all slaves is mybinlog.000005:763207
Mon May 13 15:58:08 2019 - [info] Retrieved Gtid Set:
ee072971-754c-11e9-8c9b-00163e000af9:134-137
Mon May 13 15:58:08 2019 - [info] Latest slaves (Slaves that received relay
log files to the latest):
Mon May 13 15:58:08 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:58:08 2019 - [info]     GTID ON
Mon May 13 15:58:08 2019 - [info]     Replicating from
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:58:08 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:58:08 2019 - [info] The oldest binary log file/position on
all slaves is mybinlog.000005:763207
Mon May 13 15:58:08 2019 - [info] Retrieved Gtid Set:
ee072971-754c-11e9-8c9b-00163e000af9:134-137
Mon May 13 15:58:08 2019 - [info] Oldest slaves:
Mon May 13 15:58:08 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:58:08 2019 - [info]     GTID ON
Mon May 13 15:58:08 2019 - [info]     Replicating from
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:58:08 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] * Phase 3.3: Determining New Master
Phase..
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] Searching new master from slaves..
Mon May 13 15:58:08 2019 - [info]  Candidate masters from the configuration
file:
Mon May 13 15:58:08 2019 - [info]   10.200.63.167(10.200.63.167:3306)
Version=5.7.17-log (oldest major version between slaves) log-bin:enabled
Mon May 13 15:58:08 2019 - [info]     GTID ON
```

```
Mon May 13 15:58:08 2019 - [info]     Replicating from
10.200.63.169(10.200.63.169:3306)
Mon May 13 15:58:08 2019 - [info]     Primary candidate for the new Master
(candidate_master is set)
Mon May 13 15:58:08 2019 - [info]  Non-candidate masters:
Mon May 13 15:58:08 2019 - [info]  Searching from candidate_master slaves
which have received the latest relay log events..
Mon May 13 15:58:08 2019 - [info] New master is
10.200.63.167(10.200.63.167:3306)
Mon May 13 15:58:08 2019 - [info] Starting master failover..
Mon May 13 15:58:08 2019 - [info]
From:
10.200.63.169(10.200.63.169:3306) (current master)
 +--10.200.63.167(10.200.63.167:3306)

To:
10.200.63.167(10.200.63.167:3306) (new master)
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] * Phase 3.3: New Master Recovery Phase..
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info]  Waiting all logs to be applied..
Mon May 13 15:58:08 2019 - [info]   done.
Mon May 13 15:58:08 2019 - [info] Getting new master's binlog name and
position..
Mon May 13 15:58:08 2019 - [info]  mybinlog.000029:1195
Mon May 13 15:58:08 2019 - [info]  All other slaves should start
replication from here. Statement should be: CHANGE MASTER TO
MASTER_HOST='10.200.63.167', MASTER_PORT=3306, MASTER_AUTO_POSITION=1,
MASTER_USER='slave', MASTER_PASSWORD='xxx';
Mon May 13 15:58:08 2019 - [info] Master Recovery succeeded.
File:Pos:Exec_Gtid_Set: mybinlog.000029, 1195,
48c10a24-3fbe-11e9-81ef-00163e000619:1-15,
dc602e0e-754b-11e9-9237-00163e000619:1-14,
eb66648c-46ee-11e9-b21a-00163e000af9:1-4:161-171,
ee072971-754c-11e9-8c9b-00163e000af9:134-137
Mon May 13 15:58:08 2019 - [info] Executing master IP activate script:
Mon May 13 15:58:08 2019 - [info]   /scripts/master_ip_failover
--command=start --ssh_user=root --orig_master_host=10.200.63.169
--orig_master_ip=10.200.63.169 --orig_master_port=3306
--new_master_host=10.200.63.167 --new_master_ip=10.200.63.167
--new_master_port=3306 --new_master_user='mha_mon'
--new_master_password='123'


IN SCRIPT TEST====systemctl stop keepalived==systemctl start keepalived===

Disabling the VIP on old master: 10.200.63.169
Mon May 13 15:58:08 2019 - [info]  OK.
Mon May 13 15:58:08 2019 - [info] Setting read_only=0 on
10.200.63.167(10.200.63.167:3306)..
Mon May 13 15:58:08 2019 - [info]  ok.
Mon May 13 15:58:08 2019 - [info] ** Finished master recovery successfully.
Mon May 13 15:58:08 2019 - [info] * Phase 3: Master Recovery Phase
```

```
completed.
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] * Phase 4: Slaves Recovery Phase..
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] * Phase 4.1: Starting Slaves in
parallel..
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] All new slave servers recovered
successfully.
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] * Phase 5: New master cleanup phase..
Mon May 13 15:58:08 2019 - [info]
Mon May 13 15:58:08 2019 - [info] Resetting slave info on the new master..
Mon May 13 15:58:08 2019 - [info]  10.200.63.167: Resetting slave info
succeeded.
Mon May 13 15:58:08 2019 - [info] Master failover to
10.200.63.167(10.200.63.167:3306) completed successfully.
Mon May 13 15:58:08 2019 - [info]

----- Failover Report -----

app1: MySQL Master failover 10.200.63.169(10.200.63.169:3306) to
10.200.63.167(10.200.63.167:3306) succeeded

Master 10.200.63.169(10.200.63.169:3306) is down!

Check MHA Manager logs at
iZzm0cl1fi1hbmgaxze2enZ:/masterha/app1/manager.log for details.

Started automated(non-interactive) failover.
Invalidated master IP address on 10.200.63.169(10.200.63.169:3306)
Selected 10.200.63.167(10.200.63.167:3306) as a new master.
10.200.63.167(10.200.63.167:3306): OK: Applying all logs succeeded.
10.200.63.167(10.200.63.167:3306): OK: Activated master IP address.
10.200.63.167(10.200.63.167:3306): Resetting slave info succeeded.
Master failover to 10.200.63.167(10.200.63.167:3306) completed
successfully.
Mon May 13 15:58:08 2019 - [info] Sending mail..
```

```
Option new_slave_hosts requires an argument
Unknown option: conf
```

查看VIP

```
[root@iZzm0hxkefxmcs7g22mg3mZ install]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state
UP qlen 1000
    link/ether 00:16:3e:00:0a:f9 brd ff:ff:ff:ff:ff:ff
    inet 10.200.63.169/23 brd 10.200.63.255 scope global dynamic eth0
       valid_lft 310158423sec preferred_lft 310158423sec


[root@iZzm09r762s7xsf4lg87fhZ install]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state
UP qlen 1000
    link/ether 00:16:3e:00:06:19 brd ff:ff:ff:ff:ff:ff
    inet 10.200.63.167/23 brd 10.200.63.255 scope global dynamic eth0
       valid_lft 309462631sec preferred_lft 309462631sec
    inet 10.200.63.1/32 scope global eth0:havip
       valid_lft forever preferred_lft forever
```

由以上信息得出，VIP已经从169转移到167上

查看 DTS

```
167

root@MySQL-01 15:43:  [(none)]> use chuchu;
Database changed
root@MySQL-01 15:43:  [chuchu]> create table list5(id int,name char(10));
Query OK, 0 rows affected (0.02 sec)

root@MySQL-01 15:43:  [chuchu]> insert into list5
values(1,'cbud'),(2,'dbcj');
Query OK, 2 rows affected (0.00 sec)
Records: 2  Duplicates: 0  Warnings: 0

root@MySQL-01 15:43:  [chuchu]> create table list6(id int,name char(10));
Query OK, 0 rows affected (0.02 sec)

root@MySQL-01 15:43:  [chuchu]> insert into list6
values(1,'cbuijbh'),(2,'vchvj');
Query OK, 2 rows affected (0.00 sec)
Records: 2  Duplicates: 0  Warnings: 0


RDS
mysql>show tables;
+----------------------------+
| Tables_in_chuchu           |
+----------------------------+
| list1                      |
| list2                      |
| list3                      |
| list4                      |
| list5                      |
| list6                      |
+----------------------------+
[6]4 ms.
```

再次重构测试

```
# 169167

root@MySQL-01 16:06:  [(none)]> change master to
master_host='10.200.63.167',master_user='slave',master_password='abc123',
    -> MASTER_LOG_FILE='mybinlog.000029',MASTER_LOG_POS=1195;
Query OK, 0 rows affected, 2 warnings (0.03 sec)

root@MySQL-01 16:08:  [(none)]> show tables;
ERROR 1046 (3D000): No database selected
root@MySQL-01 16:08:  [(none)]> start slave;
Query OK, 0 rows affected (0.00 sec)

root@MySQL-01 16:08:  [(none)]> use chuchu;
Database changed
root@MySQL-01 16:08:  [chuchu]> show tables;
+------------------+
| Tables_in_chuchu |
+------------------+
| list1            |
| list2            |
| list3            |
| list4            |
| list5            |
| list6            |
+------------------+
6 rows in set (0.00 sec)

MHA
app1.failover.complete
```

可以看出，169已经同步新主167中新增的数据，重构成功

总结

1 主库发生故障时，MHA发生故障切换并控制VIP的转移（测试阶段成功）

2 DTS 通过内网配置（不同VPC通过高速通道打通）HAVIP和RDS的传输（故障切换后子新增数据均写入成功）

3 两次重构测试都成功且数据一致

4 以上均为测试环境的结果，MHA、Keepalived、DTS的稳定性以及多个产品的维护都是此方案中的不确定性因素，请知悉

备注

后续测试

1 源和目标为同一个VPC内的实例

2 DTS 迁移选择通过高速通道打通

3 测试结果正常