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## dble

gitbook [SUMMARY.md](#)

## PDF

[PDF](#)

[dble](#)

- [github: github.com/actiontech/dble](#)
- [github: github.com/actiontech/dble-test-suite](#)
- [github: github.com/actiontech/dble-docs-cn](#)
- [github pages: actiontech.github.io/dble-docs-cn](#)
- [DBLE](#)
- QQ group: 669663113
- 



3.21.02.xdbletagrelease

[dble](#)

dble :

- : 400-820-6580
- : 86-13718877200,
- : 86-18503063188,
- : 86-18930110869,
- : 86-13540040119,

## 0

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## 0.1 dble

### 0.1.1 dble

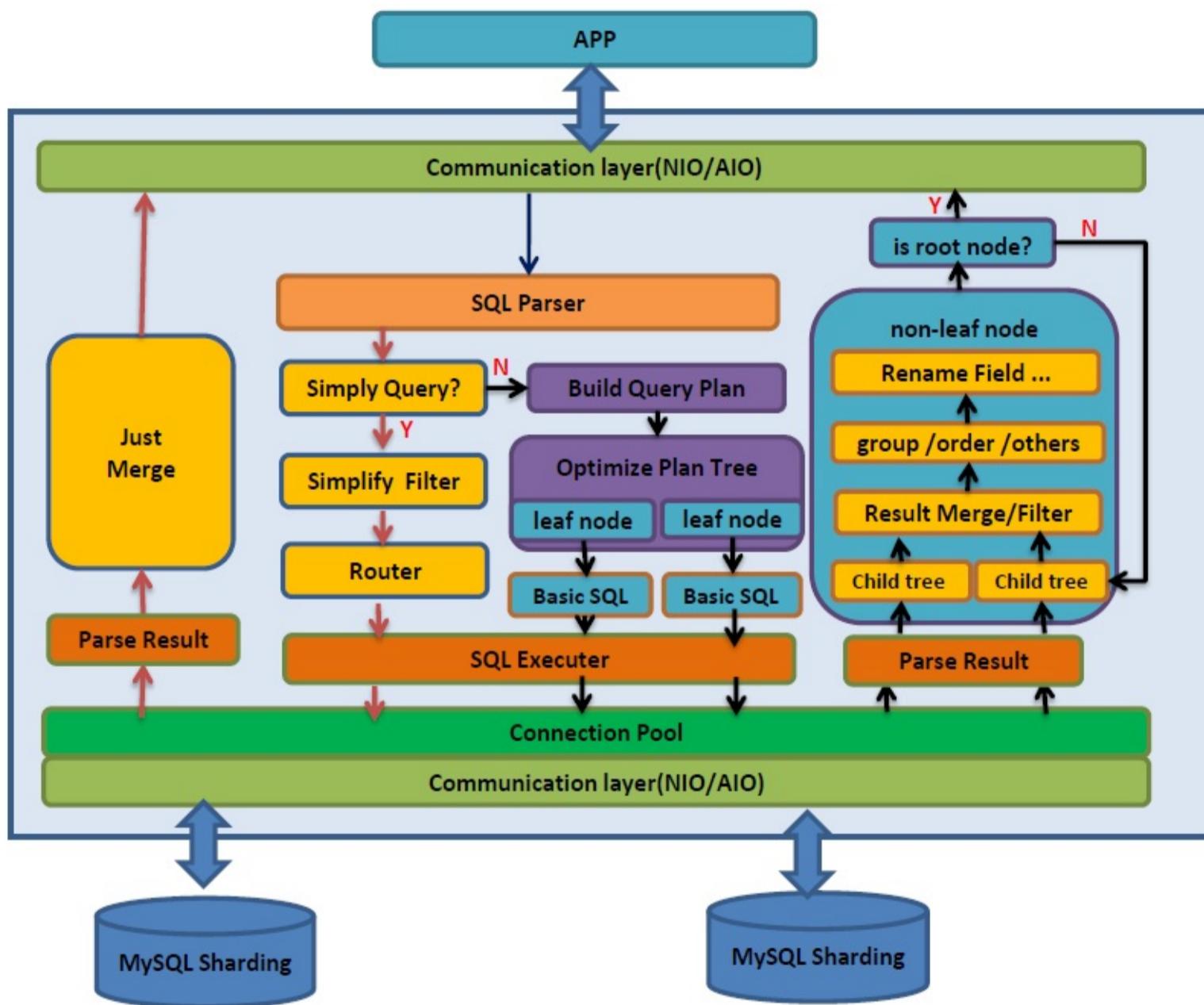
dblemysql

- dbleMySQL
- MySQL MySQLMySQL
- dble
- SQL SQL 92MySQLSQLgroup by order by distinctjoinunionsub-query
- ER
- XAXAMySQL-5.7XA TransactionMySQL

### 0.1.2 dble

- dble MyCatMyCat
- MySQL / bugs [dbleMyCat](#)

### 0.1.3 dble



## 0.2 dbleMyCat

dble

### 0.2.1 mycatmycatbug

- “double free”JVM #4
- XA #21
- wherewhereselect \* from customer wher id=1; #126
- insert into table values(1)(2)mycatSQL
- sql #92
- / #43,#31,#44
- between A and Bhash #23
- alter tableinsert...on duplicate...update...in () #24, #25,#26 ,#5
- #1
- ER, #13
- sharding-join#17

### 0.2.2

- SQLcreate table if not exists...alter table add/drop [primary ] key...
- IO: dbleIO 2
- #56
- - ZK
  - ZK ID
  - #489
  - - insert into table1(id,name) values(next value for MYCATSEQ\_GLOBAL,'test');
    - 1insert into table1(name) values('test');
    - 2insert into table1 values('test');
    - bigint
- ERER
- ERER
- schemacheckSQLschema
- conf/index\_to\_charset.properties
- 
- SQLUPDATE/DELETE/INSERT

### 0.2.3

- ShareJoin(join,union,subquery)/
- showdescolumnsinsert #7
- - 
  -
- SQL
  - mysql> explain select \* from sharding\_two\_node a inner join sharding\_four\_node b on a.id =b.id;

```
+-----+-----+
| SHARDING_NODE | TYPE      | SQL/REF           |
+-----+-----+
| dn1.0         | BASE SQL | select `a`.`id`, `a`.`c_char`, `a`.`ts`, `a`.`si` from `sharding_two_node` `a` ORDER BY `a`.`id` ASC |
| dn2.0         | BASE SQL | select `a`.`id`, `a`.`c_char`, `a`.`ts`, `a`.`si` from `sharding_two_node` `a` ORDER BY `a`.`id` ASC |
| dn1.1         | BASE SQL | select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC |
| dn2.1         | BASE SQL | select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC |
| dn3.0         | BASE SQL | select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC |
| dn4.0         | BASE SQL | select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC |
| merge.1       | MERGE     | dn1.0, dn2.0      |
| merge.2       | MERGE     | dn1.1, dn2.1, dn3.0, dn4.0 |
| join.1        | JOIN      | merge.1, merge.2 |
+-----+-----+
9 rows in set (0.00 sec)
```

- set
- set charset/names
- :XA
- 
- DUAL
- ,(CC++)
- 
- Druid,
- fastjson,
- reload
- MySQLGUI/Driver
- ,
- RocksDB
- mysqldumpslow pt-query-digest

- [Trace](#)
- [MySQL](#)
- [Prepared SQL Statement Syntax](#)
- - The Subquery as Scalar Operand
  - Comparisons Using Subqueries
  - Subqueries with ANY, IN, or SOME
  - Subqueries with ALL
  - Subqueries with EXISTS or NOT EXISTS
  - Derived Tables (Subqueries in the FROM Clause)
- dble [View](#)
- MySQL8.0
- 
- 
- 
- DDL
- 
- 

#### 0.2.4

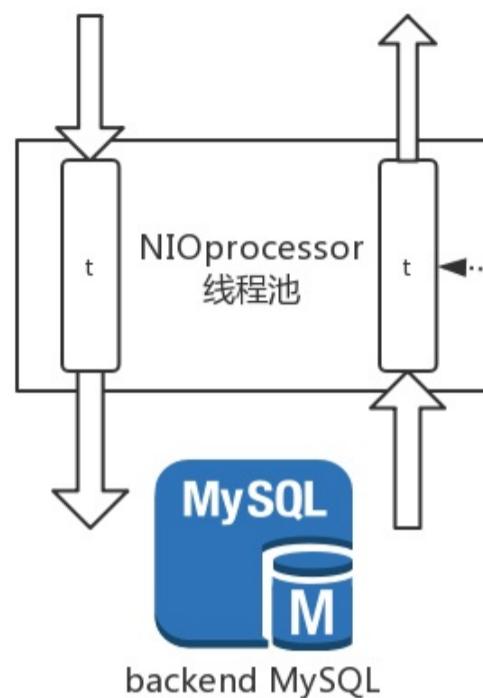
- HASH
- 
- set
- 
- writeType=1
- handleDistributedTransactions

#### 0.2.5

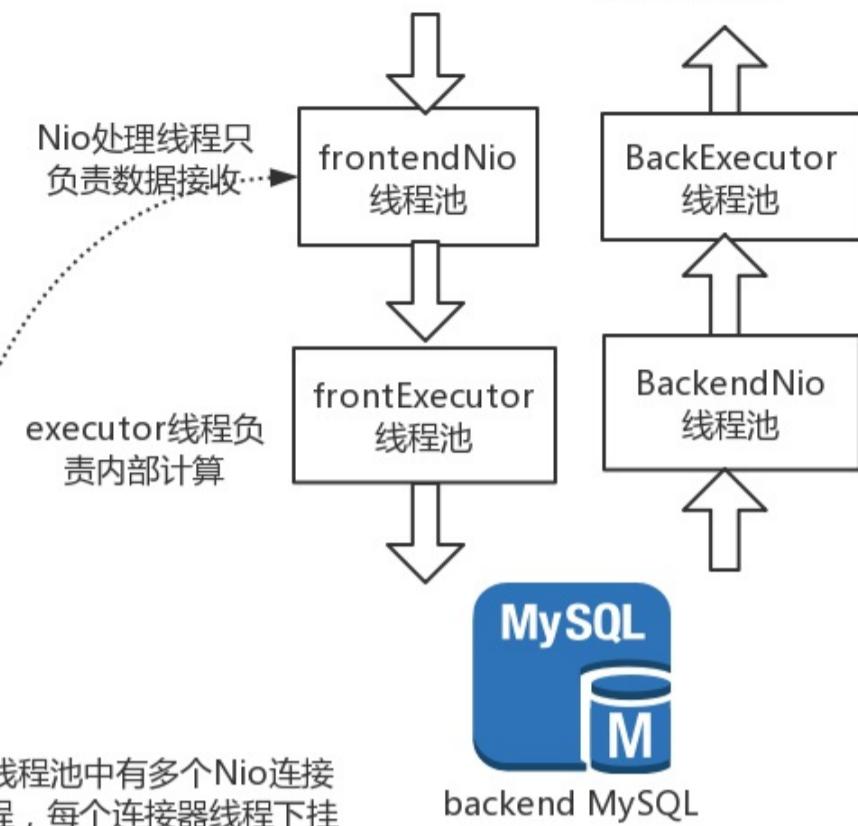
[DBLEMyCAT](#)

#### 0.2.6 2

Mycat以及dble 2.18.02之前版本



dble 2.18.02以及之后版本



NIO线程池中有多个Nio连接器线程，每个连接器线程下挂载了数量不一的tcp连接



Nio处理器（处理器线程）内部为挂载不定数量个连接，并且循环响应每个连接的请求

在数据处理和数据接收进行线程分割之后(dble 2.18.02)，使得dble可以并发响应挂载在同一个NIO连接器(同一个processor线程)上的请求

e.g.

恰好我们存在场景连接1，2同时有请求过来，旧版本需要循环处理连接1，2的任务，在连接1的任务处理完成之前，连接2的任务无法进行处理

新的IO结构中，连接1的数据被接收完毕之后，NIO线程就可以接收连接2的数据，并且此时连接1的数据已经在executor线程池进行处理中，连接1，2之间的任务执行变成并行

## 0.3

### 0.3.1

- dbledble

### 0.3.2

dble

- MySQL

```
dbledblemysqlmysq
MySQL
A:url=ip1:3306,$user=test,$password=testPsw
B:url=ip2:3306,$user=test,$password=testPsw
/etc/hostsMySQL "NO ROUTE TO HOST"
```

- JVM

```
dbledblejava1.8JAVA_HOME
```

### 0.3.3

- (<https://github.com/actiontech/dble/releases>)

- dble

```
mkdir -p $working_dir
cd $working_dir
tar -xvf actiontech-dble-$version.tar.gz
cd $working_dir/dble/conf
mv cluster_template.cnf cluster.cnf
mv bootstrap_template.cnf bootstrap.cnf
mv db_template.xml db.xml
mv user_template.xml user.xml
mv sharding_template.xml sharding.xml
```

### 0.3.4 dble

- db.xml instanceM1 instanceM2 MySQL

```
<dbInstance name="instanceM1" url="ip1:3306" user="your_user" password="your_psw" maxCon="1000" minCon="10"
primary="true">

<dbInstance name="instanceM2" url="ip2:3306" user="your_user" password="your_psw" maxCon="1000" minCon="10"
primary="true"/>
```

### 0.3.5

- 

```
cd $working_dir/dble
bin/dble start
```

- tail -f logs/wrapper.log
- mysql dble654321 mysql -p -P9066 -h 127.0.0.1 -u man1
- mysqlschema

```
create database @@shardingnode='dn$1-6';
```

- mysql dble123456 mysql -p -P8066 -h 127.0.0.1 -u root
- mysql

```
use testdb;
drop table if exists tb_enum_sharding;
create table if not exists tb_enum_sharding (
    id int not null,
    code int not null,
    content varchar(250) not null,
    primary key(id)
)engine=innodb charset=utf8;
insert into tb_enum_sharding values(1,10000,'1'),(2,10010,'2'),(3,10000,'3'),(4,10010,'4');
```

## 0.3.2 (docker)

### 0.3.2.1

- dockerhubdbledble

### 0.3.2.2

- docker
- docker-composedocker-compose
- mysql

### 0.3.2.3

docker

```
docker network create -o "com.docker.network.bridge.name"="dble-net" --subnet 172.18.0.0/16 dble-net
docker run --name backend-mysql1 --ip 172.18.0.2 -e MYSQL_ROOT_PASSWORD=123456 -p 33061:3306 --network=dble-net -d mysql:5.7 --server-id=1
docker run --name backend-mysql2 --ip 172.18.0.3 -e MYSQL_ROOT_PASSWORD=123456 -p 33062:3306 --network=dble-net -d mysql:5.7 --server-id=2
sleep 30
docker run -d -i -t --name dble-server --ip 172.18.0.5 -p 8066:8066 -p 9066:9066 --network=dble-net actiontech/dble:latest
docker 33061 33062 mysql 8066 9066
mysqldble
```

### 0.3.2.4

mysql80669066docker  
8066 (SQL) root/123456  
9066 () man1/654321

dble-server /opt/dble/conf/sharding.xml

mysql

```
# dble
mysql -P8066 -u root -p123456 -h 127.0.0.1
# dble
mysql -P9066 -u man1 -p654321 -h 127.0.0.1
#mysql1
mysql -P33061 -u root -p123456 -h 127.0.0.1
#mysql2
mysql -P33062 -u root -p123456 -h 127.0.0.1
```

### 0.3.2.5

```
docker stop backend-mysql1
docker stop backend-mysql2
docker stop dble-server
docker rm backend-mysql1
docker rm backend-mysql2
docker rm dble-server
docker network rm dble-net
```

### 0.3.2.6 docker-compose

docker-composegithub

```
wget https://raw.githubusercontent.com/actiontech/dble/master/docker-images/docker-compose.yml
```

docker-composemysqldble

```
docker-compose up
```

dble quick-start dble dble-server 8066/9066 root/123456 8066mysql 33061/33062root/123456

```
docker-compose stop
docker-compose rm
```

### 0.3.2.7 docker-compose

dble,dble dble

dblevolumesdockerdble/confdble

docker-compose.ymldble-server

```
volumes:  
- /opt/test/conf:/opt/self_conf
```

```
/opt/test/conf/opt/self_conf dble-server
```

```
command: ["/opt/dble/bin/wait.sh", "backend-mysql1:3306","--","/opt/self_conf/docker_init_start.sh"]
```

```
/opt/dble/bin/docker_init_start.shself_conf
```

- /opt/dble/conf
- /opt/dble/bin/dble startdble
- /opt/dble/bin/wait-for-it.sh dble 8066 dble
- mysqldble

## 0.3.1 dble build

### 0.3.1

- dble docker
- docker-compose

### 0.3.2

- docker
- docker-compose

### 0.3.3

dockerhub

1. (<https://github.com/actiontech/dble/releases>) 3.20.02.0
2. dble dble Dockerfile

```
mkdir -p $working_dir
cd $working_dir
tar -xvf actiontech-dble-$version.tar.gz
cd $working_dir/docker-images/dble-image
```

3. dble -t dble tag ` docker build --build-arg MODE=quick-start --build-arg DBLE\_VERSION=latest -t="actiontech/dble:latest" .

MODE docker mgrrwSplitquick-start DBLE\_VERSION docker dble

1. MODE \$working\_dir/docker-images/dble-image
  2. 3.20.10.0 3.20.10.0 3.20.10.0
- ```
### 0.3.4 docker-compose
dble $working_dir/docker-images mgrrwSplit docker-compose
+ mgrrmrg(mysql) dble
+ quick-start mysql dble
+ rwSplit mysql dble
```

docker-compose up -d

docker-compose stop docker-compose rm

- ```
## 0.3.5
#### 0.3.5.1
1.
```

mysql> show slave status\G; \* 1. row \* Slave\_IO\_State: Waiting for master to send event Master\_Host: 10.186.61.151 Master\_User: user Master\_Port: 33306 Connect\_Retry: 60 Master\_Log\_File: mysql-bin.000004 Read\_Master\_Log\_Pos: 154 Relay\_Log\_File: 4bad16278f02-relay-bin.000006 Relay\_Log\_Pos: 367 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\_Error: 0 Last\_Error: Skip\_Counter: 0 Exec\_Master\_Log\_Pos: 154 Relay\_Log\_Space: 747 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\_Error: 0 Last\_SQL\_Error: Last\_SQL\_Erno: 0 Last\_SQL\_Error: Replicate\_Ignore\_Server\_Ids: Master\_Server\_Id: 1 Master\_UUID: 46bb9692-e5f3-11ea-8340-0242ac110002 Master\_Info\_File: /var/lib/mysql/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: Master\_TLS\_Version: 1 row in set (0.00 sec)

- ```
#### 0.3.5.2 mgr
1. mgr
```

[root@localhost]docker-images# docker exec mgr-a-1 mysql -h127.0.0.1 -p3306 -uroot -p123456 \ -e "SHOW STATUS LIKE 'group\_replication\_primary\_member';" \ -e "SELECT \* FROM performance\_schema.replication\_group\_members;"

| CHANNEL_NAME              | MEMBER_ID                            | MEMBER_HOST | MEMBER_PORT | MEMBER_STATE | group_replication_primary_member                                                            |
|---------------------------|--------------------------------------|-------------|-------------|--------------|---------------------------------------------------------------------------------------------|
| group_replication_applier | 72da84d7-0c4b-11eb-9f0e-0242ac120002 | mgr-a-1     | 3306        | ONLINE       | 72da84d7-0c4b-11eb-9f0e-0242ac120002   mgr-a-1   3306   ONLINE    group_replication_applier |
| group_replication_applier | 7314efdd-0c4b-11eb-ba28-0242ac120004 | mgr-a-3     | 3306        | ONLINE       | 7314efdd-0c4b-11eb-ba28-0242ac120004   mgr-a-3   3306   ONLINE                              |
| group_replication_applier | 733b00fe-0c4b-11eb-bbea-0242ac120003 | mgr-a-2     | 3306        | ONLINE       | 733b00fe-0c4b-11eb-bbea-0242ac120003   mgr-a-2   3306   ONLINE                              |

[root@localhost]docker-images# docker exec mgr-b-1 mysql -h127.0.0.1 -p3306 -uroot -p123456 \ -e "SHOW STATUS LIKE 'group\_replication\_primary\_member';" \ -e "SELECT \* FROM performance\_schema.replication\_group\_members;"

| CHANNEL_NAME              | MEMBER_ID                            | MEMBER_HOST | MEMBER_PORT | MEMBER_STATE | group_replication_primary_member                                                            |
|---------------------------|--------------------------------------|-------------|-------------|--------------|---------------------------------------------------------------------------------------------|
| group_replication_applier | 728c327d-0c4b-11eb-9300-0242ac120005 | mgr-b-1     | 3306        | ONLINE       | 728c327d-0c4b-11eb-9300-0242ac120005   mgr-b-1   3306   ONLINE    group_replication_applier |
| group_replication_applier | 732c5b3b-0c4b-11eb-9eb1-0242ac120007 | mgr-b-3     | 3306        | ONLINE       | 732c5b3b-0c4b-11eb-9eb1-0242ac120007   mgr-b-3   3306   ONLINE                              |
| group_replication_applier | 733c6350-0c4b-11eb-b0fb-0242ac120006 | mgr-b-2     | 3306        | ONLINE       | 733c6350-0c4b-11eb-b0fb-0242ac120006   mgr-b-2   3306   ONLINE                              |

2. dble, dble-server/opt/dble/logs/

```
[root@localhost]docker-images# docker exec -it dble-server bash [root@dble-server /]# less /opt/dble/logs/wrapper.log [root@dble-server /]# less /opt/dble/logs/dble.log
```

## bootstrap.cnfuseOuterHafalse

```
[root@dble-server /]# less /opt/dble/logs/custom_mysql_ha.log
```

```
3. dble-server/opt/dble/conf/db.xml
```

```
[root@localhost]# docker exec -it dble-server bash [root@dble-server /]# cat /opt/dble/conf/db.xml
```

```
show slave status false false
```

```
4. mgr-a-1dble-servercustom_mysql_ha.log172.18.0.2:3066...is not alive!db.xmlldbGroup1instance$1
```

```
[root@localhost]docker-images# docker-compose stop mgr-a-1 [root@localhost]docker-images# docker exec -it dble-server bash [root@dble-server /]# less /opt/dble/logs/custom_mysql_ha.log ... 2020-10-12 07:05:08 [DBLEDbGroupsCheck] [INFO] DbInstance 172.18.0.2:3306 in dbGroup1 is not alive! 2020-10-12 07:05:08 [DBLEDbGroupsCheck] [INFO] DbInstance 172.18.0.3:3306 in dbGroup1 is normal! 2020-10-12 07:05:08 [DBLEDbGroupsCheck] [INFO] DbInstance 172.18.0.4:3306 in dbGroup1 is normal! 2020-10-12 07:05:08 [DBLEDbGroupsCheck] [INFO] DbInstance 172.18.0.5:3306 in dbGroup2 is normal! 2020-10-12 07:05:08 [DBLEDbGroupsCheck] [INFO] DbInstance 172.18.0.6:3306 in dbGroup2 is normal! 2020-10-12 07:05:08 [DBLEDbGroupsCheck] [INFO] DbInstance 172.18.0.7:3306 in dbGroup2 is normal! ...
```

```
[root@dble-server /]# cat /opt/dble/conf/db.xml
```

```
show slave status false false `
```

## 0.4

### 0.4.1

- dble
  - mysql
  - mysql
  - mysql

### 0.4.2

- ,
- joinjoin
- :
  - 23
  - QPSTPS
- QPSTPSSQL

### 0.4.3

- 
-

## 1.dble

- - cluster.cnf:
  - bootstrap.cnf:JVM dble
  - user.xml:dble
  - db.xml
  - sharding.xml
  - log4j.xml log4j2.xml
  - 
  - cache
  - 
  - 
  -
- - /logs/wrapper.logdble
  - /logs/dble.logdbledble
- -

dble 3.20.07.0 2.20.04.0

## 2.

[dble\\_update\\_config](#) 2.20.04.0 3.20.07.02.20.04.0

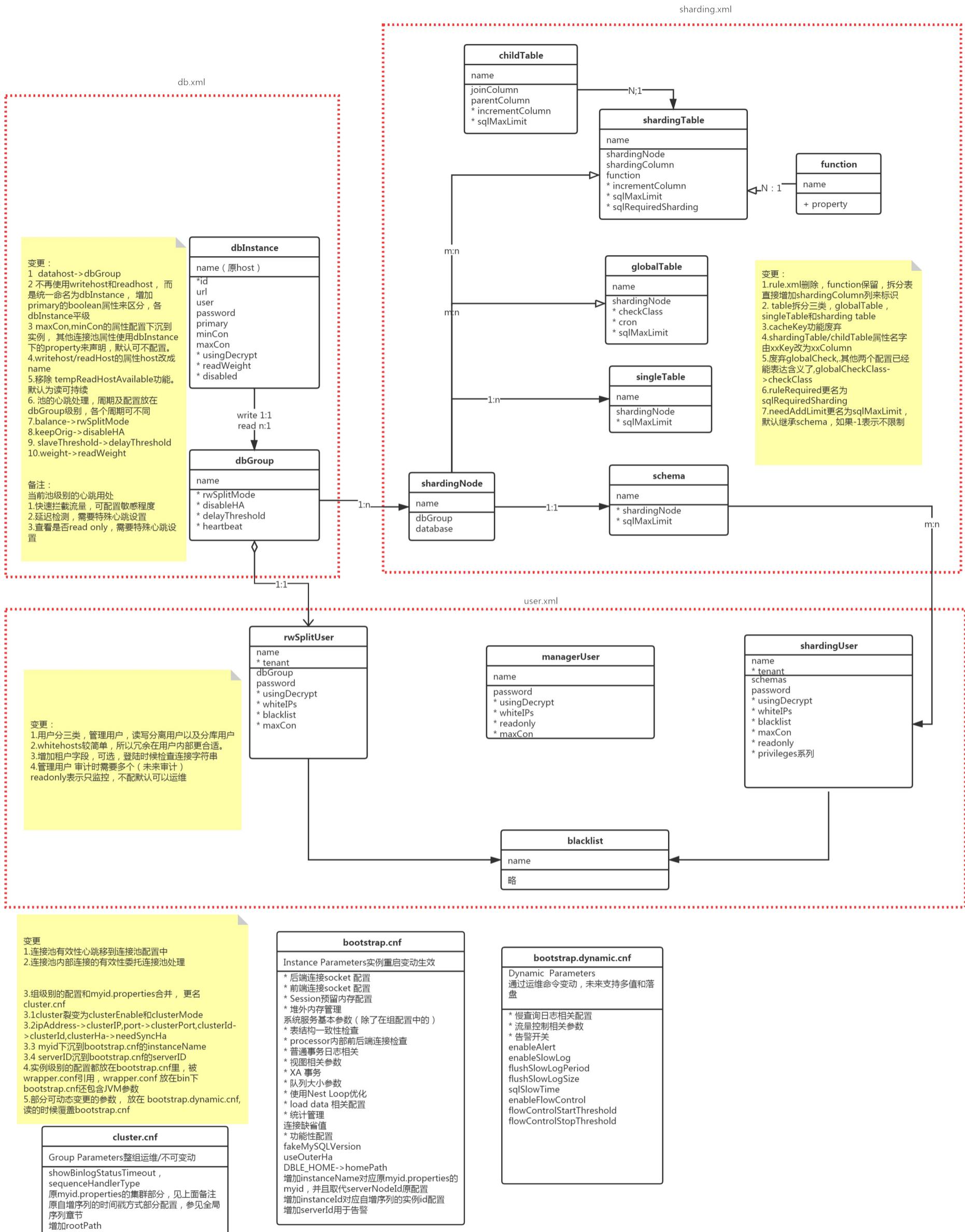
```
dble_update_config [-i=read_dir] [-o=write_dir] [-p=rootPath]
```

|                                  |                |               |
|----------------------------------|----------------|---------------|
| read_dir/write_dir: rootPath:zk, | /dble , ucore, | universe/dble |
|----------------------------------|----------------|---------------|

:  
 myid.properties  
 wrapper.conf  
 server.xml  
 schema.xml  
 rule.xml  
 log4j2.xml  
 cacheservice.properties(option)  
 sequence\_distributed\_conf.properties for type3 (option)  
 sequence\_time\_conf.properties for type2 (option)

:  
 cluster.cnf  
 bootstrap.cnf  
 user.xml  
 db.xml  
 sharding.xml  
 log4j2.xml  
 cacheservice.properties(option)

## 3.



## 1.1 cluster.cnf

```
key=valuedbleblekey/value
dbleDDL
,dble(zk),dble
sequenceHandlerType
```

|                         | &        | /                     |                                                                                   |
|-------------------------|----------|-----------------------|-----------------------------------------------------------------------------------|
| clusterEnable           |          | true/falsefalse       | clusterIPclusterPortrootPathclusterID                                             |
| clusterMode             |          | zk/ucoreclusterEnable | zkzookeeperucore                                                                  |
| clusterIP               | IP       | clusterEnable         | clusterModezk<br>10.186.19.aa:2281,10.186.60.bb:2281<br>clusterModecoreucoreip IP |
| clusterPort             |          |                       | clusterModezkclusterModeucoreucore                                                |
| rootPath                |          | clusterEnable         |                                                                                   |
| clusterId               | dble     | clusterEnable         | dbledble                                                                          |
| needSyncHa              | ha       | true/falsefalse       | trueuseOuterHatrue                                                                |
| showBinlogStatusTimeout | binlog   | 60000 ,               | binlog                                                                            |
| sequenceHandlerType     |          | 1~42                  | 1MySQL offset-step sequence<br>2(Snowflake)<br>3time(Snowflake)<br>4offset-step   |
| sequenceStartTime       |          | 2010-11-04 09:42:54   | sequenceHandlerType23                                                             |
| sequenceInstanceByZk    | timezkid | true/false,true       | sequenceHandlerType3clusterModezk                                                 |

### 1.1.1

```
clusterEnable=false
#showBinlogStatusTimeout=60000
sequenceHandlerType=2
#sequenceStartTime=2010-11-04 09:42:54
#sequenceInstanceByZk=true
```

### 1.1.2 ZK

```
clusterEnable=true
clusterMode=zk
clusterIP=10.186.19.aa:2281,10.186.60.bb:2281
rootPath=/dble
clusterId=cluster-1
#needsSyncHa=false
#showBinlogStatusTimeout=60000
sequenceHandlerType=2
#sequenceStartTime=2010-11-04 09:42:54
#sequenceInstanceByZk=true
```

### 1.1.3 ucore

```
clusterEnable=true
clusterMode=ucore
clusterIP=10.186.19.aa,10.186.60.bb
clusterPort=5700
rootPath=universe/dble
clusterId=cluster-1
#needsSyncHa=false
#showBinlogStatusTimeout=60000
sequenceHandlerType=2
#sequenceStartTime=2010-11-04 09:42:54
#sequenceInstanceByZk=true
```

## 1.2 bootstrap.cnf

dblewrapper.cnfwrapper

### 1.2.1 jvm

JVM,

```
-agentlib:jdwp=transport=dt_socket,server=y,address=8088,suspend=n
-server
-XX:+AggressiveOpts
-Dfile.encoding=UTF-8
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.port=1984
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.host=127.0.0.1
-Xmx4G
-Xms1G
-XX:MaxDirectMemorySize=2G
```

JVM JVM

MaxDirectMemorySize 81917M 79G bufferPoolPageNumber\*bufferPoolPageSize

bufferPoolPageNumber = (MaxDirectMemorySize \* 0.8 /bufferPoolPageSize), 32767

bufferPoolPageSize = 2M

```
dble=0.6 ()
Xmx = 0.4 dble
MaxDirectMemorySize = 0.6 * dble
bufferPoolPageNumber bufferPoolPageSize MaxDirectMemorySize
```

### 1.2.2 dble

dble,-Dkey=value JSWdbleJSW wrapper.app.parameter\_file

sql

|  |              |                                             |           |                            |                                       |
|--|--------------|---------------------------------------------|-----------|----------------------------|---------------------------------------|
|  |              | /                                           |           |                            |                                       |
|  | homePath     | slowlogsviewConfxa<br>tmxalogsload datatemp | ,         |                            | ,                                     |
|  | instanceName |                                             |           | xa                         |                                       |
|  | instanceId   | id                                          |           |                            | sequenceHandlerType=2<br>3.           |
|  | serverId     |                                             | IP        | dble                       | sequenceHandlerType=2<br>0~1023       |
|  | bindIp       | IP                                          | "0.0.0.0" | IP                         | IP,<br>sequenceHandlerType=3<br>0~511 |
|  | serverPort   |                                             | 8066      |                            |                                       |
|  | managerPort  |                                             | 9066      |                            |                                       |
|  | maxCon       |                                             | 0         | maxCon0,maxCon,,<br>maxcon | maxConmanager                         |

|  |                          |                   |             |                                                          |                                                                                   |
|--|--------------------------|-------------------|-------------|----------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | processors               | NIO               | java<br>,   | IO                                                       |                                                                                   |
|  | backendProcessors        | NIO               | java<br>,   | IO                                                       |                                                                                   |
|  | processorExecutor        |                   | (2,)        |                                                          |                                                                                   |
|  | backendProcessorExecutor |                   | (2,)        |                                                          |                                                                                   |
|  | complexExecutor          |                   | (2,88       |                                                          |                                                                                   |
|  | writeToBackendExecutor   | SQL               | (2,)        | SQL                                                      |                                                                                   |
|  | fakeMySQLVersion         | dblemysql         | NULL        | MySql                                                    | MYSQL                                                                             |
|  | serverBacklog            | tcp backlog       | 2048        | tcp backlog                                              |                                                                                   |
|  | usePerformanceMode       |                   | 0/          | DbleCPU,                                                 | 1-0-                                                                              |
|  | useOuterHa               |                   | true        | dble                                                     | true/false                                                                        |
|  | charset                  |                   | utf8mb4     |                                                          |                                                                                   |
|  | maxPacketSize            |                   | 4×1024×1024 | dble(+1024)dbInstance<br>dbInstance-1024.1024SQL         |                                                                                   |
|  | txIsolation              |                   | 3           | SQL<br><br>dbledbInstancesession<br>sessionSQLsessionset | 1-<br>READ_UNCOMMITTED<br>2-READ_COMMITTED<br>3-REPEATABLE_READ<br>4-SERIALIZABLE |
|  | autocommit               |                   | 1           | dbledbInstance<br><br>sessionSQLsessionset               | 0/1                                                                               |
|  | useCompression           |                   | 0           | mysql                                                    | 1 - 0 -                                                                           |
|  | capClientFoundRows       | Client_Found_Rows | false       | dbleClient_Found_Rows                                    | true - false -                                                                    |
|  | usingAIO                 | AIO               | 0           | AIONIO                                                   | 1 - 0 -                                                                           |
|  | useThreadUsageStat       |                   | 0/          | show @@thread_used                                       | 1-0-                                                                              |
|  | useCostTimeStat          |                   | 0/          | BTraceCostTime.jav,<br>show @@cost_time                  | 1-0-                                                                              |
|  | maxCostStatSize          |                   | 100         | show @@cost_time                                         |                                                                                   |

|            |                             |              |                                                                     |                                                                                                                                                    |           |
|------------|-----------------------------|--------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|            | costSamplePercent           |              | 1%                                                                  | costSamplePercent                                                                                                                                  |           |
|            | checkTableConsistency       |              | 0                                                                   | 1<br>DB                                                                                                                                            | 1,-0-     |
|            | checkTableConsistencyPeriod |              | 30×60×1000,<br>,                                                    |                                                                                                                                                    |           |
| processor  | sqlExecuteTimeout           |              | 300,<br>,                                                           |                                                                                                                                                    |           |
|            | idleTimeout                 |              | 10 × 60 × 1000,<br>,                                                | processor                                                                                                                                          |           |
|            | processorCheckPeriod        | processor    | 1000,<br>,                                                          | processor                                                                                                                                          |           |
| socket     | backSocketSoRcvbuf          |              | 1024×1024×4,<br>,                                                   | buffer                                                                                                                                             |           |
|            | backSocketSoSndbuf          |              | 1024×1024,<br>,                                                     | buffer                                                                                                                                             |           |
|            | backSocketNoDelay           | Nagle        | 1/<br>,                                                             |                                                                                                                                                    | 1-,<br>0- |
| socket     | frontSocketSoRcvbuf         |              | 1024 × 1024<br>,                                                    |                                                                                                                                                    |           |
|            | frontSocketSoSndbuf         |              | 1024×1024×4<br>,                                                    | buffer                                                                                                                                             |           |
|            | frontSocketNoDelay          | Nagle        | 1<br>,                                                              |                                                                                                                                                    | 1,-0-     |
| Session    | orderMemSize                | sessionorder | 4,M<br>,                                                            | sessionorder by                                                                                                                                    |           |
|            | otherMemSize                | session      | 4,M<br>,                                                            | sessionsubQuerydistinctd                                                                                                                           |           |
|            | joinMemSize                 | sessionjoin  | 4M<br>,                                                             | sessionjoin                                                                                                                                        |           |
| BufferPool | bufferPoolChunkSize         |              | 4096<br>,                                                           |                                                                                                                                                    |           |
|            | bufferPoolPageNumber        |              | 0.8 ×<br>MaxDirectMemorySize /<br>bufferPoolPageSize(default<br>2M) | bufferPoolPageSize<br><a href="#">1.4_wrapper.conf</a>                                                                                             |           |
|            | bufferPoolPageSize          |              | 1024 * 1024 * 2,<br>,                                               | bufferPoolPageNumbe,<br><br><i>MaxDirectMemorySize(<br/><a href="#">1.4_wrapper.conf</a>)<br/>bufferPoolPageNumber *<br/>bufferPoolPageSizeOOM</i> |           |
|            |                             |              |                                                                     |                                                                                                                                                    |           |

|    |                             |        |                   |                                               |       |
|----|-----------------------------|--------|-------------------|-----------------------------------------------|-------|
|    | mappedFileSize              |        | 1024×1024×64<br>, | ,                                             |       |
|    | bufferUsagePercent          |        | 80,               | resultSetMapClear<br>clearBigSQLResultSetMaps | 0-100 |
|    | useSqlStat                  | SQL    | 1/<br>,           | SQL<br>recycleSqlStat5SQL                     | 1-0-  |
|    | clearBigSQLResultSetMaps    |        | 600×1000<br>,     | resultSetMapClear                             |       |
|    | sqlRecordCount              |        | 10<br>,           | recycleSqlStatsql,SQL                         |       |
|    | maxResultSet                |        | 512×1024<br>,     | SQL                                           |       |
|    | recordTxn                   | log    | 0                 | log                                           | 1-0-  |
|    | transactionLogBaseDir       | log    | /txlogs           | log                                           |       |
|    | transactionLogBaseName      | log    | server-tx         |                                               |       |
|    | transactionRotateSize       |        | 16<br>,M          |                                               |       |
| XA | xaRecoveryLogBaseDir        | xatm   | dble/tmlogs/      | XADblexa                                      |       |
|    | xaRecoveryLogBaseName       | xatm   | tmlog             |                                               |       |
|    | xaSessionCheckPeriod        | XA     | 1000 ms           | server<br>session                             |       |
|    | xaLogCleanPeriod            | XAlog  | 1000 ms           | server<br>XA log                              |       |
|    | xaRetryCount                | XA     | 0                 | XA0                                           |       |
|    | viewPersistenceConfBaseDir  |        | dble/viewConf     | ,                                             |       |
|    | viewPersistenceConfBaseName |        | viewJson          | ,                                             |       |
|    | joinQueueSize               | join,  | 1024              |                                               |       |
|    | mergeQueueSize              | merge, | 1024              |                                               |       |
|    | orderByQueueSize            | ,      | 1024              |                                               |       |
|    |                             |        |                   |                                               | true  |

|           |                                         |                                                    |                     |                                              |                     |
|-----------|-----------------------------------------|----------------------------------------------------|---------------------|----------------------------------------------|---------------------|
| Nest Loop | useJoinStrategy                         | nest loop                                          |                     | joinwhereSQL                                 | false               |
|           | nestLoopConnSize                        |                                                    | 4                   |                                              |                     |
|           | nestLoopRowsSize                        |                                                    | 2000                |                                              |                     |
|           | enableSlowLog                           |                                                    | 0                   |                                              | 01                  |
|           | slowLogBaseDir                          |                                                    | dble/slowlogs       |                                              |                     |
|           | slowLogBaseName                         |                                                    | slow-query          | (.log)                                       |                     |
|           | flushSlowLogPeriod                      |                                                    | 1                   |                                              |                     |
|           | flushSlowLogSize                        |                                                    | 1000                | 1                                            |                     |
|           | sqlSlowTime                             |                                                    | 100                 |                                              | 0                   |
| load data | maxCharsPerColumn                       |                                                    | 65535               |                                              |                     |
|           | maxRowSizeToFile                        | load data                                          | 100000              | load dataOOM load data ,                     |                     |
|           | enableBatchLoadData                     | load data                                          | 0                   | load datamaxRowSizeToFile                    | 01                  |
|           | enableFlowControl                       | true/false                                         | false               |                                              | true/false          |
|           | flowControlStartThreshold               |                                                    | 4096                |                                              |                     |
|           | flowControlStopThreshold                |                                                    | 256                 |                                              |                     |
|           | maxHeapTableSize                        |                                                    | 4096                |                                              | 0                   |
|           | heapTableBufferChunkSize                | buffer cache                                       | bufferPoolChunkSize | buffer                                       | bufferPoolChunkSize |
|           | enableGeneralLog                        | genegral                                           | 0                   | sqlgeneral                                   | 0/1                 |
| general   | generalLogFile                          | general                                            | general/general.log | '/homepath                                   |                     |
|           | generalLogFileSize                      | general                                            | 16M                 | general.logyyyy-MM/general-MM-dd-%d.loglog4j |                     |
|           | generalLogQueueSize                     | general                                            | 4096                | log4jAsyncLogger                             | 2                   |
|           | enableStatistic                         |                                                    | false               |                                              | true false          |
|           | associateTablesByEntryByUserTableSize   | sql_statistic_by_associate_tables_by_entry_by_user | 1024                |                                              | 1                   |
|           | frontendByBackendByEntryByUserTableSize | sql_statistic_by_frontend_backend_by_entry_by_user | 1024                |                                              |                     |

|               |                                          |                                                       |      |                              |         |
|---------------|------------------------------------------|-------------------------------------------------------|------|------------------------------|---------|
| sql statistic | frontendBy BackendByEntryByUserTableSize | sql_statistic_by_frontend_by_backend_by_entry_by_user |      |                              | 1       |
|               | tableByUserByEntryTableSize              | sql_statistic_by_table_by_user_by_entry               | 1024 |                              | 1       |
|               | statisticQueueSize                       | sql statistic                                         | 4096 | log4jAsyncLogger             | 2       |
|               | samplingRate                             | sql                                                   | 0    | samplingRate100dble4<br>1004 | [0,100] |
|               | sqlLogTableSize                          | sql log                                               | 1024 |                              | 2       |

### 1.2.3 bootstrap.dynamic.cnf

```
bootstrap.dynamic.cnf
bootstrap.dynamic.cnf
enableAlert
enableSlowLog
flushSlowLogPeriod
flushSlowLogSize
sqlSlowTime
enableFlowControl
flowControlStartThreshold
flowControlStopThreshold
enableGeneralLog
generalLogFile
enableStatistic
associateTablesByEntryByUserTableSize
frontendBy BackendByEntryByUserTableSize
tableByUserByEntryTableSize
enableBatchLoadData
maxRowSizeToFile
```

### 1.2.4

```
#encoding=UTF-8
-agentlib:jdwp=transport=dt_socket,server=y,address=8088,suspend=n
-server
-XX:+AggressiveOpts
-Dfile.encoding=UTF-8
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.port=1984
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.host=127.0.0.1
-Xmx4G
-Xms1G
-XX:MaxDirectMemorySize=2G
# base config
-DhomePath=.
-DinstanceName=1
# valid for sequenceHandlerType=2 or 3
-DinstanceId=1
-DserverId=xxx1
--DbindIp=0.0.0.0
--DserverPort=8066
--DmanagerPort=9066
--DmaxCon=1024
--Dprocessors=4
--DbackendProcessors=12
--DprocessorExecutor=4
--DbackendProcessorExecutor=12
--DcomplexExecutor=8
--DwriteToBackendExecutor=4

-DfakeMySQLVersion=5.7.11

# serverBacklog size,default 2048
-DserverBacklog=2048

--DusePerformanceMode=0
# if need out HA
-DuseOuterHa=true

# connection
--Dcharset=utf8mb4
-DmaxPacketSize=167772160
-DtxIsolation=2
--DautoCommit=1

# option
--DuseCompression=1
-DusingAIO=0
```

```

-DuseThreadUsageStat=1
# query time cost statistics
--DuseCostTimeStat=0
--DmaxCostStatSize=100
--DcostSamplePercent=1

# consistency
# check the consistency of table structure between nodes,default not
-DcheckTableConsistency=0
# check period, he default period is 60000 milliseconds
-DcheckTableConsistencyPeriod=60000

# processor check conn
-DprocessorCheckPeriod=1000
-DsqlExecuteTimeout=3000
-DidleTimeout=1800000

--DbackSocket unit:bytes
--DbackSocketSoRcvbuf=4194304
--DbackSocketSoSndbuf=1048576
--DbackSocketNoDelay=1

# frontSocket
--DfrontSocketSoRcvbuf=1048576
--DfrontSocketSoSndbuf=4194304
--DfrontSocketNoDelay=1

# query memory used for per session,unit is M
-DotherMemSize=4
-DorderMemSize=4
-DjoinMemSize=4

# off Heap unit:bytes
-DbufferPoolChunkSize=32767
-DbufferPoolPageNumber=512
-DbufferPoolPageSize=2097152
--DmappedFileSize=2097152

# sql statistics
# 1 means use SQL statistics, 0 means not
-DuseSqlStat=1
--DbufferUsagePercent=80
-DclearBigSQLResultSetMapMs=600000
--DsqliRecordCount=10
--DmaxResultSet=524288

# transaction log
# 1 enable record the transaction log, 0 disable ,the unit of transactionRotateSize is M
-DrecordTxn=0
--DtransactionLogBaseDir=/txlogs
--DtransactionLogBaseName=server-tx
--DtransactionRotateSize=16
# XA transaction
# use XA transaction ,if the mysql service crash,the unfinished XA commit/rollback will retry for several times , it is the check period for ,default is 1000 milliseconds
-DxaSessionCheckPeriod=1000
# use XA transaction ,the finished XA log will removed. the default period is 1000 milliseconds
-DxaLogCleanPeriod=1000
# XA Recovery Log path
# -DxaRecoveryLogBaseDir=/tmlogs/
# XA Recovery Log name
--DxaRecoveryLogBaseName=tmlog
# XA Retry count, retry times in backend, 0 means always retry until success
--DxaRetryCount=0

--DviewPersistenceConfBaseDir=/viewPath
--viewPersistenceConfBaseName=viewJson

# for join tmp results
--DmergeQueueSize=1024
--DorderByQueueSize=1024
--DjoinQueueSize=1024

# true is use JoinStrategy, default false
--DuseJoinStrategy=true
-DnestLoopConnSize=4
-DnestLoopRowsSize=2000

# if enable the slow query log
-DenableSlowLog=1
# the slow query log location
--DslowLogBaseDir=./slowlogs
--DslowLogBaseName=slow-query
# the max period for flushing the slow query log from memory to disk after last time , unit is second
-DflushSlowLogPeriod=1
# the max records for flushing the slow query log from memory to disk after last time
-DflushSlowLogSize=1000
# the threshold for judging if the query is slow , unit is millisecond
-DsqlSlowTime=100

# used for load data,maxCharsPerColumn means max chars length for per column when load data
--DmaxCharsPerColumn=65535
# used for load data, because dble need save to disk if loading file contains large size
--DmaxRowSizeToFile=100000
if enable the batch load data
--DenableBatchLoadData=1
#enableFlowControl=false
#flowControlStartThreshold=4096
#flowControlStopThreshold=256

```

```
# if enable the general log
#-DenableGeneralLog=1
# general log file path
#-DgeneralLogFile=general/general.log
# maximum value of file, unit is mb
#-DgeneralLogFileSize=16
# the queue size must not be less than 1 and must be a power of 2
#-DgeneralLogQueueSize=4096

# if enable statistic sql
#-DenableStatistic=1
#-DassociateTablesByEntryByUserTableSize=1024
#-DfrontendByBackendByEntryByUserTableSize=1024
#-DtableByUserByEntryTableSize=1024
# processing queue size must not be less than 1 and must be a power of 2
#-DstatisticQueueSize=4096

# samplingRate
#-DsamplingRate=0
# size of sql log table
#-DsqlLogTableSize=1024
```

## 1.3 user.xml

### 1.3.1 XML

- managerUser (,)
- shardingUser ()
- rwSplitUser ()
- blacklist()

### 1.3.2 managerUser()

|              |    |                 |                                                                                                                                                                                                                                                                                                                   |
|--------------|----|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |    | /               |                                                                                                                                                                                                                                                                                                                   |
| name         |    | mysql           |                                                                                                                                                                                                                                                                                                                   |
| password     |    |                 |                                                                                                                                                                                                                                                                                                                   |
| usingDecrypt |    | true/falsefalse | passwordcrypt.sh 0:{user}:{password}<br>encrypt.sh 0:xxx:123456<br>fP/nl3XPXrSfWjpQzit5IOrRU1QRXuLTYt<br>ATUG0fGW2k5kdXUhKL5zf02hE6nGjdnS<br>WrufVkJPUZpbQ2qX9uQ==<br>password<br>fP/nl3XPXrSfWjpQzit5IOrRU1QRXuLTYt<br>ATUG0fGW2k5kdXUhKL5zf02hE6nGjdnS<br>WrufVkJPUZpbQ2qX9uQ==<br>user xxx<br>-u root -p123456 |
| whiteIPs     | ip |                 | whiteIPs                                                                                                                                                                                                                                                                                                          |
| readOnly     |    | true/falsefalse | showselect                                                                                                                                                                                                                                                                                                        |
| maxCon       |    |                 | ,0 maxCon                                                                                                                                                                                                                                                                                                         |

### 1.3.3 shardingUser()

|              |           |                 |                                                                                                                                                                                                                                                                                                                   |
|--------------|-----------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |           | /               |                                                                                                                                                                                                                                                                                                                   |
| name         |           | mysql           |                                                                                                                                                                                                                                                                                                                   |
| password     |           |                 |                                                                                                                                                                                                                                                                                                                   |
| usingDecrypt |           | true/falsefalse | passwordcrypt.sh 0:{user}:{password}<br>encrypt.sh 0:xxx:123456<br>fP/nl3XPXrSfWjpQzit5IOrRU1QRXuLTYt<br>ATUG0fGW2k5kdXUhKL5zf02hE6nGjdnS<br>WrufVkJPUZpbQ2qX9uQ==<br>password<br>fP/nl3XPXrSfWjpQzit5IOrRU1QRXuLTYt<br>ATUG0fGW2k5kdXUhKL5zf02hE6nGjdnS<br>WrufVkJPUZpbQ2qX9uQ==<br>user xxx<br>-u root -p123456 |
| whiteIPs     | ip        |                 | whiteIPs                                                                                                                                                                                                                                                                                                          |
| readOnly     |           | true/falsefalse | DMLshowselect                                                                                                                                                                                                                                                                                                     |
| tenant       |           |                 | tenant                                                                                                                                                                                                                                                                                                            |
| schemas      | schema    |                 | schemaschemasharding.xmlschma                                                                                                                                                                                                                                                                                     |
| maxCon       |           |                 | ,0 maxConmaxCon                                                                                                                                                                                                                                                                                                   |
| blacklist    | blacklist |                 | blacklist                                                                                                                                                                                                                                                                                                         |
| privileges   | table     |                 | privileges                                                                                                                                                                                                                                                                                                        |

### 1.3.3.1 user.privileges.schema

user.privileges schemadml

|  |  |   |  |
|--|--|---|--|
|  |  | / |  |
|  |  |   |  |

|       |        |      |                                           |
|-------|--------|------|-------------------------------------------|
| name  | schema |      | schema                                    |
| dml   | dml    | 0000 | INSERT UPDATE SELECT DELETE<br>1- 0- 1111 |
| table |        |      | tableschema                               |

### 1.3.3.2 user.privileges.schema.table

|      |     |      |                                           |
|------|-----|------|-------------------------------------------|
|      |     | /    |                                           |
| name |     |      | key                                       |
| dml  | dml | 0000 | INSERT UPDATE SELECT DELETE<br>1- 0- 1111 |

### 1.3.4 rwSplitUser()

|              |           |                 |                                                                                                                                                                                                                                                                                                                           |
|--------------|-----------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |           | /               |                                                                                                                                                                                                                                                                                                                           |
| name         |           | mysql           |                                                                                                                                                                                                                                                                                                                           |
| password     |           |                 |                                                                                                                                                                                                                                                                                                                           |
| usingDecrypt |           | true/falsefalse | passwordcrypt.sh 0:{user}:{password}<br>crypt.sh 0:xxx:123456<br>fp/nl3XPXrSfWjpQzit5liOrRU1QRXuLTYt<br>ATUG0fGW2k5kdXUhKL5zf02hE6nGjdnS<br>WrufVkJPUZpbQ2qX9uQ==<br><br>password<br>fp/nl3XPXrSfWjpQzit5liOrRU1QRXuLTYt<br>ATUG0fGW2k5kdXUhKL5zf02hE6nGjdnS<br>WrufVkJPUZpbQ2qX9uQ==<br>user xxx<br><br>-u root -p123456 |
| whiteIPs     | ip        |                 | whiteIPs                                                                                                                                                                                                                                                                                                                  |
| tenant       |           |                 | tenant                                                                                                                                                                                                                                                                                                                    |
| dbGroup      | dbGroup   |                 | db.xmldbGroup                                                                                                                                                                                                                                                                                                             |
| maxCon       |           |                 | ,0 maxConmaxCon                                                                                                                                                                                                                                                                                                           |
| blacklist    | blacklist |                 | blacklist                                                                                                                                                                                                                                                                                                                 |

### 1.3.5 blacklist()

|          |           |   |          |
|----------|-----------|---|----------|
|          |           | / |          |
| name     | blacklist |   |          |
| property |           |   | property |

### 1.3.5.1 blacklist.property()

```
<property name="selectHavingAlwayTrueCheck">true</property>
```

keyvalue

|                            |               |      |                   |                           |  |
|----------------------------|---------------|------|-------------------|---------------------------|--|
|                            |               |      |                   |                           |  |
| selectHavingAlwayTrueCheck | select having | true | true -<br>false - | 1having<br>2SQL()<br>3SQL |  |

|                              |                 |       |                |                                                                                                        |      |
|------------------------------|-----------------|-------|----------------|--------------------------------------------------------------------------------------------------------|------|
|                              |                 |       |                | select * from test having id = id and hujh = hujh /*lxxddfsqdfqwesfct*/;                               |      |
| selectWhereAlwayTrueCheck    | select where    | true  | true - false - | 1where<br>2SQL()<br>3SQL<br><br>select * from test where id = id and hujh = hujh/*lxxddfsqdfqwesfct*/; |      |
| doPrivilegedAllow            | druid           | false | true - false - | druidflagble                                                                                           |      |
| wrapAllow                    | isWrapForunwrap | true  | true - false - | druidflagble                                                                                           |      |
| metadataAllow                | getmetadata     | true  | true - false - | druidflagble                                                                                           |      |
| completeInsertValuesCheck    | dble1.0.31      | false | true - false - | druidflagble                                                                                           |      |
| mergeAllow                   | merge(mysql)    | true  | true - false - | merge                                                                                                  | Dble |
| conditionLikeTrueAllow       | like            | true  | true - false - | SQLlike '%'                                                                                            |      |
| conditionDoubleConstAllow    |                 | false | true - false - | SQL<br>select * from suntest asdf where 1 = 1 and 2 = 1;                                               |      |
| conditionAndAlwaysFalseAllow | and<br>false    | false | true - false - | whereand<br>:select * from suntest where id = 567 and 1 = 1;                                           |      |
| conditionAndAlwaysTrueAllow  | and<br>true     | false | true - false - | whereand<br>:select * from suntest where id = 567 and 1 = 1;                                           |      |
| selectAllColumnAllow         |                 | true  | true - false - | sql*<br>(x*)                                                                                           |      |
| multiStatementAllow          | sql             | false | true - false - | sql                                                                                                    | Dble |
| constArithmeticAllow         |                 | true  | true - false - | SQL<br>select * from suntest asdf where id = 2 -1;                                                     |      |
| alterTableAllow              | alter table     | true  | true - false - | alter tableSQL<br>SQLalter table                                                                       |      |
| commitAllow                  | commit          | true  | true - false - | commitSQL<br>commit                                                                                    |      |
| createTableAllow             | create table    | true  | true - false - | create tableSQL<br>SQLcreate table                                                                     |      |
| deleteAllow                  | delete          | true  | true - false - | deleteSQLdelete                                                                                        |      |
| dropTableAllow               | drop table      | true  | true - false - | drop tableSQL<br>SQLdrop table                                                                         |      |
| insertAllow                  | insert          | true  | true - false - | insertSQLinsert                                                                                        |      |
|                              |                 |       | true -         | intersectSQL                                                                                           |      |

|                         |                         |       |                   |                                                            |      |
|-------------------------|-------------------------|-------|-------------------|------------------------------------------------------------|------|
| intersectAllow          | intersect               | true  | true -<br>false - | intersectSQL<br>intersect                                  |      |
| lockTableAllow          | lock tables             | true  | true -<br>false - | lock tablesSQL<br>lock                                     |      |
| minusAllow              | minus                   | true  | true -<br>false - | minusSQL<br>minus                                          |      |
| callAllow               | call                    | true  | true -<br>false - | querySQL<br>SQLCALL                                        |      |
| selectIntoOutfileAllow  | SELECT ... INTO OUTFILE | false | true -<br>false - | querySQLSQL<br>SELECT ... INTO OUTFILE                     | Dble |
| selectIntoAllow         | select into             | true  | true -<br>false - | querySQL<br>SQLselect into                                 | Dble |
| selectAllow             | select                  | true  | true -<br>false - | querySQL<br>SQLselect                                      |      |
| renameTableAllow        | rename table            | true  | true -<br>false - | rename tableSQL<br>SQLrename table                         |      |
| replaceAllow            | replace                 | true  | true -<br>false - | replaceSQL<br>replace                                      |      |
| rollbackAllow           | rollback                | true  | true -<br>false - | rollbackSQL<br>rollback                                    | Dble |
| setAllow                | set                     | true  | true -<br>false - | setSQL<br>set                                              |      |
| describeAllow           | describe                | true  | true -<br>false - | SQLSQL<br>describe                                         |      |
| limitZeroAllow          | limit 0                 | false | true -<br>false - | SQLSQL<br>limit 0                                          |      |
| showAllow               | show                    | true  | true -<br>false - | SQLSQL<br>show                                             |      |
| hintAllow               | sql hint                | true  | true -<br>false - | sqlSQL<br>SQLhint                                          |      |
| commentAllow            | SQL                     | true  | true -<br>false - | SQLSQL                                                     |      |
| mustParameterized       |                         | false | true -<br>false - | SQLSQL<br>name = 'sdfasdf',id = 1                          |      |
| conditionOpXorAllow     | SQLXOR                  | false | true -<br>false - | SQLSQL                                                     |      |
| conditionOpBitwiseAllow | "&"<br>"~"" ""^""^"     | true  | true -<br>false - | SQLSQL                                                     |      |
| startTransactionAllow   | START TRANSACTION       | true  | true -<br>false - | START TRANSACTION SQL<br>START TRANSACTION :begin<br>druid |      |
| truncateAllow           | truncate                | true  | true -<br>false - | truncateSQL<br>truncate                                    |      |
| updateAllow             | update                  | true  | true -<br>false - | updateSQLupdate                                            |      |

|                            |                 |       |                   |                                                                                                                                       |  |
|----------------------------|-----------------|-------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------|--|
| useAllow                   | use             | true  | true -<br>false - | useSQLuse                                                                                                                             |  |
| blockAllow                 |                 | true  | true -<br>false - | SQLSQLSQL<br>BEGIN; select * from suntest;END;//                                                                                      |  |
| deleteWhereNoneCheck       | deletewhere     | false | true -<br>false - | delete<br>delete from suntest;                                                                                                        |  |
| updateWhereNoneCheck       | updatewhere     | false | true -<br>false - | update<br>update suntest set name = '33';                                                                                             |  |
| deleteWhereAlwaysTrueCheck | delete          | true  | true -<br>false - | delete,sql<br>where<br>delete from suntest where id = id and name= name /*sdfaasdf*/;                                                 |  |
| updateWhereAlwaysTrueCheck | delete          | true  | true -<br>false - | deletesql<br>where<br>update suntest set name = '33' where id = id,name = name /*sdfsdf*/;                                            |  |
| selectIntersectCheck       | intersect check | true  | true -<br>false - | except<br>left sqlfromright from<br>:select * from sbtest1 where name = 'ff' INTERSECT;<br>select * from dual;                        |  |
| selectExceptCheck          | except check    | true  | true -<br>false - | except<br>left sqlfromright from<br>select * from sbtest1 where name = 'ff' except;<br>select * from dual;                            |  |
| selectMinusCheck           | MINUS check     | true  | true -<br>false - | MINUS<br>left sqlfromright from<br>select * from sbtest1 where namec = 'fff' minus<br>select * from dual;                             |  |
| selectUnionCheck           | union check     | true  | true -<br>false - | unoIn<br>select * from sbtest1 unoIn<br>select * from suntest;                                                                        |  |
| caseConditionConstAllow    |                 | false | true -<br>false - | SQL<br>:delete from suntest where id = 123 and 'name' = (select case 'fname' who<br>dsome' else 'good' end from xtest ) /*sdfaasdf*/; |  |
| strictSyntaxCheck          |                 | true  | true -<br>false - | Druid SQL Parser<br>SQL                                                                                                               |  |
| schemaCheck                | schema          | true  | true -<br>false - | druidble                                                                                                                              |  |
| tableCheck                 | table           | true  | true -<br>false - | druidble                                                                                                                              |  |
| functionCheck              | function        | true  | true -<br>false - | druidble                                                                                                                              |  |
| objectCheck                | object          | true  | true -<br>false - | druidble                                                                                                                              |  |
| variantCheck               |                 | true  | true -<br>false - | druidble                                                                                                                              |  |

### 1.3.6 tenant

### 1.3.6 tenant

dble

1. ::

```
mysql -u: -p -h

DriverManager.getConnection("jdbc:mysql://127.0.0.1:8066", "root2:tenant1", "123456");
```

2. JDBC-connectionAttributes connectionAttributes tenant

```
DriverManager.getConnection("jdbc:mysql://127.0.0.1:8066?connectionAttributes=tenant:tenant1", "root2", "123456");
```

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### 1.3.7 whiteIPsIP

IP

ip192.168.1.2,192.168.2.22  
 IP192.168.1.10-192.168.1.100  
 192.168.1.%  
 IP/CIDR192.168.1.1/20

*IPV4/IPV6*

- 127.0.0.10:0:0:0:0:0:1
- IPV6IPv4

### 1.3.8

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE dble:user SYSTEM "user.dtd">
<dbl:User xmlns:dbl="http://dble.cloud/">
  <managerUser name="man1" password="654321" whiteIPs="127.0.0.1,0:0:0:0:0:0:1" readOnly="false"/>
  <managerUser name="user" usingDecrypt="true" readOnly="true" password="AqEkFEuIFAX6g2TJQnp4cJ2r7Yc0Z4/KBsZqKhT8qSz18Aj91e8lx049BKQE1C60Ffw4c38pCYa8QGFTub7pnw==" />
  <shardingUser name="root" password="123456" schemas="testdb" readOnly="false" blacklist="blacklist1" maxCon="20"/>
  <shardingUser name="root2" password="123456" schemas="testdb,testdb2" maxCon="20" tenant="tenant1">
    <privileges check="true">
      <schema name="testdb" dml="0110">
        <table name="tb01" dml="0000"/>
        <table name="tb02" dml="1111"/>
      </schema>
    </privileges>
  </shardingUser>
  <!--rwSplitUser not work for now-->
  <rwSplitUser name="rwsu1" password="123456" dbGroup="dbGroup1" blacklist="blacklist1"
    maxCon="20"/>
  <blacklist name="blacklist1">
    <property name="selelctAllow">true</property>
  </blacklist>
</dbl:User>
```

## 1.4 db.xml

db.xml,

### 1.4.1 dbGroup

- dbGroup

|                | & | /                |                                                                                                      |
|----------------|---|------------------|------------------------------------------------------------------------------------------------------|
| name           |   |                  | dbGroup                                                                                              |
| rwSplitMode    |   | 0/1/2/3          | 0,<br>1<br>2<br>3                                                                                    |
| delayThreshold |   | -1               | 1:delayThreshold show slave status<br>2:delayThreshold=-1                                            |
| disableHA      |   | true/false/false |                                                                                                      |
| heartbeat      | , |                  | mysql:<br>1.select 1<br>2. select @@read_only<br>3.show slave status,<br>Seconds_Behind_Master mysql |
| dbInstance     |   |                  |                                                                                                      |

- heartbeat

|                 | &          | /  |                                                                                                                 |
|-----------------|------------|----|-----------------------------------------------------------------------------------------------------------------|
| timeout         | heartbeat, | 0  | dble heartbeatPeriodMillis dbInstance<br>,timeout<br>(heartbeatPeriodMillis)22s4s4s<br>timeout(<br>2. dbTimeout |
| errorRetryCount | heartbeat, | 10 | ,/errorRetryCount<br>1. errorOK()<br>2. okError<br>3.                                                           |

- dbInstance

|              | &        | /                |                                                         |
|--------------|----------|------------------|---------------------------------------------------------|
| name         |          |                  |                                                         |
| url          | ip:port  |                  | IPPORT                                                  |
| user         |          |                  |                                                         |
| password     |          |                  |                                                         |
| usingDecrypt | password | false/true,false | true password encrypt.sh 1:{name}:{user}:<br>{password} |
| minCon       |          |                  |                                                         |
| maxCon       |          |                  |                                                         |
| readWeight   | ()       | 0                |                                                         |
| primary      | true     | false            |                                                         |
| disabled     |          | false            |                                                         |
| property     |          |                  |                                                         |

- property

:

```

<?xml version="1.0"?>
<!DOCTYPE dble:db SYSTEM "db.dtd">
<db:db xmlns:db="http://db.cloud/">
  <dbGroup name="dbGroup1" rwSplitMode="2" delayThreshold="100">
    <heartbeat>show slave status</heartbeat>
    <dbInstance name="instanceM1" url="ip1:3306" user="your_user" password="your_psw" maxCon="1000" minCon="10"
      primary="true" readWeight="1" id="xx1">
    </dbInstance>
    <dbInstance name="instanceS1" url="ip2:3306" user="your_user" password="your_psw" maxCon="1000" minCon="10" readWeight="2" disabled="true">
      <property name="testOnCreate">false</property>
    </dbInstance>
  </dbGroup>

  <dbGroup name="dbGroup2" rwSplitMode="0" delayThreshold="100" disableHA="true">
    <heartbeat errorRetryCount="1" timeout="10">show slave status</heartbeat>
    <dbInstance name="instanceM2" url="ip4:3306" user="your_user" password="your_psw" maxCon="1000" minCon="10"
      primary="true">
      <property name="testOnCreate">true</property>
    </dbInstance>
  </dbGroup>
</db:db>

```

```

<!-- can have multi read instances -->
<dbInstance name="instanceS2" url="ip5:3306" user="your_user" password="your_psw" maxCon="1000" minCon="10" usingDecrypt="true">
    <property name="testOnCreate">true</property>
</dbInstance>
</dbGroup>
</dble:db>

```

## 1.4.2 MySQL

dble MySQL

|                    |                                                  |
|--------------------|--------------------------------------------------|
|                    |                                                  |
| SELECT             |                                                  |
| INSERT             |                                                  |
| UPDATE             |                                                  |
| DELETE             |                                                  |
| FILE               | load data                                        |
| CREATE             | {}                                               |
| DROP               |                                                  |
| ALTER              |                                                  |
| LOCK TABLES        | lock tables                                      |
| ALTER ROUTINE      | (hint)/                                          |
| CREATE ROUTINE     | (hint)                                           |
| EXECUTE            | (hint)                                           |
| INDEX              | /                                                |
| SUPER              | KILL                                             |
| SHOW DATABASES     | GUINFORMATION_SCHEMA SCHEMATA                    |
| PROCESS            | show processlist                                 |
| REPLICATION CLIENT | : 1., 2.show slave status 3.show @@binlog_status |
| REFERENCES         | {}                                               |

## 1.5 sharding.xml

### 1.5.1 XML

- schema (schema)
- shardingNode ()
- function ()

### 1.5.2 schema

#### 1.5.3 schema

- schema

|               |               |    |                                                              |
|---------------|---------------|----|--------------------------------------------------------------|
|               |               | /  |                                                              |
| name          | schema        |    | schema                                                       |
| shardingNode  |               |    | xmltable;<br>1.tableschema2.schema,tablesingle node<br>table |
| sqlMaxLimit   |               | -1 | SQL<br>1 (order/group/)<br>2 shemasqlMaxLimit                |
| shardingTable | shardingTable |    |                                                              |
| globalTable   | globalTable   |    |                                                              |
| singleTable   | singleTable   |    |                                                              |

- shardingTable

|                     |            |                   |                                                                                      |
|---------------------|------------|-------------------|--------------------------------------------------------------------------------------|
|                     |            | /                 |                                                                                      |
| name                |            |                   | ,                                                                                    |
| shardingNode        |            |                   | xxx\$ $n_0-n_1$<br>xxxn0, ..., xxxnm, ..., xxxn1<br>dn\$1-6 dn1,dn2, dn3,dn4,dn5,dn6 |
| shardingColumn      |            |                   |                                                                                      |
| function            |            |                   | function                                                                             |
| incrementColumn     |            |                   |                                                                                      |
| sqlMaxLimit         |            | schemasqlMaxLimit | schemas schema                                                                       |
| sqlRequiredSharding | sql        | false             | truesql                                                                              |
| childTable          | childTable |                   | ER                                                                                   |

- childTable

|                 |            |                   |                |
|-----------------|------------|-------------------|----------------|
|                 |            | /                 |                |
| name            |            |                   | ,              |
| joinColumn      | joinjoin   |                   |                |
| parentColumn    | joinjoin   |                   | /              |
| incrementColumn |            |                   |                |
| sqlMaxLimit     |            | schemasqlMaxLimit | schemas schema |
| childTable      | childTable |                   | ER             |

- globalTable

|              |  |                   |                                                                                                                                                                                                       |
|--------------|--|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |  | /                 |                                                                                                                                                                                                       |
| name         |  |                   | ,                                                                                                                                                                                                     |
| shardingNode |  |                   | xxx\$ $n_0-n_1$<br>xxxn0, ..., xxxnm, ..., xxxn1<br>dn\$1-6 dn1,dn2, dn3,dn4,dn5,dn6                                                                                                                  |
| sqlMaxLimit  |  | schemasqlMaxLimit | schemas schema                                                                                                                                                                                        |
| checkClass   |  |                   | dbleCHECKSUMCOUNT                                                                                                                                                                                     |
| cron         |  | 0 0 0 * * ?       | quartz<br><a href="http://www.quartz-scheduler.org/api/2.4.0-SNAPSHOT/org/quartz/CronScheduleBuilder.html">http://www.quartz-scheduler.org/api/2.4.0-SNAPSHOT/org/quartz/CronScheduleBuilder.html</a> |

- singleTable

|              |  |   |              |
|--------------|--|---|--------------|
|              |  | / |              |
| name         |  |   | ,            |
| shardingNode |  |   | shardingNode |

|             |  |                   |                |
|-------------|--|-------------------|----------------|
| sqlMaxLimit |  | schemasqlMaxLimit | schemas schema |
|-------------|--|-------------------|----------------|

### 1.5.4 shardingNode

- shardingNode

|          | &                                      |                                         |
|----------|----------------------------------------|-----------------------------------------|
| name     | "dn,dn\$0-5"                           | ,,'',X()05,"X\$0-5",\$namedatabaseGroup |
| database | shardingNodemysqlschema,"db,db\$0-5"   | ,,'',X()05,"X\$0-5",\$                  |
| dbGroup  | shardingNodedb.xmldbGroup,,dh,dh\$0-5" | Host,'X()05,"X\$0-5",\$                 |

|                                                                                                 |                                                                         |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <shardingNode name="dn1" dbGroup="localhost1" database="db1" />                                 |                                                                         |
| name, dbGroup, database                                                                         | xxx\$n0-n1, xxx, xxnn0... , xxnm ... ,xxnn1, xxx,                       |
| n0 < nm < n1                                                                                    |                                                                         |
| :                                                                                               |                                                                         |
| <shardingNode name="dn1\$0-19" dbGroup="localhost1\$0-9" database="db1\$0-1" />                 |                                                                         |
| ...                                                                                             |                                                                         |
| <shardingNode name="dn10" dbGroup="localhost10" database="db10" />                              |                                                                         |
| <shardingNode name="dn11" dbGroup="localhost10" database="db11" />                              |                                                                         |
| <shardingNode name="dn12" dbGroup="localhost11" database="db10" />                              |                                                                         |
| <shardingNode name="dn13" dbGroup="localhost11" database="db11" />                              |                                                                         |
| ...                                                                                             |                                                                         |
| <shardingNode name="dn19" dbGroup="localhost19" database="db11" />                              |                                                                         |
| shardingNode(name)dbGroupdatabase,,name20,dbGroup 10, database2;                                |                                                                         |
| <shardingNode name="dn,dn\$0-19,dnx" dbGroup="localhost,localhost1\$0-9" database="db1\$0-1" /> |                                                                         |
| ,name22,dbGroup11, database2                                                                    |                                                                         |
| shardingNodedatabasedbGroup(shardingNode)                                                       |                                                                         |
| <b>1.5.5 function</b>                                                                           |                                                                         |
| name: class property name                                                                       |                                                                         |
| ● function                                                                                      |                                                                         |
|                                                                                                 |                                                                         |
| name                                                                                            |                                                                         |
| class                                                                                           | Enum, NumberRange, Hash, StringHash, Date, PatternRange, jumpStringHash |
| property                                                                                        | function                                                                |

|                                                                                             |  |
|---------------------------------------------------------------------------------------------|--|
| <function name="rang-long"" class="com.actiontech.dble.route.function.AutoPartitionByLong"> |  |
| <property name="mapFile">auto-sharding-long.txt</property>                                  |  |
| ...                                                                                         |  |
| </function>                                                                                 |  |

: hash, stringhash, enum, numberrange, patternrange, datejumpstringhash.

#### 1.5.5.1.hash

function class="hash" "com.actiontech.dble.route.function.PartitionByLong"

|                                                            |  |
|------------------------------------------------------------|--|
| <function name="hashLong" class="hash">                    |  |
| <property name="partitionCount">C1[,C2, ...Cn]</property>  |  |
| <property name="partitionLength">L1[,L2, ...Ln]</property> |  |
| </function>                                                |  |

**partitionCount:** C1 [+C2 + ... + Cn].

**partitionLength:** [0, L1], [L1, 2L1), ..., [(C1-1)L1, C1L1), [C1L1, C1L1+L2), [C1L1+L2, C1L1+2L2), ...

F1

|                                                |  |
|------------------------------------------------|--|
| <property name="partitionCount">2,3</property> |  |
|------------------------------------------------|--|

```
<property name="partitionLength">100,50</property>
```

[0 , 100) [100, 200) [200, 250) [250, 300) [300, 350)

,F2:

```
<property name="partitionCount">2</property>
<property name="partitionLength">1000</property>
```

[0 , 1000) [1000, 2000)

MC1  $L_1 + \dots + C_n L_n$ . F1 M350F2M2000 keyM value = key mod M value F1,key = 805 ,value = 105,51(0)

N C1 [+C2 + ... + Cn]. F1 N5F2N2

1. M28802880:2, 3, 4, 5, 6, 8, 9, 10, 12, 15, 16, 18, 20, 24, 30, 32, 36, 40, 45, 48, 60, 64, 72, 80, 90, 96, 120, 144, 160, 180, 192, 240, 288, 320, 360, 480, 576, 720, 960, 14402880,
2. NshardingNodesharingNodesharingNode="dn1,dn2,dn3,dn4" N4
3. CnLn
- 4.
5. partitionLength1hashM NpartitionCount
6. NULL0

### 1.5.5.2.stringhash

class "stringhash" "com.actiontech.dble.route.function.PartitionByString"

```
<function name="hashString" class="stringhash">
    <property name="partitionCount">C1[,C2, ...Cn]</property>
    <property name="partitionLength">L1[,L2, ...Ln]</property>
    <property name="hashSlice">l:r</property>
</function>
```

**partitionCountpartitionLength hash hashSlicehashkey0**

1.

n	n>=0	(0,n)
n	n<0	(n,0)
:r		(0,r)
l:		(l,0)
:		(0:0)
l:r		(l, r)

2.

a.l

l	l>=0	l	l
l	l<0	l=l+length	l<0

b.r

r	r>0	r	r>length	r=length
r	r<=0	r=r+length		r

length.

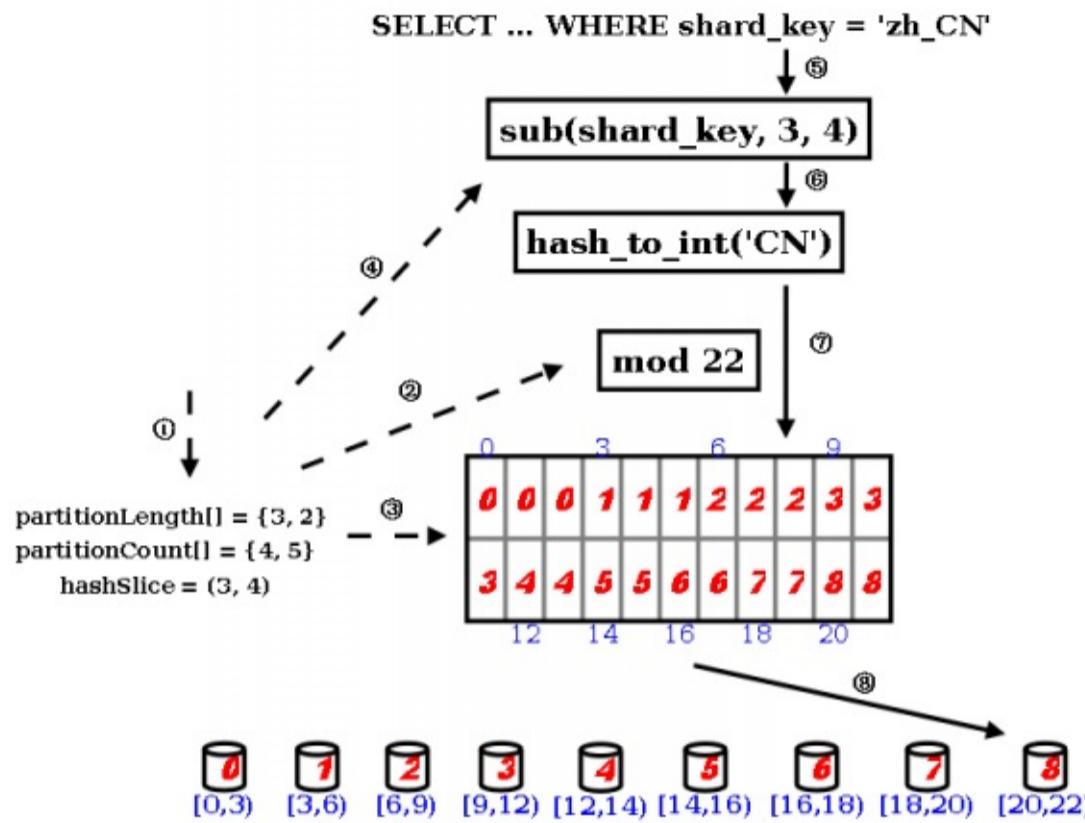
3.

				hash
l<r		[l, r)		hash
l>=r				0

hash hashhashhash

1. hash(3)
- 2.

stringhash unicode hash



- partitionLength[] partitionCount[] hashSlice
- DBLE
- partitionCount[]
- hashSlice 4 5 0 3 4 4 5 “->”
- DBLE WHERE 4 5
- 0 31 unicode “->”
- 
- 

### 1.5.5.3.enum

class“enum”“com.actiontech.dble.route.function.PartitionByFileMap”

```
<function name="enum" class="enum">
  <property name="mapFile">partition.txt</property>
  <property name="defaultNode">0</property>
  <property name="type">0</property>
</function>
```

mapFile: defaultNode-1 typekey0

a. type0

```
#comment //comment this line will be skiped
int1=node0
int2=node1
...
```

b. type0

```
#comment //comment this line will be skiped
string1=node0
string2=node1
...
```

defaultNodedefaultNode

1. “=”.
2. node
- 3.
- 4.
5. NULLdefaultNodedefaultNode;mysqlnot null, "Sharding column can't be null when the table in MySQL column is not null"

### 1.5.5.4.numberrange

class“numberrange”“com.actiontech.dble.route.function.AutoPartitionByLong”

```

<function name="rangeLong" class="numberrange">
    <property name="mapFile">partition.txt</property>
    <property name="defaultNode">0</property>
</function>

mapFile: defaultNode-1

#comment //comment this line will be skiped start1-end1=node1 start2-end2=node2 ...

[start1, end1], [start2, end2], ...           1.defaultNodedefaultNode2.defaultNode

1. =""
2. nodex
3.
4.
5. NULLdefaultNodedefaultNode;mysqlnot null, "Sharding column can't be null when the table in MySQL column is not null"

```

### 1.5.5.5.patternrange

```
class"patternrange""com.actiontech.dble.route.function.PartitionByPattern"
```

```

<function name="pattern" class="patternrange">
    <property name="mapFile">partition.txt</property>
    <property name="patternValue">1024</property>
    <property name="defaultNode">0</property>
</function>

```

**mapFile: patternValue: 1024 defaultNode-1**

```
#comment //comment this line will be skiped start1-end1=node1 start1-end2=node2 ...
```

numberrangepatternValuenumberrange

```

1. =""
2. nodex
3.
4. defaultNode defaultNode
5. NULLdefaultNodedefaultNode;mysqlnot null, "Sharding column can't be null when the table in MySQL column is not null"

```

### 1.5.5.6.date

```
class"date""com.actiontech.dble.route.function.PartitionByDate"
```

```

<function name="partbydate" class="date">
    <property name="dateFormat">yyyy-MM-dd</property>
    <property name="sBeginDate">2015-01-01</property>
    [<property name="sEndDate">2015-01-31</property>]
    <property name="sPartitionDay">10</property>
    <property name="defaultNode">0</property>
</function>

```

**dateFormat: sBeginDate sEndDate("") sPartitionDay defaultNode-1**

```
1sEndDatesEndDate"" sBeginDate sPartitionDay sBeginDatedefaultNodedefaultNode,           2sEndDate"" sBeginDate sPartitionDaysEndDate N sEndDate
1sEndDateindex=((key - sBeginDate)/sPartitionDay)%N,                               key index sBeginDatedefaultNodedefaultNode;
```

```

1. dateFormat
2. sPartitionDay86400000
3. 2 (sEndDate - sBeginDate)sPartitionDay0
4. NULLdefaultNodedefaultNode;mysqlnot null, "Sharding column can't be null when the table in MySQL column is not null"

```

### 1.5.5.7.

```
class"jumpstringhash""com.actiontech.dble.route.function.PartitionByJumpConsistentHash"
```

```

<function name="jumphash"
    class="jumpStringHash">
    <property name="partitionCount">2</property>
    <property name="hashSlice">0:2</property>
</function>

```

**partitionCount: hashSlice: GoogleA Fast, Minimal Memory, Consistent Hash Algorithmhash1/n**

```
1. NULL0;mysqlnot null, "Sharding column can't be null when the table in MySQL column is not null"
```

## 1.5.6

```

<?xml version="1.0"?>
<!--
~ Copyright (C) 2016-2020 ActionTech.
~ License: http://www.gnu.org/licenses/gpl.html GPL version 2 or higher.
-->

<!DOCTYPE dble:sharding SYSTEM "sharding.dtd">
<db:sharding xmlns:db="http://db:le.cloud/" version="4.0">

<schema name="testdb" sqlMaxLimit="100">
    <shardingTable name="tb_enum_sharding" shardingNode="dn1,dn2" sqlMaxLimit="200" function="func_enum" shardingColumn="code"/>
    <shardingTable name="tb_range_sharding" shardingNode="dn1,dn2,dn3" function="func_range" shardingColumn="id"/>
    <!--er tables-->
    <shardingTable name="tb_hash_sharding" shardingNode="dn1,dn2" function="func_common_hash" shardingColumn="id"/>
    <shardingTable name="tb_hash_sharding_er1" shardingNode="dn1,dn2" function="func_common_hash" shardingColumn="id"/>
    <shardingTable name="tb_hash_sharding_er2" shardingNode="dn1,dn2" function="func_common_hash" shardingColumn="id2"/>
    <shardingTable name="tb_hash_sharding_er3" shardingNode="dn1,dn2" function="func_common_hash" shardingColumn="id" incrementColumn="id2"/>

    <shardingTable name="tb_uneven_hash" shardingNode="dn1,dn2,dn3" function="func_uneven_hash" shardingColumn="id"/>

    <shardingTable name="tb_mod" shardingNode="dn1,dn2,dn3,dn4" function="func_mod" shardingColumn="id" sqlRequiredSharding="true"/>

    <shardingTable name="tb_jump_hash" shardingNode="dn1,dn2" function="func_jumpHash" shardingColumn="code"/>

    <shardingTable name="tb_hash_string" shardingNode="dn1,dn2,dn3,dn4" function="func_hashString" shardingColumn="code"/>

    <shardingTable name="tb_date" shardingNode="dn1,dn2,dn3,dn4" function="func_date" shardingColumn="create_date"/>

    <shardingTable name="tb_pattern" shardingNode="dn1,dn2" function="func_pattern" shardingColumn="id"/>
    <!--global tables-->
    <globalTable name="tb_global1" shardingNode="dn1,dn2" sqlMaxLimit="103" />
    <globalTable name="tb_global2" shardingNode="dn1,dn2,dn3,dn4" cron="0 0 0 * * ?" checkClass="CHECKSUM"/>
    <!--single node table-->
    <singleTable name="tb_single" shardingNode="dn6" sqlMaxLimit="105"/>
    <!--er tables-->
    <shardingTable name="tb_parent" shardingNode="dn1,dn2" function="func_common_hash" shardingColumn="id">
        <childTable name="tb_child1" joinColumn="child1_id" parentColumn="id" sqlMaxLimit="201">
            <childTable name="tb_grandson1" joinColumn="grandson1_id" parentColumn="child1_id"/>
            <childTable name="tb_grandson2" joinColumn="grandson2_id" parentColumn="child1_id2"/>
        </childTable>
        <childTable name="tb_child2" joinColumn="child2_id" parentColumn="id"/>
        <childTable name="tb_child3" joinColumn="child3_id" parentColumn="id2"/>
    </shardingTable>
</schema>
<!-- sharding testdb2 route to database named dn5 in localhost2 -->
<schema name="testdb2" shardingNode="dn5">
    <shardingNode name="dn1" dbGroup="dbGroup1" database="db_1"/>
    <shardingNode name="dn2" dbGroup="dbGroup2" database="db_2"/>
    <shardingNode name="dn3" dbGroup="dbGroup1" database="db_3"/>
    <shardingNode name="dn4" dbGroup="dbGroup2" database="db_4"/>
    <shardingNode name="dn5" dbGroup="dbGroup1" database="db_5"/>
    <shardingNode name="dn6" dbGroup="dbGroup2" database="db_6"/>
    <!-- enum partition -->
    <function name="func_enum" class="Enum">
        <property name="mapFile">partition-enum.txt</property>
        <property name="defaultNode">0</property><!--the default is -1,means unexpected value will report error-->
        <property name="type">0</property><!--0 means key is a number, 1 means key is a string-->
    </function>
    <!-- number range partition -->
    <function name="func_range" class="NumberRange">
        <property name="mapFile">partition-number-range.txt</property>
        <property name="defaultNode">0</property><!--he default is -1,means unexpected value will report error-->
    </function>
    <!-- Hash partition,when partitionLength=1, it is a mod partition, MAX(sum(count*length[i])) must not more than 2880-->
    <function name="func_common_hash" class="Hash">
        <property name="partitionCount">2</property>
        <property name="partitionLength">512</property>
    </function>
    <!-- Hash partition,when partitionLength=1, it is a mod partition, MAX(sum(count*length[i])) must not more than 2880-->
    <function name="func_uneven_hash" class="Hash">
        <property name="partitionCount">2,1</property>
        <property name="partitionLength">256,512</property>
    </function>
    <!-- eg: mod 4 -->
    <function name="func_mod" class="Hash">
        <property name="partitionCount">4</property>
        <property name="partitionLength">1</property>
    </function>
    <!-- jumpStringHash partition for string-->
    <function name="func_jumpHash" class="jumpStringHash">
        <property name="partitionCount">2</property>
        <property name="hashSlice">0:2</property>
    </function>
    <!-- Hash partition for string-->
    <function name="func_hashString" class="StringHash">
        <property name="partitionCount">4</property>
        <property name="partitionLength">256</property>
        <property name="hashSlice">0:2</property>
        <!--<property name="hashSlice">-4:0</property> -->
    </function>
    <!-- date partition 4 case:
1.set sEndDate and defaultNode: input <sBeginDate ,router to defaultNode; input>sEndDate ,mod the period
2.set sEndDate, but no defaultNode:input <sBeginDate report error; input>sEndDate ,mod the period
3.set defaultNode without sEndDate: input <sBeginDate router to defaultNode;input>sBeginDate + (node size)*sPartitionDay-1 will report error(expected is defaultNode,but can't control now)
4.sEndDate and defaultNode are all not set: input <sBeginDate report error;input>sBeginDate + (node size)*sPartitionDay-1 will report error
-->
    <function name="func_date" class="Date">
        <property name="dateFormat">yyyy-MM-dd</property>
        <property name="sBeginDate">2015-01-01</property>
        <property name="sEndDate">2015-01-31</property><!--if not set sEndDate,then in fact ,the sEndDate = sBeginDate+ (node size)*sPartitionDay-1 -->
        <property name="sPartitionDay">10</property>
        <property name="defaultNode">0</property><!--the default is -1-->
    </function>
    <!-- pattern partition : mapFile must contains all value of 0~patternValue-1,key and value must be Continuous increase-->
    <function name="func_pattern" class="PatternRange">
        <property name="mapFile">partition-pattern.txt</property>
    </function>
</schema>

```

```
<property name="patternValue">1024</property>
<property name="defaultNode">0</property><!--contains string which is not number,router to default node-->
</function>
</db1e:sharding>
```

## 1.6 log4j2.xml

### 1.6.1

Dblejavalog4j2.xml

#### 1.6.1.1

DefaultRolloverStrategy RollingRandomAccessFileRolloverStrategy

```
<DefaultRolloverStrategy max="100">
    <Delete basePath="logs" maxDepth="2">
        <IfFileName glob="*/dble-*.log.gz">
            <IfLastModified age="2d">
                <IfAny>
                    <IfAccumulatedFileSize exceeds="1 GB" />
                    <IfAccumulatedFileCount exceeds="10" />
                </IfAny>
            </IfLastModified>
        </IfFileName>
    </Delete>
</DefaultRolloverStrategy>
```

```
:
basePath
maxDepth basePathmaxDepth.../logs/2018-01-01           .../logs/2018-01-02
glob
age
IfAccumulatedFileSize
IfAccumulatedFileCount
logs2"          /dble-.log.gz"21 GB10
```

### 1.6.2

```
<?xml version="1.0" encoding="UTF-8"?>
<Configuration status="WARN" packages="com.actiontech.dble.log">
    <Appenders>
        <Console name="Console" target="SYSTEM_OUT">
            <PatternLayout pattern="%d [%t] %m %throwable{full} (%C:%F:%L) %n"/>
        </Console>

        <RollingRandomAccessFile name="RollingFile" fileName="logs/dble.log"
            filePattern="logs/${date:yyyy-MM}/dble-%d{MM-dd}-%i.log.gz">
            <PatternLayout>
                <Pattern>%d{yyyy-MM-dd HH:mm:ss.SSS} %5p [%t] (%l) - %m%n</Pattern>
            </PatternLayout>
            <Policies>
                <OnStartupTriggeringPolicy/>
                <SizeBasedTriggeringPolicy size="250 MB"/>
                <TimeBasedTriggeringPolicy/>
            </Policies>
            <DefaultRolloverStrategy max="100">
                <Delete basePath="logs" maxDepth="2">
                    <IfFileName glob="*/dble-*.log.gz">
                        <IfLastModified age="2d">
                            <IfAny>
                                <IfAccumulatedFileSize exceeds="1 GB" />
                                <IfAccumulatedFileCount exceeds="10" />
                            </IfAny>
                        </IfLastModified>
                    </IfFileName>
                </Delete>
            </DefaultRolloverStrategy>
        </RollingRandomAccessFile>
    </Appenders>
    <Loggers>
        <asyncRoot level="debug" includeLocation="true">
            <AppenderRef ref="Console"/>
            <AppenderRef ref="RollingFile"/>
        </asyncRoot>
    </Loggers>
</Configuration>
```

## 1.7

dble

cluster.cnf

```
sequenceHandlerType=n
```

sequenceHandlerType

- 1:MySQL offset-step
- 2:(Snowflake)
- 3:(Snowflake)
- 4:offset-step

sharding.xml

: incrementColumn

```
//incrementColumn=pidpid
<shardingTable name="table1" shardingNode="dn1,dn2" function="func_common_hash" shardingColumn="id" incrementColumn="pid"/>
```

```
insert into table1(name) values('test');
insert into table1 set name = 'test';
```

## 2.2

**MySQL**

MySQLdb

bleID

mysql

```
table1aid,bid,cid,did biddble
insert into table1 values(1,2,3)
sql
insert into table1 set aid = 1,cid = 2,did = 3
```

dbleupdate(replace)

## 1.7.1 MySQL-offset-step

### 1.7.1.1 MySQL-offset-step

mysqlsequence\_db\_conf.properties:

#this is comment

**`schema1`.`table1`=node1**

**`schema1`.`table2`=node1**

**`schema2`.`table1`=node2**

...

**schemaXdb**ble

**tableX** dbble

**nodeX**

### 1.7.1.2

mysql **nodeX` schemaX`.`tableX`**

**nodeX**

a. mysql**nodeX**

mysql ...

b. **nodeXdb(1.5 sharding.xml)**

use db;

c. dbsql.sqldbseq.sql1.7.1.3

source .../dbseq.sql;

d.

INSERT INTO DBLE\_SEQUENCE VALUES ('**schemaX`.`tableX`**', 1, 1);

...

### 1.7.1.3 dbseq.sql

dbseq.sql

```

DROP TABLE IF EXISTS DBLE_SEQUENCE;
CREATE TABLE DBLE_SEQUENCE ( name VARCHAR(64) NOT NULL, current_value BIGINT(20) NOT NULL, increment INT NOT NULL DEFAULT 1, PRIMARY KEY (name) ) ENGINE=InnoDB;

-- -----
-- Function structure for `dbe_seq_currval`
-- -----
DROP FUNCTION IF EXISTS `dbe_seq_currval`;
DELIMITER ;;
CREATE FUNCTION `dbe_seq_currval`(seq_name VARCHAR(64)) RETURNS varchar(64) CHARSET latin1
DETERMINISTIC
BEGIN
DECLARE retval VARCHAR(64);
SET retval="-1,0";
SELECT concat(CAST(current_value AS CHAR),",",CAST(increment AS CHAR) ) INTO retval FROM DBLE_SEQUENCE WHERE name = seq_name;
RETURN retval ;
END
;;
DELIMITER ;

-- -----
-- Function structure for `dbe_seq_nextval`
-- -----
DROP FUNCTION IF EXISTS `dbe_seq_nextval`;
DELIMITER ;;
CREATE FUNCTION `dbe_seq_nextval`(seq_name VARCHAR(64)) RETURNS varchar(64) CHARSET latin1
DETERMINISTIC
BEGIN
DECLARE retval VARCHAR(64);
DECLARE val BIGINT;
DECLARE inc INT;
DECLARE seq_lock INT;
set val = -1;
set inc = 0;
SET seq_lock = -1;
SELECT GET_LOCK(seq_name, 15) into seq_lock;
if seq_lock = 1 then
SELECT current_value + increment, increment INTO val, inc FROM DBLE_SEQUENCE WHERE name = seq_name for update;
if val != -1 then
UPDATE DBLE_SEQUENCE SET current_value = val WHERE name = seq_name;
end if;
SELECT RELEASE_LOCK(seq_name) into seq_lock;
end if;
SELECT concat(VAL - inc + 1 as CHAR),",",CAST(inc as CHAR)) INTO retval;
RETURN retval;
END
;;
DELIMITER ;

```

```
-- -----
-- Function structure for `dble_seq_setvals`
-- -----
DROP FUNCTION IF EXISTS `dble_seq_nextvals`;
DELIMITER ;;
CREATE FUNCTION `dble_seq_nextvals`(seq_name VARCHAR(64), count INT) RETURNS VARCHAR(64) CHARSET latin1
DETERMINISTIC
BEGIN
DECLARE retval VARCHAR(64);
DECLARE val BIGINT;
DECLARE seq_lock INT;
SET val = -1;
SET seq_lock = -1;
SELECT GET_LOCK(seq_name, 15) into seq_lock;
if seq_lock = 1 then
SELECT current_value + count INTO val FROM DBLE_SEQUENCE WHERE name = seq_name for update;
IF val != -1 THEN
UPDATE DBLE_SEQUENCE SET current_value = val WHERE name = seq_name;
END IF;
SELECT RELEASE_LOCK(seq_name) into seq_lock;
end if;
SELECT CONCAT(CAST((val - count + 1) as CHAR), ", ", CAST(count as CHAR)) INTO retval;
RETURN retval;
END
;;
DELIMITER ;

-- -----
-- Function structure for `dble_seq_setval`
-- -----
DROP FUNCTION IF EXISTS `dble_seq_setval`;
DELIMITER ;;
CREATE FUNCTION `dble_seq_setval`(seq_name VARCHAR(64), value BIGINT) RETURNS varchar(64) CHARSET latin1
DETERMINISTIC
BEGIN
DECLARE retval VARCHAR(64);
DECLARE inc INT;
SET inc = 0;
SELECT increment INTO inc FROM DBLE_SEQUENCE WHERE name = seq_name;
UPDATE DBLE_SEQUENCE SET current_value = value WHERE name = seq_name;
SELECT concat(CAST(value as CHAR), ", ", CAST(inc as CHAR)) INTO retval;
RETURN retval;
END
;;
DELIMITER ;
```

### 1.7.2

```
bootstrap.cnf cluster.cnf
bootstrap.cnfinstanceIdinstance id [0,1023]
cluster.cnfsequenceStartTime YYYY-MM-dd HH:mm:ss 2010-10-04 09:42:54
bootstrap.cnfinstanceIddbledble
bigint63
```

### 1.7.3

```
bootstrap.cnf cluster.cnf

bootstrap.cnfinstanceIdinstance id [0,511]   cluster.cnfsequenceInstanceByZktrueidzk

cluster.cnfsequenceStartTime YYYY-MM-dd HH:mm:ss 2010-10-04 09:42:54
```

1. cluster.cnfsequenceInstanceByZktruezookeeper( [1.1 cluster.cnf](#))
2. **bootstrap.cnfinstanceId**ble
3. bigint63

#### 1.7.4 offset-step

offset-stepsequence\_conf.properties

```
# this is comment
`schema1`.`table1`.MINID=1001
`schema1`.`table1`.MAXID=2000
`schema1`.`table1`.CURID=1000

`schema2`.`table2`.MINID=1001
`schema2`.`table2`.MAXID=20000
`schema2`.`table2`.CURID=1000

schemaXmysqldbble
tableX mysqldbble
```

1. zkMINID MAXID CURID
2. MINIDCURID1 MINID+1
3. MAXID - MINID + 1zookeeper
4. dblezookeeper [1.1 cluster.cnf](#)

## 1.8 cache

## 1.8.1 cache

### 1.8.1.1 dblecache

dblecache

- SQLRouteCacheSQL shema\_user\_SQL -> RouteResult
- ER\_SQL2PARENTIDSQLERjoinColumn(parentColumn)schema:select \* from where parentKey = (value of joinColumn) -> shardingNode

### 1.8.1.2 dblecache

dblecache

- ehcache, ehcachecache
- leveldb leveldbcache
- map db MapDBcache
- rocksdbRocksDBcache

### 1.8.1.3 dblecache

dblecachecacheservice.properties

:

factory.cache\_type=cache\_type

keyvalue

#### A.SQL

pool.SQLRouteCache=**type,max\_size,expire\_seconds**

#### B.ER

pool.ER\_SQL2PARENTID=**type,max\_size,expire\_seconds**

### 1.8.1.4 cache

a. #

b. factory.cache\_type=cache\_typecache cache\_typecacheehcacheleveldbmap db rocksdbcache cache

,

factory.encache=ehcache

pool.SQLRouteCache=encache,10000,1800

pool.ER\_SQL2PARENTID=encache,1000,1800

**type**ehcache

factory.encache=ehcache

factory.leveldb=leveldb

pool.SQLRouteCache=**encache,10000,1800**

pool.ER\_SQL2PARENTID=**leveldb,1000,1800**

**type**encacheleveldb

c. pool.SQLRouteCache=**type,max\_size,expire\_seconds**spool.ER\_SQL2PARENTID=**type,max\_size,expire\_seconds**SQLRouteCacheER\_SQL2PARENTID      **type max\_size expire\_seconds**

d. **default**

### 1.8.1.5

- RocksDB cache dble rocksdb dble

## 1.8.2 ehcache

ehcachecacheservice.propertiesehcache

### 1.8.2.1 ehcache

dble2.6.11.

### 1.8.2.2 ehcache

ehcacheehcache.xml

<http://www.ehcache.org/documentation/ehcache-2.6.x-documentation.pdf>

```
<ehcache xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="ehcache.xsd" maxEntriesLocalHeap="100000000" maxBytesLocalDisk="50G" updateCheck="false">
    <defaultCache maxElementsInMemory="1000000" eternal="false" overflowToDisk="false" diskSpoolBufferSizeMB="30" maxElementsOnDisk="10000000" diskPersistent="false" diskExpiryThreadIntervalSeconds="120" memoryStoreEvictionPolicy="LRU"/>
</ehcache>
```

1.dbleehcachedefaultCachecache

2.maxEntriesLocalHeap

0 cacheservice.properties**max\_size**cacheservice.properties      **max\_size**  
3.timeToIdleSeconds

cacheservice.properties **expire\_seconds**

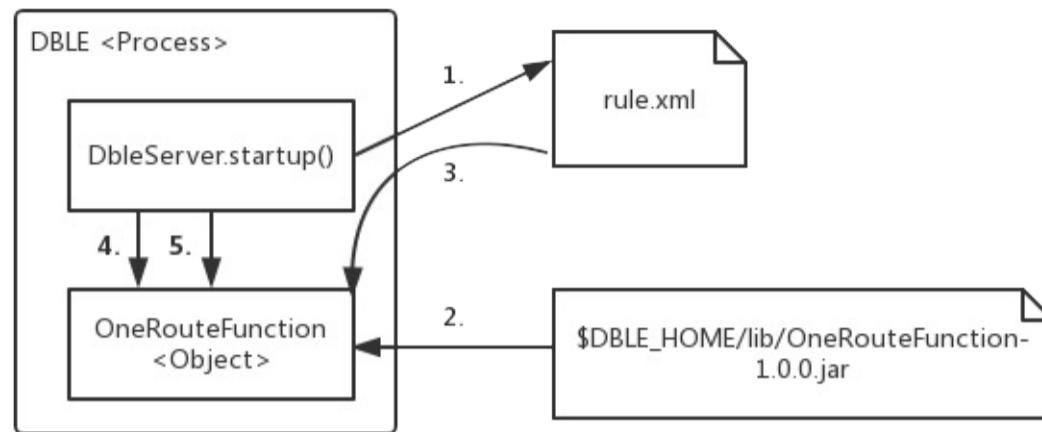
4.dbledefaultCachecache

## 1.9

### 1.9.1

#### 1.9.1.1

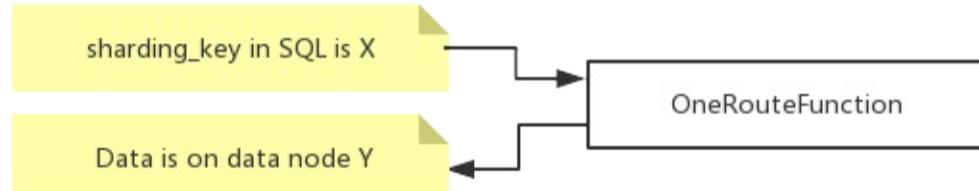
dbe



1. dblesharding.xml class
2. dbleJava\$DBLE\_HOME/libjarjarclass
3. dblenamesetter—— 2dblesetPartitionCount()“2”
4. dbleselfCheck()
5. dbleinit()

#### 1.9.1.2

SQLDBLESQ



#### 1.9.1.3

9066SHOW @@ALGORITHM WHERE SCHEMA=? AND TABLE=?dbegetAllProperties()

```

mysql> show @@algorithm where schema=testdb and table=seqtest;
+-----+-----+
| KEY      | VALUE
+-----+-----+
| TYPE     | SHARDING TABLE
| COLUMN   | ID
| CLASS    | com.actiontech.dble.route.function.PartitionByLong |
| partitionCount | 2
| partitionLength | 1
+-----+-----+
5 rows in set (0.05 sec)
    
```

## 1.9.2

### 1.9.2.1

AbstractPartitionAlgorithmRuleAlgorithmAbstractPartitionAlgorithmTableConfigDBLE

DBLE

DBLEDIBLE

1. jarDBLEDIBLE
2. DBLEAbstractPartitionAlgorithmRuleAlgorithmDBLEDIBLE
3. DBLE

### 1.9.2.2

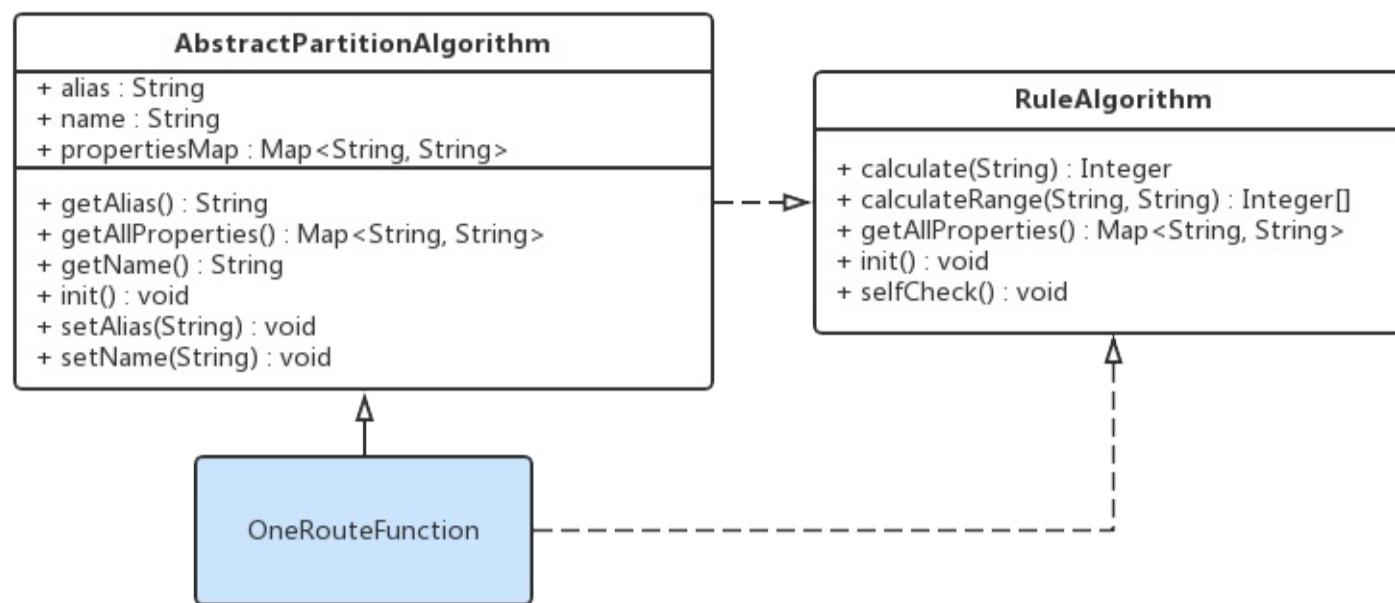
jar classlibraryjarclass

DBLE

1. jar\$DBLE\_HOME/lib
2. jarchownchmod\$DBLE\_HOME/libjar
3. sharding.xml classFully Qualified Namenet.john.dble.route.functions.NewFunction
4. DBLE

### 1.9.3

AbstractPartitionAlgorithmRuleAlgorithmcom.actiontech.dble.route.function.PartitionByLong



#### 1.9.3.1 setters

sharding.xmlpartitionCountpartitionLength

```

<function name="hashmod" class="com">
  <property name="partitionCount">4</property>
  <property name="partitionLength">1</property>
</function>
  
```

dblepartitionCount4partitionLength1PartitionByLongsetPartitionCount()setPartitionLength(sharding.xmlXMLStringsetter

```

public void setPartitionCount(String partitionCount) {
    this.count = toIntArray(partitionCount);
    /* getAllProperties() */
    propertiesMap.put("partitionCount", partitionCount);
}

public void setPartitionLength(String partitionLength) {
    this.length = toIntArray(partitionLength);
    /* getAllProperties() */
    propertiesMap.put("partitionLength", partitionLength);
}
  
```

#### 1.9.3.2 selfCheck()

dbleselfCheck()RuntimeExceptiondbleRuntimeExceptiondble

selfCheck()RuleAlgorithmAbstractPartitionAlgorithm

```

@Override
public void selfCheck() {
}
  
```

#### 1.9.3.3 init()

dbleinit()

PartitionByLonginit()PartitionUtil

```

@Override
public void init() {
    partitionUtil = new PartitionUtil(count, length);

    initHashCode();
}
  
```

#### 1.9.3.4 calculate()calculateRange()

dbleSQLSQLcalculate()calculateRange()SQL

IPOInput-Process-Outputcalculate()calculateRange()

- InputSQL
- OutputSQL
- ProcessInputOutput

calculate()calculateRange()

		Input	Output
calculate()	SQL ... WHERE sharding_key = 1	1String	1Integer
calculateRange()	SQL ... WHERE sharding_key BETWEEN 1 AND 5	2String	Integer

```

@Override
public Integer calculate(String columnValue) {
    try {
        if (columnValue == null || columnValue.equalsIgnoreCase("NULL")) {
            return 0;
        }
        long key = Long.parseLong(columnValue);
        return calculate(key);
    } catch (NumberFormatException e) {
        throw new IllegalArgumentException("columnValue:" + columnValue + " Please eliminate any quote and non number within it.", e);
    }
}

@Override
public Integer[] calculateRange(String beginValue, String endValue) {
    long begin = 0;
    long end = 0;
    try {
        begin = Long.parseLong(beginValue);
        end = Long.parseLong(endValue);
    } catch (NumberFormatException e) {
        return new Integer[0];
    }
    int partitionLength = partitionUtil.getPartitionLength();
    if (end - begin >= partitionLength || begin > end) { //TODO: optimize begin > end
        return new Integer[0];
    }
    Integer beginNode = calculate(begin);
    Integer endNode = calculate(end);

    if (endNode > beginNode || (endNode.equals(beginNode) && partitionUtil.isSingleNode(begin, end))) {
        int len = endNode - beginNode + 1;
        Integer[] re = new Integer[len];

        for (int i = 0; i < len; i++) {
            re[i] = beginNode + i;
        }
        return re;
    } else {
        int split = partitionUtil.getSegmentLength() - beginNode;
        int len = split + endNode + 1;
        if (endNode.equals(beginNode)) {
            //remove duplicate
            len--;
        }
        Integer[] re = new Integer[len];
        for (int i = 0; i < split; i++) {
            re[i] = beginNode + i;
        }
        for (int i = split; i < len; i++) {
            re[i] = i - split;
        }
        return re;
    }
}

```

### 1.9.3.5 getAllProperties()

dbledblegetAllProperties()<, >  
getAllProperties()RuleAlgorithmAbstractPartitionAlgorithmpropertiesMap“propertiesMap”getAllProperties()setters<, >put()propertiesMap

```

@Override
public Map<String, String> getAllProperties() {
    return propertiesMap;
}

```

### 1.9.4

DBLEcom.actiontech.dble.route.functions.sharding.xmlXMLLoader7

date	PartitionByDate
enum	PartitionByFileMap
hash	PartitionByLong
jumpstringhash	PartitionByJumpConsistentHash
numberrange	AutoPartitionByLong
patternrange	PartitionByPattern
stringhash	PartitionByString

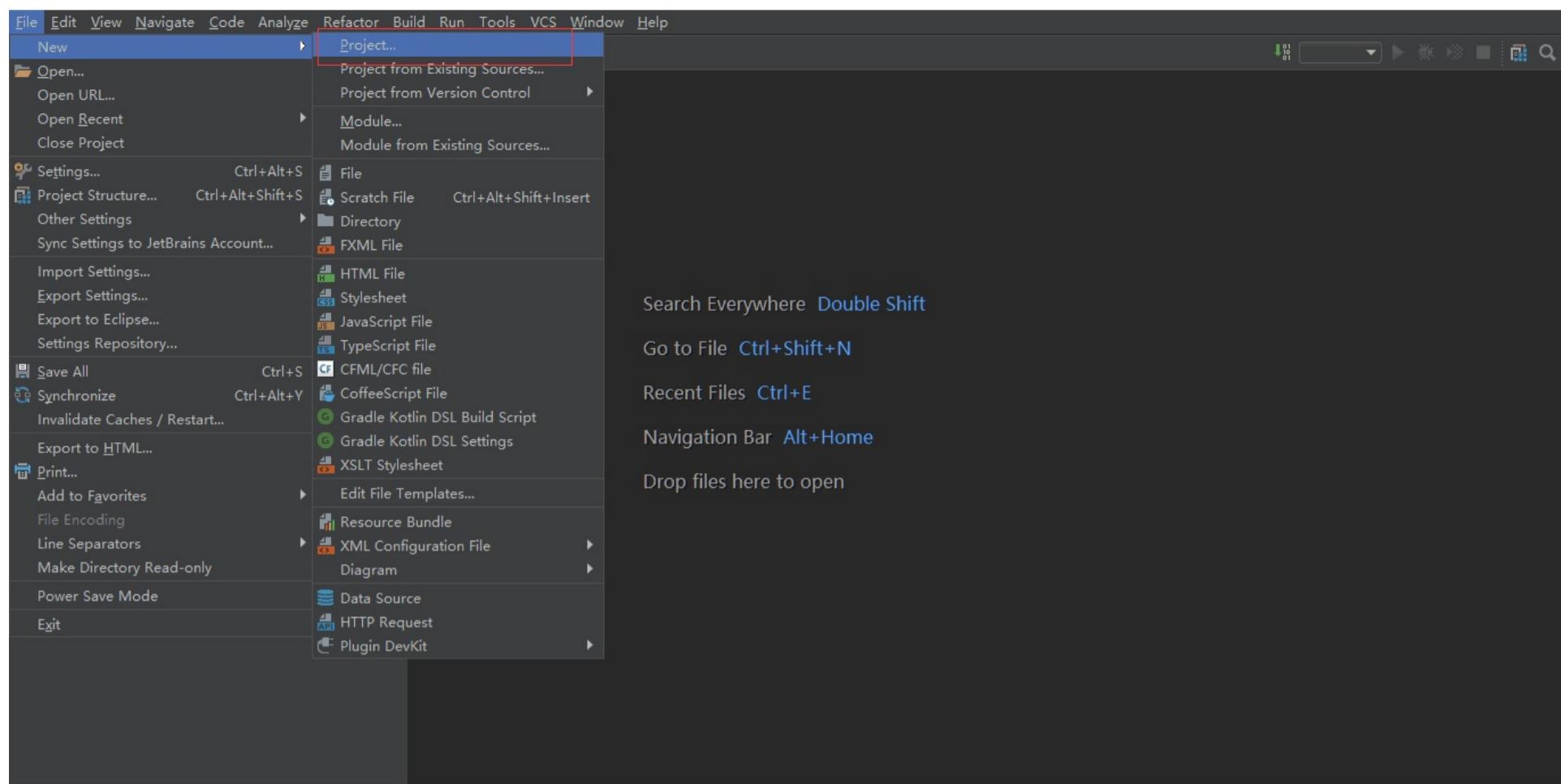
### 1.9.5 IntelliJ IDEA

#### 1.9.5.0

1. java
2. dblereleasejar2.19.05.0 <https://github.com/actiontech/dble/releases/download/2.19.05.0%2Ftag/actiontech-dble-2.19.05.0.tar.gz>

#### 1.9.5.1 java

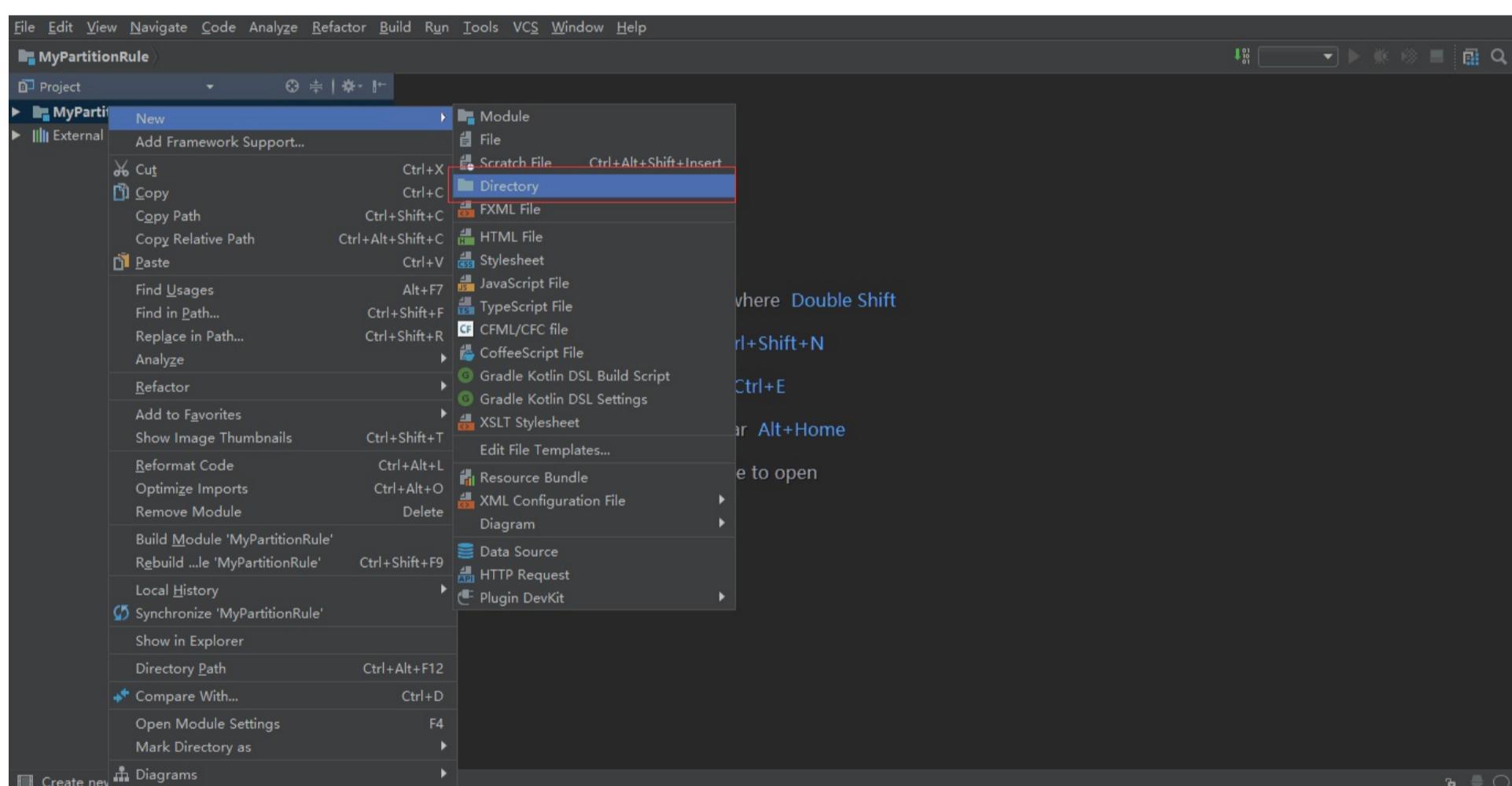
javaProject



Projectjavanext

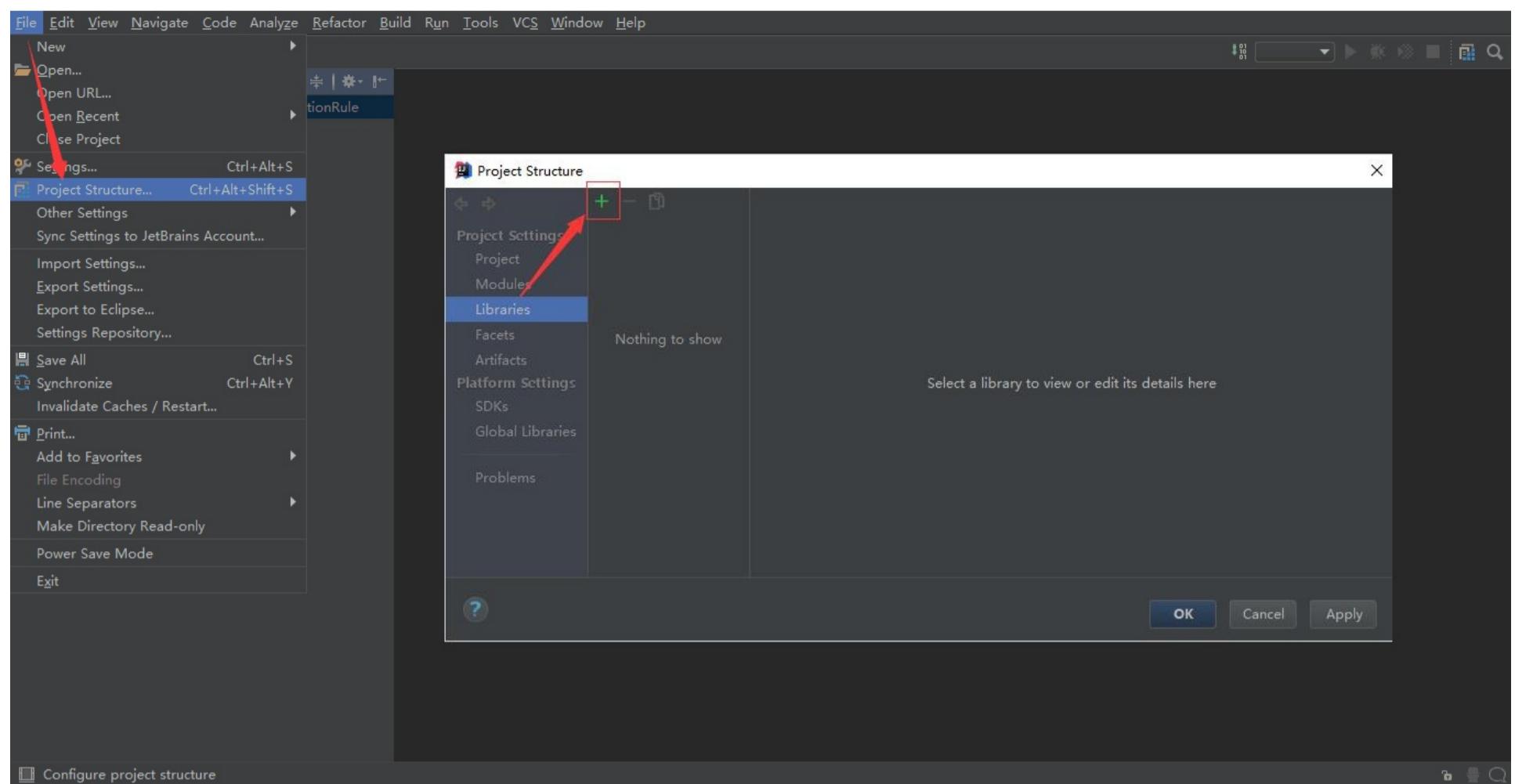
### 1.9.5.2 dble jar

javalib



dble jarlib

libdble jar

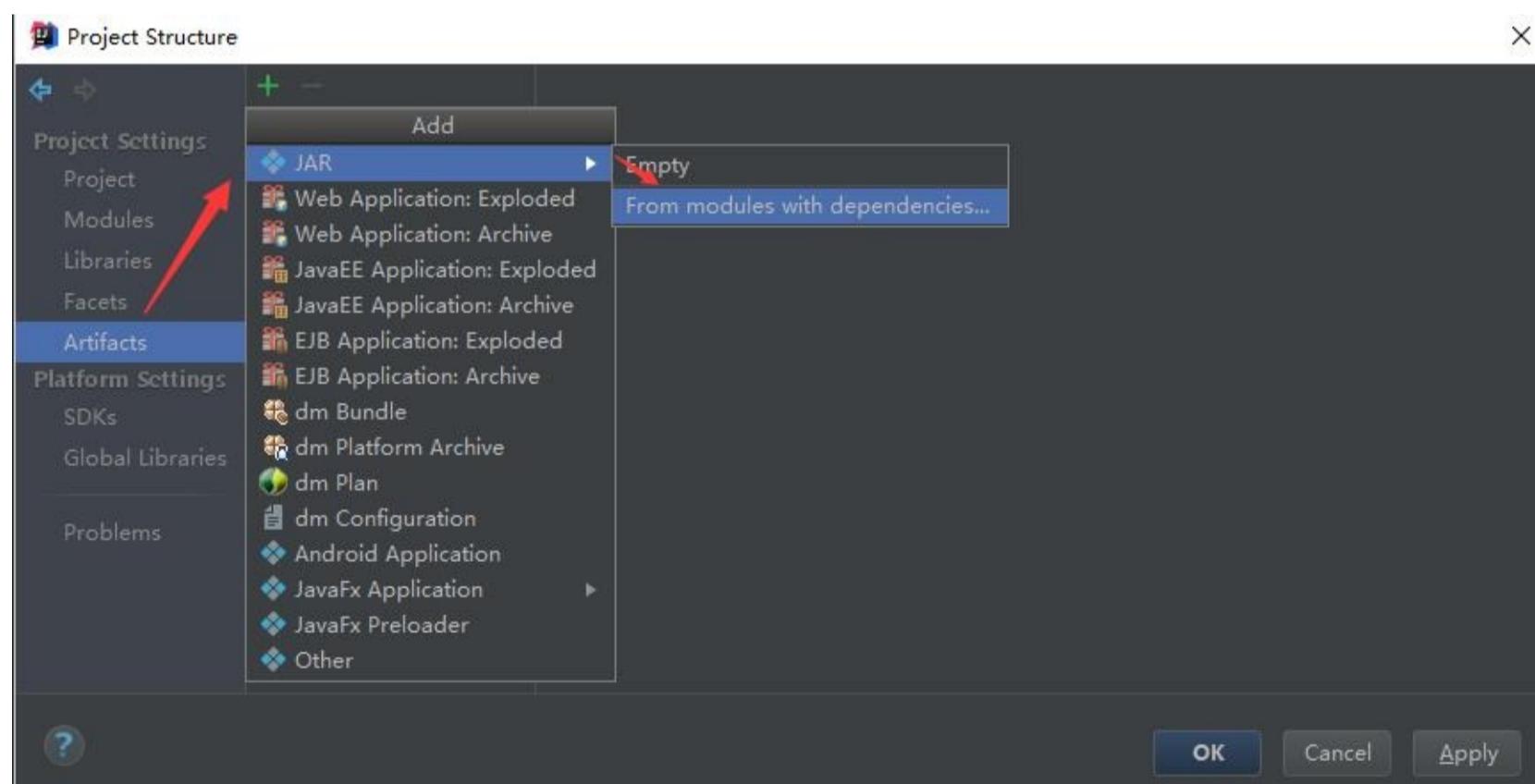


lib

### 1.9.5.3

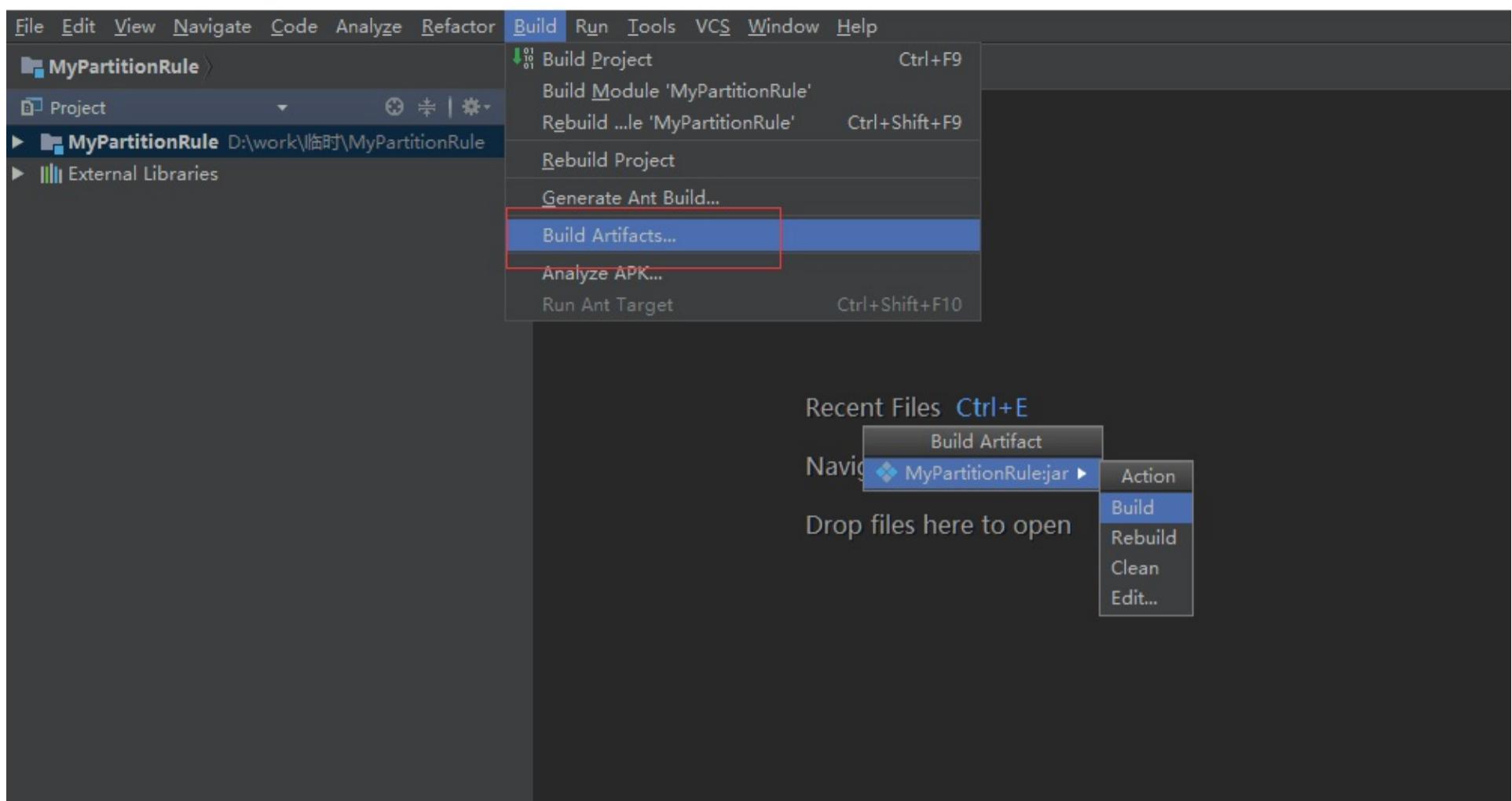
#### 1.9.5.4 Artifacts

Project StructureArtifactsOK



### 1.9.5.5 jar

BuildBuild ArtifactsArtifactbuild



outartifactjar

## 1.10

- [3.21.02.0](#)
  - [sequence](#)
  - 
  -
- [3.20.07.0](#)
  -

### 1.10.13.21.02.0

#### 1.10.1.1 sequence

dble3.21.02.0

`zksequencekey-valuekey value`

`zksequencekey-valuekey valuejson`

`sequence(rootPath/clusterId/conf/sequences)` [ZK](#)

#### 1.10.1.2 dble

3.21.02.0dblexml

`dtdxmldbleDocumentBuilderxml`

`xsdxmldblejaxb2.0xml`

`xmldb.xml<!DOCTYPE dble:db SYSTEM "db.dtd">sharding.xml<!DOCTYPE dble:sharding SYSTEM "sharding.dtd">user.xml<!DOCTYPE dble:user SYSTEM "user.dtd">`

#### 1.10.1.3 dble

##### 1.10.1.3.1 bootstrap.cnf

`</tr>`

#### homePath

3.21.02

`bootstrap.cnfhomePath-DhomePath=.`

`</tr></tbody></table>`

## 1.10.23.20.07.0

### 1.10.2.1

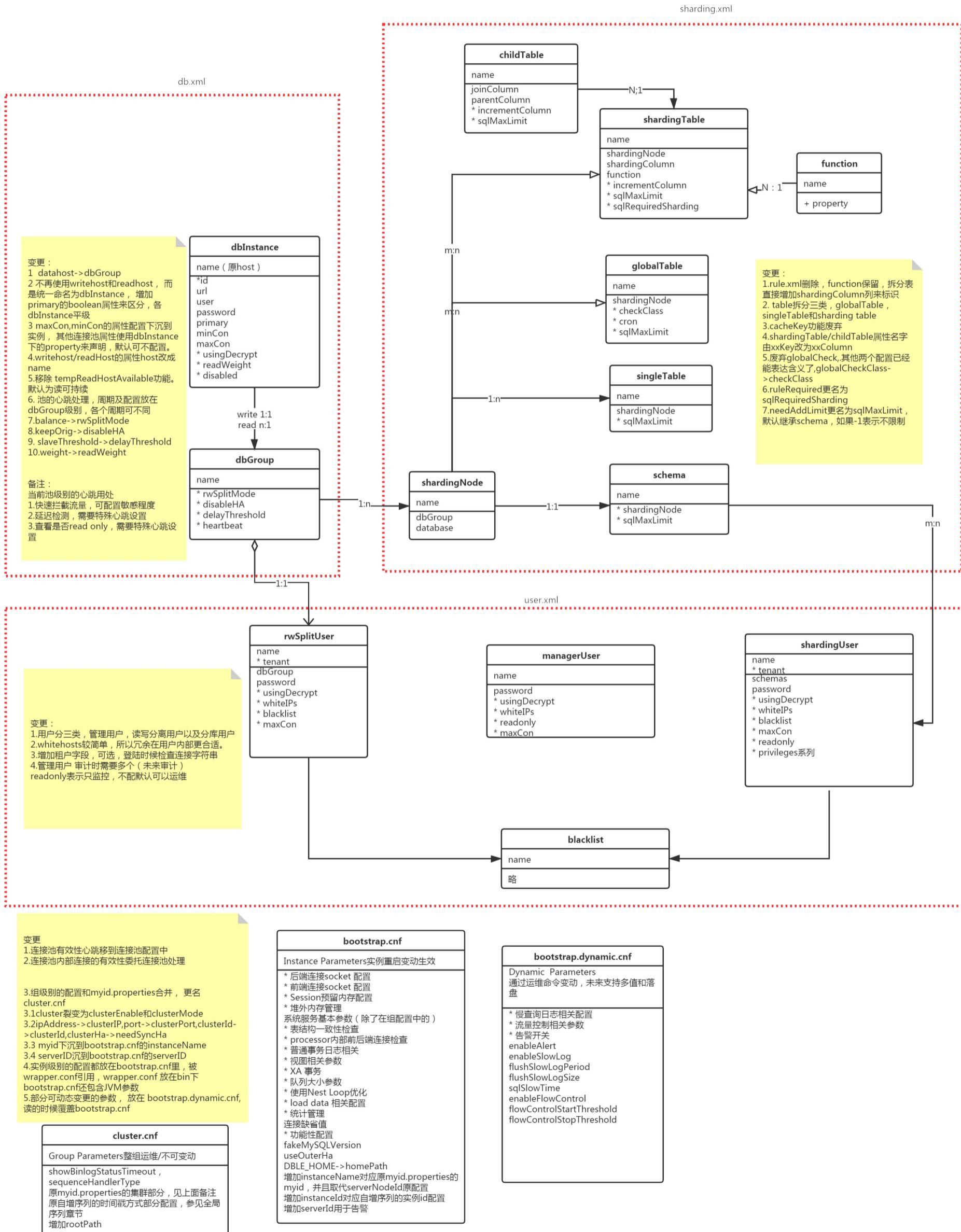
dble 3.20.07.0 [2.20.04.0](#)

`dble_update_config` 2.20.04.0 3.20.07.02.20.04.0

```
dble_update_config [-i=read_dir] [-o=write_dir] [-p=rootPath]
```

<code>read_dir/write_dir: rootPath:zk,</code> <code>:</code> <code>myid.properties</code> <code>wrapper.conf</code> <code>server.xml</code> <code>schema.xml</code> <code>rule.xml</code> <code>log4j2.xml</code> <code>cacheservice.properties(option)</code> <code>sequence_distributed_conf.properties for type3 (option)</code> <code>sequence_time_conf.properties for type2 (option)</code>	<code>/dble , ucore,</code> <code>universe/dble</code>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------

cluster.cnf  
bootstrap.cnf  
user.xml  
db.xml  
sharding.xml  
log4j2.xml  
cacheservice.properties(option)



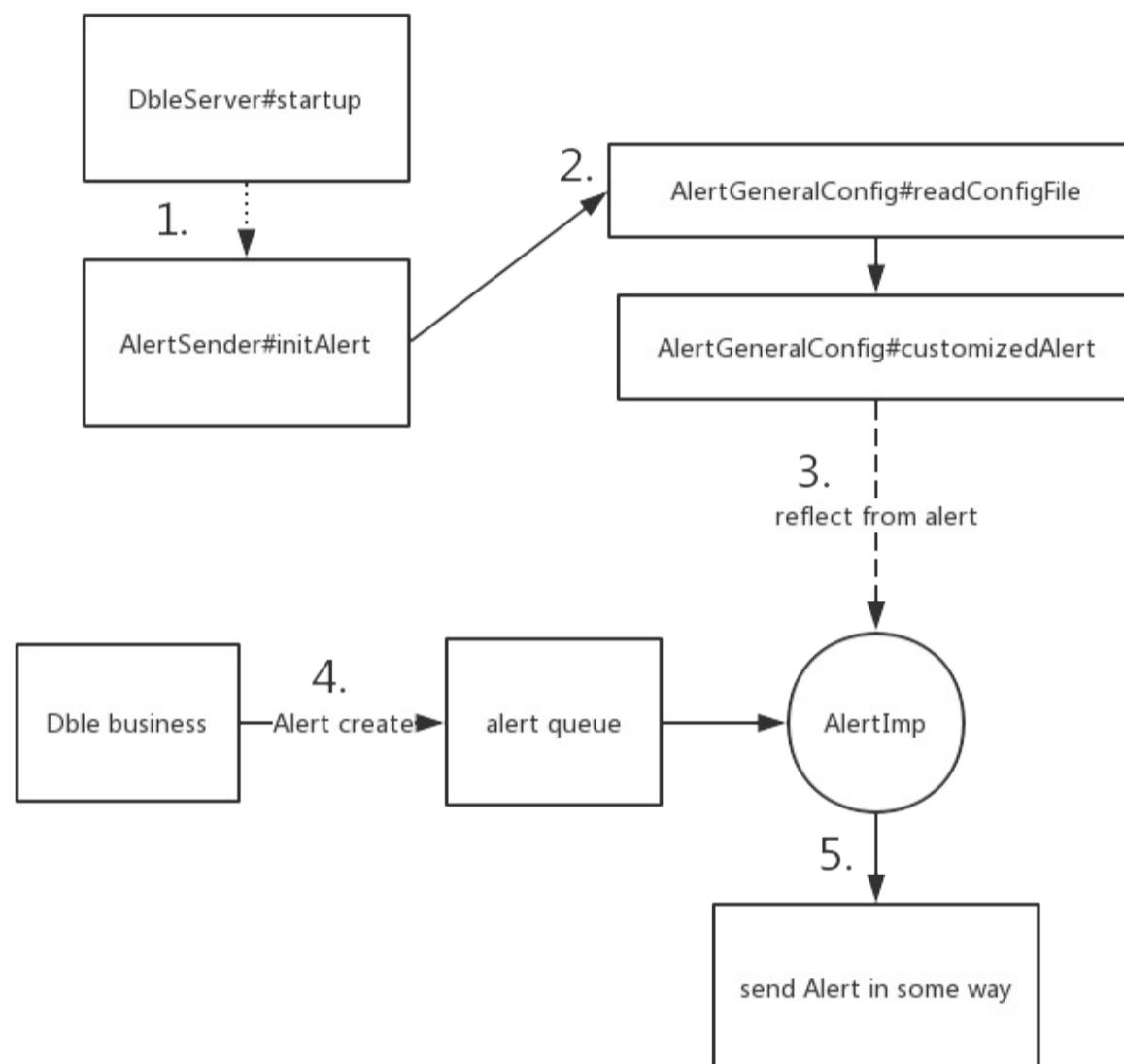


## 1.11

- - 
  - 
  - Interface Alert
  -
- - 
  - 
  - 
  -

### 1.11.1

#### 1.11.1.1



#### dble

1. dble
2. AlertGeneralConfigdble\_alert.properties
3. alert
4. dble
5. dble

#### 1.11.1.2

dble

- 
- 

“”dbleXA  
“”dbleXA

dble

- dble
- dble

“dble”dblekill “dble”dble

#### dble

- -dble
- -dble

- -dble
  - -dble

dble

- dble
  - dble
  - dble
  - dble

### **1.11.1.3 Interface Alert**

```
public interface Alert {  
    void alertSelf(ClusterAlertBean bean);  
    void alert(ClusterAlertBean bean);  
    boolean alertResolve(ClusterAlertBean bean);  
    boolean alertSelfResolve(ClusterAlertBean bean);  
    void alertConfigCheck() throws Exception;  
}
```

### alertConfigCheck

- alert --- dble
  - alertSelf --- dble
  - alertResolve --- dble
  - alertSelfResolve --- dble

dble

alarm alert Selfalert ClusterAlert Beanalert ComponentTypealert ComponentIdalert SelfDBLEserverAlert alertResolvealert SelfResolve

#### 1.11.1.4

```
public class ClusterAlertBean {  
    String code; // / /  
    String level; // / /  
    String desc; // / /  
    String sourceComponentType; // / /  
    String sourceComponentId; // ID  
    String alertComponentType; // / /  
    String alertComponentId; // ID  
    String serverId; // / /  
    long timestampUnix; // / /  
    long resolveTimestampUnix; // / /  
    Map<String, String> labels; // / /  
}
```

dble

1.11.2

### 1.11.2.1

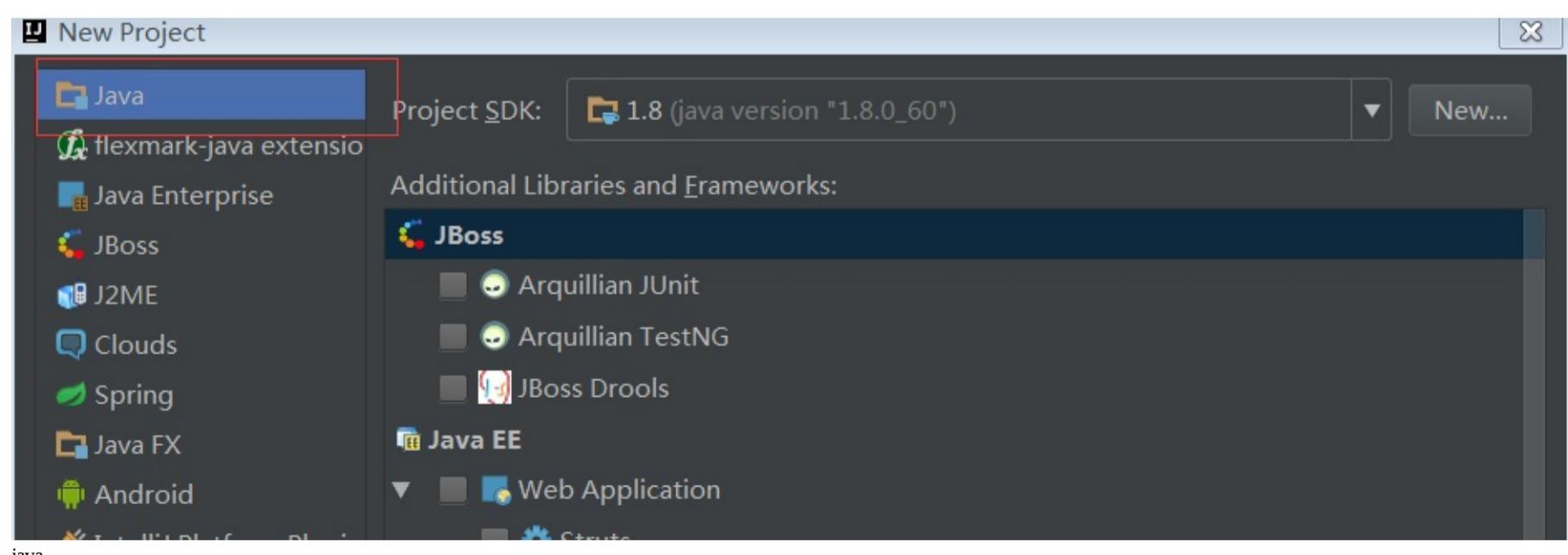
dbledble



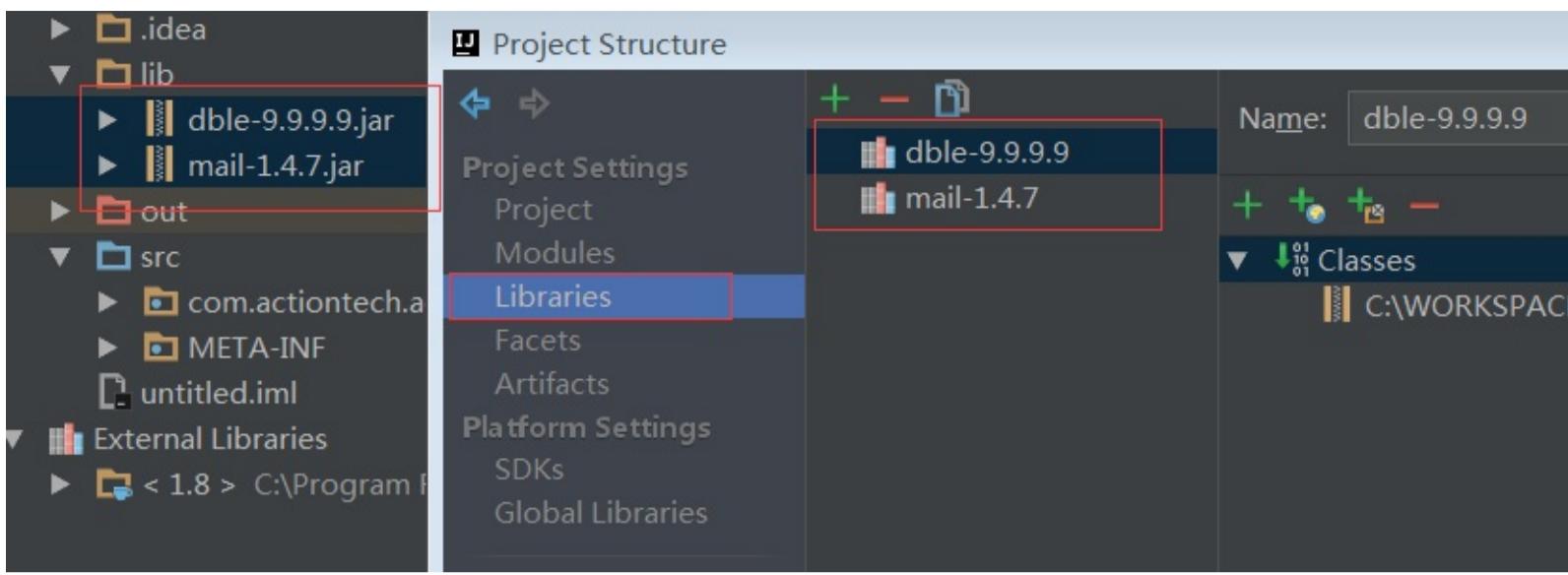
### **dble ----- Alert**

IDEA

1 java



3 copylib



javamailjar

### 3.1 Alert

```
public MailAlert() {
    //init the mail data and read config file
    properties = AlertGeneralConfig.getInstance().getProperties();
}
```

AlertMailAlertAlertGeneralConfig.getInstance().getProperties();dbe(dble\_alert.properties) dble\_alert.propertiesAlertkey

### 3.2 Alert

```
@Override
public void alertConfigCheck() throws ConfigException {
    //check if the config is correct
    if (properties.getProperty(EMAIL_SENDER) == null
        || properties.getProperty(SENDER_PASSWORD) == null
        || properties.getProperty(MAIL_SERVER) == null
        || properties.getProperty(MAIL_RECEIVE) == null) {
        throw new ConfigException("alert check error, for some config is missing");
    }
}
```

dbe\_alert.propertiesMAIL\_SENTERSENDER\_PASSWORDMAIL\_SERVERMAIL\_RECEIVE dble

properties.getProperty(MAIL\_RECEIVE)

### 3.3

send

```
private boolean sendMail(boolean isResolve, ClusterAlertBean clusterAlertBean) {
    try {
        Properties props = new Properties();
        props.setProperty("mail.debug", "true");
        props.setProperty("mail.smtp.auth", "true");
        props.setProperty("mail.host", properties.getProperty(MAIL_SERVER));
        props.setProperty("mail.transport.protocol", "smtp");

        MailSSLSocketFactory sf = new MailSSLSocketFactory();
        sf.setTrustAllHosts(true);
        props.put("mail.smtp.ssl.enable", "true");
        props.put("mail.smtp.ssl.socketFactory", sf);

        Session session = Session.getInstance(props);

        Message msg = new MimeMessage(session);
        msg.setSubject("DBLE " + (isResolve ? "RESOLVE\n" : "ALERT\n"));
        StringBuilder builder = new StringBuilder();
        builder.append(groupMailMsg(clusterAlertBean, isResolve));
        msg.setText(builder.toString());
        msg.setFrom(new InternetAddress(properties.getProperty(EMAIL_SENDER)));

        Transport transport = session.getTransport();
        transport.connect(properties.getProperty(MAIL_SERVER), properties.getProperty(EMAIL_SENDER), properties.getProperty(SENDER_PASSWORD));

        transport.sendMessage(msg, new Address[]{new InternetAddress(properties.getProperty(MAIL_RECEIVE))});
        transport.close();
        //send EMAIL SUCCESS return TRUE
        return true;
    } catch (Exception e) {
        e.printStackTrace();
    }
    //send fail retrun false
    return false;
}

private String groupMailMsg(ClusterAlertBean clusterAlertBean, boolean isResolve) {
    StringBuffer sb = new StringBuffer("Alert mail:\n");
    sb.append("    Alert type:" + clusterAlertBean.getCode() + " " + (isResolve ? "RESOLVE\n" : "ALERT\n"));
    sb.append("    Alert message:" + clusterAlertBean.getDesc() + "\n");
    sb.append("    Alert component:" + clusterAlertBean.getAlertComponentType() + "\n");
    sb.append("    Alert componentID:" + clusterAlertBean.getAlertComponentId() + "\n");
    sb.append("    Alert source:" + clusterAlertBean.getAlertComponentId() + "\n");
    sb.append("    Alert server:" + clusterAlertBean.getServerId() + "\n");
}
```

```

sb.append("      Alert time:" + TimeStamp2Date(clusterAlertBean.getTimestampUnix()) + "\n");
String detail = "|";
if (clusterAlertBean.getLabels() != null) {
    for (Map.Entry<String, String> entry : clusterAlertBean.getLabels().entrySet()) {
        detail += entry.getKey() + ":" + entry.getValue();
    }
}
sb.append("      Other detail:" + detail + "|\n");
return sb.toString();
}

```

javaproPERTIES group MailMsgclusterAlertBean

## 3.4

```

@Override
public void alertSelf(ClusterAlertBean clusterAlertBean) {
    alert(clusterAlertBean.setAlertComponentType(COMPARTMENT_TYPE).setAlertComponentId(properties.getProperty(COMPONENT_ID)));
}

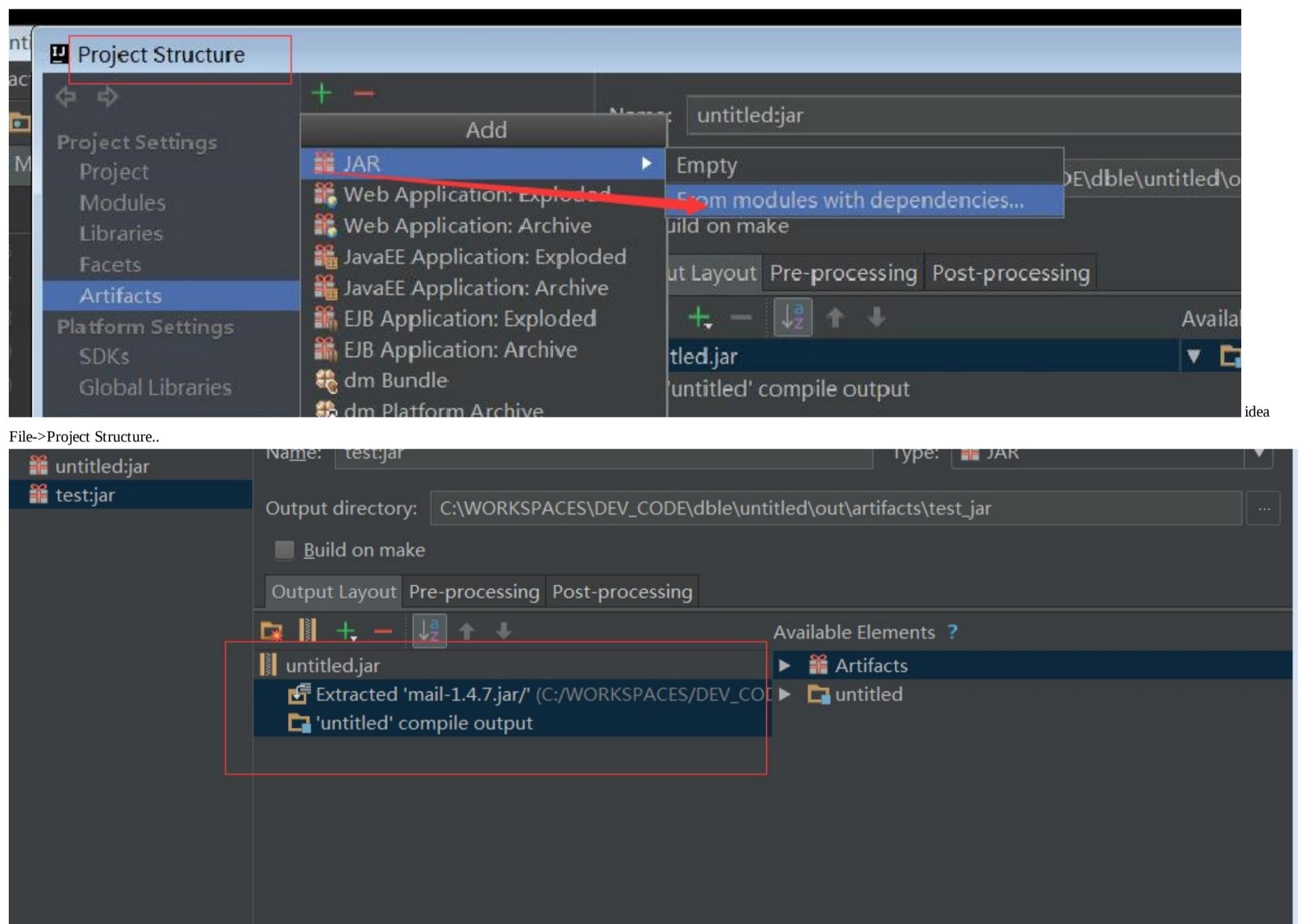
@Override
public void alert(ClusterAlertBean clusterAlertBean) {
    clusterAlertBean.setSourceComponentType(COMPARTMENT_TYPE).
        setSourceComponentId(properties.getProperty(COMPONENT_ID)).
        setServerId(properties.getProperty(SERVER_ID)).
        setTimestampUnix(System.currentTimeMillis() * 1000000);
    sendMail(false, clusterAlertBean);
}

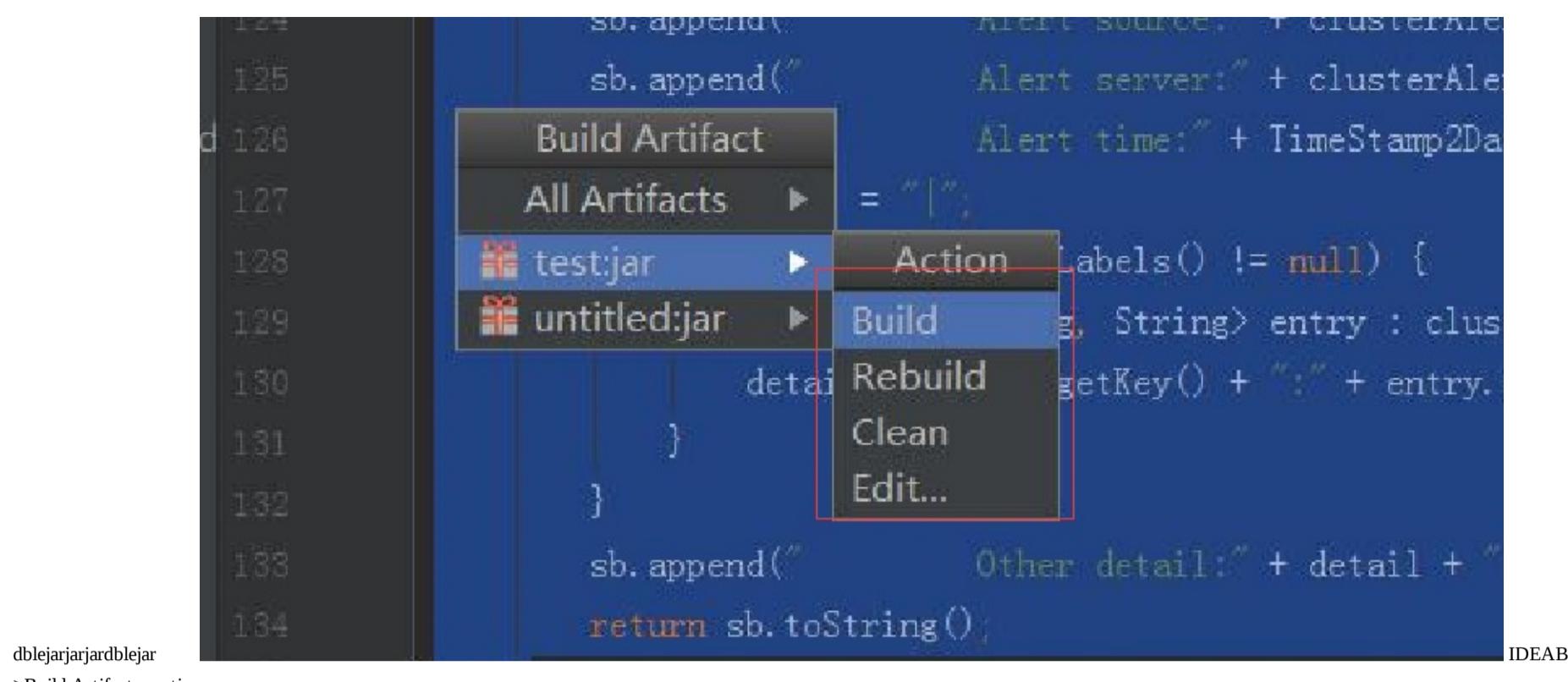
@Override
public boolean alertResolve(ClusterAlertBean clusterAlertBean) {
    clusterAlertBean.setSourceComponentType(COMPARTMENT_TYPE).
        setSourceComponentId(properties.getProperty(COMPONENT_ID)).
        setServerId(properties.getProperty(SERVER_ID)).
        setTimestampUnix(System.currentTimeMillis() * 1000000);
    return sendMail(true, clusterAlertBean);
}

@Override
public boolean alertSelfResolve(ClusterAlertBean clusterAlertBean) {
    return alertResolve(clusterAlertBean.setAlertComponentType(COMPARTMENT_TYPE).setAlertComponentId(properties.getProperty(COMPONENT_ID)));
}

```

## 3.5 jar





IDEABuild-

&gt;Build Artifacts..outjar

### 1.11.2.2

jar

- jardblelib
  - dble\_alert.properties,alert
  - dble lib dble\_alert.properties,
- ```

alert=com.actiontech.addtionAlert.MailAlert
mail_sender=123456798@qq.com
sender_pass=qwertyuiop
mail_server=smtp.qq.com
mail_receive=yyyyyyyyyy@actionsky.com
server_id=dble-server-001
component_id=DBLE-FOR-XXX-01

```

dblecom.actiontech.addtionAlert.MailAlert

### 1.11.2.3

jar

## 1.11.3 dbleCODE

|  |              |   |
|--|--------------|---|
| DBLE_WRITE_TEMP_RESULT_FAIL            |              | / |
| DBLE_XA_RECOVER_FAIL                   | XA           | / |
| XA_READ_XA_STREAM_FAIL                 | XA           | / |
| DBLE_XA_READ_DECODE_FAIL               | XA           | / |
| DBLE_XA_READ_IO_FAIL                   | XA           | / |
| DBLE_XA_WRITE_IO_FAIL                  | XA           | / |
| DBLE_XA_WRITE_CHECK_POINT_FAIL         | XA           | / |
| DBLE_XA_BACKGROUND_RETRY_FAIL          | XA           | / |
| DBLE_REACH_MAX_CON                     |              | / |
| DBLE_TABLE_NOT_CONSISTENT_IN_SHARDINGS |              | / |
| DBLE_TABLE_NOT_CONSISTENT_IN_MEMORY    | dble         | / |
| DBLE_GLOBAL_TABLE_COLUMN_LOST          |              | / |
| DBLE_CREATE_CONN_FAIL                  | mysql        | / |
| DBLE_DB_INSTANCE_CAN_NOT_REACH         |              | / |
| DBLE_KILL_BACKEND_CONN_FAIL            | Kill         | / |
| DBLE_NIOREACTOR_UNKNOWN_EXCEPTION      | NIO          | / |
| DBLE_NIOREACTOR_UNKNOWN_THROWABLE      | NIO          | / |
| DBLE_NIOCONNECTOR_UNKNOWN_EXCEPTION    | NIO          | / |
| DBLE_TABLE_LACK                        |              | / |
| DBLE_GET_TABLE_META_FAIL               |              | / |
| DBLE_TEST_CONN_FAIL                    |              | / |
| DBLE_HEARTBEAT_FAIL                    |              | / |
| DBLE_SHARDING_NODE_LACK                | shardingNode | / |

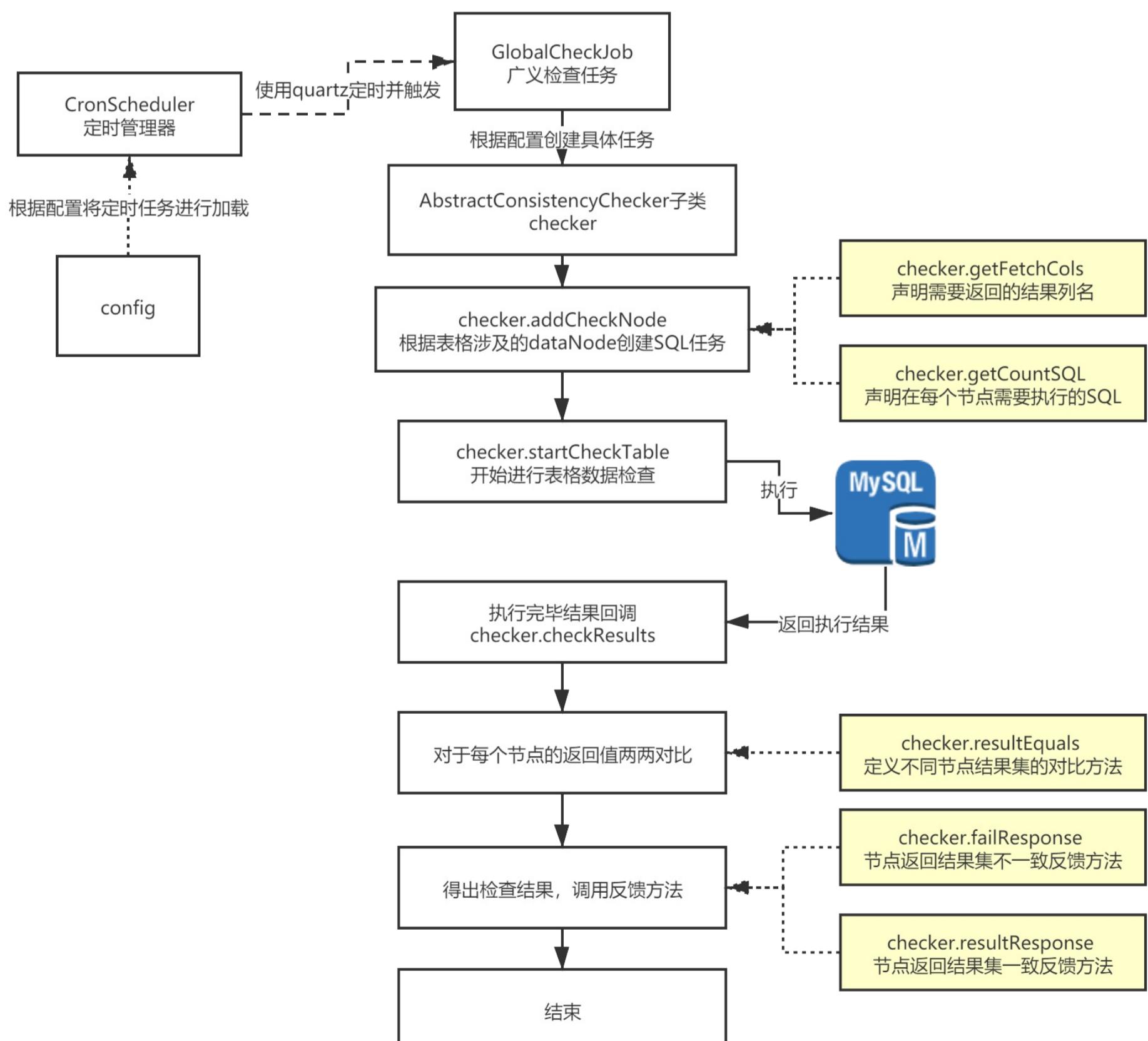


- 
- 
- getCountSQL
- getFetchCols
- resultEquals
- failResponse
- resultResponse
- 
- 

dbletable\_atable\_a

•

dbletable\_a  
dbletable\_a



- reloadCronScheduler
- GlobalCheckJob
- GlobalCheckJobSQL
  - checkerSQL
  - shardingNodeSQL
- SQLSQLSQLMySQL
- SQL()
- SQLcheckResults
- checkerSQL
- SQL()failResponseSQL()resultResponse

**1.SQL string getCountSQL(String dbName, String tableName)**

SQL  
 SQLMySQLdatabase  
 SQL

```
public String getCountSQL(String dbName, String tableName) {
    //tablechecksum
    return "checksum table " + tableName;
}
```

**2. getFetchCols()**

SQL

list

```
public String[] getFetchCols() {
    //checksumChecksum
    // mysql> checksum table suntest;
    //+-----+-----+
    //| Table     | Checksum |
    //+-----+-----+
    //| db1.suntest |1290812451|
    //+-----+-----+
    //returnChecksum
    return new String[]{"Checksum"};
}
```

**3.SQL boolean resultEquals(result1,result2)**

result result1, result2

```
SQLQueryResult<List<Map<String, String>>> result
result
  |
  ----- row(List)
    |
    -----Key-Value(Field-Value)
checksum
result
  |
  ----- row(List<1> checksum table suntest)
    |
    -----Key-Value(checksum - 1290812451 getFetchCols)
```

list

```
public boolean resultEquals(SQLQueryResult<List<Map<String, String>>> or, SQLQueryResult<List<Map<String, String>>> cr) {
    //checksum
    //
    Map<String, String> oresult = or.getResult().get(0);
    Map<String, String> cresult = cr.getResult().get(0);
    //Mapchecksum
    return (oresult.get("Checksum") == null && cresult.get("Checksum") == null) ||
           (oresult.get("Checksum") != null && cresult.get("Checksum") != null &&
            oresult.get("Checksum").equals(cresult.get("Checksum")));
}
```

**4. failResponse(resultList)**

//

```
public void failResponse(List<SQLQueryResult<List<Map<String, String>>>> res) {
    //
    /////
    String errorMsg = "Global Consistency Check fail for table :" + schema + "-" + tableName;
    System.out.println(errorMsg);
    for (SQLQueryResult<List<Map<String, String>>> r : res) {
        System.out.println("Checksum is : " + r.getResult().get(0).get("Checksum"));
```

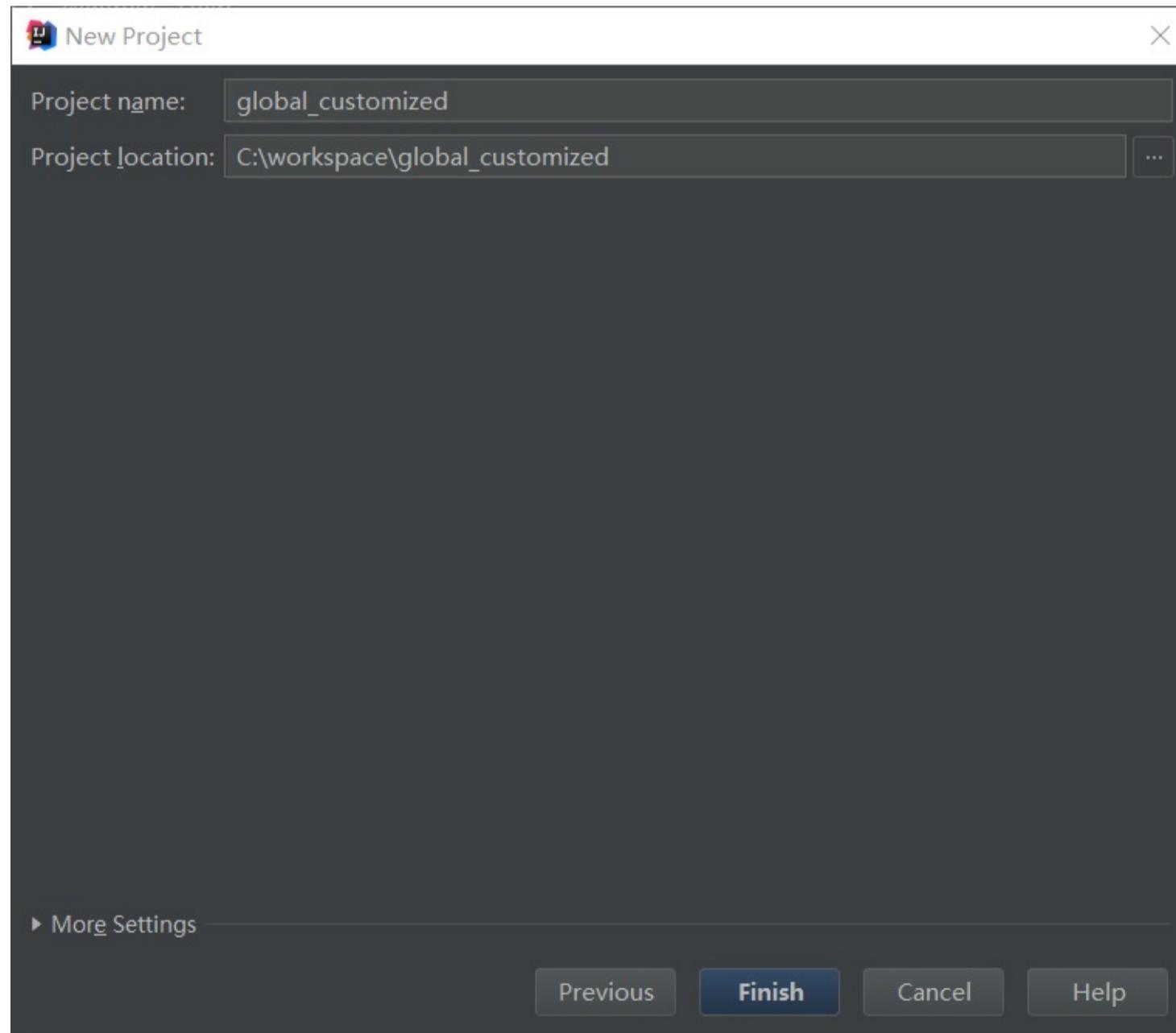
```
    }
}
```

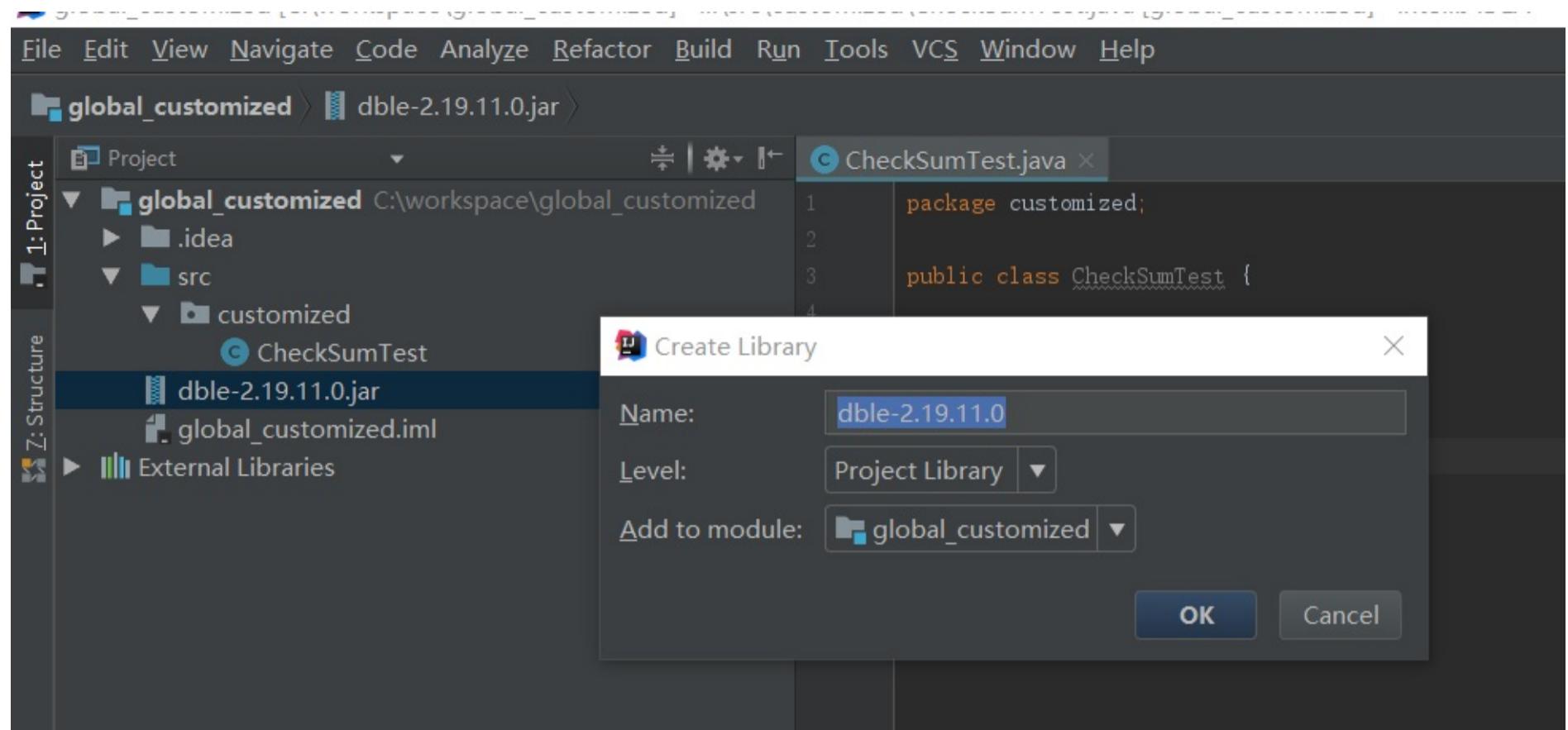
**5. void resultResponse(errorList)**

```
//
0
```

```
public void resultResponse(List<SQLQueryResult<List<Map<String, String>>> elist) {
    //SQLlistSQL
    //SQLSQL
    //
    String tableId = schema + "." + tableName;

    if (elist.size() == 0) {
        System.out.println("Global Consistency Check success for table :" + schema + "-" + tableName);
    } else {
        System.out.println("Global Consistency Check fail for table :" + schema + "-" + tableName);
        StringBuilder sb = new StringBuilder("Error when check Global Consistency, Table ");
        sb.append(tableName).append(" shardingNode ");
        for (SQLQueryResult<List<Map<String, String>>> r : elist) {
            System.out.println("error node is : " + r.getTableName() + "-" + r.getShardingNode());
            sb.append(r.getShardingNode()).append(",");
        }
        sb.setLength(sb.length() - 1);
    }
}
```

**1 java****2 copylib**



35

global\_customized C:\workspace\global\_customized

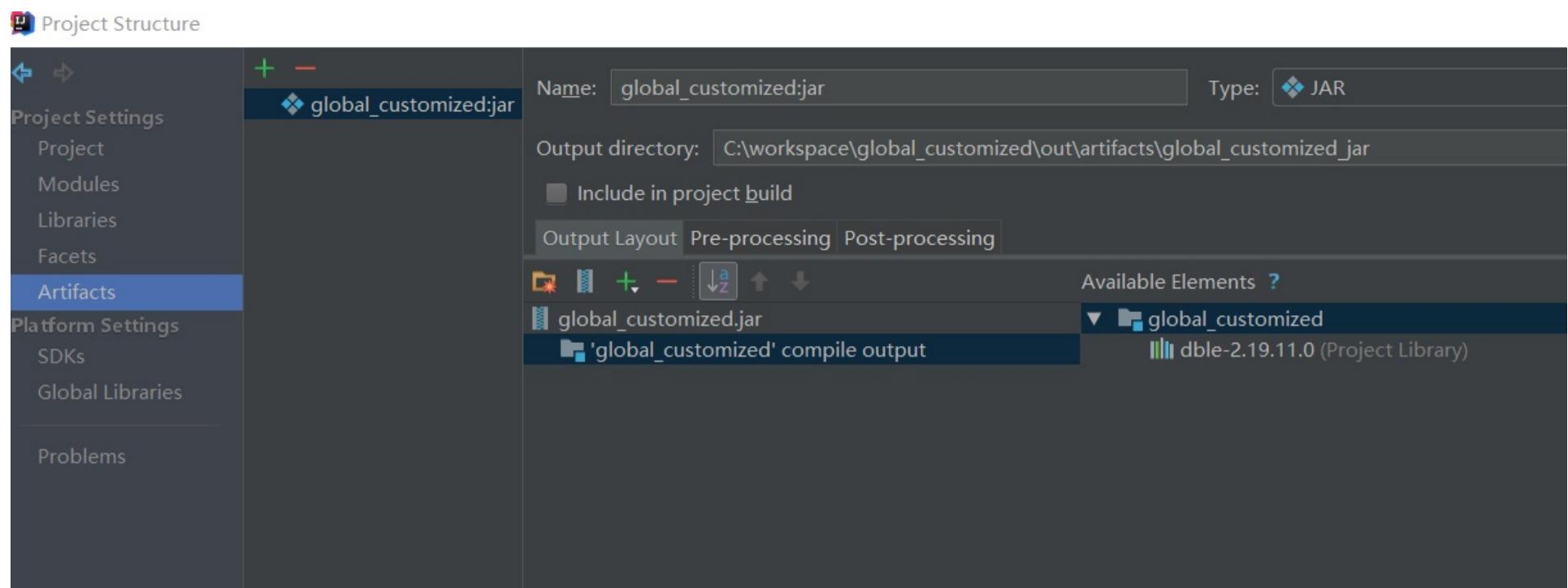
```

1 import com.actiontech.dble.backend.datasource.check.AbstractConsistencyChecker;
2 import com.actiontech.dble.sqlengine.SQLQueryResult;
3
4 import java.util.List;
5 import java.util.Map;
6
7 public class CustomizeTest extends AbstractConsistencyChecker {
8
9
10    @Override
11    public String[] getFetchCols() {
12        return new String[0];
13    }
14
15    @Override
16    public String getCountSQL(String s, String s1) {
17        return null;
18    }
19
20    @Override
21    public boolean resultEquals(SQLQueryResult<List<Map<String, String>>> sqlQueryResult, SQLQueryResult<I>
22        return false;
23    }
24
25    @Override
26    public void failResponse(List<SQLQueryResult<List<Map<String, String>>>> list) {
27    }
28
29    @Override
30    public void resultResponse(List<SQLQueryResult<List<Map<String, String>>>> list) {
31    }
32
33    }
34
35

```

按照自身的需要实现这几个方法

4 jar



**5 jar**

schema.table  
**:reload**

```
<!--dbleCHECKSUM-->
<globalTable name="tb_global1" shardingNode="dn1,dn2" cron = "0 * * * * ?" globalCheckClass="CHECKSUM"/>

<!--dbleCOUNT-->
<globalTable name="tb_global2" shardingNode="dn1,dn2" cron = "0 * * * * ?" globalCheckClass="COUNT"/>

<!--CustomizeTest-->
<globalTable name="tb_global3" shardingNode="dn1,dn2" cron = "0 * * * * ?" globalCheckClass="CustomizeTest"/>
```

jardblejaralgorithmlibdblejavajarjardble  
**jardblereload**

## 2.

- [2.0](#)
- [2.1](#)
  - [2.1.1 select](#)
  - [2.1.2 set](#)
  - [2.1.3 show](#)
  - [2.1.4 switch](#)
  - [2.1.5 kill](#)
  - [2.1.6 stop](#)
  - [2.1.7 reload](#)
  - [2.1.8 rollback](#)
  - [2.1.9 offline](#)
  - [2.1.10 online](#)
  - [2.1.11 file](#)
  - [2.1.12 log](#)
  - [2.1.13](#)
  - [2.1.14 pause & resume](#)
  - [2.1.15](#)
  - [2.1.16 /](#)
  - [2.1.17 check @@metadata](#)
  - [2.1.18 release @@reload\\_metadata](#)
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  - [2.5.1 XA](#)
  - [2.5.2 XA](#)
  - [2.5.3 XA](#)
  - [2.5.4 XA](#)
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  - [2.11.3](#)
  - [2.11.4](#)
  - [2.11.5 heartbeat](#)
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- [2.23](#)
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- [2.25](#)
- [2.26 client\\_found\\_rows](#)
- [2.27 general](#)
- [2.28 sql](#)
- [2.29 load data](#)

## 2.0 dble\_information

### 2.0.0

```
dble_information dbledbleuse dble_information
:
(select)
(where)
(join)
where
```

```
use dble_information
show tables [ like ]
desc|describe table xxx
show databases; show @@database
INSERT/UPDATE/DELETE
```

### 2.0.1 dble\_information

#### 2.0.1.0 version

- version
- dble
- 

version	true	

- - dble

#### 2.0.1.1 dble\_variables

- dble\_variables
- 
- 

variable_name	true	
variable_value		
comment		
read_only		

- - version\_comment
  - isOnline:
  - heap\_memory\_max (mb)
  - direct\_memory\_max: -XX:MaxDirectMemorySize
  - show @@sysparam

#### 2.0.1.2 dble\_status

- dble\_status
- 
- 

variable_name	true	
variable_value		
comment		

- - uptime: dble()
  - current\_timestamp: dble
  - startup\_timestamp: dble
  - heap\_memory\_max:
  - heap\_memory\_used:
  - heap\_memory\_total:
  - config\_reload\_timestamp: config
  - direct\_memory\_max: -XX:MaxDirectMemorySize

```

- direct_memory_pool_size: bufferpoolpagesizebufferpoolpagenumber
- direct_memory_pool_used: directmemory
- questions:
- transactions:

```

### 2.0.1.3 dble\_thread\_pool

- dble\_thread\_pool
- 
- 

name	true	
size		
active_count		
waiting_task_count		(, )

- 

### 2.0.1.4 dble\_processor

- dble\_processor
- processor
- 

name	true	
type		(session/backend)
conn_count		
conn_net_in		0
conn_net_out		0

- 

### 2.0.1.5 dble\_sharding\_node

- dble\_sharding\_node
- sharding\_node
- 

name	true	
db_group		db_group
db_schema		db_schema

- 

### 2.0.1.6 dble\_db\_group

- dble\_db\_group
- db\_group
- 

name	true	
heartbeat_stmt		sql
heartbeat_timeout		0
heartbeat_retry		
rw_split_mode		
delay_threshold		
disable_ha		
active		

- 

### 2.0.1.7 dble\_db\_instance

- dble\_db\_instance

- db\_instance

- 

name	true	
db_group	true	db_group
addr		
port		
primary		
user		
password_encrypt		
encrypt_configured		
active_conn_count		
idle_conn_count		
read_conn_request		
write_conn_request		
disabled		disabled
last_heartbeat_ack_timestamp		
last_heartbeat_ack		init/ok/error/timeout
heartbeat_status		idle/checking
heartbeat_failure_in_last_5min		5,
min_conn_count		
max_conn_count		
read_weight		
id		id
connection_timeout		
connection_heartbeat_timeout		
test_on_create		
test_on_borrow		
test_on_return		
test_while_idle		
time_between_eviction_runs_millis		
evictor_shutdown_timeout_millis		
idle_timeout		
heartbeat_period_millis		

- 

### 2.0.1.8 dble\_schema

- dble\_schema
- schema
- 

name	true	
sharding_node		sharding_node
sql_max_limit		

- 

### 2.0.1.9 session\_variables

- session\_variables
- 
- 

session_conn_id	true	id
variable_name	true	
variable_value		
variable_type		(sys/user)

- 

```

- tx_read_only(mysql8.0)
- transaction_read_only(mysql5.7)
- character_set_client
- collation_connection
- character_set_results
- tx_isolation_level(mysql8.0)
- transaction_isolation (mysql5.7)
- autocommit
-

```

### 2.0.1.10 session\_connections

- session\_connections
- 
- 

session_conn_id	true	id
remote_addr		
remote_port		
local_port		
processor_id		id
user		
tenant		
schema		schema? (/)
sql		sql(10241024)
sql_execute_time		sql, sql(ms)20ms
sql_start_timestamp		sql
sql_stage		,finished
conn_net_in		
conn_net_out		
conn_estab_time		0
conn_recv_buffer		0 (,,)
conn_send_task_queue		0 (,)
in_transaction		
entry_id		id

- 

### 2.0.1.11 backend\_variables

- backend\_variables
- 
- 

backend_conn_id	true	id
variable_name	true	
variable_value		
variable_type		(sys/user)

- 

```

- tx_read_only, (mysql8.0)
- transaction_read_only, (mysql5.7)
- character_set_client,
- collation_connection,
- character_set_results,
- tx_isolation_level, (mysql8.0)
- transaction_isolation, (mysql5.7)
- autocommit,
-

```

### 2.0.1.12 backend\_connections

- backend\_connections
- 
-

backend_conn_id	true	id
db_group_name		db
db_instance_name		db
remote_addr		
remote_port		
remote_processlist_id		mysqid
local_port		
processor_id		id
user		
schema		schema? (/)
session_conn_id		id,
sql		sql(10241024)
sql_execute_time		sql20ms
mark_as_expired_timestamp		, ,
conn_net_in		
conn_net_out		
conn_estab_time		0
borrowed_from_pool		0
state		
conn_recv_buffer		0 (,,)
conn_send_task_queue		0 (,)
used_for_heartbeat		
conn_closing		
xa_status		xa
in_transaction		

•

### 2.0.1.13 dble\_table

#### 2.0.1.13.0 dble\_table

- dble\_table
- table
- 

id	true	tableCschemaMySqltableM
name		
schema		schema
max_limit		
type		global/single/sharding/child/no sharding

- nameschema
- 

#### 2.0.1.13.1 dble\_global\_table

- dble\_global\_table
- 
- 

id	true	dble_tableid
check		
checkClass		class
cron		

•

#### 2.0.1.13.2 dble\_sharding\_table

- dble\_sharding\_table

- 
- 

id	true	dble_tableid
increment_column		
sharding_column		
sql_required_sharding		sqlRequiredSharding
algorithm_name		

- 

#### 2.0.1.13.3 dble\_child\_table

- dble\_child\_table
- 
- 

id	true	dble_tableid
parent_id		id
increment_column		
join_column		
paren_column		

- 

#### 2.0.1.13.4 dble\_table\_sharding\_node

- dble\_table\_sharding\_node
- sharding\_node
- 

id	true	dble_tableid
sharding_node	true	
order		sharding_node(0)

- 

#### 2.0.1.14 dble\_algorithm

- dble\_algorithm
- 
- 

name	true	
key	true	
value		
is_file		map filetruefilefalsecontentmap file1024

- 

#### 2.0.1.15 dble\_entry

##### 2.0.1.15.0 dble\_entry

- dble\_entry
- (+)
- 

id	true	
type		(username/conn_attr),
user_type		//sharding
username		
password_encrypt		
encrypt_configured		

conn_attr_key		tenant
conn_attr_value		
white_ips		
readonly		-
max_conn_count		
blacklist		

•

**2.0.1.15.1 dble\_entry\_schema**

- dble\_entry\_schema
- schema
- 

id	true	dble_entryid
schema	true	schema

•

**2.0.1.15.2 dble\_rw\_split\_entry**

- dble\_rw\_split\_entry
- schema
- 

id	true	
type		(username/conn_attr),
username		
password_encrypt		
encrypt_configured		
conn_attr_key		tenant
conn_attr_value		
white_ips		
max_conn_count		
blacklist		
db_group		db_group

•

usernameconn\_attr\_keyconn\_attr\_value

•

**2.0.1.15.3 dble\_entry\_table\_privilege**

- dble\_entry\_table\_privilege
- privilege
- 

id	true	dble_entryid
schema	true	schema
table	true	table
exist_metas		tabledble
insert		insert
update		update
select		select
delete		delete
is_effective		

•

**2.0.1.16 dble\_blacklist**

- dble\_blacklist
-

- 

name	true	
property_key	true	key
property_value		value
user_configured		

- 

### 2.0.1.17 processlist

- processlist
- (NULL)
- 

front_id	true	id
db_instance		name
mysql_id	true	mysql id
user		
front_host		
mysql_db		mysql 'show processlist' db
command		mysql mysql 'show processlist' command
time		mysqlstate mysql 'show processlist' time
state		mysql mysql 'show processlist' state
info		mysql mysql 'show processlist' info

- (show @@processlist)

### 2.0.1.18 dble\_thread\_usage

- dble\_thread\_usage
- 
- 

thread_name	true	
last_quarter_min		15s
last_minute		1min
last_five_minute		5min

- (show @@thread\_used;)

### 2.0.1.19 dble\_reload\_status

- dble\_reload\_status
- reload
- 

index	true	reload[ RL ]
cluster		dble
reload_type		reload reload_metadata/reload_all/manager_insert/manager_update/manager_delete
reload_status		reloadnot_reloading/self_reload/meta_reload/waiting_others
last_reload_start		
last_reload_end		
trigger_type		local_command/cluster_notify
end_type		

- (show @@reload\_status)

### 2.0.1.20 dble\_xa\_session

- dble\_xa\_session

- xa

- 

front_id	true	id
xa_id		xa_id
xa_state		xa
sharding_node	true	xasharding_node,

- (show @@session.xa)

### 2.0.1.21 dble\_ddl\_lock

- dble\_ddl\_lock
- dbleddl
- 

schema	true	schema
table	true	table
sql		ddl sql

- (show @@ddl)

### 2.0.1.22 sql\_statistic\_by\_frontend\_by\_backend\_by\_entry\_by\_user

- sql\_statistic\_by\_frontend\_by\_backend\_by\_entry\_by\_user
- sql
- 

entry	true	dble_entryid
user	true	
frontend_host	true	ip
backend_host	true	ip
backend_port	true	
sharding_node	true	
tx_count	false	
tx_rows	false	
tx_time	false	
sql_insert_count	false	insert
sql_insert_rows	false	insert
sql_insert_time	false	insert
sql_update_count	false	update
sql_update_rows	false	update
sql_update_time	false	update
sql_delete_count	false	delete
sql_delete_rows	false	delete
sql_delete_time	false	delete
sql_select_count	false	select
sql_select_rows	false	dble
sql_select_time	false	select
last_update_time	false	

- 

### 2.0.1.23 sql\_statistic\_by\_table\_by\_user\_by\_entry

- sql\_statistic\_by\_table\_by\_user\_by\_entry
- sql
- 

entry	true	dble_entryid

user	true	
table	true	
sql_insert_count	false	insert
sql_insert_rows	false	insert
sql_insert_time	false	insert
sql_update_count	false	update
sql_update_rows	false	update
sql_update_time	false	update
sql_delete_count	false	delete
sql_delete_rows	false	delete
sql_delete_time	false	delete
sql_select_count	false	select
sql_select_examined_rows	false	dble
sql_select_rows	false	
sql_select_time	false	select
last_update_time	false	

•

#### 2.0.1.24 sql\_statistic\_by\_associate\_tables\_by\_entry\_by\_user

- sql\_statistic\_by\_associate\_tables\_by\_entry\_by\_user

- sql

•

entry	true	dble_entryid
user	true	
tables	true	
sql_select_count	false	select
sql_select_examined_rows	false	dble
sql_select_rows	false	
sql_select_time	false	select
last_update_time	false	

•

#### 2.0.1.25 sql\_log

- sql\_log

- sql

•

sql_id	true	sql id
sql_stmt	false	SQL (1024)
sql_type	false	SQL
tx_id	true	ID
entry	false	dble_entryid
user	false	
source_host	false	IP
source_port	false	port
rows	false	
examined_rows	false	
start_time	false	
duration	false	

•

#### 2.0.1.26 sql\_log\_by\_tx\_by\_entry\_by\_user

- sql\_log\_by\_tx\_by\_entry\_by\_user

- sql log

- 

tx_id	true	id
entry	true	dble_entryid
user	false	
source_host	false	IP
source_port	false	port
sql_ids	false	sql_id
sql_count	false	SQL
tx_duration	false	
busy_time	false	SQL
examined_rows	false	

- 

### 2.0.1.27 dble\_config

- dble\_config
- dbledbshardingusersequence
- 

content	false	dbshardingusersequencejson

- 

## 2.0.2 INSERT/UPDATE/DELETE&

### 2.0.2.0 INSERT Syntax

```

INSERT
  [INTO] tbl_name
  [(col_name [, col_name] ...)]
  {VALUES | VALUE} (value_list) [, (value_list)] ...
  
```

```

INSERT
  [INTO] tbl_name
  SET assignment_list
  
```

- INSERT ...SELECT ,LOW\_PRIORITY,DELAYED,HIGH\_PRIORITY,IGNORE,ON DUPLICATE KEY UPDATE,PARTITION

### 2.0.2.1 UPDATE Syntax

```

UPDATE table_reference
  SET assignment_list
  WHERE where_condition
value:
  {expr | DEFAULT}
assignment:
  col_name = value
assignment_list:
  assignment [, assignment]
  
```

- 
- 
- 
- LOW\_PRIORITY IGNORE ORDER BY LIMIT ,PARTITION
- where
- 

### 2.0.2.2 DELETE Syntax

```
DELETE FROM tbl_name WHERE where_condition
```

- 
- 
- LOW\_PRIORITY IGNORE ORDER BY LIMIT ,PARTITION
- where
-

### 2.0.2.3 TRUNCATE Syntax

```
TRUNCATE [TABLE] tbl_name
```

- 

### 2.0.2.4 INSERT/UPDATE/DELETE

#### 2.0.2.4.0 dble\_db\_group

- active

#### 2.0.2.4.1 dble\_db\_instance

- active\_conn\_countidle\_conn\_countread\_conn\_requestwrite\_conn\_requestlast\_heartbeat\_ack\_timestamplast\_heartbeat\_ackheartbeat\_statusheartbeat\_failure\_in\_last\_5min

#### 2.0.2.4.2 dble\_rw\_split\_entry

- idblacklisttype

### 2.0.2.5 TRUNCATE

```
sql_statistic_by_frontend_by_backend_by_entry_by_usersql_statistic_by_table_by_user_by_entriesql_statistic_by_associate_tables_by_entry_by_user sql_log
```

## 2.1

- [2.1.1 select](#)
- [2.1.2 set](#)
- [2.1.3 show](#)
- [2.1.4 switch](#)
- [2.1.5 kill](#)
- [2.1.6 stop](#)
- [2.1.7 reload](#)
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- [2.1.12 log](#)
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- [2.1.14 pause & resume](#)
- [2.1.15](#)
- [2.1.16 create database](#)
- [2.1.17 check @@metadata](#)
- [2.1.18 release @@reload\\_metadata](#)
- [2.1.19 split](#)
- [2.1.20 flow\\_control](#)
- [2.1.21](#)

## 2.1.1 select

### 2.1.1.1 select @@VERSION\_COMMENT

```
select @@VERSION_COMMENT;
```

dble

```
MySQL [(none)]> select @@VERSION_COMMENT;
+-----+
| @@VERSION_COMMENT      |
+-----+
| dble Server (ActionTech) |
+-----+
1 row in set (0.02 sec)
```

### 2.1.1.2 select @@SESSION.TX\_READ\_ONLY/ select @@SESSION.Transaction\_READ\_ONLY

```
select @@SESSION.TX_READ_ONLY;
```

```
select @@SESSION.Transaction_READ_ONLY
```

readonly

### 2.1.1.3 select @@max\_allowed\_packet

```
select @@max_allowed_packet;
```

1048576

### 2.1.1.4 select TIMEDIFF(NOW(), UTC\_TIMESTAMP())

```
select TIMEDIFF(NOW(), UTC_TIMESTAMP())
```

00:00:00

### 2.1.2 set xxx

**set xxx;**

xxx

OK

### 2.1.3 show

#### 2.1.3.1 show @@time.current

```
show @@time.current;
```

#### 2.1.3.2 show @@time.startup

```
show @@time.startup;
```

#### 2.1.3.3 show @@version

```
show @@version;
```

dble

#### 2.1.3.4 show @@server

```
show @@server;
```

dble

```
mysql> show @@server;
+-----+-----+-----+-----+-----+-----+
| UPTIME | USED_MEMORY | TOTAL_MEMORY | MAX_MEMORY | RELOAD_TIME | CHARSET | STATUS |
+-----+-----+-----+-----+-----+-----+
| 1h 4m 47s | 17414592 | 87031808 | 1840250880 | 2017/10/17 16:42:09 | utf8 | ON |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.05 sec)
```

UPTIME:  
USED\_MEMORY:  
TOTAL\_MEMORY:  
MAX\_MEMORY:  
RELOAD\_TIME: config  
CHARSET:  
STATUS:

#### 2.1.3.5 show @@threadpool

```
show @@threadpool;
```

```
mysql> show @@threadpool;
+-----+-----+-----+-----+-----+
| NAME | POOL_SIZE | ACTIVE_COUNT | TASK_QUEUE_SIZE | COMPLETED_TASK | TOTAL_TASK |
+-----+-----+-----+-----+-----+
| Timer | 1 | 0 | 0 | 22596 | 22596 |
| BusinessExecutor | 8 | 1 | 0 | 216 | 217 |
| complexQueryExecutor | 0 | 0 | 0 | 0 | 0 |
+-----+-----+-----+-----+-----+
3 rows in set (0.03 sec)
```

NAME:  
POOL\_SIZE:  
ACTIVE\_COUNT:  
TASK\_QUEUE\_SIZE:  
COMPLETED\_TASK:  
TOTAL\_TASK:

#### 2.1.3.6 show @@database

```
show @@database;
```

schema

#### 2.1.3.7 show @@shardingnode

```
show @@shardingnode;
```

shardingnode

```
mysql> show @@shardingnode;
+-----+-----+-----+-----+-----+-----+
| NAME | DB_GROUP      | SCHEMA_EXISTS | ACTIVE | IDLE | SIZE | EXECUTE | RECOVERY_TIME |
+-----+-----+-----+-----+-----+-----+
| dn1  | dh1/dble_test | true          | 0 | 0 | 1000 | 34 | -1 |
| dn2  | dh2/dble_test | true          | 0 | 0 | 1000 | 34 | -1 |
| dn3  | dh1/dble2_test | false         | 0 | 0 | 1000 | 26 | -1 |
| dn4  | dh2/dble2_test | true          | 0 | 0 | 1000 | 26 | -1 |
| dn5  | dh1/noshardng | true          | 0 | 0 | 1000 | 9 | -1 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.09 sec)
```

NAME:  
DB\_GROUP: dbGroupName/schema  
SCHEMA\_EXISTS: true/false  
ACTIVE:  
IDLE: (bug)  
SIZE: maxCon  
EXECUTE:  
RECOVERY\_TIME: (stop @@heartbeat )

schemashardingnode

```
show @@shardingnode where schema=xxx;
xxxschema
```

### 2.1.3.8 show @@dbinstance

show @@dbinstance

dbinstance

```
mysql> show @@dbinstance;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| DB_GROUP | NAME   | HOST       | PORT | W/R | ACTIVE | IDLE | SIZE | EXECUTE | READ_LOAD | WRITE_LOAD | DISABLED |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| localhost2 | hostS1 | 10.18x.2x.63 | 3307 | W | 1 | 9 | 100 | 11 | 0 | 0 | true |
| localhost1 | hostM1 | 10.18x.2x.64 | 3306 | W | 1 | 9 | 100 | 17 | 0 | 0 | false |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.09 sec)
```

DB\_GROUP:dbinstanceDB\_GROUP  
NAME: dbinstance  
HOST: host  
PORT:  
W/R:  
ACTIVE: ,dbinstance  
IDLE: ,dbinstance(bug)  
SIZE: maxCon  
EXECUTE: ,dbinstance  
READ\_LOAD: ()  
WRITE\_LOAD: ()  
DISABLED: db.xmldbinstance (2.19.09.0disabledtrue)

shardingnodedbinstance

```
show @@dbinstance where shardingnode=xxx;
xxxshardingnode
```

### 2.1.3.9 show @@dbinstance.synstatus

show @@dbinstance.synstatus;

dbinstance

: heartbeat show slave statusdb.xml

```
mysql> show @@dbinstance.synstatus \G
***** 1. row *****
DB_GROUP: dbGroup2
NAME: instanceM3
HOST: 111.231.25.141
PORT: 30309
MASTER_HOST: mysql3
MASTER_PORT: 3306
MASTER_USER: replicator
SECONDS_BEHIND_MASTER: 0
SLAVE_IO_RUNNING: Yes
SLAVE_SQL_RUNNING: Yes
SLAVE_IO_STATE: Waiting for master to send event
CONNECT_RETRY: 10
LAST_IO_ERROR:
```

```
1 row in set (0.00 sec)
```

```
DB_GROUP:dbinstanceDB_GROUP
NAME: dbinstance
HOST: /ip
PORT:
```

mysqlshow slave status

### 2.1.3.10 show @@dbinstance.syndetail where name=?

```
show @@dbinstance.syndetail where name=xxx;
```

xxdbinstance

24dbinstance

```
mysql> show @@dbinstance.syndetail WHERE name =hostM2;
+-----+-----+-----+-----+-----+-----+-----+
| DB_GROUP | NAME | HOST | PORT | MASTER_HOST | MASTER_PORT | MASTER_USER | TIME | SECONDS_BEHIND_MASTER |
+-----+-----+-----+-----+-----+-----+-----+
| localhost2 | hostM2 | 10.18x.2x.64 | 3320 | 10.18x.2x.62 | 3320 | qrep | 2017-10-17 18:31:27 | -1 |
| localhost2 | hostM2 | 10.18x.2x.64 | 3320 | 10.18x.2x.62 | 3320 | qrep | 2017-10-17 18:31:57 | -1 |
| localhost2 | hostM2 | 10.18x.2x.64 | 3320 | 10.18x.2x.62 | 3320 | qrep | 2017-10-17 18:32:27 | -1 |
| localhost2 | hostM2 | 10.18x.2x.64 | 3320 | 10.18x.2x.62 | 3320 | qrep | 2017-10-17 18:32:57 | -1 |
+-----+-----+-----+-----+-----+-----+-----+
4 row in set (0.05 sec)
```

:

```
DB_GROUP:dbinstanceDB_GROUP
NAME: dbinstance
HOST: /ip
PORT:
```

mysqlshow slave status

### 2.1.3.11 show @@datasource.cluster

```
show @@datasource.cluster;
```

2.20.04.0

### 2.1.3.12 show @@processor

```
show @@processor;
```

dbleprocessor

```
mysql> show @@processor\G
*****1. row *****
  NAME: frontProcessor0
  NET_IN: 0
  NET_OUT: 0
REACT_COUNT: 0
  R_QUEUE: 0
  W_QUEUE: 0
FREE_BUFFER: 1072169008
TOTAL_BUFFER: 1073741824
BU_PERCENT: 0
  BU_WARNs: 0
  FC_COUNT: 0
  BC_COUNT: 0
*****2. row *****
  NAME: frontProcessor1
  NET_IN: 0
  NET_OUT: 267
REACT_COUNT: 0
  R_QUEUE: 0
  W_QUEUE: 0
FREE_BUFFER: 1072169008
TOTAL_BUFFER: 1073741824
BU_PERCENT: 0
  BU_WARNs: 0
  FC_COUNT: 0
  BC_COUNT: 0
*****3. row *****
  NAME: frontProcessor2
  NET_IN: 0
  NET_OUT: 150
REACT_COUNT: 0
  R_QUEUE: 0
  W_QUEUE: 0
FREE_BUFFER: 1072169008
TOTAL_BUFFER: 1073741824
BU_PERCENT: 0
  BU_WARNs: 0
  FC_COUNT: 0
  BC_COUNT: 0
*****4. row *****
```

```

NAME: frontProcessor3
NET_IN: 0
NET_OUT: 1548
REACT_COUNT: 0
R_QUEUE: 0
W_QUEUE: 0
FREE_BUFFER: 1072169008
TOTAL_BUFFER: 1073741824
BU_PERCENT: 0
BU_WARNS: 0
FC_COUNT: 0
BC_COUNT: 0
...

```

```

NAME:
NET_IN:
NET_OUT:
REACT_COUNT: 0
R_QUEUE: 0
W_QUEUE:
FREE_BUFFER: BufferPool free
TOTAL_BUFFER: BufferPool
BU_PERCENT: BufferPool
BU_WARNS: 0
FC_COUNT:
BC_COUNT:

```

### 2.1.3.13 show @@command

show @@command;

processor

```

mysql> show @@command;
+-----+-----+-----+-----+-----+-----+-----+-----+
| PROCESSOR | INIT_DB | QUERY | STMT_PREPARE | STMT_EXECUTE | STMT_CLOSE | PING | KILL | QUIT | OTHER |
+-----+-----+-----+-----+-----+-----+-----+-----+
| Processor0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Processor1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Processor2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Processor3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
+-----+-----+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

```

PROCESSOR: processor
INIT_DB: COM_INIT_DB
QUERY: COM_QUERY
STMT_PREPARE: COM_STMT_PREPARE
STMT_EXECUTE: COM_STMT_EXECUTE
STMT_CLOSE: COM_STMT_CLOSE
PING: COM_PING
KILL: COM_PROCESS_KILL
QUIT: COM_QUIT
OTHER:

```

### 2.1.3.14 show @@connection where processor=? and front\_id=? and host=? and user=?

show @@connection where processor=? and front\_id=? and host=? and user=?;

processorfront\_idhostuser

```

mysql> show @@connection where processor='frontProcessor4' \G
***** 1. row *****
PROCESSOR: frontProcessor4
FRONT_ID: 4
HOST: 192.168.2.190
PORT: 9066
LOCAL_PORT: 52082
USER: man1
SCHEMA:
CHARACTER_SET_CLIENT: utf8mb4
COLLATION_CONNECTION: utf8mb4_general_ci
CHARACTER_SET_RESULTS: utf8mb4
NET_IN: 1438
NET_OUT: 10925
ALIVE_TIME(S): 526
RECV_BUFFER: 32767
SEND_QUEUE: 0
TX_ISOLATION_LEVEL:
AUTOCOMMIT:
SYS_VARIABLES:
USER_VARIABLES:
1 row in set (0.01 sec)

```

```

PROCESSOR: PROCESSOR

```

```
FRONT_ID: ID
HOST: host
PORT: ()
LOCAL_PORT:
USER:
SCHEMA: schema
CHARACTER_SET_CLIENT:
COLLATION_CONNECTION:
CHARACTER_SET_RESULTS :
NET_IN:
NET_OUT:
ALIVE_TIME(S):
RECV_BUFFER: ()
SEND_QUEUE:
TX_ISOLATION_LEVEL:
AUTOCOMMIT:
SYS_VARIABLES:
USER_VARIABLES:
```

### 2.1.3.15 show @@cache

**show @@cache;**

cache

```
mysql> show @@cache;
+-----+-----+-----+-----+-----+
| CACHE | MAX | CUR | ACCESS | HIT | PUT | LAST_ACCESS | LAST_PUT |
+-----+-----+-----+-----+-----+
| ER_SQL2PARENTID | 1000 | 0 | 0 | 0 | 0 |          |          |
| SQLRouteCache | 10000 | 0 | 0 | 0 | 0 |          |          |
+-----+-----+-----+-----+-----+
2 rows in set (0.09 sec)
```

:

```
CACHE: cache
MAX:
CUR:
ACCESS:
HIT:
PUT:
LAST_ACCESS:(yyyy/mm/dd hh:mm:ss)
LAST_INPUT: (yyyy/mm/dd hh:mm:ss)
```

### 2.1.3.16 show @@backend where processor=? and backend\_id=? and mysqlid=? and host=? and port=?

**show @@backend where processor=? and backend\_id=? and mysqlid=? and host=? and port=?;**

show @@sessionprocessorbackend\_idmysqlidhostport

```
mysql> show @@backend where processor='backendProcessor9' and host='172.18.0.3' \G
***** 1. row *****
processor: backendProcessor9
BACKEND_ID: 29
MYSQLID: 26
HOST: 172.18.0.3
PORT: 3306
LOCAL_TCP_PORT: 34848
NET_IN: 93
NET_OUT: 85
ACTIVE_TIME(S): 699
CLOSED: false
STATE: IDLE
SEND_QUEUE: 0
SCHEMA: NULL
CHARACTER_SET_CLIENT: utf8mb4
COLLATION_CONNECTION: utf8mb4_general_ci
CHARACTER_SET_RESULTS: utf8mb4
TX_ISOLATION_LEVEL: 2
AUTOCOMMIT: true
SYS_VARIABLES:
USER_VARIABLES:
XA_STATUS: 0
DEAD_TIME:
USED_FOR_HEARTBEAT: false
1 row in set (0.01 sec)
```

```
processor: processor
BACKEND_ID: ID
MYSQLID: mysqlid(show processlistMYSQLID)
HOST:
PORT:
LOCAL_TCP_PORT: tcp
NET_IN:
NET_OUT:
ACTIVE_TIME(S):
CLOSED:
BORROWED:
SEND_QUEUE:
SCHEMA: schema
CHARACTER_SET_CLIENT:
COLLATION_CONNECTION:
```

```
CHARACTER_SET_RESULTS:
TX_ISOLATION_LEVEL: -1
AUTOCOMMIT:
SYS_VARIABLES:
USER_VARIABLES:
XA_STATUS: xa
DEAD_TIME
USED_FOR_HEARTBEAT:
```

### 2.1.3.17 show @@session

show @@session;

session

```
mysql> show @@session ;
+-----+-----+
| FRONT_ID | DN_COUNT | DN_LIST
+-----+-----+
| 2        | 2          | MySQLConnection [backendId=59, lastTime=1508233042917 [,...] ]
+-----+-----+
1 row in set (0.00 sec)
```

```
FRONT_ID: ID
DN_COUNT:
DN_LIST: ,
```

DN\_LIST

```
MySQLConnection [backendId=59, lastTime=1508233042917, user=xxxx , schema=dble_test, old schema=dble_test, borrowed=true, fromSlaveDB=false, mysqlId=23201, character_set_client=utf8, character_set_results=utf8, collation_connection=utf8_general_ci, txIsolation=3, autocommit=false, attachment=dn2{select * from sharding_two_node LIMIT 100}.0, respHandler=com.actiontech.dble.backend.mysql.nio.handler.MultiNodeQueryHandler@181db802, host=10.18x.2x.64, port=3320, statusSync=com.actiontech.dble.backend.mysql.nio.MySQLConnection$StatusSync@d7da548, writeQueue=0, modifiedSQLExecuted=false] MySQLConnection [id=58, lastTime=1508233042917, user=qrep, schema=dble_test, old schema=dble_test, borrowed=true, fromSlaveDB=false, threadId=11112, character_set_client=utf8, character_set_results=utf8, collation_connection=utf8_general_ci, txIsolation=3, autocommit=false, attachment=dn1{select * from sharding_two_node LIMIT 100}.0, respHandler=com.actiontech.dble.backend.mysql.nio.handler.MultiNodeQueryHandler@181db802, host=10.18x.2x.63, port=3320, statusSync=com.actiontech.dble.backend.mysql.nio.MySQLConnection$StatusSync@5882b3d, writeQueue=0, modifiedSQLExecuted=false]
```

:

```
backendId: id
lastTime
user:
schema: schema
old_schema: schema
borrowed:
fromSlaveDB:
mysqlId: idshow processlist
charset:
txIsolation:
autocommit:
attachment:
respHandler: handler
host: host ip
port:
statusSync:
writeQueue:
modifiedSQLExecuted:
```

### 2.1.3.18 show @@connection.sql

show @@connection.sql;

sessionSQL

```
mysql> show @@connection.sql;
+-----+-----+-----+-----+-----+
| FRONT_ID | HOST      | USER    | SCHEMA   | START_TIME           | EXECUTE_TIME | SQL          | STAGE      |
+-----+-----+-----+-----+-----+
| 1        | 0:0:0:0:0:0:1 | man     | NULL     | 2017/10/17 17:00:58 |       139     | show @@connection.sql | Read SQL   |
+-----+-----+-----+-----+-----+
1 row in set (0.13 sec)
```

:

```
FRONT_ID: ID
HOST: host
USER:
SCHEMA: schema
START_TIME:
EXECUTE_TIME: SQL20ms
SQL10241024
STAGE: ,finished
```

### 2.1.3.19 show @@sql

show @@sql;

50sql(5)

```
mysql> show @@sql;
+----+-----+-----+-----+
| ID | USER | START_TIME | EXECUTE_TIME | SQL |
+----+-----+-----+-----+
| 1 | root | 2017/10/17 17:37:22 | 381 | select * from sharding_two_node LIMIT 100 |
+----+-----+-----+-----+
1 row in set (0.02 sec)
```

```
:  
ID:  
USER:  
START_TIME:  
EXECUTE_TIME:  
SQL
```

show @@sql true;

### 2.1.3.20 show @@sql.high

```
show @@sql.high;  
sql(10245)
```

```
mysql> show @@sql.high;
+-----+-----+-----+-----+-----+-----+-----+
| ID | USER | FREQUENCY | AVG_TIME | MAX_TIME | MIN_TIME | EXECUTE_TIME | LAST_TIME | SQL |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | root | 1 | 381 | 381 | 381 | 381 | 2017/10/17 17:37:23 | SELECT * FROM sharding_two_node LIMIT ? |
+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.06 sec)
```

```
ID:  
USER:  
FREQUENCY: sql  
AVG_TIME:  
MAX_TIME:  
MIN_TIME:  
EXECUTE_TIME:  
LAST_TIME:  
SQL
```

show @@sql.high true;

### 2.1.3.21 show @@sql.slow

```
show @@sql.slow;  
(100reload)sql(10sqlRecordCount5
```

```
mysql> show @@sql.slow;
+-----+-----+-----+
| USER | START_TIME | EXECUTE_TIME | SQL |
+-----+-----+-----+
| root | 2017/10/17 17:37:22 | 381 | select * from sharding_two_node LIMIT 100 |
+-----+-----+-----+
1 row in set (0.07 sec)
```

```
USER:  
START_TIME:  
EXECUTE_TIME:  
SQL
```

show @@sql.slow true;

### 2.1.3.22 show @@sql.resultset

```
show @@sql.resultset;  
(512KmaxResultSet) sql
```

```
mysql> show @@sql.resultset;
+----+-----+-----+-----+
| ID | USER | FREQUENCY | SQL | RESULTSET_SIZE |
+----+-----+-----+-----+
```

```
| 1 | root | 1 | SELECT * FROM sharding_two_node | 1048576 |
+-----+-----+-----+-----+
1 row in set (0.05 sec)
```

ID:  
USER:  
FREQUENCY:sql  
SQL:  
RESULTSET\_SIZE:

### 2.1.3.23 show @@sql.sum

show @@sql.sum;

sql .user.true

```
mysql> show @@sql.sum;
+-----+-----+-----+-----+-----+-----+-----+-----+
| ID   | USER  | R    | W    | R%   | MAX  | NET_IN | NET_OUT | TIME_COUNT | TTL_COUNT | LAST_TIME      |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1    | root  | 1   | 0    | 1.00 | 1     | 41    | 840    | [0, 0, 1, 0] | [0, 0, 1, 0] | 2017/10/17 17:37:23 |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.26 sec)
```

:

ID:  
USER:  
R:  
W:()  
R%:W0100%  
MAX:  
NET\_IN:  
NET\_OUT:  
TIME\_COUNT:query22-06 ,06-13 ,13-18,18-22  
TTL\_COUNT:query10,10 - 200,1, 1  
LAST\_TIME:SQL

show @@sql.sum true;

### 2.1.3.24 show @@sql.sum.user

show @@sql.sum;

show @@sql.sum.user true;

### 2.1.3.25 show @@sql.sum.table

show @@sql.sum.table;

```
mysql> show @@sql.sum.table;
+-----+-----+-----+-----+-----+-----+-----+
| ID   | TABLE        | R    | W    | R%   | RELATABLE | RELACOUNT | LAST_TIME      |
+-----+-----+-----+-----+-----+-----+-----+
| 1    | sharding_two_node | 1   | 0    | 1.00 | NULL      | NULL       | 2017/10/17 17:37:23 |
+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.06 sec)
```

:

ID:  
TABLE:(:,bug)  
R:  
W:()  
R%:W0100%  
RELATABLE:(,NULL)  
RELACOUNT:(,NULL)  
LAST\_TIME:SQL

show @@sql.sum.table true;

### 2.1.3.26 show @@heartbeat

show @@heartbeat;

dbinstanceheartbeat

```
mysql> show @@heartbeat;
+-----+-----+-----+-----+-----+-----+-----+-----+
| NAME | HOST      | PORT | RS_CODE | RETRY | STATUS | TIMEOUT | EXECUTE_TIME | LAST_ACTIVE_TIME | STOP | RS_MESSAGE |
+-----+-----+-----+-----+-----+-----+-----+-----+
| hostM1 | 10.18x.2x.63 | 3320 |    OK |     0 | idle   |    0 | 8,8,8       | NULL        | false | NULL      |
| hostM2 | 10.18x.2x.64 | 3320 |    OK |     0 | idle   |    0 | 9,9,9       | NULL        | false | NULL      |
+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.07 sec)
```

```
NAME:dbGroup
HOST://IP
PORT:
RS_CODE:INIT, OK, ERROR, TIMEOUT
RETRY:
STATUS:checking/idle
TIMEOUT:(db.xmlheartbeattimeout0)
EXECUTE_TIME:311030
LAST_ACTIVE_TIME:
STOP:stop,stop
RS_MESSAGE:RS_CODEINIT, OK, TIMEOUTmessageNULLRS_CODEERRORmessage
```

### 2.1.3.27 show @@heartbeat.detail where name=

```
show @@heartbeat.detail where name=xxx;
```

xxxdbinstance

dbinstanceheartbeat

:shardingNodeHeartbeatPeriod

:

```
mysql> show @@heartbeat.detail where name='hostM1';
+-----+-----+-----+-----+
| NAME | HOST      | PORT | TIME           | EXECUTE_TIME |
+-----+-----+-----+-----+
| hostM1 | 10.18x.2x.63 | 3320 | 2017-10-17 17:31:58 | 7
| hostM1 | 10.18x.2x.63 | 3320 | 2017-10-17 17:32:59 | 9
+-----+-----+-----+-----+
2 row in set (0.00 sec)
```

:

```
NAME:dbGroup
HOST://IP
PORT:
TIME:
EXECUTE_TIME:()
```

### 2.1.3.28 show @@sysparam

```
show @@sysparam;
```

sysconfig

### 2.1.3.29 show @@syslog limit=?

```
show @@syslog limit=N;
```

N

: dble.logN

### 2.1.3.30 show @@white

```
show @@white;
```

```
mysql> show @@white;
+-----+-----+
| IP          | USER |
+-----+-----+
| 0:0:0:0:0:0:0:1 | root |
| 127.0.0.1    | root |
| 0:0:0:0:0:0:0:1 | test |
| 127.0.0.1    | test |
+-----+-----+
4 rows in set (0.00 sec)
```

### 2.1.3.31 show @@directmemory

```
show @@directmemory;
```

```
+-----+-----+-----+
| DIRECT_MEMORY_MAXED | DIRECT_MEMORY_POOL_SIZE | DIRECT_MEMORY_POOL_USED |
+-----+-----+-----+
| 3GB           | 1024MB        | 44KB          |
+-----+-----+-----+
1 row in set (0.16 sec)
```

:

```
DIRECT_MEMORY_MAXED:-XX:MaxDirectMemorySize
DIRECT_MEMORY_POOL_SIZE: bufferPoolPageSizebufferPoolPageNumber
DIRECT_MEMORY_POOL_USEDDirectMemory
```

### 2.1.3.32 show @@command.count

```
show @@command.count;
```

### 2.1.3.33 show @@connection.count

```
show @@connection.count;
```

### 2.1.3.34 show @@backend.statistics

```
show @@backend.statistics;
```

```
MySQL [(none)]> show @@backend.statistics;
+-----+-----+-----+
| HOST      | PORT     | ACTIVE    | TOTAL    |
+-----+-----+-----+
| 192.168.2.177 | 3307    | 0         | 10       |
| 192.168.2.177 | 3308    | 0         | 10       |
+-----+-----+-----+
2 rows in set (0.02 sec)
```

```
HOSTip
PORT
ACTIVE
TOTAL
```

### 2.1.3.35 show @@backend.old

```
show @@backend.old;
```

```
reload @@config_all
show @@backend
```

### 2.1.3.36 show @@binlog.status

```
show @@binlog.status;
```

```
sharding.xmlmysqlbinlog
```

```
mysql> show @@binlog.status;
+-----+-----+-----+-----+-----+
| Url          | File          | Position | Binlog_Do_DB | Binlog_Ignore_DB | Executed_Gtid_Set |
+-----+-----+-----+-----+-----+
| 10.18x.2x.63:3320 | mysql-bin.000024 | 14128    |           | 7ad71aab-de94-11e5-9488-3a935460da28:1-67646 |
| 10.18x.2x.64:3320 | mysql-bin.000049 | 604440   |           | ba8f8b5c-debf-11e5-a87b-26b8a61f9012:1-91   |
+-----+-----+-----+-----+-----+
2 rows in set (0.11 sec)
```

```
Url: Url
show master status
```

### 2.1.3.37 show @@help

```
show @@help;
```

### 2.1.3.38 show @@sql.large

show @@sql.large;

10000sql(10,5)

```
mysql> show @@sql.large;
+-----+-----+-----+-----+
| USER | ROWS | START_TIME | EXECUTE_TIME | SQL
+-----+-----+-----+-----+
| root | 20000 | 2017/10/17 17:37:23 | 381 | SELECT * FROM sharding_two_node LIMIT ? |
+-----+-----+-----+-----+
1 row in set (0.06 sec)
```

:

```
USER:
ROWS:
START_TIME: EXECUTE_TIME:
SQL
```

show @@sql.large true;

### 2.1.3.39 show @@sql.condition

show @@sql.condition;

reload @@query\_cf table&columnsql.100000

select from sharding\_two\_node where id =0; select from sharding\_two\_node where id =1;

```
mysql> show @@sql.condition;
+-----+-----+-----+-----+
| ID | KEY | VALUE | COUNT |
+-----+-----+-----+-----+
| 2 | sharding_two_node.id | 0 | 1 |
| 3 | sharding_two_node.id | 1 | 2 |
| 2 | sharding_two_node.id.valuekey | size | 2 |
| 3 | sharding_two_node.id.valuecount | total | 3 |
+-----+-----+-----+-----+
4 rows in set (0.05 sec)
```

:

```
ID:
KEY: schema.table schema.table.valuekey schema.table.valuecount
VALUE: keyvalue
COUNT:
```

### 2.1.3.40 show @@cost\_time;

show @@cost\_time;

query,bootstrap,cnfuseCostTimeStat

```
mysql> show @@cost_time;
+-----+-----+
| OVER_ALL(us) | FRONT_PREPARE | BACKEND_EXECUTE |
+-----+-----+
| 71496 | Id:9,Time:53135;Id:12,Time:54056 | Id:9,Time:16924;Id:12,Time:16006 |
| 15316 | Id:17,Time:2301;Id:11,Time:3196 | Id:17,Time:10691;Id:11,Time:11397 |
+-----+-----+
2 rows in set (0.05 sec)
```

:

```
OVER_ALL:
FRONT_PREPARE: dble
BACKEND_EXECUTE:
```

### 2.1.3.41 show @@shardingNodes where schema=? and table=?;

show @@shardingNodes

```
mysql> show @@shardingNodes where schema=testdb and table=seqtest;
+-----+-----+-----+-----+
| NAME | SEQUENCE | HOST | PORT | PHYSICAL_SCHEMA | USER | PASSWORD |
+-----+-----+-----+-----+
```

### 2.1.3 show

```
+-----+-----+-----+-----+-----+
| dn1 | 0      | 10.186.24.113 | 3309 | db1          | root | 123456   |
| dn2 | 1      | 10.186.24.113 | 3309 | db2          | root | 123456   |
+-----+-----+-----+-----+-----+
2 rows in set (0.05 sec)
```

:

```
NAME:
SEQUENCE:
HOST:IP
PORT
PHYSICAL_SCHEMA
USER
PASSWORD
```

### 2.1.3.42 show @@algorithm where schema=? and table=?;

show @@algorithm

:

```
mysql> show @@algorithm where schema=testdb and table=seqtest;
+-----+-----+
| KEY        | VALUE
+-----+-----+
| TYPE       | SHARDING TABLE
| COLUMN     | ID
| CLASS      | com.actiontech.dble.route.function.PartitionByLong
| partitionCount | 2
| partitionLength | 1
+-----+-----+
5 rows in set (0.05 sec)
```

:

```
KEY:
VALUE
```

### 2.1.3.43 show @@thread\_used;

show @@thread\_used;

:

```
mysql> show @@thread_used;
+-----+-----+-----+-----+
| THREAD_NAME           | LAST_QUARTER_MIN | LAST_MINUTE | LAST_FIVE_MINUTE |
+-----+-----+-----+-----+
| BusinessExecutor3    | 0%              | 0%          | 0%              |
| $_NIO_REACTOR_BACKEND-2 | 0%              | 0%          | 0%              |
| BusinessExecutor1    | 0%              | 0%          | 0%              |
| $_NIO_REACTOR_BACKEND-3 | 0%              | 0%          | 0%              |
| $_NIO_REACTOR_BACKEND-0 | 0%              | 0%          | 0%              |
| $_NIO_REACTOR_FRONT-0 | 0%              | 0%          | 0%              |
| $_NIO_REACTOR_BACKEND-1 | 0%              | 0%          | 0%              |
+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

:

```
THREAD_NAME:
LAST_QUARTER_MIN15
LAST_MINUTE
LAST_FIVE_MINUTE
```

### 2.1.3.44 show @@ddl;

show @@ddl;

dbleDDL

:

```
Schema:Schema
TableTable
Sqlddl sql
```

**2.1.3.45 show @@processlist;**

show @@processlist;

NULL

```
mysql> show @@processlist;
+-----+-----+-----+-----+-----+-----+
| Front_Id | db_instance | MysqlId | User | Front_Host | db | Command | Time | State | Info |
+-----+-----+-----+-----+-----+-----+
|      1 | instanceM2 |    2303 | root | 127.0.0.1:33222 | db2 | Sleep |   17 |     | NULL |
|      2 | instanceM2 |    NULL | man1 | 127.0.0.1:34882 | NULL | NULL |    0 |     | NULL |
|      3 | instances2 |    2259 | root | 127.0.0.1:33226 | db1 | Sleep |    4 |     | NULL |
|      3 | instanceS2 |    2308 | root | 127.0.0.1:33226 | db2 | Sleep |    4 |     | NULL |
|      3 | instances2 |    2304 | root | 127.0.0.1:33226 | db1 | Sleep |    4 |     | NULL |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.05 sec)
```

:

```
Front_IdID
db_instance
MysqlId mysql ID
User
Front_Host
db mysql 'show processlist' db
Commandmysql mysql 'show processlist' Command
Timemysqlstate mysql 'show processlist' Time
Statemysql mysql 'show processlist' State
Infomysql mysql 'show processlist' Info
```

**2.1.3.46 show @@session.xa;**

show @@session.xa;

xa

```
mysql> show @@session.xa;
+-----+-----+-----+
| FRONT_ID | XA_ID | XA_STATE | SHARDING_NODES |
+-----+-----+-----+
| 1 | 'Dble_Server.1.1' | TX_COMMIT_FAILED_STATE | dn1,dn3 |
+-----+-----+-----+
1 rows in set (0.00 sec)
```

:

```
FRONT_IDID
XA_IDxaid
XA_STATExa
SHARDING_NODESEXashardingNode
```

**2.1.3.47 show @@reload\_status**

show @@reload\_status

dbleread

```
+-----+-----+-----+-----+-----+-----+
| INDEX | CLUSTER | RELOAD_TYPE | RELOAD_STATUS | LAST_RELOAD_START | LAST_RELOAD_END | TRIGGER_TYPE | END_TYPE |
+-----+-----+-----+-----+-----+-----+
| 0 | No Cluster | RELOAD_ALL | NOT_RELOADING | 2020/06/19 14:28:04 | 2020/06/19 14:28:05 | LOCAL_COMMAND | RELOAD_END |
+-----+-----+-----+-----+-----+-----+
```

:

```
INDEX:reload[RL]
CLUSTER:dble
RELOAD_TYPE:reload RELOAD_ALL/RELOAD_META/MANAGER_INSERT/MANAGER_UPDATE/MANAGER_DELETE
RELOAD_STATUS:reloadnot_reloading/self_reload/meta_reload/waiting_others
LAST_RELOAD_START
LAST_RELOAD_END
TRIGGER_TYPE LOCAL_COMMAND/CLUSTER_NOTIFY
END_TYPE RELOAD_END/INTERRUPTED
```

release @@reload\_metadata

**2.1.3.48 show @@user**

show @@user

dble

```
mysql> show @@user;
+-----+-----+-----+
```

```
| Username | Manager | Readonly | Max_con |
+-----+-----+-----+-----+
| man1   | Y     | N      | no limit |
| root    | N     | N      | no limit |
| user    | N     | N      | no limit |
+-----+-----+-----+
3 rows in set (0.03 sec)
```

:

```
Username
Manager
Readonly
Max_con
```

**2.1.3.49 show @@user.privilege**

show @@user.privilege

dble

```
mysql> show @@user.privilege;
+-----+-----+-----+-----+-----+
| Username | Schema | Table | INSERT | UPDATE | SELECT | DELETE |
+-----+-----+-----+-----+-----+
| root    | testdb1 | *     | Y     | Y     | Y     | Y     |
| root    | testdb  | *     | Y     | Y     | Y     | Y     |
| user    | testdb  | *     | N     | Y     | Y     | N     |
+-----+-----+-----+-----+-----+
3 rows in set (0.01 sec)
```

:

```
Username
Schema
Tabledml, *
INSERT
UPDATE
SELECT
DELETE
```

**2.1.3.50 show @@data\_distribution where table ='schema.table'**

show @@data\_distribution where table ='schema.table'

```
+-----+-----+
| SHARDING_NODE | COUNT |
+-----+-----+
| dn1          | 100  |
| dn2          | 101  |
| dn3          | 98   |
| dn4          | 104  |
+-----+-----+
4 rows in set (0.09 sec)
```

:

```
SHARDING_NODE
COUNT
```

**2.1.3.51 show @@Questions**

show @@Questions

SQLQUERYTransaction

```
mysql> show @@Questions;
+-----+-----+
| Questions | Transactions |
+-----+-----+
|       0 |         0 |
+-----+-----+
```

:

```
Questions:
Transactions
```

**2.1.3.52 show @@connection\_pool**

show @@connection\_pool

```
mysql> show @@connection_pool;
+-----+-----+-----+
| DB_GROUP | DB_INSTANCE | PROPERTY          | VALUE   |
+-----+-----+-----+
| dbGroup1 | instanceM1 | minCon           |      2 |
| dbGroup1 | instanceM1 | maxCon           |      4 |
| dbGroup1 | instanceM1 | testOnCreate       |  false  |
| dbGroup1 | instanceM1 | testOnBorrow       |  false  |
| dbGroup1 | instanceM1 | testOnReturn       |  false  |
| dbGroup1 | instanceM1 | testWhileIdle      |  false  |
| dbGroup1 | instanceM1 | connectionHeartbeatTimeout |    20 |
| dbGroup1 | instanceM1 | connectionTimeout    | 10000  |
| dbGroup1 | instanceM1 | heartbeatPeriodMillis | 10000  |
| dbGroup1 | instanceM1 | idleTimeout        | 600000 |
| dbGroup1 | instanceM1 | evictorShutdownTimeoutMillis | 10000 |
| dbGroup1 | instanceM1 | timeBetweenEvictionRunsMillis | 30000 |
+-----+-----+-----+
12 rows in set (0.01 sec)
```

:

DB_GROUP	DB_INSTANCE	PROPERTY	VALUE
----------	-------------	----------	-------

**2.1.3.52 show @@cap\_client\_found\_rows**

show @@cap\_client\_found\_rows

cap\_client\_found\_rows

```
mysql> show @@cap_client_found_rows;
+-----+
| @@cap_client_found_rows |
+-----+
| 0                      |
+-----+
1 row in set (0.02 sec)
```

:

0-1-

**2.1.3.53 show @@general\_log**

show @@general\_log

general

```
mysql> show @@general_log;
+-----+-----+
| NAME      | VALUE      |
+-----+-----+
| general_log | ON         |
| general_log_file | /tmp/dble-general/general/general.log |
+-----+-----+
2 rows in set (0.02 sec)
```

:

```
general_log/
general_log_filegeneral
```

**2.1.3.54 show @@statistic;**

show @@statistic;

sql statistic

```
mysql> show @@statistic;
+-----+-----+
| NAME      | VALUE   |
+-----+-----+
| statistic      | OFF     |
| associateTablesByEntryByUserTableSize | 1024   |
| frontendByBackendByEntryByUserTableSize | 1024   |
| tableByUserByEntryTableSize           | 1024   |
| samplingRate           | 0       |
| sqlLogTableSize           | 1024   |
+-----+-----+
6 rows in set (0.01 sec)
```

:

```
statistic/
associateTablesByEntryByUserTableSizesql_statistic_by_associate_tables_by_entry_by_user
frontendByBackendByEntryByUserTableSizesql_statistic_by_frontend_by_backend_by_entry_by_user
tableByUserByEntryTableSizesql_statistic_by_table_by_user_by_entry
samplingRate0[0,100] %
sqlLogTableSizesql_log
```

### 2.1.3.55 show @@load\_data.fail

```
show @@load_data.fail
```

```
load data
```

```
show @@load_data.fail;
Empty set (0.01 sec)

if have error file may like
show @@load_data.fail;
+-----+
| error_load_data_file      |
+-----+
| ./temp/error/1-data-dn1.txt |
| ./temp/error/1-data-dn2.txt |
+-----+
2 rows in set (0.01 sec)
```

```
:
```

```
error_load_data_file:
```

## 2.1.4 switch

2.20.04.0

## 2.1.5 kill

### 2.1.5.1 kill @@connection

```
kill @@connection id1,id2,...;  
idx idshow @@connection
```

OK

### 2.1.5.2 kill @@xa\_session;

```
kill @@xa_session id1,id2,...;  
idx session idshow @@session.xa  
sessionxasession  
OKsession
```

### 2.1.5.3 KILL @@DDL\_LOCK where schema=? and table=?

```
KILL@@DDL_LOCK where schema=? and table=?;  
schematableddl 2.22 KILL @@DDL_LOCK  
OK
```

### 2.1.5.4 kill @@load\_data

```
kill @@load_data;
```

OK

## 2.1.6 stop

### 2.1.6.1 stop @@heartbeat

**stop @@heartbeat keys:dbGroup**

keys:dbGroupkeydbGroup      **key:**dbGroup dbGroup\$0-n dbGroup\$0-2dbGroup[0],dbGroup[1],dbGroup[2]BUG

**value:**

dbGroupkeyhostheartbeat n

OK

## 2.1.7 reload

### 2.1.7.1 reload @@config

**reload @@config;**

2.19.09.0()2.19.09.0reload @@config\_all

### 2.1.7.2 reload @@config\_all

**reload @@config\_all [-s] [-f] [-r];**

user.xmlldb.xmlsharding.xml

-s ERROR

-f dbGroup-rdbGroup,

-r ,

[2.19 reload\\_all](#)

OK ERROR

metameta

- 
- 
- shardingNode
- shardingNodedbGroup/dbInstance
- schema
- schema
- schema shardingNode
- schemashardingNodedbGroup/dbInstance

-rmeta

-r-s,metadatadbGroup/dbInstance

,metadata #1002

shardingNodeschemaglobal

(systemouterHAfalse),,,, [2.12](#)

### 2.1.7.3 reload @@metadata

**reload @@metadata;**

OK

**reload @@metadata where schema=? [ and table=? ]**

schema

OK

**reload @@metadata where table in ('schema1.table1','schema2.table2','schema1.table3',...)**

schema1table1,table3schema2table2

OK

### 2.1.7.4 reload @@sqlslow=N;

**reload @@sqlslow=N;**

slow sqlN OK

### 2.1.7.5 reload @@user\_stat

**reload @@user\_stat;**

```
:  
show @@sql;  
show @@sql.sum;  
show @@sql.slow;  
show @@sql.high;  
show @@sql.large;  
show @@sql.resultset;
```

OK

### 2.1.7.6 reload @@query\_cf

**reload @@query\_cf[=table&column];**

tablecolumn

show @@sql.conditiont

OK

```
reload @@query_cf;
```

```
reload @@query_cf=NULL;
```

### 2.1.7.7 reload @@general\_log\_file=?

```
reload @@general_log_file = 'general/general.log';
```

```
general'/homepath
```

```
OK
```

### 2.1.7.8 reload @@statistic\_table\_size = ? [where table='?' | where table in (dble\_information.tableA,...)]

```
reload @@statistic_table_size = 90;
```

```
sql_statistic_by_frontend_by_backend_by_entry_by_usersql_statistic_by_table_by_user_by_entrysql_statistic_by_associate_tables_by_entry_by_user90
```

```
OK
```

```
reload @@statistic_table_size = 90 where table = 'sql_statistic_by_table_by_user_by_entry'
```

```
sql_statistic_by_table_by_user_by_entry90
```

```
OK
```

```
reload @@statistic_table_size = 90 where table in(sql_statistic_by_table_by_user_by_entry,sql_statistic_by_associate_tables_by_entry_by_user)
```

```
sql_statistic_by_table_by_user_by_entrysql_statistic_by_associate_tables_by_entry_by_user90
```

```
OK
```

```
reload @@statistic_table_size = 90 where table='sql_log'
```

```
sql_log90
```

```
OK
```

### 2.1.7.9 reload @@samplingRate = ?

```
0[0,100] %
```

### 2.1.7.10 reload @@load\_data.num=N

```
reload @@load_data.num=N
```

```
NmaxRowSizeToFilesql
```

```
OK
```

## **2.1.8 rollback 3.20.10.0**

### 2.1.9 offline

**offline;**

dble, dblepingselect user

OK

## **2.1.10 online**

### **online**

dbleoffline  
OK

## 2.1.11 file

### 2.1.11.1 file @@list

conf

```
MySQL [(none)]> file @@list;
+-----+
| DATA
+-----+
| 1 : wrapper.conf  time:2019-10-17 11:13      |
| 2 : myid.properties  time:2019-10-17 11:11      |
+-----+
2 rows in set (0.00 sec)
```

### 2.1.11.2 file @@show filename

filename  
filename conf/filename

### 2.1.11.3 file @@upload filename content

contentfileNameNamexml

### 2.1.12 log

```
log @@[file=logfile limit=numberOfRow key=keyword regex=regex]
```

logslogname

- lognamedble.log
- rowLimit0:10000
- keyWord :key,key'key word'
- regexStr : regexStr\s

logslogname

### 2.1.13 dryrun

reloaddryrun

sharding.xml reloaddryrun sharding.xml:

```
<?xml version="1.0"?>
<!DOCTYPE dble:sharding SYSTEM "sharding.dtd">
<db:sharding xmlns:db="http://dble.cloud/">
  <schema name="testdb" sqlMaxLimit="100" >
    <shardingTable name="sharding_two_node" shardingNode="dn1,dn2" shardingColumn="id" function="two-long" />
    <shardingTable name="sharding_two_node2" shardingNode="dn1,dn2" shardingColumn="id" function="two-long" />
    <shardingTable name="sharding_two_node3" shardingNode="dn1,dn2" shardingColumn="id" function="two-long" />
    <shardingTable name="sharding_four_node" shardingNode="dn1,dn2,dn3,dn4" shardingColumn="id" function="rule_simple" />
    <globalTable name="test_table" shardingNode="dn$1-2"/>
    <shardingTable name="a_test" shardingNode="dn1,dn2,dn3,dn4" shardingColumn="id" function="rule_simple" />
    <shardingTable name="a_order" shardingNode="dn1,dn2,dn3,dn4" shardingColumn="id" function="rule_simple" />
    <shardingTable name="test_shard" shardingNode="dn1,dn2,dn3,dn4" shardingColumn="id" function="rule_simple" />
    <globalTable name="test_global" shardingNode="dn1,dn2,dn3,dn4"/>
    <shardingTable name="sbtest1" shardingNode="dn1,dn2,dn3,dn4" shardingColumn="id" function="rule_simple" />
  </schema>
  <schema name="nosharding_test" sqlMaxLimit="100" shardingNode="dn5">
  </schema>
  <shardingNode name="dn1" dbGroup="dh1" database="ares_test" />
  <shardingNode name="dn2" dbGroup="dh2" database="dble_test" />
  <shardingNode name="dn3" dbGroup="dh1" database="mycat_test" />
  <shardingNode name="dn4" dbGroup="dh2" database="mycat_test" />
  <shardingNode name="dn5" dbGroup="dh1" database="nosharding" />
  <shardingNode name="dn8" dbGroup="dh1" database="xxxxooxxx" />

  <function name="rule_simple" class="Hash">
    <property name="partitionCount">4</property>
    <property name="partitionLength">1</property>
  </function>
</db:sharding>
<function class="Hash" name="two-long">
  <property name="partitionCount">2</property>
  <property name="partitionLength">1</property>
</function>
```

dry run

```
mysql> dryrun;
+-----+-----+-----+
| TYPE | LEVEL | DETAIL           |
+-----+-----+-----+
| Xml  | WARNING | shardingNode dn9 is useless |
| Xml  | WARNING | shardingNode dn8 is useless |
+-----+-----+-----+
2 rows in set (0.58 sec)
```

TYPE: XML xmlBACKEND

LEVEL:WARNING ERROR,WARNING

DETAIL :

## 2.1.14 shardingNode

shardingNodedbGroup shardingNodes shardingNode

### 2.1.14.0

```
pausedblequeuewait_limitresume,  
pausepausetimeoutsqldblesql  
pausedble server pause shardingNode reloaddbble  
reload
```

### 2.1.14.1

```
pause @@shardingNode = 'dn1,dn2' and timeout = 10 ,queue = 10,wait_limit = 10;  
:  
timeout:timeout pause  
queue:  
wait_limit:wait_limit
```

### 2.1.14.2

```
RESUME; OK "No shardingNode paused"
```

### 2.1.14.3

```
show @@pause;
```

```
mysql> show @@pause;  
+-----+  
| PAUSE_SHARDING_NODE |  
+-----+  
| dn1 |  
| dn2 |  
+-----+  
2 rows in set (0.15 sec)
```

## 2.1.15

:

### 2.1.15.1

```
mysql> show @@slow_query_log;
+-----+
| @@slow_query_log |
+-----+
| 0 |
+-----+
1 row in set (0.00 sec)
```

### 2.1.15.2

```
mysql> enable @@slow_query_log;
Query OK, 1 row affected (0.09 sec)
enable slow_query_log success
```

### 2.1.15.3

```
mysql> disable @@slow_query_log;
Query OK, 1 row affected (0.03 sec)
disable slow_query_log success
```

### 2.1.15.4

```
mysql> show @@slow_query.time;
+-----+
| @@slow_query.time |
+-----+
| 100 |
+-----+
1 row in set (0.00 sec)
```

### 2.1.15.5

```
mysql> reload @@slow_query.time=200;
Query OK, 1 row affected (0.10 sec)
reload @@slow_query.time success

mysql> show @@slow_query.time;
+-----+
| @@slow_query.time |
+-----+
| 200 |
+-----+
1 row in set (0.00 sec)
```

### 2.1.15.6

```
mysql> show @@slow_query.flushperiod;
+-----+
| @@slow_query.flushperiod |
+-----+
| 1 |
+-----+
1 row in set (0.00 sec)
```

### 2.1.15.7

```
mysql> reload @@slow_query.flushperiod=2;
Query OK, 1 row affected (0.05 sec)
reload @@slow_query.flushPeriod success

mysql> show @@slow_query.flushperiod;
+-----+
| @@slow_query.flushperiod |
+-----+
| 2 |
+-----+
1 row in set (0.00 sec)
```

### 2.1.15.8

```
mysql> show @@slow_query.flushsize;
+-----+
| @@slow_query.flushsize |
+-----+
| 1000 |
+-----+
1 row in set (0.01 sec)
```

### 2.1.15.9

```
mysql> reload @@slow_query.flushsize=1100;
Query OK, 1 row affected (0.03 sec)
reload @@slow_query.flushSize success

mysql> show @@slow_query.flushsize;
+-----+
| @@slow_query.flushsize |
+-----+
| 1100                  |
+-----+
1 row in set (0.00 sec)
```

## 2.1.15.10

show @@connection.sql.status where FRONT\_ID= ?; query trace queryquery

```
mysql> show @@connection.sql.status where FRONT_ID= 1;
+-----+-----+-----+-----+-----+-----+
| OPERATION | START(ms) | END(ms) | DURATION(ms) | SHARDING_NODE | SQL/REF           |
+-----+-----+-----+-----+-----+-----+
| Read_SQL  | 0.0       | 0.082598 | 0.082598   | -              |                   |
| Parse_SQL | 0.082598 | 0.676424 | 0.593826   | -              |                   |
| Route_Calculation | 0.676424 | 0.895382 | 0.218958   | -              |                   |
| Prepare_to_Push/Optimize | 0.895382 | 6743.838628 | 6742.943246 | -              |                   |
| Execute_SQL | 6743.838628 | 6753.488422 | 9.649794   | dn1            | select * from sharding_4_t1 |
| Execute_SQL | 6743.838628 | 6751.472835 | 7.634207   | dn3            | select * from sharding_4_t1 |
| Execute_SQL | 6743.838628 | 6750.981646 | 7.143018   | dn4            | select * from sharding_4_t1 |
| Execute_SQL | 6743.838628 | 6753.31394  | 9.475312   | dn2            | select * from sharding_4_t1 |
| Fetch_result | 6753.488422 | 6754.383316 | 0.894894   | dn1            | select * from sharding_4_t1 |
| Fetch_result | 6751.472835 | 6751.656604 | 0.183769   | dn3            | select * from sharding_4_t1 |
| Fetch_result | 6750.981646 | 6751.188385 | 0.206739   | dn4            | select * from sharding_4_t1 |
| Fetch_result | 6753.31394  | 6754.286055 | 0.972115   | dn2            | select * from sharding_4_t1 |
| Write_to_Client | 6750.981646 | unfinished  | unknown     | -              |                   |
+-----+-----+-----+-----+-----+-----+
13 rows in set (0.04 sec)
```

join

```
mysql> show @@connection.sql.status where FRONT_ID= 1;
+-----+-----+-----+-----+-----+-----+
| OPERATION | START(ms) | END(ms) | DURATION(ms) | SHARDING_NODE | SQL/REF           |
+-----+-----+-----+-----+-----+-----+
| Read_SQL  | 0.0       | 0.039588 | 0.039588   | -              |                   |
| Parse_SQL | 0.039588 | 0.756578 | 0.71699    | -              |                   |
| Route_Calculation | 0.756578 | 1.5547   | 0.798122   | -              |                   |
| Prepare_to_Push/Optimize | 1.5547 | 3.428551 | 1.873851   | -              |                   |
| Execute_SQL | 3.428551 | 2362.10579 | 2358.677239 | dn1_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| Fetch_result | 2362.10579 | unfinished | unknown     | dn1_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| Execute_SQL | 3.428551 | 2362.122407 | 2358.693856 | dn2_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| Fetch_result | 2362.122407 | unfinished | unknown     | dn2_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| Execute_SQL | 3.428551 | 2362.307153 | 2358.878602 | dn3_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| Fetch_result | 2362.307153 | unfinished | unknown     | dn3_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| Execute_SQL | 3.428551 | 2364.523615 | 2361.095064 | dn4_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| Fetch_result | 2364.523615 | unfinished | unknown     | dn4_0          | select `a`.`age`, `a`.`id`, `a`.`name` from `sharding_4_t1` `a` ORDER BY `a`.`id` ASC |
| MERGE_AND_ORDER | 2362.639012 | unfinished | unknown     | merge_and_order_1 | dn1_0; dn2_0; dn3_0; dn4_0 |
| SHUFFLE_FIELD | 4178.383366 | unfinished | unknown     | shuffle_field_1 | merge_and_order_1 |
| Execute_SQL | 3.428551 | 2365.71371 | 2362.285159 | dn1_1          | select `b`.`id` from `sharding_2_t1` `b` ORDER BY `b`.`id` ASC |
| Fetch_result | 2365.71371 | unfinished | unknown     | dn1_1          | select `b`.`id` from `sharding_2_t1` `b` ORDER BY `b`.`id` ASC |
| Execute_SQL | 3.428551 | 2365.952707 | 2362.524156 | dn2_1          | select `b`.`id` from `sharding_2_t1` `b` ORDER BY `b`.`id` ASC |
| Fetch_result | 2365.952707 | unfinished | unknown     | dn2_1          | select `b`.`id` from `sharding_2_t1` `b` ORDER BY `b`.`id` ASC |
| MERGE_AND_ORDER | 2366.164823 | unfinished | unknown     | merge_and_order_2 | dn1_1; dn2_1 |
| SHUFFLE_FIELD | not started | unfinished | unknown     | -              |                   |
| JOIN | not started | unfinished | unknown     | -              |                   |
| SHUFFLE_FIELD | not started | unfinished | unknown     | -              |                   |
| Write_to_Client | not started | unfinished | unknown     | -              |                   |
+-----+-----+-----+-----+-----+-----+
23 rows in set (0.04 sec)
```

## 2.1.16 /

### 2.1.16.1

dbleshardingNode

```
create database @@shardingNode ='dn.....'
```

shardingNode dn\$1-4

shardingNodeshardingNode \$Name does not exists.

```
shardingNode create database if not exists $databaseNameOK
```

### 2.1.16.2

shardingNode

```
drop database @@shardingNode ='dn.....'
```

shardingNode dn\$1-4

shardingNodeshardingNode \$Name does not exists.

```
shardingNode drop database if exists $databaseNameOKshow @@shardingNodeSCHEMA_EXISTfalse
```

## check

### 2.1.17.0 check @@metadata

meta

- check @@metadata
  - reload @@metadata datatime reload @@config\_alldatatime metadatatetime
- check full @@metadata ;
- where schema=? and table=?
- where schema=?
- where reload\_time='yyyy-MM-dd HH:mm:ss' , where reload\_time>='yyyy-MM-dd HH:mm:ss' , where reload\_time<='yyyy-MM-dd HH:mm:ss'
- where reload\_time is null
- where consistent\_in\_sharding\_nodes=0
- where consistent\_in\_sharding\_nodes = 1
- where consistent\_in\_memory=0
- where consistent\_in\_memory = 1
- If no where, retrun all results.

- check full @@metadata :

schema	table	reload_time	table_structure	consistent_in_sharding_nodes	consistent_in_memory
schema	table	2018-09-18 11:01:04	CREATE TABLE table`(...)	1	1

column table\_structure show create table

column consistent\_in\_sharding\_nodes 01

column consistent\_in\_memory meta01

table\_structurenulconsistent\_in\_sharding\_nodesconsistent\_in\_memory  
consistent\_in\_sharding\_nodes0consistent\_in\_memory

### 2.1.17.1 check @@global schema = '' [and table = '']

```
mysql> check @@global schema = 'testdb';
+-----+-----+-----+
| SCHEMA | TABLE      | DISTINCT_CONSISTENCY_NUMBER | ERROR_NODE_NUMBER |
+-----+-----+-----+
| testdb | tb_global1 |          0 |                 0 |
+-----+-----+-----+
```

SCHEMA: SCHEMA A

TABLE: TABLE

DISTINCT\_CONSISTENCY\_NUMBER

ERROR\_NODE\_NUMBER SQL

SQLDISTINCT\_CONSISTENCY\_NUMBER1

## 2.1.18 release

### 2.1.18.1 release @@reload\_metadata

reload\_metadata reload/reload config\_all/reload metadata reload metadata  
hangreload metadataable OK ERROR

- configurable metareload @@metadatameta
- reloadreload5999SQLCODE“meta”
- dblereload [show @@reload\\_status](#)

## 2.1.19 split

POCdblesqldble 2.19.09.0mysqldump

### dump

1. create database
2. ddldump bigint
3. insertdbledump
4. ddldump
- 5.
- 6.

```
mysql > split src dest [-sschema] [-r500] [-w500] [-l10000] [--ignore] [-t2]
- srccdump
- destdump
- -sdumpschemaschema
- -r500
- -w500
- -lsplitinsertvalues,4000
- --ignoreinsert
- -tinsert
```

-shardingNode-.dump

dump /tmp/mysql\_dump.sql /tmp/dump/

```
split /tmp/mysql_dump.sql /tmp/dump/
```

splitdblesqldble.logsplitlog4j.xml

```
<Configuration status="WARN">
  <Appenders>
    <!-- dbelog4j.xmlAppenders -->
    <RollingFile name="DumpFileLog" fileName="logs/dump.log"
      filePattern="logs/${date:yyyy-MM}/dump-%d{MM-dd}-%i.log.gz">
      <PatternLayout>
        <Pattern>%d{yyyy-MM-dd HH:mm:ss.SSS} %5p [%t] (%L) - %m%n</Pattern>
      </PatternLayout>
      <Policies>
        <OnStartupTriggeringPolicy/>
        <SizeBasedTriggeringPolicy size="250 MB"/>
        <TimeBasedTriggeringPolicy/>
      </Policies>
      <DefaultRolloverStrategy max="10"/>
    </RollingFile>
  </Appenders>
  <Loggers>
    <!-- dbelog4j.xmlLoggersleveldebug -->
    <Logger name="dumpFileLog" level="info" additivity="false" includeLocation="false" >
      <AppenderRef ref="DumpFileLog" />
      <AppenderRef ref="RollingFile"/>
    </Logger>
  </Loggers>
</Configuration>
```

“dump file has been read d%”

debug

dump file idletimeout kill @@connection id dump file

- 1.
- 2.
3. dump

## 2.1.20 flow\_control

### 2.1.20.1

```
mysql> flow_control @@show;
+-----+-----+
| FLOW_CONTROL_ENABLE | FLOW_CONTROL_START | FLOW_CONTROL_END |
+-----+-----+
| false | 4096 | 256 |
+-----+-----+
1 row in set (0.00 sec)
```

- FLOW\_CONTROL\_ENABLE
- FLOW\_CONTROL\_START
- FLOW\_CONTROL\_END

### 2.1.20.2

flow\_control @@set [enableFlowControl = true/false] [flowControlStart = ?] [flowControlEnd = ?]

```
MySQL [(none)]> flow_control @@set enableFlowControl = true flowControlStart= 100 flowControlEND = 30;
Query OK, 0 rows affected (0.02 sec)
```

- enableFlowControl bootstrap.cnfenableFlowControl
- flowControlStartbootstrap.cnfflowControlStartThreshold
- flowControlEndbootstrap.cnfflowControlStopThreshold

### 2.1.20.3

```
MySQL [(none)]> flow_control @@list;
+-----+-----+-----+-----+
| CONNECTION_TYPE | CONNECTION_ID | CONNECTION_INFO | WRITE_QUEUE_SIZE |
+-----+-----+-----+-----+
| ServerConnection | 2 | 127.0.0.1:60772/testdb user = root | 2920 |
+-----+-----+-----+-----+
```

- CONNECTION\_TYPE MySQLConnection/ServerConnection
- CONNECTION\_ID dbleIDID
- CONNECTION\_INFO IPMySQOLID
- WRITE\_QUEUE\_SIZE

## 2.1.21

### 2.1.21.1 &

mysql/dble

### 2.1.21.2

**fresh conn [forced] where dbGroup ='groupName' [and dbInstance='instanceName'];**

- forced
- forced
- dbInstancedbGroupdbInstance
- dbInstancedbInstancedbGroupdbInstance

## 2.2

dble cluster.cnf

```
sequenceHandlerType=n
```

sequenceHandlerType

- 1 MySQL offset-step
- 2
- 3
- 4 offset-step

```
/*id*/  
insert into table1(name) values('test');
```

## 2.2.1 MySQL offset-step

MySQL offset-step

1. 24
2. SELECT dble\_seq\_nextval('seqName'); seqName increment[current\_value, current\_value+increment)
3. 2
- 4.

[1.7.1 offset-step](#)

### 2.2.2

dbleID  
bigint63(63Java0)  
63bits

a.29bits	b.10bits	c.12bits	d.12bits
----------	----------	----------	----------

- a - e
- a4129
- b10instance idbootstrap.cnfinstanceId
- c12
- d4112

1. bootstrap.cnfinstanceId1023
2. 40954095
3. java,411288834974657L(2010)
4. 4169

### 2.2.3

Zookeeper(ID63ID  
PS:63Java0

#### 2.2.3.1

63bits

a.9bits	b.9bits	c.6bits	d.39bits
---------	---------	---------	----------

:

- a - e
- aid9
- b9 id( bootstrap.cnfinstanceIdzookeeper, [1.7.3 time](#))
- c6
- d39(17)

#### 2.2.3.2

cluster.cnfsequenceInstanceByZktrue, bootstrap.cnfinstanceId([2.2.2](#))

#### 2.2.3.3

cluster.cnfsequenceInstanceByZktruezookeeper,zk, % 32 INSTANCEID.

## 2.2.4 offset-step

offset-stepzookeeper

1. (`schemaX`.`tableX`)
2. zookeepermin
3. ( [1.7.4 offset-step](#)),max
4. max+1zookeepermin
- 5.

## 2.3

3.20.10.0dble3.20.10.0

### 2.3.1

#### 2.3.1.1

dble user.xml rwSplitUserdbGroup dbGroup db.xmluser.xmluser.xml

```
<dble:user xmlns:dble="http://dble.cloud/" version="4.0">
  <managerUser name="man1" password="654321" maxCon="100"/>
  <shardingUser name="root" password="123456" schemas="testdb" readOnly="false" maxCon="20"/>
  <rwSplitUser name="rwsu1" password="123456" dbGroup="rwGroup" maxCon="20"/>
</dble:user>
```

1. user.xmlrwSplitUserdblesharding.xmldble
2. dbledbGroupdbGrouprwSplitUserdbGroupdb.xmlshardingUserdbGroupschemassharding.xmlshardingNode
3. rwSplitUserdbGroup
4. dbGroupinstancedbGroupinstance

#### 2.3.1.2

db.xmlsharding.xmldb.xmlsharding.xml

### 2.3.2

dbledbInstancerwSplitMode0db.xml

1. dbInstance
- 2.

#### 2.3.2.1 dbInstance

dbInstancesdbInstancedbInstanceshow slave statusdbledelayThresholddbInstancesdelayThreshold=-1

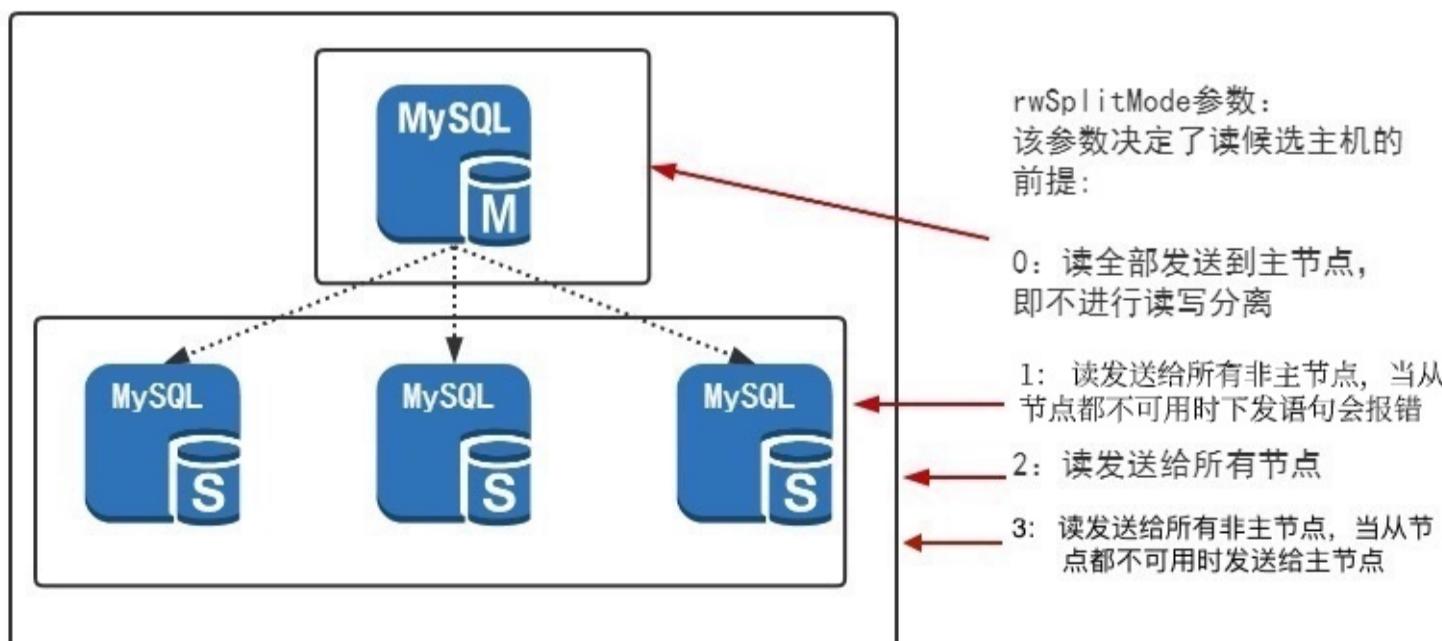
- (primary="true")
  - rwSplitMod2dbInstances
  - (primary primary="false")
    - dbInstances
    - dbInstances
- -

#### 2.3.2.2

dbInstancedbInstance

- dbInstance
- dbInstance
  - dbInstance(readWeight), ,
  - dbInstance, ,

#### 2.3.2.3 dbGrouprwSplitMode



### 2.3.3

### 2.3.3.1

1. ddl
2. dml
3. prepared statement
- 4.

### 2.3.3.2

1. SQL select show

### 2.3.4

1. druid - set
2. druid - set session transaction read write, isolation level repeatable read
- 3.
4. set transaction read write
5. select
6. select ... into load datadble
- 7.
8. clientdbleschemadble
9. mysqlnulldbble
10. prepared statement
11. set hint
- 12.
13. ,
14. allowMultiQueries=true ( false) jdbc multi-queries , dble MySQL Command-Line client

## 2.4 /Hint

Hint, :SQLSQL“”

- 
- dbleinsert...select...

SQLSQLSQLSQLSQLSQLSQLSQL

### 2.4.1 Hint

Hint

1. /\*!dble:type=....\*/
2. /\*#dble:type=...\*/
3. /\* \*/()

“/\*#dble: \*/” for mybatis and “/\*!dble: \*/” for mysql

[Hint](#)

type4shardingnodedb\_typesql\_db\_instance\_url

### 2.4.2 shardingnode

- 1.
- shardingnode=node  
node,(node1.5 sharding.xml)
- 2.

### 2.4.3 db\_type

- 1.
- db\_type=masterdb\_type=slave
- 2.
- 3.
- delete, insert, replace, update, ddldb\_type=slave

### 2.4.4 sql

- 1.
- sql=sql\_statement
- 2.
- sql\_statementsql

### 2.4.5 db\_instance\_url

- 1.
- db\_instance\_url=ip:port
- 2.
- mysql
- 3.
- delete, insert, replace, update, ddlmysqlread\_only

### 2.4.6

- dbleMySQL, MySQL #1169
- selectSQLdelete/update/insert delete/update/insert SQL
- SQL
- hintDDLreload @@metadata
- hintsession
- SQLSQL select id from tab\_a where id='10000'
- 
- / xxx /(sql)up roxy slavedblemaster

## 2.5

- [2.5.1 XA](#)
- [2.5.2 XA](#)
- [2.5.3 XA](#)
- [2.5.4 XA](#)
- [2.5.5](#)

## 2.5.1 XA

### 2.5.1.1 XA

2

DbleMysqlXAMySQL5.7XAMySQL 5.7dbeXA

1. set autocommit=0;
2. XA set xa=on;
3. SQL
4. commit/rollback;

SQL dble SQL 100

JDBCXAdemo

0

```

public class XaDemo {

    public static final String URL = "jdbc:mysql://localhost:8066/testdb";
        //jdbc:mysql://127.0.0.1:8066?sessionVariables=xa=1
        //set xa = 1
    public static final String USER = "root";
    public static final String PASSWORD = "123456";

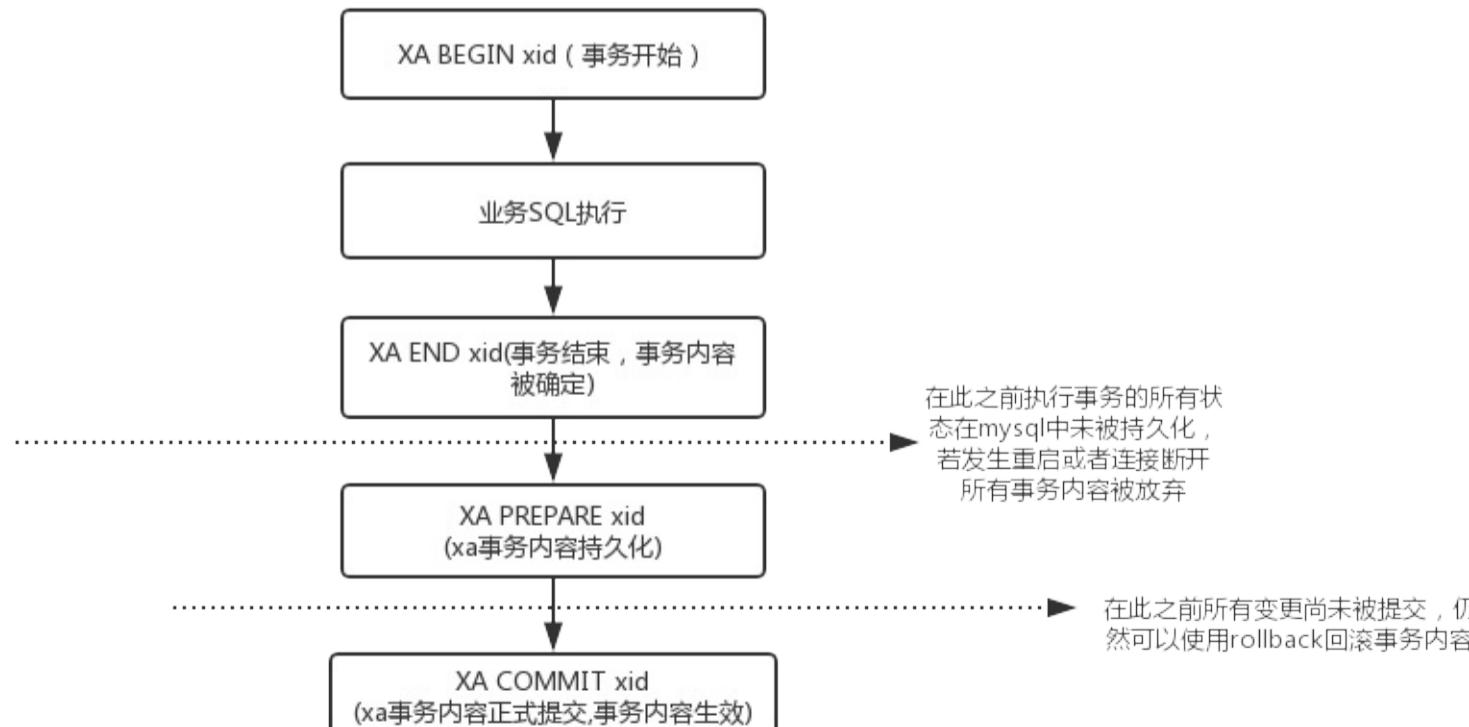
    public static void main(String[] args){
        try {
            //1.
            Class.forName("com.mysql.jdbc.Driver");
            //2.
            Connection conn = DriverManager.getConnection(URL, USER, PASSWORD);
            //3.
            Statement stmt = conn.createStatement();
            stmt.execute("set xa = 1");
            //xa
            stmt.execute("begin");
            try {
                //catch
                //rollback
                stmt.execute("insert into xa_test set id = 11,name = '3333'");
                stmt.execute("insert into xa_test set id = 22,name = '333'");
                stmt.execute("insert into xa_test set id = 3,name = '33'");
                //
                stmt.execute("commit");
            }catch (Exception e){
                System.out.println(" error "+e);
                //
                stmt.execute("rollback");
            }finally {
                stmt.close();
                conn.close();
            }
        }catch(Exception e){

        }
    }
}

```

### 2.5.1.2 XA

xamysql5.7xa

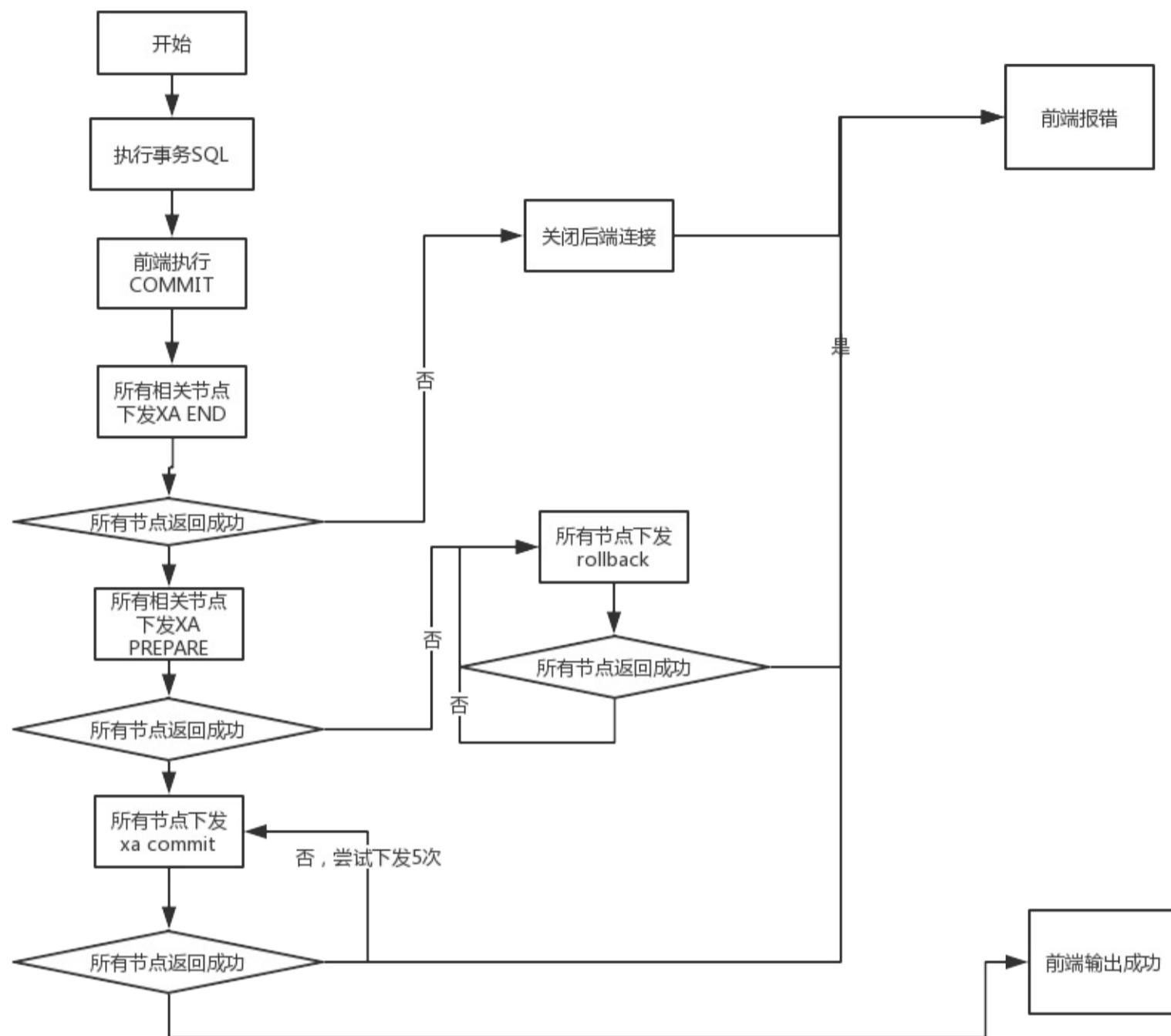




## 2.5.2 XA

### 2.5.2.1 XA

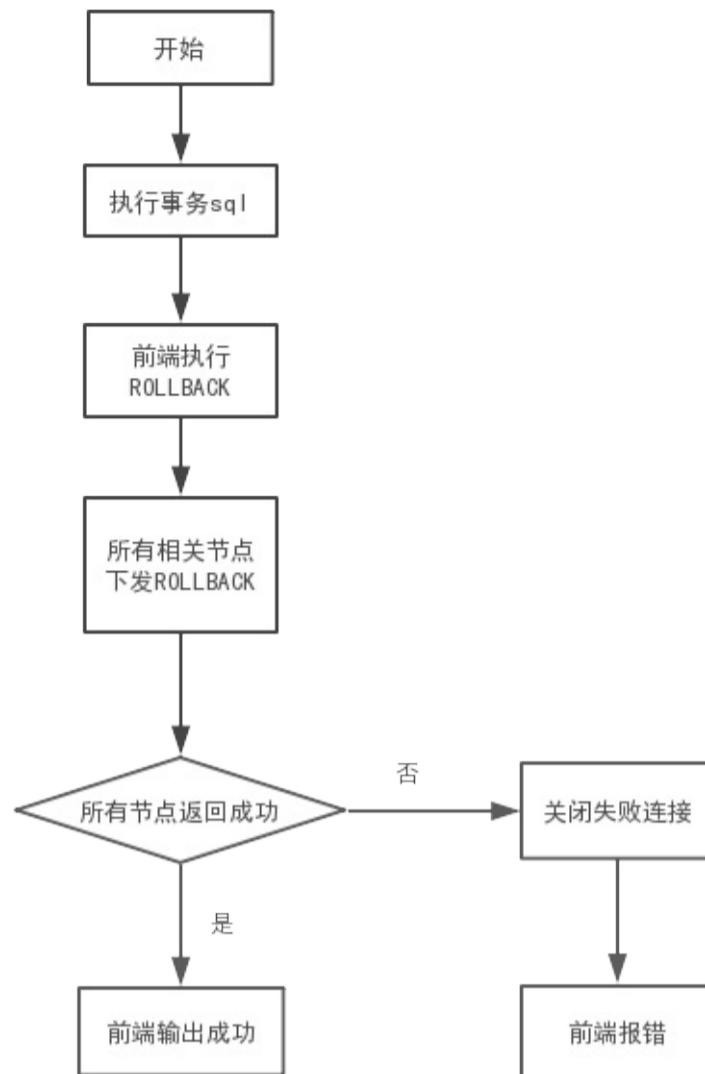
DbleXA



1. XAEND PREPARE COMMIT
2. PREPARE
3. PREPAREROLLBACK
4. COMMIT

### 2.5.2.2 XA

rollback



### 2.5.2.3 XA

2.19.03.0dble2.19.03.0

#### 2.5.2.3.1

2.19.03.0bootstrap.cnfxaRetryCountxa

1. xaRetryCount 0
2. xaRetryCount 0xaRetryCount

#### 2.5.2.3.2

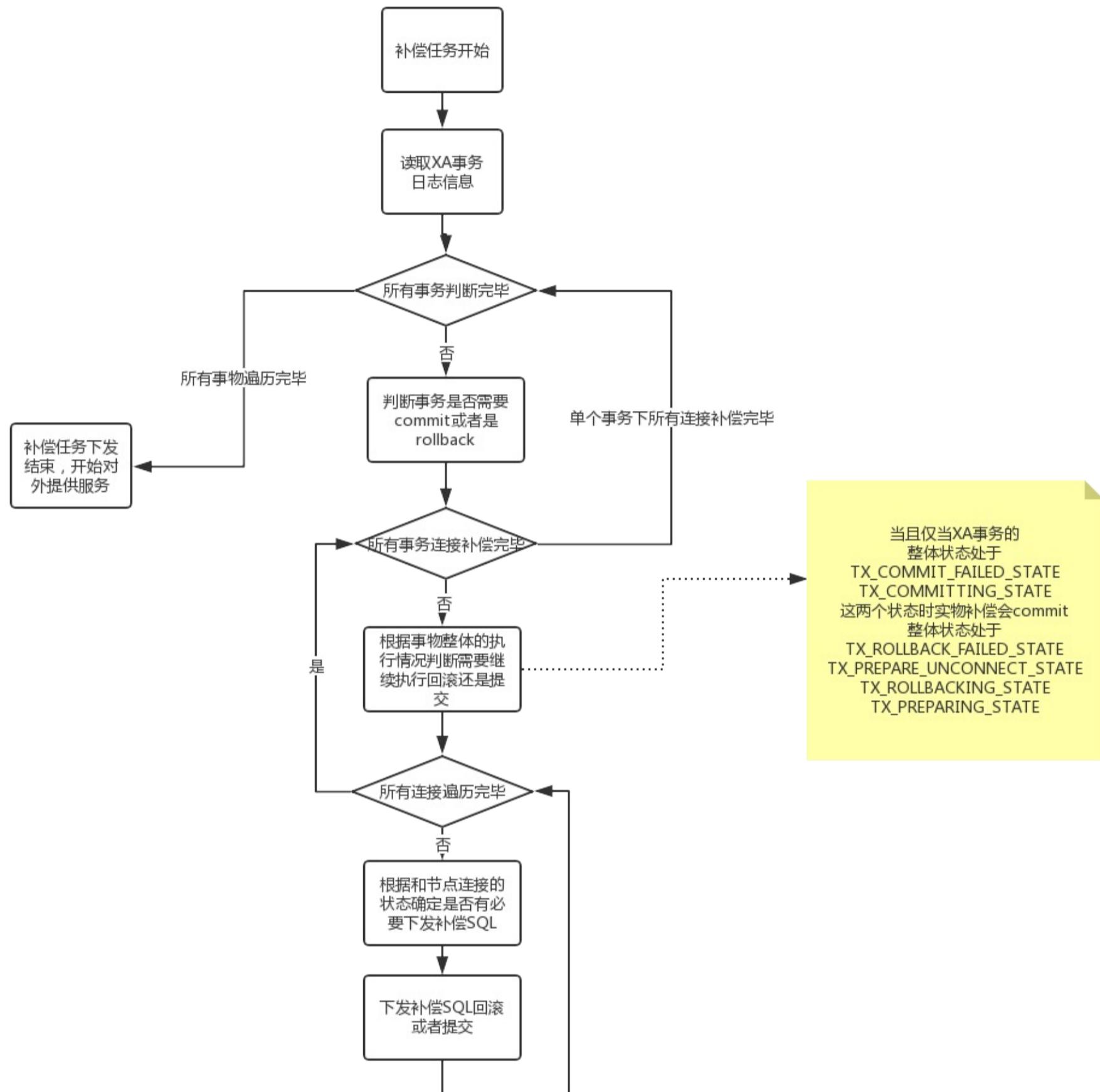
2.19.03.0

1. show @@session.xa xa
2. kill @@xa\_session id1,id2... sessionxa

### 2.5.3 XA

### 2.5.3.1 XA

XA dbleXA dbleXAXA



XASQLdbe

### 2.5.3.2 XAxaLogClean

xa.bootstrap.cnf.xaLogCleanPeriod

### 2.5.3.3 XAxaSessionCheck

dblecommit(commit,XAp preparecommit) rollback xap prepare

## 2.5.4 XA

### 2.5.4.1 XA

DbleXADBLEXA

```

1. ID
2.
3. host
4.
5.
6. ()
7.

```

```
{
  "id": "'Dble_Server.1.15'",
  "state": "8",
  "participants": [
    {
      "host": "10.186.24.37",
      "port": "3308",
      "p_state": "8",
      "expires": 0,
      "schema": "db3"
    },
    {
      "host": "10.186.24.37",
      "port": "3306",
      "p_state": "8",
      "expires": 0,
      "schema": "db2"
    },
    {
      "host": "10.186.24.37",
      "port": "3308",
      "p_state": "8",
      "expires": 0,
      "schema": "db2"
    },
    {
      "host": "10.186.24.37",
      "port": "3306",
      "p_state": "8",
      "expires": 0,
      "schema": "db1"
    }
  ]
}
```

### 2.5.4.2 XAstatus

status		
0	TX_INITIALIZE_STATE	XA
1	TX_STARTED_STATE	XA XA
2	TX_ENDED_STATE	XA END
3	TX_PREPARED_STATE	XA PREPARED
4	TX_PREPARE_UNCONNECT_STATE	XA PREPARED
5	TX_COMMIT_FAILED_STATE	XA COMMIT
6	TX_ROLLBACK_FAILED_STATE	XA ROLLBACK
7	TX_CONN_QUIT	mysql
8	TX_COMMITED_STATE	XA
9	TX_ROLLBACKED_STATE	XA
10	TX_COMMITTING_STATE	XA

11	TX_ROLLBACKING_STATE	XA
12	TX_PREPARING_STATE	XA prepare

### 2.5.4.3 XA

xa

bootstrap.cnf{xaRecoveryLogBaseDir}/{XaRecoveryLogBaseName}.log/tmlogs/tmlogs-1.log

Dble

**ZK**

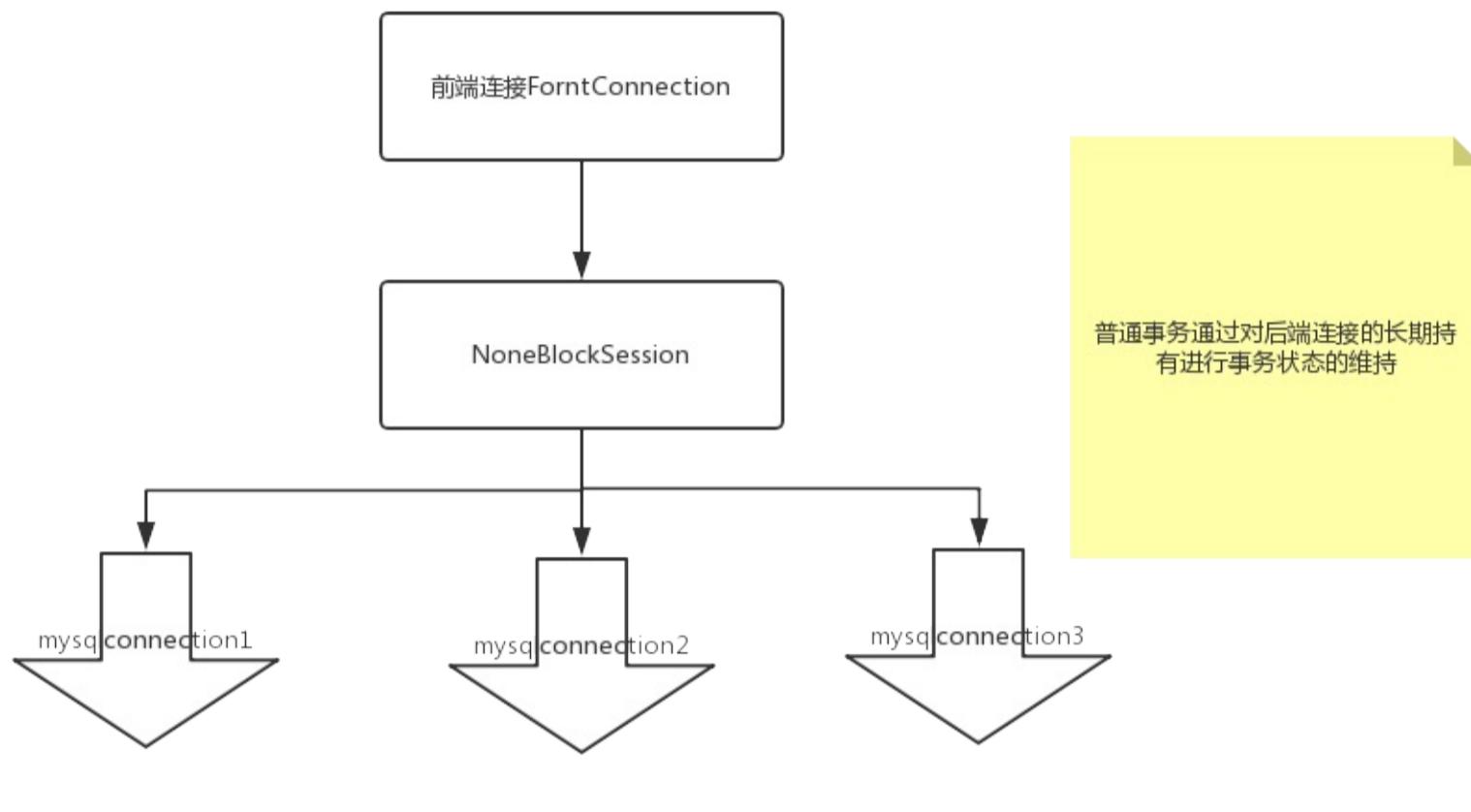
ZKDbleZKXAZK

XAdble/{clusterId}/XALOG/{myid} Key

### 2.5.5

mysqlfrontconnectionsessiondblesessionsessiontargetautocommittargetSQLconnectiontargetsessionsessioncommitrollback

Dblemysqlmysqlcommitdn1,dn2,dn3,dn4commitdn1,dn2,dn3dn4dn1,dn2.dn3



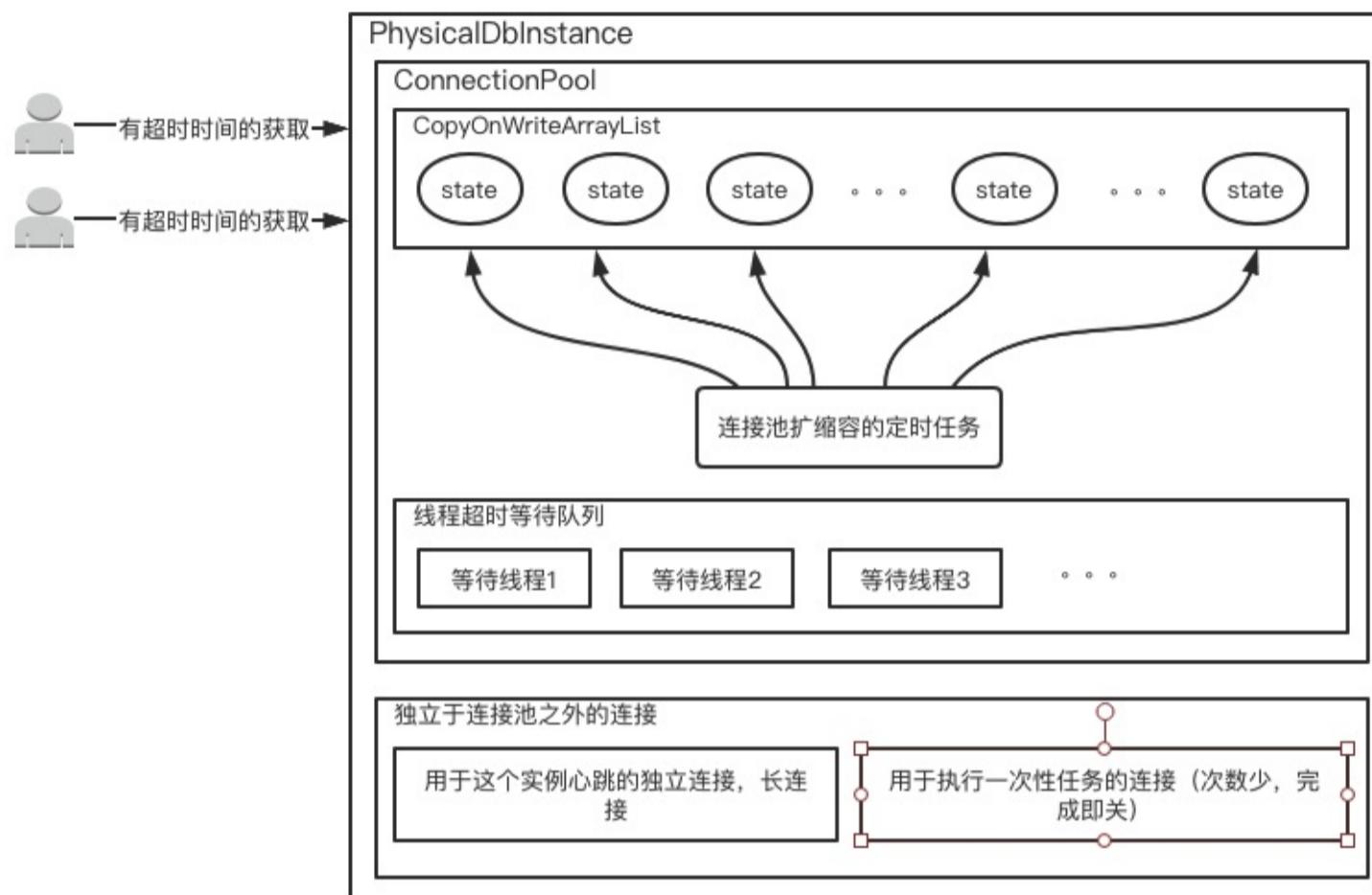
## 2.6

dbleMySQL PhysicalDbInstance PhysicalDbInstance

- 1.
2. MySQLOneTimeJob

### 2.6.1 dble

CopyOnWriteArrayList MySQLstateevictor



#### 2.6.1.1

#### 2.6.1.2

#### 2.6.1.3

evictorevictor

minConminConmin( - - ) - 0

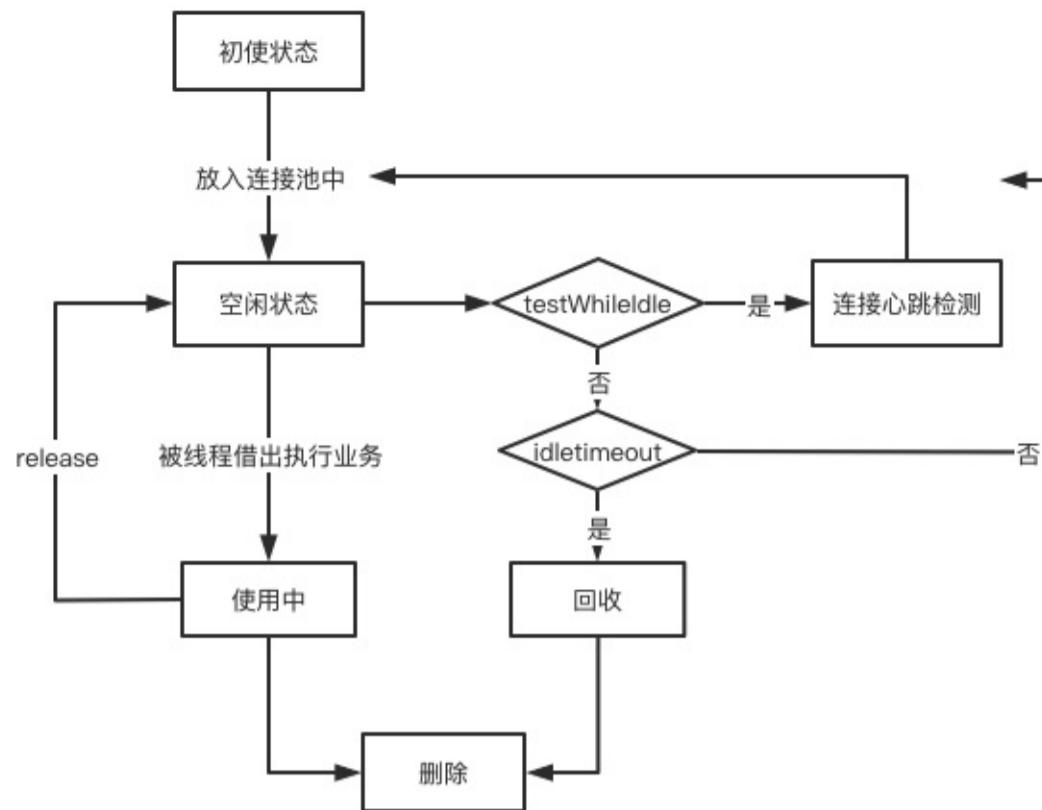
minConminCon - > 0 && idleTimeout

#### 2.6.1.4

- testOnCreate true ping connectionHeartbeatTimeout
- testOnBorrow true ping connectionHeartbeatTimeout
- testOnReturn true ping connectionHeartbeatTimeout
- testWhileIdle true ping connectionHeartbeatTimeout

## 2.6.2

CopyOnWriteArrayList MySQLstate



### 2.6.3

testOnCreate	false		
testOnBorrow	false		
testOnReturn	false		
testWhileIdle	false		
connectionTimeout	30000 (30s)		
connectionHeartbeatTimeout	20		
timeBetweenEvictionRunsMillis	30000 (30s)		
idleTimeout	600000 (10 minute)		
heartbeatPeriodMillis	10000 (10s)		
evictorShutdownTimeoutMillis	10000 (10s)		

### 2.6.4 dble

dbleMySQLHeartbeatPeriodMillisdbleMySQLLevictor

#### 2.6.4.1

- 
- 

#### 2.6.4.2

dble

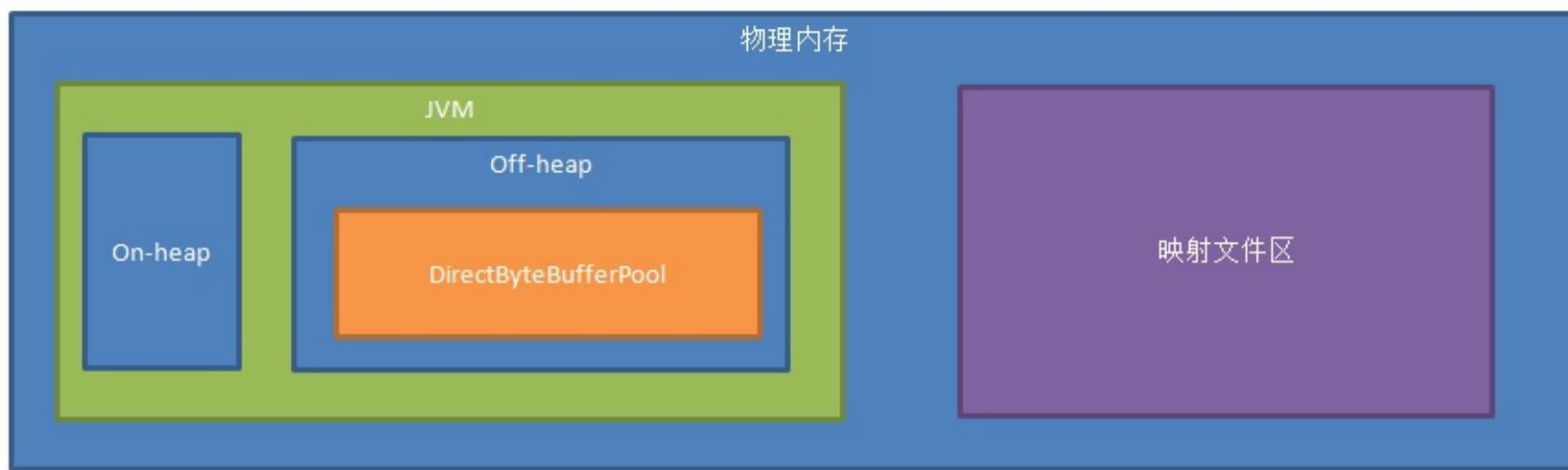
- init
- ok
- timeoutHeartbeatTimeout
- errordbe

#### 2.6.4.2

- dblerrorerrorRetryCountok
- dblerrorRetryCounterror
- timeoutOK, init

## 2.7

### 2.7.1



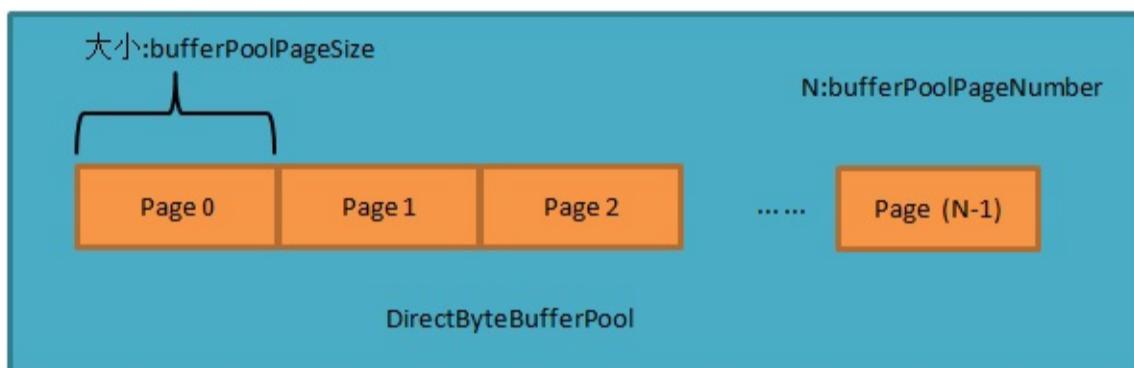
- On-Heap JVM Xms ,Xmx jvm
  - Off-Heap JVM XX:MaxDirectMemorySize
  - DirectByteBufferPool = bufferPoolPageNumber\*bufferPoolPageSize
- bufferPoolPageNumberbufferPoolPageSizebootstrap.cnf bufferPoolPageSize2M, bufferPoolPageNumber(MaxDirectMemorySize \* 0.8 /bufferPoolPageSize),
- JVM
- ```

tmpMin= Min( free)
=((tmpMin/mappedFileSize))
=*mappedFileSize (mappedFileSize64M)
mappedFileSizebootstrap.cnf

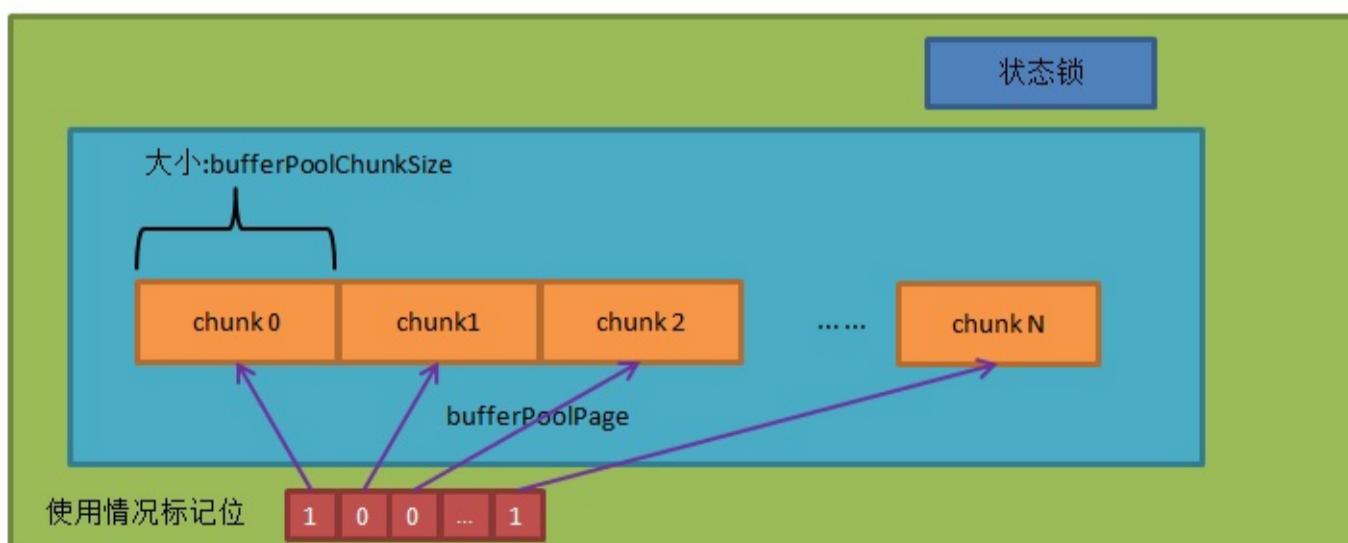
```

### 2.7.2 DirectByteBufferPool

BufferPool



bufferPoolPage:



1.:

1.1

1.2 buffer

2.

bufferPoolPageNumberbufferPoolPageSize

### 3.

#### 3.1

(bufferPoolChunkSize 4k,bufferPoolPageSize )

0

M \*bufferPoolChunkSize

#### 3.2

N+1bufferPoolPageNumber-1(N)

M

0N

(bufferPoolPageSize )On-Heap

### 4.

#### 4.1 On-Heap

clearGC

#### 4.2 Off-Heap

### 2.7.3

dble session

- Join4Mjoin
- Order4M
- Other4Mdistinct group nestloop

,Heap 4M

mappedFileSize

1:

2:DirectByteBufferPoolchunk

## 2.8 &

### 2.8.1

dble/

zookeeper

### 2.8.2

#### 2.8.2.1 cluster.conf

ZK

```
#  
clusterEnable=true  
# zk  
clusterMode=zk  
# zk  
clusterIP=10.186.19.aa:2281,10.186.60.bb:2281  
#zkdble  
rootPath=/dble  
#dble  
clusterId=cluster-1  
# Ha  
#needSyncHa=false  
# binlog  
#showBinlogStatusTimeout=60000  
#  
sequenceHandlerType=2  
#  
#sequenceStartTime=2010-11-04 09:42:54  
#3instanceIdZK  
#sequenceInstanceByZk=true
```

#### 2.8.2.2 bootstrap.conf

instanceName instanceId 01023 0511

### 2.8.3

1.

init\_zk\_data.shZK,ZK

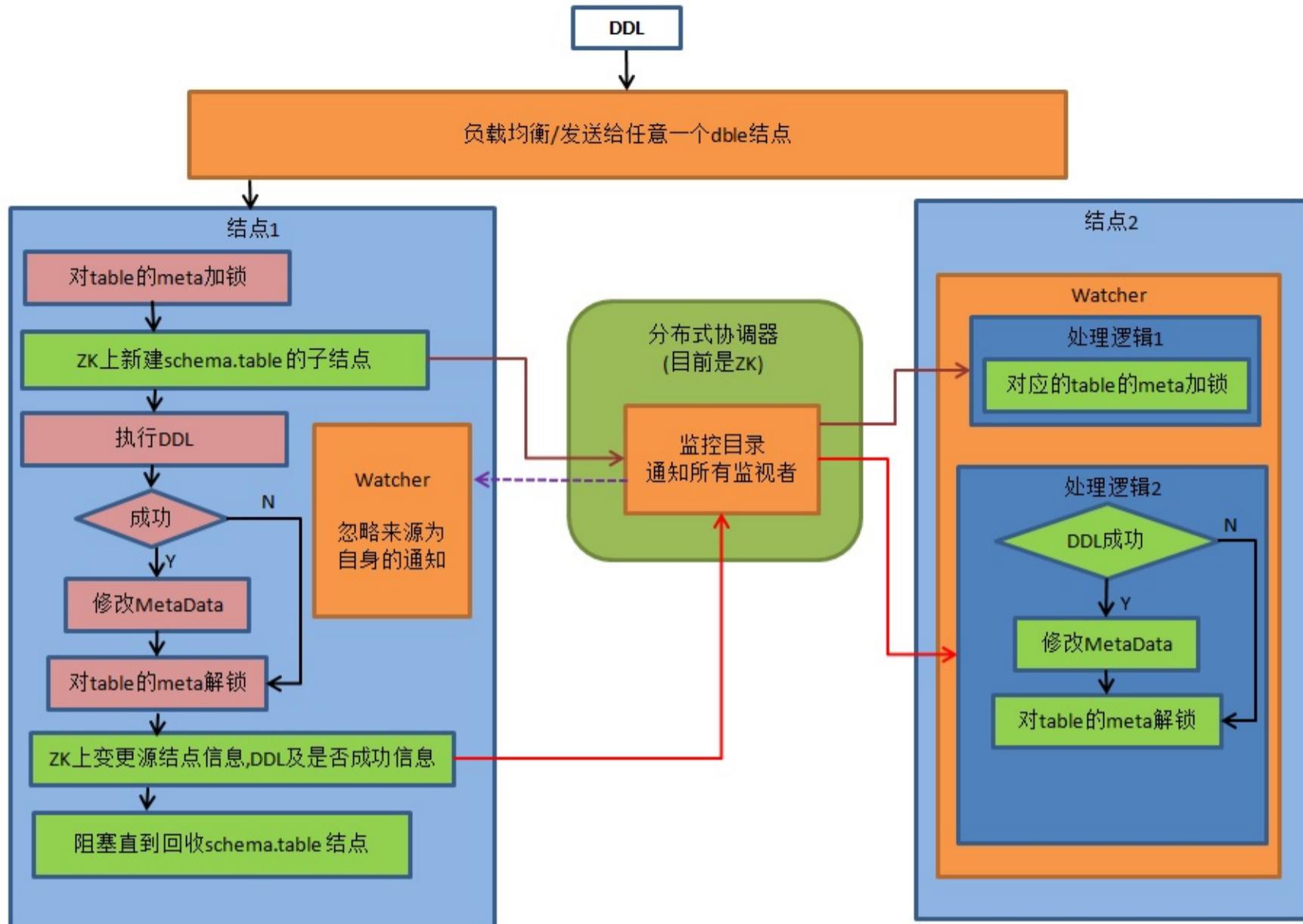
2.

ZK,ZK  
ZK

### 2.8.4

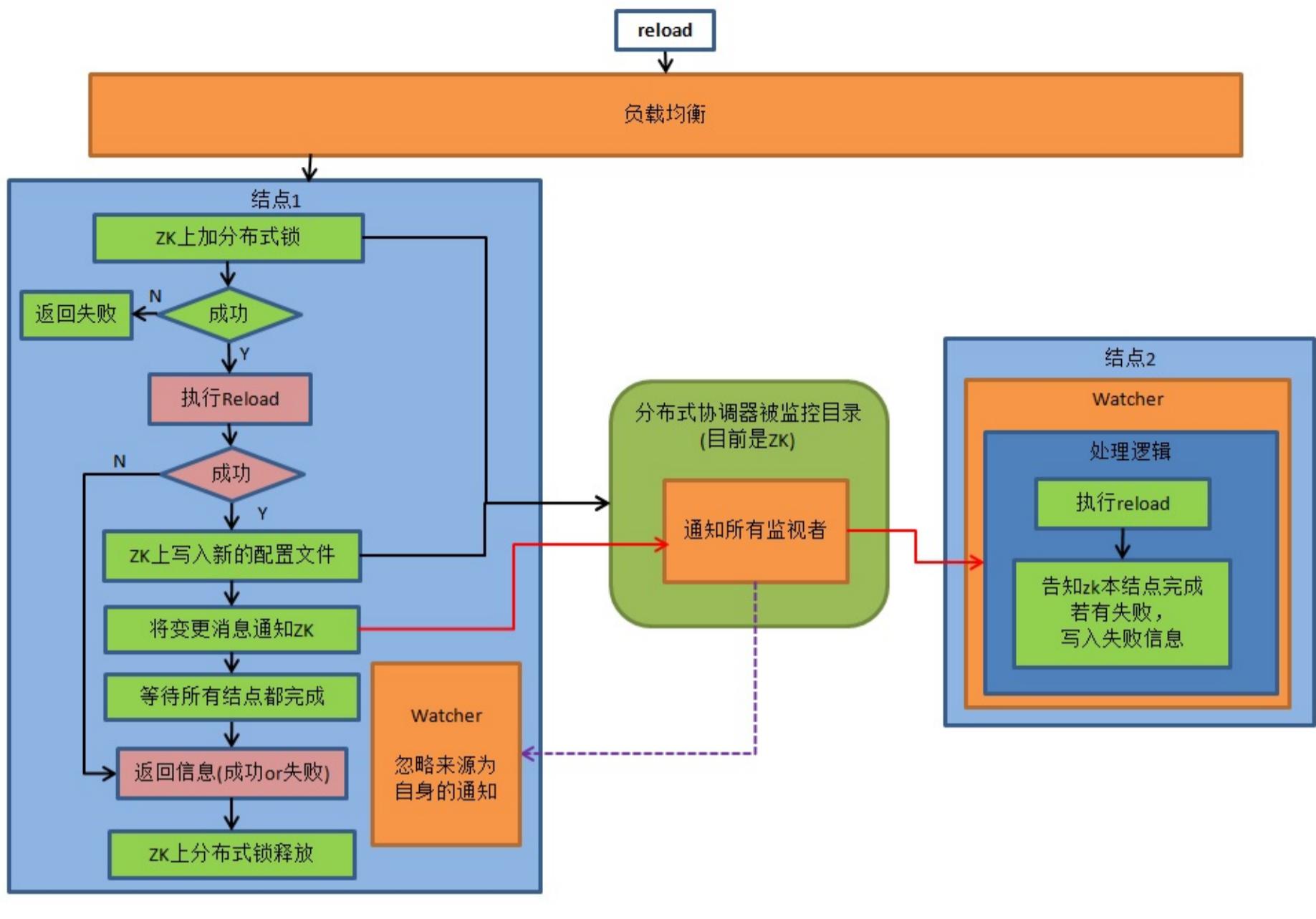
#### A.DDL

DDLZKZK



1. DDL  
DDL,
1. ddlschema.table
1. DDЛtablemetaZKddlmetareload metadata
1. meta  
(meta,reload meta)
1. :view,viewview

**B.reload @@config/ reload @@config\_all**



db.xmlsharding.xml, userxml, sequence\_conf.properties

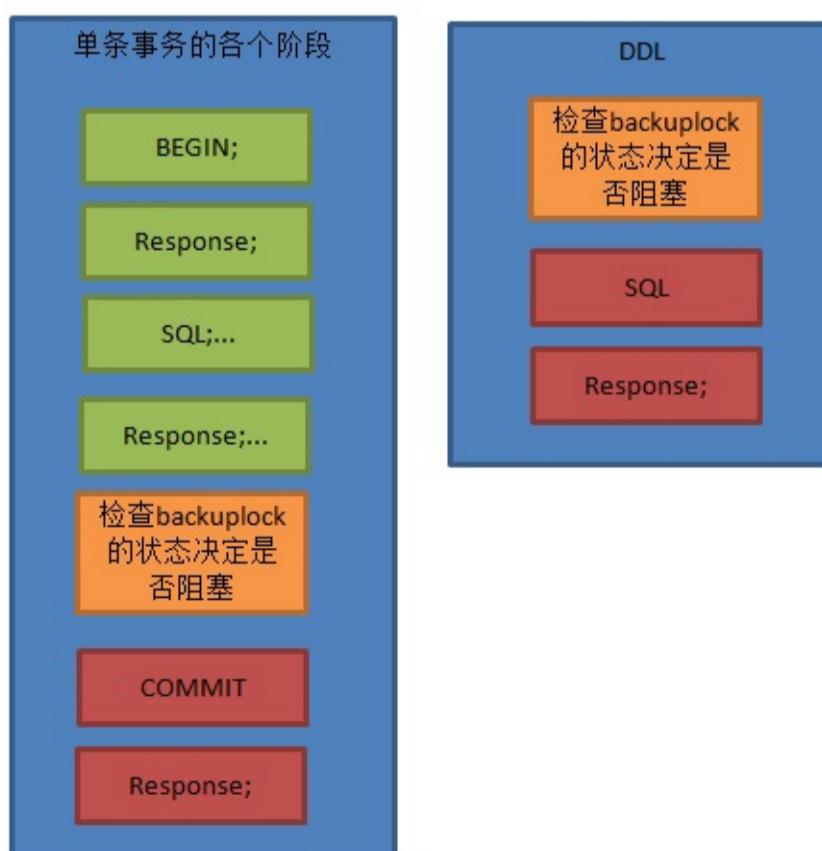
sequence\_db\_conf.properties

### C.binlog

:

binlogshow master status binlog

```
show @@binlog.status session
sessionshow @@binlog status
sessionsessionshow master status
```



```
:session1 tableA session2 tableA DDL
metaLock.session3 show @@binlog.status.
session1 session3, session2 session1, session3 session2.
session3 showBinlogStatusTimeout(60s)
```

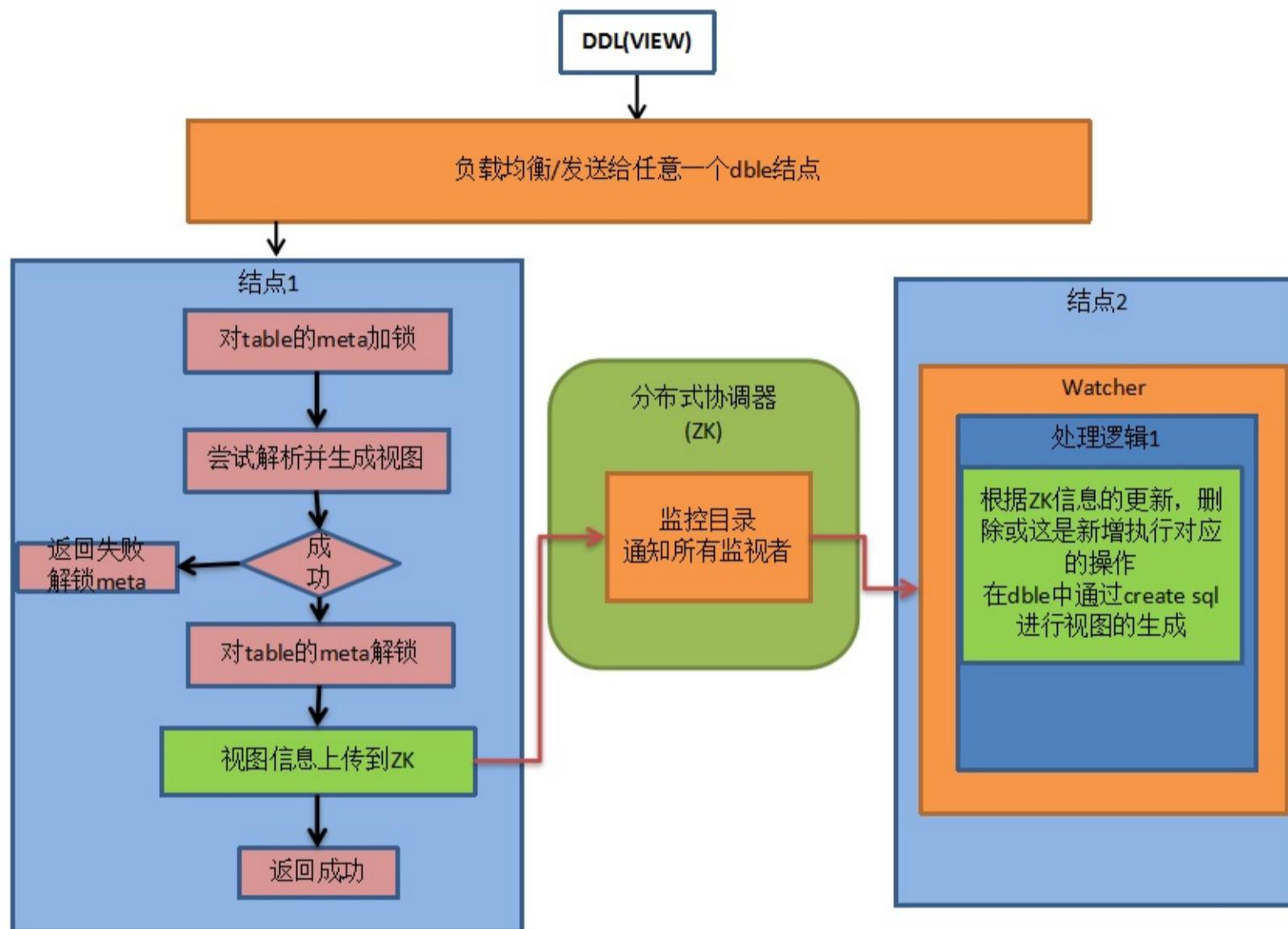
1.ZKzk  
2.session  
3./ZK  
4.show @@binlog.status  
5.ZK

ZK

ZK/zk

## D.View

zkviewdble



zkview key schema.table value {"serverId":"create\_Server\_id", "createSql":"view\_create\_sql"}

## E.online

dbleonlineDDL

1.dble 2.dbleDDLbinlog

## F.

needSyncHa

### F.1 disable

- 1.
- 2.disable
- 3.
- 4.disable
- 5.
- 6.

### F.2 enable

- 1.
- 2.enable
- 3.
- 4.
- 5.enable

**F.3 switch**

- 1.
- 2.switch
- 3.
- 4.
- 5.switch

**G.****G.1 pause**

1. pause\_node.lock
- 2.
- 3.
- 4.
- 5.
- 6.

**G.2 resume**

1. pause\_node.lock
- 2.
- 3.
- 4.
- 5.
- 6.

**2.8.5 XA**

XAzookeeper

**2.8.6 ZK**

```

rootPath(cluster.cnf)
clusterId(cluster.cnf)
conf
  init
  status
  operator
    instanceName(keybootstrap.cnf:reloadid)
  sharding(sharding.xmljson)
  db(db.xmljson)
  user(user.xmljson)
  migration()
  pause
    instanceName(keybootstrap.cnf:)
  resume
    instanceName(keybootstrap.cnf:)
sequences
  instanceid //zk
  incr_sequence/
  table_name
  common(sequence_conf.properties sequence_db_conf.properties)
binlog_pause
  status ()
  instanceName(keybootstrap.cnf:)
lock
  syncMeta.lock(,)
  confInit.lock
  confChange.lock
  binlogStatus.lock
  ddl_lock/schema.table
  view_lock/`schema`.`table`
  dbGroup_locks/groupName
  pause_node.lock
online
  instanceName(keybootstrap.cnf)
ddl
  schema.tableddl
  instanceName(keybootstrap.cnf:)
  schema.table2
xalog
  node1
  node2
view
  schema:view
  operator
    schema.view:(update/delete,:createupdate)
    instanceName(keybootstrap.cnf:)

dbGroups
  dbGroup_status
  groupName
  dbGroup_response
  instanceName(keybootstrap.cnf:)

```

**2.8.7**

twitter snowflake ZKinstanceID  
offset-step ZKStep

**2.8.8**



图例

## 2.9 Grpc

### 2.9.1

Dbleucoredbleucoregrpcucore

### 2.9.2

#### myid.properties

|               |      |                                                           |        |   |
|---------------|------|-----------------------------------------------------------|--------|---|
|               |      |                                                           |        | / |
| url           | curl | myid.properties ipAddress                                 | grpcIP |   |
| port          |      | myid.properties port                                      | grpc   |   |
| serverId      | ID   | \$ushard-id(ip1,ip2) ,\$ushard-id<br>myid.properties myid |        |   |
| componentId   | ID   | \$ushard-id myid.properties myid                          |        |   |
| componentType |      | ushard                                                    |        |   |

## 2.10 meta

### Meta

- [2.10.1 Meta](#)
- [2.10.2 Meta](#)
- [2.10.3](#)
- [2.10.4 View Meta](#)

## 2.10.1 Meta

dble

### 2.10.1.1

dbleschematable1.5 sharding.xml

show tables;

show create table ...

### 2.10.1.2

DbleDble

1 view

2 ZKview

view meta2.10.4 view meta

### 2.10.1.3

:

- ;
- 
- 
- 
-

## 2.10.2 Meta

dbleddlll

- create table
- drop table
- alter table
- truncate table
- create index
- drop index

zookeeper(1.8 myid.properties)Meta:

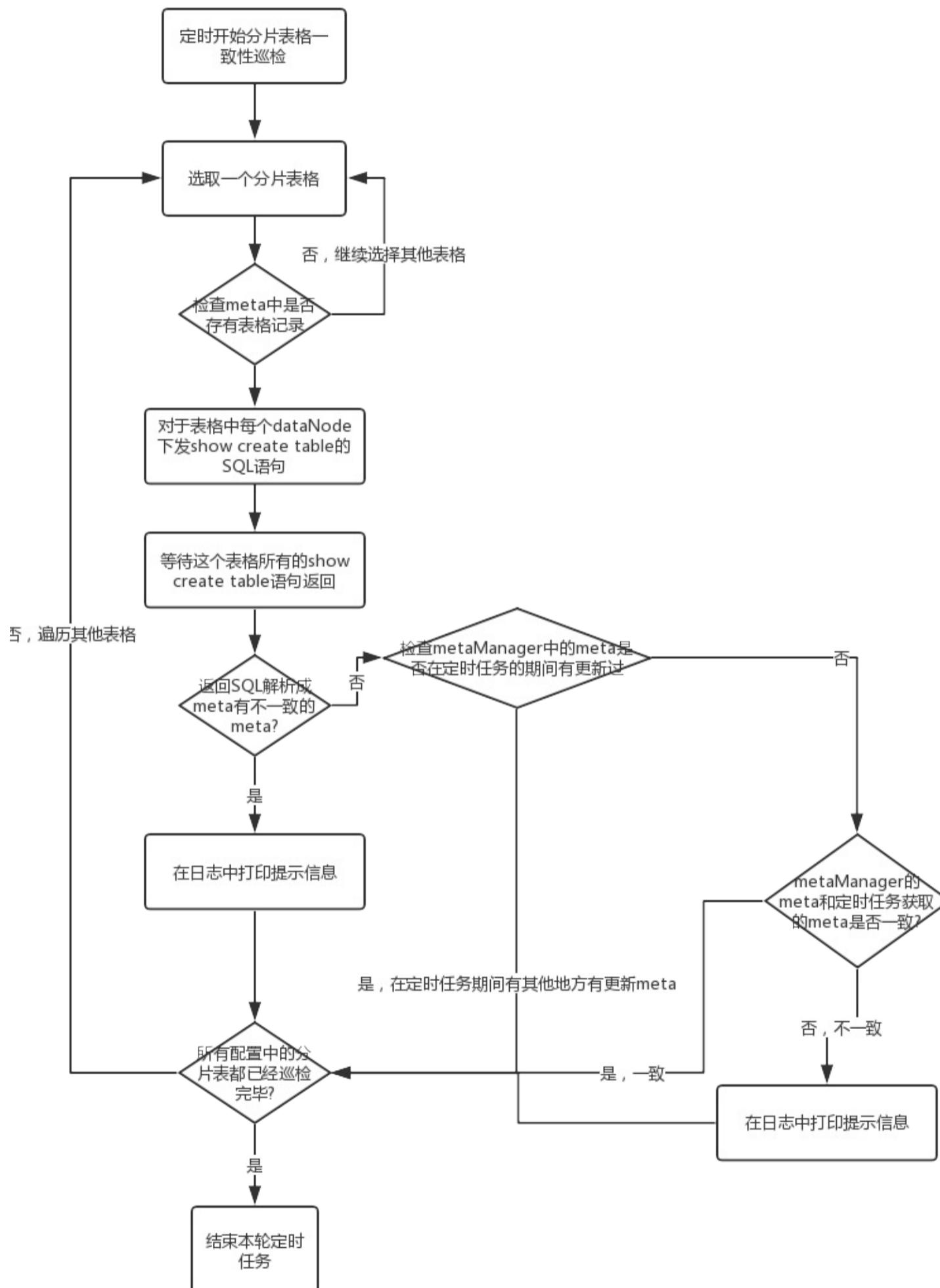
1. zookeeper  
dble
2. zookeeper  
:  
a. dblezookeeper  
b. dblezookeepr  
c. dble

### 2.10.3

DbleDbleDble

tableStructureCheckTaskcheckTableConsistencyPeriod30×60×100030checkTableConsistency0bootstrap.cnf

- schematable
- meta
- SQL “show create table”
- metaSet
- metameta
- metametameta





## 2.10.4 view meta

### 2.10.4.1 view

- mysqlview
- dbleview

### 2.10.4.2 view meta

Dble 2.18.11.0 viewviewVIEWselectquerySQLview

MySQLView metaDbleviewDbleviewDbleDbleviewXASQL

- 
- ZK

DblemetaZKSQLmeta

Dble 2.19.10.0mysql viewmysql viewdblemysql mysql viewview schema

```
<schema name="schema2" sqlMaxLimit="100" shardingNode="dn5">
</schema>
```

viewshardingNode dn5 mysql viewdbleview metysql view dblereoloaddble

### 2.10.4.2 view meta

JSONbootstrap.cnfviewPersistenceConfBaseDirviewPersistenceConfBaseName./viewConf/viewJson,

```
[{
  "schema": "testdb",
  "list": [
    {
      "name": "view_test",
      "sql": "create view view_test as select * from a_test"
    },
    {
      "name": "vt2",
      "sql": "create or replace view vt2 as select * from suntest"
    },
    {
      "name": "suntest",
      "sql": "create view suntest as select * from sbtest"
    }
  ]
}]
```

### ZK K/V

Dbleviewkey ZK BASE\_PATH/viewkeyschema\_name:view\_nameviewjsoncreate sqlserverID

```
{
  "serverId": "10010",
  "createSql": "create view view_test as select * from a_test"
}
```

JSONvalue ./..../view/testdb:view\_test

## 2.11

- [2.11.1](#)
- [2.11.2](#)
- [2.11.3](#)
- [2.11.4](#)
- [2.11.5 heartbeat](#)
- [2.11.6](#)

## 2.11.1

```
dble  
useSqlStat
```

### 2.11.1.1

```
reload @@query_cf=table&column;
```

```
table column
```

```
reload @@query_cf;
```

### 2.11.1.2

```
show @@sql.condition;
```

**2.11.2**

useSqlStat

**2.11.2.1**

- 
- 
- 
- 

**2.11.2.2**

```
show @@sql.sum.table;
```

```
show @@sql.sum.table true;
```

### 2.11.3

useSqlStat

#### 2.11.3.1

- 1.
2. NSQLsqlNsqliRecordCount10SQLTsql  
:
3. **reload @@sqlslow=t;**  
t
4. 50
5. 1000010select
6. 1024sql
7. MsqlM maxResultSet

#### 2.11.3.2

- show @@sql;
- show @@sql.high;
- show @@sql.large;
- show @@sql.resultset;
- show @@sql.slow;
- show @@sql.sum.user;

2.1

#### 2.11.3.3

```
:  
reload @@user_stat;
```

## 2.11.4

dble

1. initDB
2. query
3. stmtPrepare
4. stmtSendLongData
5. stmtReset
6. stmtExecute
7. stmtClose
8. ping
9. kill
10. quit
11. heartbeat
12. other

### 2.11.4.1

- show @@command;
- show @@command.count; [2.1](#)

## 2.11.5 heartbeat

heartbeatmysqlheartbeatmysqlheartbeat

### 2.11.5.1

heartbeatheartbeat

### 2.11.5.2

heartbeat

- show @@heartbeat;
- show @@heartbeat.detail where name=xxx; xxxdbinstance
- show @@dbinstance.synstatus;
- show @@dbinstance.syndetail where name=xxx;xxxdbinstance

[2.1](#)

## 2.11.6

dbe

### 2.11.6.1

- 
- 
- /

### 2.11.6.2

- show @@connection;
- show @@backend;
- show @@connection.sql;

[2.1](#)

2.20.04.0,  
 MySQL:  
 dblepython3dble,bootstrap.cnfsystemuseOuterHa false  
 dblesystemuseOuterHa true.

## 2.12.1

- dblebootstrap.cnfsystemuseOuterHa false
- python3"python"

## 2.12.2

dbledblepython3db.xmldbe

dble

```
show @@custom_mysql_ha
```

python

```
enable @@custom_mysql_ha
```

```
disable @@custom_mysql_ha
```

## 2.12.2

### 2.12.2.1 linux

#### 2.12.2.2 reload

```
reload @@config python
1. disable @@custom_mysql_ha
2.
3. reload @@config
4. enable @@custom_mysql_ha
```

#### 2.12.2.3 python

custom\_mysql\_ha.py dblebin,python3,

##### 1Python3,python3

```
/usr/local/bin/python3 --version
/usr/local/bin/pip3 --version
```

##### 2mysqlclient

CentOS

```
yum install mysql-devel
```

or Ubuntu

```
apt-get install libmysqlclient-dev
```

```
pip3 install mysqlclient
```

##### 3six

```
pip3 install six
```

or

```
pip3 install six -i http://pypi.douban.com/simple --trusted-host pypi.douban.com
```

##### 4coloredlogs

```
pip3 install coloredlogs
```

or

```
pip3 install coloredlogs -i http://pypi.douban.com/simple --trusted-host pypi.douban.com
```

**5rsa**

```
pip3 install rsa
```

or

```
pip3 install rsa -i http://pypi.douban.com/simple --trusted-host pypi.douban.com
```

## 2.13

### 2.13.1

- bootstrap.cnfprocessorCheckPeriod
- bootstrap.cnfidleTimeout
- 

### 2.13.2 SQL

- bootstrap.cnfprocessorCheckPeriod
- sqlExecuteTimeout
- DDL

## 2.14 ER

### 2.14.1 ER

join, nest loop  
join

销售单		
流水号	顾客ID	日期
201712010001	1	20171201
201712010002	4	20171201
201712020001	15	20171202
201712020002	4	20171202

销售详情单	
流水号	商品ID
201712010001	1
201712010001	2
201712010002	7
201712010002	31
201712020001	103
201712020001	2304
201712020002	27
201712020002	91

join

:

分片node1																				
销售单(按日期拆分表1)	销售详情单																			
<table border="1"> <thead> <tr> <th>流水号</th><th>顾客ID</th><th>日期</th></tr> </thead> <tbody> <tr> <td>201712010001</td><td>1</td><td>20171201</td></tr> <tr> <td>201712010002</td><td>4</td><td>20171201</td></tr> </tbody> </table>	流水号	顾客ID	日期	201712010001	1	20171201	201712010002	4	20171201	<table border="1"> <thead> <tr> <th>流水号</th><th>商品ID</th></tr> </thead> <tbody> <tr> <td>201712010001</td><td>1</td></tr> <tr> <td>201712010001</td><td>2</td></tr> <tr> <td>201712010002</td><td>7</td></tr> <tr> <td>201712010002</td><td>31</td></tr> </tbody> </table>	流水号	商品ID	201712010001	1	201712010001	2	201712010002	7	201712010002	31
流水号	顾客ID	日期																		
201712010001	1	20171201																		
201712010002	4	20171201																		
流水号	商品ID																			
201712010001	1																			
201712010001	2																			
201712010002	7																			
201712010002	31																			

分片node2																				
销售单(按日期拆分表2)	销售详情单																			
<table border="1"> <thead> <tr> <th>流水号</th><th>顾客ID</th><th>日期</th></tr> </thead> <tbody> <tr> <td>201712020001</td><td>15</td><td>20171202</td></tr> <tr> <td>201712020002</td><td>4</td><td>20171202</td></tr> </tbody> </table>	流水号	顾客ID	日期	201712020001	15	20171202	201712020002	4	20171202	<table border="1"> <thead> <tr> <th>流水号</th><th>商品ID</th></tr> </thead> <tbody> <tr> <td>201712020001</td><td>103</td></tr> <tr> <td>201712020001</td><td>2304</td></tr> <tr> <td>201712020002</td><td>27</td></tr> <tr> <td>201712020002</td><td>91</td></tr> </tbody> </table>	流水号	商品ID	201712020001	103	201712020001	2304	201712020002	27	201712020002	91
流水号	顾客ID	日期																		
201712020001	15	20171202																		
201712020002	4	20171202																		
流水号	商品ID																			
201712020001	103																			
201712020001	2304																			
201712020002	27																			
201712020002	91																			

ER

```
<shardingTable name="sales" shardingNode="dn1,dn2" function="sharding" shardingColumn="id">
<childTable name="sales_detail" joinColumn="sales_detail_pos_num" parentColumn="sales_pos_num"/>
</table>
```

### 2.14.2 ER

2mycatERER

```
<!--schema-->
<shardingTable name="tableA" shardingNode="dn1,dn2" function="hash_function" shardingColumn="id_a" />
<shardingTable name="tableB" shardingNode="dn1,dn2" function="hash_function" shardingColumn="id_b" />
<shardingTable name="tableC" shardingNode="dn2,dn1" function="hash_function" shardingColumn="id_c" />
<shardingTable name="tableD" shardingNode="dn3,dn4" function="hash_function" shardingColumn="id_a" />
<shardingTable name="tableE" shardingNode="dn1,dn2" function="hash_function" shardingColumn="id_a" />
<shardingTable name="tableF" shardingNode="dn1,dn2" function="enum_par" shardingColumn="id_a" />

<!--rfunction-->
<function name="enum_par">
    <class>io.mycat.route.function.PartitionByFileMap</class>
    <property name="mapFile">partition-hash-int.txt</property>
</function>
<function name="hash_function" class="io.mycat.route.function.PartitionByLong">
    <property name="partitionCount">2</property>
    <property name="partitionLength">512</property>
</function>
```

functionER

table	function

tableA	id_a	dn1,dn2	hash_function	1
tableB	id_b	dn1,dn2	hash_function	1
tableC	id_c	dn2,dn1	hash_function	2
tableD	id_a	dn3,dn4	hash_function	3
tableE	id_a	dn1,dn2	hash_function	1
tableF	id_a	dn1,dn2	enum_par	4

ER

PSschemaschemaERER.

## 2.15 global

“”“”

- 
- 
- 

dble “”

- 
- 
- JOIN

JOIN

:



;

JOIN.

JOIN (SQL):

```

SELECT , , COUNT(*) AS
FROM
JOIN USING(ID)
WHERE ()
GROUP BY ,

```

## 2.16 cache

cache 1.6

### 2.16.1

[sql, ]

KEYpool.SQLRouteCache  
VALUE cachefactoryname,

### 2.16.2 ER

[joinColumn, ]

KEYpool.ER\_SQL2PARENTID  
VALUEcachefactoryname,

## 2.17

### 2.17.1

SQLSQL

### 2.17.2

dbledble

dbe: SQLdbeSQLdbeSQLdbeSQL

: MySQL

### 2.17.3 dble

dbleEXPLAINdbe explain select id,accountno from account where userid=2;

EXPLAINSQ

```
mysql> explain select * from sharding_two_node a inner join sharding_four_node b on a.id =b.id;
```

SHARDING_NODE	TYPE	SQL/REF
dn1.0	BASE SQL	select `a`.`id`, `a`.`c_char`, `a`.`ts`, `a`.`si` from `sharding_two_node` `a` ORDER BY `a`.`id` ASC
dn2.0	BASE SQL	select `a`.`id`, `a`.`c_char`, `a`.`ts`, `a`.`si` from `sharding_two_node` `a` ORDER BY `a`.`id` ASC
dn1.1	BASE SQL	select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC
dn2.1	BASE SQL	select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC
dn3.0	BASE SQL	select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC
dn4.0	BASE SQL	select `b`.`id`, `b`.`c_flag`, `b`.`c_decimal` from `sharding_four_node` `b` ORDER BY `b`.`id` ASC
merge.1	MERGE	dn1.0, dn2.0
merge.2	MERGE	dn1.1, dn2.1, dn3.0, dn4.0
join.1	JOIN	merge.1, merge.2

9 rows in set (0.00 sec)

:

```
mysql> explain select id from single union all select b.si from sharding_four_node a inner join sharding_two_node b on a.id =b.id
```

SHARDING_NODE	TYPE	SQL/REF
dn1.0	BASE SQL	select `single`.`id` from `single`
dn1.1	BASE SQL	select `a`.`id` from `sharding_four_node` `a` ORDER BY `a`.`id` ASC
dn2.0	BASE SQL	select `a`.`id` from `sharding_four_node` `a` ORDER BY `a`.`id` ASC
dn3.0	BASE SQL	select `a`.`id` from `sharding_four_node` `a` ORDER BY `a`.`id` ASC
dn4.0	BASE SQL	select `a`.`id` from `sharding_four_node` `a` ORDER BY `a`.`id` ASC
dn1.2	BASE SQL	select `b`.`si`, `b`.`id` from `sharding_two_node` `b` ORDER BY `b`.`id` ASC
dn2.1	BASE SQL	select `b`.`si`, `b`.`id` from `sharding_two_node` `b` ORDER BY `b`.`id` ASC
merge.2	MERGE	dn1.1, dn2.0, dn3.0, dn4.0
merge.3	MERGE	dn1.2, dn2.1
join.1	JOIN	merge.2, merge.3
merge.1	MERGE	dn1.0
union_all.1	UNION_ALL	join.1, merge.1

12 rows in set (0.01 sec)

### 2.17.4

EXPLAIN2

explain2 shardingnode=dn1 sql=select id,accountno from account where userid=2;

explain2sqlexplainshardingnodeexplain

## 2.18

- Btrace()
- managershow @@thread\_used()

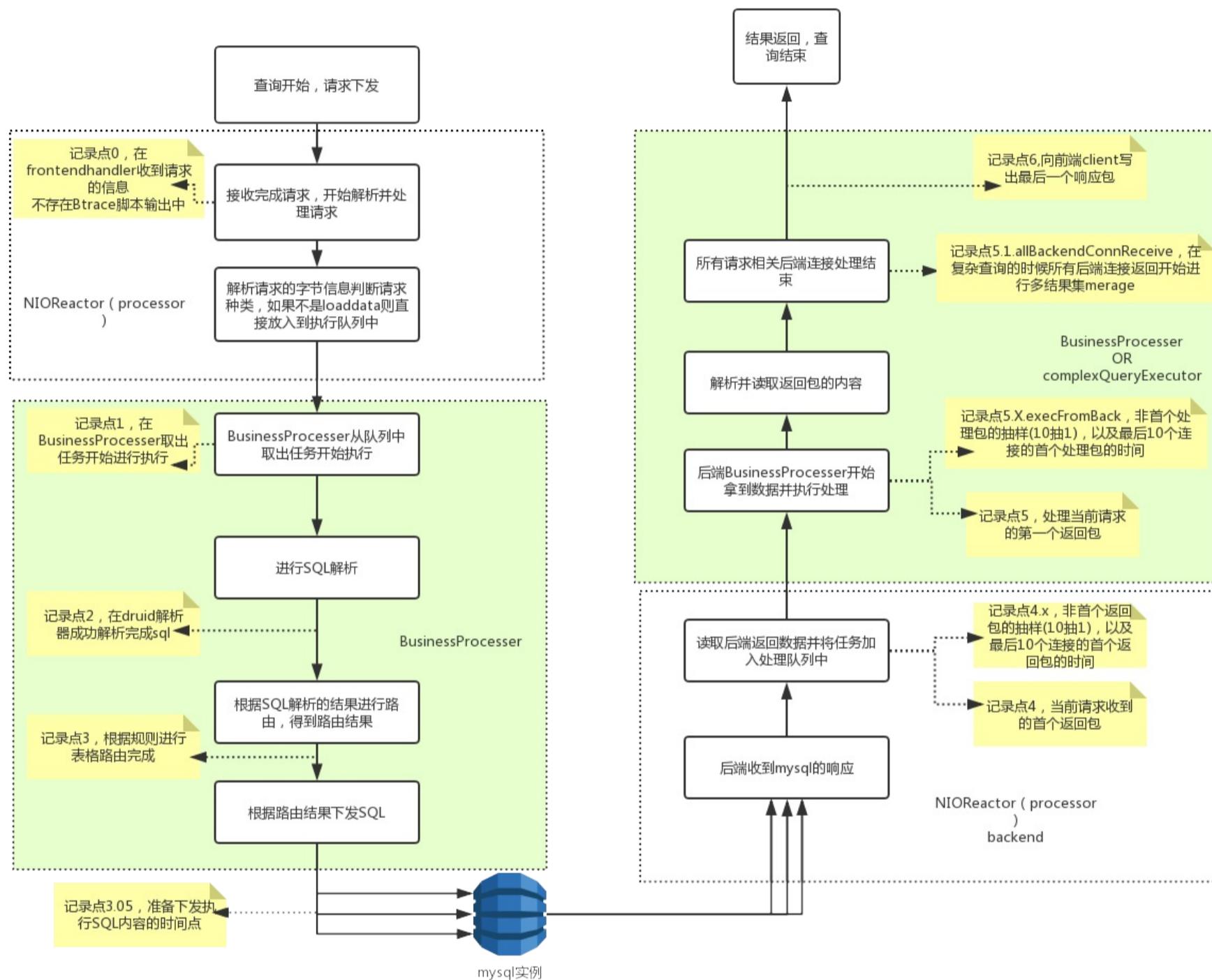
### 2.18.1 Btrace

#### 2.18.1.1

Dble, [BTraceCostTime.java](#) Btrace, Btrace v.1.3

Btrace <https://github.com/btracingio/btrace>

bootstrap.cnf useCostTimeStat costSamplePercent useCostTimeStat = 1 costSamplePercent 1% btrace



btraceable

profiling:	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block
		Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block
profiling:	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block	Block
	request->1.startProcess	9073	-638142734	-70334	-1051058	493260	202952071	22368	10565	493260		
	request->2.endParse	9073	234134936	25805	13206	523393	437087007	48174	23771	1016653		
	request->3.endRoute	9073	404389553	44570	20123	121474	841476560	92745	43894	1075553		
	request->4.resFromBack	9073	592398	65	-649019	1602901	4805691043	529669	261612	1602901		
	request->5.startExecuteBackend	9073	-56808823	-6261	-1749483	2020297	5047581273	556329	350530	2020297		
	request->6.response	9073	59150286	6519	3045	366620	5107315454	562913	353575	2386917		

Block, Invocations, WallTime. , SelfTime. btrace

#### 2.18.1.2

- 0 : 0dble
- 1.startProcess :
- 2.endParse : SQL
- 3.endRoute : SQL
- 3.05 readyToDeliver : SQL
- 4.resFromBack :
- 4.X.resFromBack : ,4.3.resFromBackdble1
- 5.startExecuteBackend :
- 5.X.startExecuteBackend : 5.3.startExecuteBackend
- 5.1.allBackendConnReceive merge

- 6.response :

:BtraceSQLSQLSQL

### 2.18.1.3

- 1-0bootstrap.cnfprocessorExecutor 0dbe01-0request->1.startProcess
- 4-3bootstrap.cnfbackendProcessors
- 5-4bootstrap.cnfbackendBusinessExecutor

### 2.18.2 Manager

#### 2.18.2.1

Dble 18.02.0managerbootstrap.cnfuseThreadUsageStat  
show @@thread\_useddbe

THREAD_NAME	LAST_QUARTER_MIN	LAST_MINUTE	LAST_FIVE_MINUTE
backendBusinessExecutor2	0%	0%	0%
backendBusinessExecutor1	0%	0%	0%
backendBusinessExecutor0	0%	0%	0%
BusinessExecutor3	0%	0%	0%
\$_NIO_REACTOR_BACKEND-2	0%	0%	0%
BusinessExecutor1	0%	0%	0%
\$_NIO_REACTOR_BACKEND-3	0%	0%	0%
BusinessExecutor2	12%	3%	3%
\$_NIO_REACTOR_BACKEND-0	0%	0%	0%
\$_NIO_REACTOR_FRONT-0	0%	0%	0%
\$_NIO_REACTOR_BACKEND-1	0%	0%	0%
BusinessExecutor0	0%	0%	0%

12 rows in set (0.00 sec)

- BussinessExecutorX  
sqlmysql
- backendBusinessExecutorX  
mysqclient
- \$\_NIO\_REACTOR\_FRONT\_X  
,,BussinessExecutor
- \$\_NIO\_REACTOR\_BACKEND\_X  
mysqlbackendBusinessExecutor

#### 2.18.2.2

80%

- processors\_NIO\_REACTOR\_FRONT\_X
- backendProcessors\_NIO\_REACTOR\_BACKEND\_X
- backendProcessorExecutor backendBusinessExecutorX
- processorExecutor BussinessExecutorX

## 2.19 reload

reload @@config\_all dbGroupreload  
dbGroup dbGroup dbGroup

### 2.19.1 reload @@config\_all

:

#### 2.19.1.1 dbGroup

,dbGroupschmea,

#### 2.19.1.2 dbGroup

#### 2.19.1.3 dbGroup

show backend

### 2.19.2 reload @@config\_all -f

:

#### 2.19.2.1 dbGroup

,dbGroup

#### 2.19.2.2 dbGroup

#### 2.19.2.3 dbGroup

### 2.19.3 reload @@config\_all -r

dbGroup

show backend

### 2.19.4 reload @@config\_all -s

dbGroup

## 2.20

```
MySQLLdble serverMySQL(MySQLmysqldumpslowPerconapt-query-digest)
SQL      show @@connection.sql.status where FRONT_ID= ?;
```

### 2.20.1 bootstrap.cnf6

```
<!-- -->
-DenableSlowLog=1
<!-- -->
-DslowLogBaseDir=./slowlogs
<!-- -->
-DslowLogBaseName=slow-query
<!-- -->
-DflushSlowLogPeriod=1
<!-- -->
-DflushSlowLogSize=1000
<!-- , -->
-DsqlSlowTime=100
```

### 2.20.2

```
enable @@slow_query_log; --
show @@slow_query_log; --
disable @@slow_query_log; --
show @@slow_query_log; --

show @@slow_query.time; --
reload @@slow_query.time=200; --

show @@slow_query.flushperiod; --
reload @@slow_query.flushperiod=2; --

show @@slow_query.flushsize;--
reload @@slow_query.flushsize=1100; --
```

### 2.20.3 MySQL mysqldumpslow Percona pt-query-digest

```
:
/FAKE_PATH/mysql, Version: FAKE_VERSION. started with:
Tcp port: 3320 Unix socket: FAKE_SOCK
Time           Id Command    Argument
# Time: 2018-08-23T17:40:10.149000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.132709  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000350  Prepare_Push: 0.116678  dn1_First_Result_Fetch: 0.013686  dn1_Last_Result_Fetch: 0.001422  Write_C
lient: 0.001995
SET timestamp=1535017210149;
select * from sharding_two_node where id =1;
# Time: 2018-08-23T17:40:10.200000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.035600  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000062  Prepare_Push: 0.006733  dn2_First_Result_Fetch: 0.012524  dn1_First_Result_Fetch: 0.010971  dn2_La
st_Result_Fetch: 0.015368  dn1_Last_Result_Fetch: 0.005119  Write_Client: 0.017834
SET timestamp=1535017210200;
select * from sharding_two_node;
# Time: 2018-08-23T17:40:10.282000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.045337  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000166  Prepare_Push: 0.003941  dn1_First_Result_Fetch: 0.039652  dn1_Last_Result_Fetch: 0.000300  Write_C
lient: 0.001578
SET timestamp=1535017210282;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:10.315000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.031232  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.005467  Prepare_Push: 0.001989  dn2_First_Result_Fetch: 0.020240  dn2_Last_Result_Fetch: 0.001900  Write_C
lient: 0.003536
SET timestamp=1535017210315;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:10.432000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.116672  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.013625  Prepare_Push: 0.024767  dn2_First_Result_Fetch: 0.056395  dn1_First_Result_Fetch: 0.026420  dn2_La
st_Result_Fetch: 0.000743  dn1_Last_Result_Fetch: 0.001700  Write_Client: 0.051861
SET timestamp=1535017210432;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:10.772000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.338569  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000082  Prepare_Push: 0.258365  dn1_0_First_Result_Fetch: 0.047494  dn1_0_Last_Result_Fetch: 0.029018  dn2_
0_First_Result_Fetch: 0.042964  dn2_0_Last_Result_Fetch: 0.033525  Write_Client: 0.009385
SET timestamp=1535017210772;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:10.821000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.046745  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000059  Prepare_Push: 0.025401  dn1_0_First_Result_Fetch: 0.011755  dn1_0_Last_Result_Fetch: 0.001180  Ge
nerate_New_Query: 0.001706  dn1_1_First_Result_Fetch: 0.004224  dn1_1_Last_Result_Fetch: 0.001213  Write_Client: 0.001384
SET timestamp=1535017210821;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:12.061000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.036952  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.001111  Prepare_Push: 0.001132  dn1_First_Result_Fetch: 0.034266  dn1_Last_Result_Fetch: 0.000084  Write_C
lient: 0.000443
SET timestamp=1535017212061;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:12.091000Z
# User@Host: root[root] @ [0:0:0:0:0:0:1]  Id:  2
# Query_time: 0.028213  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000666  Prepare_Push: 0.001206  dn2_First_Result_Fetch: 0.025991  dn2_Last_Result_Fetch: 0.000101  Write_C
lient: 0.000349
SET timestamp=1535017212091;
delete from sharding_two_node where id =519;
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# Time: 2018-08-23T17:40:12.132000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.040365 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000223 Prepare_Push: 0.001172 dn2_First_Result_Fetch: 0.019852 dn1_First_Result_Fetch: 0.019810 dn2_Last_Result_Fetch: 0.000901 dn1_Last_Result_Fetch: 0.000780 Write_Client: 0.019160
SET timestamp=1535017212132;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:12.145000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.012196 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000115 Prepare_Push: 0.001403 dn1_0_First_Result_Fetch: 0.006714 dn1_0_Last_Result_Fetch: 0.002561 dn2_0_First_Result_Fetch: 0.006787 dn2_0_Last_Result_Fetch: 0.001806 Write_Client: 0.002280
SET timestamp=1535017212145;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:12.164000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.016979 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000224 Prepare_Push: 0.002236 dn1_0_First_Result_Fetch: 0.006678 dn1_0_Last_Result_Fetch: 0.000703 Generate_New_Query: 0.000866 dn1_1_First_Result_Fetch: 0.004532 dn1_1_Last_Result_Fetch: 0.000879 Write_Client: 0.001002
SET timestamp=1535017212164;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:13.134000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.010213 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000145 Prepare_Push: 0.001520 dn1_First_Result_Fetch: 0.007996 dn1_Last_Result_Fetch: 0.000201 Write_Client: 0.000551
SET timestamp=1535017213134;
select * from sharding_two_node where id =1;
# Time: 2018-08-23T17:40:13.153000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.014257 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000080 Prepare_Push: 0.002394 dn2_First_Result_Fetch: 0.008839 dn1_First_Result_Fetch: 0.008837 dn2_Last_Result_Fetch: 0.001424 dn1_Last_Result_Fetch: 0.002407 Write_Client: 0.002945
SET timestamp=1535017213153;
select * from sharding_two_node;
# Time: 2018-08-23T17:40:13.212000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.029822 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000063 Prepare_Push: 0.001128 dn1_First_Result_Fetch: 0.028277 dn1_Last_Result_Fetch: 0.000109 Write_Client: 0.000355
SET timestamp=1535017213212;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:13.240000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.027695 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000067 Prepare_Push: 0.000682 dn2_First_Result_Fetch: 0.026582 dn2_Last_Result_Fetch: 0.000078 Write_Client: 0.000364
SET timestamp=1535017213240;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:13.321000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.076093 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000231 Prepare_Push: 0.001334 dn2_First_Result_Fetch: 0.035072 dn1_First_Result_Fetch: 0.035074 dn2_Last_Result_Fetch: 0.018756 dn1_Last_Result_Fetch: 0.001263 Write_Client: 0.039457
SET timestamp=1535017213321;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:13.348000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.026278 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000335 Prepare_Push: 0.001249 dn1_0_First_Result_Fetch: 0.011028 dn1_0_Last_Result_Fetch: 0.009279 dn2_0_First_Result_Fetch: 0.019200 dn2_0_Last_Result_Fetch: 0.003441 Write_Client: 0.004600
SET timestamp=1535017213348;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:13.381000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.029152 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000662 Prepare_Push: 0.003189 dn1_0_First_Result_Fetch: 0.014453 dn1_0_Last_Result_Fetch: 0.001013 Generate_New_Query: 0.000911 dn1_1_First_Result_Fetch: 0.005703 dn1_1_Last_Result_Fetch: 0.001483 Write_Client: 0.002114
SET timestamp=1535017213381;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:14.163000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.012540 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000197 Prepare_Push: 0.001303 dn2_First_Result_Fetch: 0.006452 dn1_First_Result_Fetch: 0.007858 dn2_Last_Result_Fetch: 0.004065 dn1_Last_Result_Fetch: 0.002960 Write_Client: 0.004588
SET timestamp=1535017214163;
select * from sharding_two_node;
# Time: 2018-08-23T17:40:14.220000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.027587 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000051 Prepare_Push: 0.000744 dn1_First_Result_Fetch: 0.026441 dn1_Last_Result_Fetch: 0.000104 Write_Client: 0.000350
SET timestamp=1535017214220;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:14.253000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.031984 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000070 Prepare_Push: 0.001144 dn2_First_Result_Fetch: 0.030202 dn2_Last_Result_Fetch: 0.000182 Write_Client: 0.000568
SET timestamp=1535017214253;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:14.292000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.037327 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000272 Prepare_Push: 0.001316 dn2_First_Result_Fetch: 0.014299 dn1_First_Result_Fetch: 0.014331 dn2_Last_Result_Fetch: 0.001148 dn1_Last_Result_Fetch: 0.000753 Write_Client: 0.021440
SET timestamp=1535017214292;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:14.303000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.010244 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000050 Prepare_Push: 0.001101 dn1_0_First_Result_Fetch: 0.004540 dn1_0_Last_Result_Fetch: 0.002781 dn2_0_First_Result_Fetch: 0.004708 dn2_0_Last_Result_Fetch: 0.002592 Write_Client: 0.002092
SET timestamp=1535017214303;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:14.327000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.021978 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000109 Prepare_Push: 0.002098 dn1_0_First_Result_Fetch: 0.006720 dn1_0_Last_Result_Fetch: 0.000748 Generate_New_Query: 0.001158 dn1_1_First_Result_Fetch: 0.008043 dn1_1_Last_Result_Fetch: 0.001147 Write_Client: 0.001269
SET timestamp=1535017214327;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:15.254000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.010569 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000076 Prepare_Push: 0.001050 dn1_First_Result_Fetch: 0.008330 dn1_Last_Result_Fetch: 0.000146 Write_Client: 0.001113
SET timestamp=1535017215254;
select * from sharding_two_node where id =1;
# Time: 2018-08-23T17:40:15.321000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.024216 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000081 Prepare_Push: 0.001295 dn1_First_Result_Fetch: 0.021938 dn1_Last_Result_Fetch: 0.000422 Write_Client: 0.000902
SET timestamp=1535017215321;

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delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:15.351000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.027796 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000666 Prepare_Push: 0.000760 dn2_First_Result_Fetch: 0.025984 dn2_Last_Result_Fetch: 0.000094 Write_Client: 0.000386
SET timestamp=1535017215351;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:15.392000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.039805 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000217 Prepare_Push: 0.000804 dn2_First_Result_Fetch: 0.017410 dn1_First_Result_Fetch: 0.017468 dn2_Last_Result_Fetch: 0.001490 dn1_Last_Result_Fetch: 0.001223 Write_Client: 0.021374
SET timestamp=1535017215392;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:15.410000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.017384 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000152 Prepare_Push: 0.001183 dn1_0_First_Result_Fetch: 0.005037 dn1_0_Last_Result_Fetch: 0.007164 dn2_0_First_Result_Fetch: 0.008156 dn2_0_Last_Result_Fetch: 0.004962 Write_Client: 0.004043
SET timestamp=1535017215410;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:15.434000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.021341 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000318 Prepare_Push: 0.002764 dn1_0_First_Result_Fetch: 0.010897 dn1_0_Last_Result_Fetch: 0.000544 Generate_New_Query: 0.000798 dn1_1_First_Result_Fetch: 0.004506 dn1_1_Last_Result_Fetch: 0.000790 Write_Client: 0.000845
SET timestamp=1535017215434;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:16.322000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.030106 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000217 Prepare_Push: 0.001253 dn1_First_Result_Fetch: 0.028330 dn1_Last_Result_Fetch: 0.000086 Write_Client: 0.000306
SET timestamp=1535017216322;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:16.353000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.030005 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001306 Prepare_Push: 0.001004 dn2_First_Result_Fetch: 0.027242 dn2_Last_Result_Fetch: 0.000140 Write_Client: 0.000453
SET timestamp=1535017216353;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:16.403000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.049615 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001459 Prepare_Push: 0.000830 dn2_First_Result_Fetch: 0.024286 dn1_First_Result_Fetch: 0.025469 dn2_Last_Result_Fetch: 0.001726 dn1_Last_Result_Fetch: 0.000853 Write_Client: 0.023039
SET timestamp=1535017216403;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:16.526000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.121702 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000337 Prepare_Push: 0.000889 dn1_0_First_Result_Fetch: 0.009370 dn1_0_Last_Result_Fetch: 0.002010 dn2_0_First_Result_Fetch: 0.009160 dn2_0_Last_Result_Fetch: 0.001779 Write_Client: 0.109753
SET timestamp=1535017216526;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:16.560000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.030306 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001534 Prepare_Push: 0.001759 dn1_0_First_Result_Fetch: 0.011846 dn1_0_Last_Result_Fetch: 0.001663 Generate_New_Query: 0.003223 dn1_1_First_Result_Fetch: 0.006428 dn1_1_Last_Result_Fetch: 0.002601 Write_Client: 0.002291
SET timestamp=1535017216560;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:17.325000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.017545 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.006231 Prepare_Push: 0.002335 dn1_First_Result_Fetch: 0.008121 dn1_Last_Result_Fetch: 0.000277 Write_Client: 0.000857
SET timestamp=1535017217325;
select * from sharding_two_node where id =1;
# Time: 2018-08-23T17:40:17.390000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.026216 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000854 Prepare_Push: 0.000904 dn1_First_Result_Fetch: 0.024157 dn1_Last_Result_Fetch: 0.000081 Write_Client: 0.000301
SET timestamp=1535017217390;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:17.411000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.020095 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000699 Prepare_Push: 0.000711 dn2_First_Result_Fetch: 0.017634 dn2_Last_Result_Fetch: 0.000132 Write_Client: 0.001051
SET timestamp=1535017217411;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:17.491000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.078505 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001702 Prepare_Push: 0.000763 dn2_First_Result_Fetch: 0.018547 dn1_First_Result_Fetch: 0.018482 dn2_Last_Result_Fetch: 0.036637 dn1_Last_Result_Fetch: 0.000566 Write_Client: 0.057558
SET timestamp=1535017217491;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:17.518000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.026112 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000686 Prepare_Push: 0.000872 dn1_0_First_Result_Fetch: 0.007054 dn1_0_Last_Result_Fetch: 0.001072 dn2_0_First_Result_Fetch: 0.005839 dn2_0_Last_Result_Fetch: 0.017248 Write_Client: 0.016586
SET timestamp=1535017217518;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:17.558000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.038199 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000966 Prepare_Push: 0.005189 dn1_0_First_Result_Fetch: 0.013137 dn1_0_Last_Result_Fetch: 0.001134 Generate_New_Query: 0.003973 dn1_1_First_Result_Fetch: 0.010228 dn1_1_Last_Result_Fetch: 0.003564 Write_Client: 0.002115
SET timestamp=1535017217558;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:18.353000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.019048 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.003008 Prepare_Push: 0.000844 dn2_First_Result_Fetch: 0.006415 dn1_First_Result_Fetch: 0.009082 dn2_Last_Result_Fetch: 0.000323 dn1_Last_Result_Fetch: 0.005902 Write_Client: 0.008781
SET timestamp=1535017218353;
select * from sharding_two_node;
# Time: 2018-08-23T17:40:18.410000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.025498 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000060 Prepare_Push: 0.000696 dn1_First_Result_Fetch: 0.024394 dn1_Last_Result_Fetch: 0.000084 Write_Client: 0.000348
SET timestamp=1535017218410;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:18.430000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.018794 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000047 Prepare_Push: 0.001301 dn2_First_Result_Fetch: 0.017073 dn2_Last_Result_Fetch: 0.000099 Write_Client: 0.000373

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SET timestamp=1535017218430;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:18.471000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.039810 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000052 Prepare_Push: 0.000661 dn2_First_Result_Fetch: 0.019799 dn1_First_Result_Fetch: 0.019923 dn2_La
st_Result_Fetch: 0.000698 dn1_Last_Result_Fetch: 0.000814 Write_Client: 0.019298
SET timestamp=1535017218471;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:18.484000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.012214 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000047 Prepare_Push: 0.001782 dn1_0_First_Result_Fetch: 0.007109 dn1_0_Last_Result_Fetch: 0.001544 dn2
_0_First_Result_Fetch: 0.005518 dn2_0_Last_Result_Fetch: 0.001470 Write_Client: 0.003568
SET timestamp=1535017218484;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:18.507000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.019695 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000046 Prepare_Push: 0.001448 dn1_0_First_Result_Fetch: 0.006244 dn1_0_Last_Result_Fetch: 0.000988 Gen
erate_New_Query: 0.001564 dn1_1_First_Result_Fetch: 0.007080 dn1_1_Last_Result_Fetch: 0.001306 Write_Client: 0.001137
SET timestamp=1535017218507;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:19.351000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.020937 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000059 Prepare_Push: 0.000800 dn1_First_Result_Fetch: 0.019607 dn1_Last_Result_Fetch: 0.000169 Write_C
lient: 0.000472
SET timestamp=1535017219351;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:19.370000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.018011 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001184 Prepare_Push: 0.000583 dn2_First_Result_Fetch: 0.015894 dn2_Last_Result_Fetch: 0.000129 Write_C
lient: 0.000351
SET timestamp=1535017219370;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:19.412000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.041319 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000689 Prepare_Push: 0.000573 dn2_First_Result_Fetch: 0.017735 dn1_First_Result_Fetch: 0.017876 dn2_La
st_Result_Fetch: 0.000601 dn1_Last_Result_Fetch: 0.000806 Write_Client: 0.022322
SET timestamp=1535017219412;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:19.423000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.010063 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000200 Prepare_Push: 0.001136 dn1_0_First_Result_Fetch: 0.006820 dn1_0_Last_Result_Fetch: 0.000694 dn2
_0_First_Result_Fetch: 0.003519 dn2_0_Last_Result_Fetch: 0.003944 Write_Client: 0.001443
SET timestamp=1535017219423;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:19.454000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.027592 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000182 Prepare_Push: 0.012798 dn1_0_First_Result_Fetch: 0.005960 dn1_0_Last_Result_Fetch: 0.000530 Gen
erate_New_Query: 0.000811 dn1_1_First_Result_Fetch: 0.005659 dn1_1_Last_Result_Fetch: 0.000926 Write_Client: 0.001101
SET timestamp=1535017219454;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:20.312000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.025903 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001470 Prepare_Push: 0.000887 dn1_First_Result_Fetch: 0.022114 dn1_Last_Result_Fetch: 0.000197 Write_C
lient: 0.001433
SET timestamp=1535017220312;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:20.342000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.028503 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.005643 Prepare_Push: 0.001172 dn2_First_Result_Fetch: 0.021342 dn2_Last_Result_Fetch: 0.000074 Write_C
lient: 0.000346
SET timestamp=1535017220342;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:20.381000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.037424 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000641 Prepare_Push: 0.000959 dn2_First_Result_Fetch: 0.015139 dn1_First_Result_Fetch: 0.015238 dn2_La
st_Result_Fetch: 0.000795 dn1_Last_Result_Fetch: 0.000956 Write_Client: 0.020685
SET timestamp=1535017220381;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:20.408000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.016143 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000122 Prepare_Push: 0.001979 dn1_0_First_Result_Fetch: 0.004408 dn1_0_Last_Result_Fetch: 0.000484 Gen
erate_New_Query: 0.000965 dn1_1_First_Result_Fetch: 0.006059 dn1_1_Last_Result_Fetch: 0.001553 Write_Client: 0.000755
SET timestamp=1535017220408;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:21.214000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.023376 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000073 Prepare_Push: 0.001306 dn1_First_Result_Fetch: 0.021694 dn1_Last_Result_Fetch: 0.000081 Write_C
lient: 0.000302
SET timestamp=1535017221214;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:21.241000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.025408 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000083 Prepare_Push: 0.001029 dn2_First_Result_Fetch: 0.023856 dn2_Last_Result_Fetch: 0.000122 Write_C
lient: 0.000440
SET timestamp=1535017221241;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:21.281000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.038482 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000087 Prepare_Push: 0.000871 dn2_First_Result_Fetch: 0.016690 dn1_First_Result_Fetch: 0.016708 dn2_La
st_Result_Fetch: 0.000579 dn1_Last_Result_Fetch: 0.000891 Write_Client: 0.020835
SET timestamp=1535017221281;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:21.293000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.011657 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000615 Prepare_Push: 0.001320 dn1_0_First_Result_Fetch: 0.006906 dn1_0_Last_Result_Fetch: 0.001589 dn2
_0_First_Result_Fetch: 0.005105 dn2_0_Last_Result_Fetch: 0.001548 Write_Client: 0.003341
SET timestamp=1535017221293;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:21.312000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.017169 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000635 Prepare_Push: 0.001609 dn1_0_First_Result_Fetch: 0.006997 dn1_0_Last_Result_Fetch: 0.000728 Gen
erate_New_Query: 0.001037 dn1_1_First_Result_Fetch: 0.004816 dn1_1_Last_Result_Fetch: 0.000709 Write_Client: 0.000703
SET timestamp=1535017221312;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:22.150000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.026153 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000180 Prepare_Push: 0.000771 dn1_First_Result_Fetch: 0.024940 dn1_Last_Result_Fetch: 0.000061 Write_C

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lient: 0.000261
SET timestamp=1535017222150;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:22.170000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.019181  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000180  Prepare_Push: 0.000642  dn2_First_Result_Fetch: 0.018060  dn2_Last_Result_Fetch: 0.000088  Write_C
lient: 0.000299
SET timestamp=1535017222170;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:22.220000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.049834  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000261  Prepare_Push: 0.000735  dn2_First_Result_Fetch: 0.019862  dn1_First_Result_Fetch: 0.019807  dn2_La
st_Result_Fetch: 0.000418  dn1_Last_Result_Fetch: 0.000655  Write_Client: 0.029031
SET timestamp=153501722220;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:22.240000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.019128  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000934  Prepare_Push: 0.002731  dn1_0_First_Result_Fetch: 0.013430  dn1_0_Last_Result_Fetch: 0.000521  dn2
_0_First_Result_Fetch: 0.003296  dn2_0_Last_Result_Fetch: 0.001243  Write_Client: 0.011072
SET timestamp=1535017222240;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:22.270000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.028479  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.003233  Prepare_Push: 0.004986  dn1_0_First_Result_Fetch: 0.009870  dn1_0_Last_Result_Fetch: 0.001172  Gen
erate_New_Query: 0.001590  dn1_1_First_Result_Fetch: 0.006060  dn1_1_Last_Result_Fetch: 0.000771  Write_Client: 0.000700
SET timestamp=1535017222270;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:23.097000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.053956  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000056  Prepare_Push: 0.001034  dn1_First_Result_Fetch: 0.052343  dn1_Last_Result_Fetch: 0.000174  Write_C
lient: 0.000523
SET timestamp=1535017223097;
select * from sharding_two_node where id =1;
# Time: 2018-08-23T17:40:23.110000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.010839  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000499  Prepare_Push: 0.000680  dn2_First_Result_Fetch: 0.006349  dn1_First_Result_Fetch: 0.009082  dn2_La
st_Result_Fetch: 0.000270  dn1_Last_Result_Fetch: 0.000333  Write_Client: 0.003311
SET timestamp=1535017223110;
select * from sharding_two_node;
# Time: 2018-08-23T17:40:23.181000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.027573  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000109  Prepare_Push: 0.000980  dn2_First_Result_Fetch: 0.026156  dn2_Last_Result_Fetch: 0.000086  Write_C
lient: 0.000328
SET timestamp=1535017223181;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:23.231000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.049380  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.002435  Prepare_Push: 0.000670  dn2_First_Result_Fetch: 0.025278  dn1_First_Result_Fetch: 0.025242  dn2_La
st_Result_Fetch: 0.000392  dn1_Last_Result_Fetch: 0.000629  Write_Client: 0.021032
SET timestamp=1535017223231;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:23.268000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.025207  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000060  Prepare_Push: 0.001492  dn1_0_First_Result_Fetch: 0.007693  dn1_0_Last_Result_Fetch: 0.000752  Gen
erate_New_Query: 0.001946  dn1_1_First_Result_Fetch: 0.008776  dn1_1_Last_Result_Fetch: 0.005040  Write_Client: 0.001884
SET timestamp=1535017223268;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:24.121000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.027104  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.001558  Prepare_Push: 0.001107  dn1_First_Result_Fetch: 0.024084  dn1_Last_Result_Fetch: 0.000085  Write_C
lient: 0.000356
SET timestamp=1535017224121;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:24.141000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.019191  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000072  Prepare_Push: 0.000673  dn2_First_Result_Fetch: 0.017923  dn2_Last_Result_Fetch: 0.000092  Write_C
lient: 0.000522
SET timestamp=1535017224141;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:24.182000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.039883  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000483  Prepare_Push: 0.000584  dn2_First_Result_Fetch: 0.017241  dn1_First_Result_Fetch: 0.017320  dn2_La
st_Result_Fetch: 0.000603  dn1_Last_Result_Fetch: 0.000767  Write_Client: 0.021575
SET timestamp=1535017224182;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:24.196000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.012406  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000073  Prepare_Push: 0.000958  dn1_0_First_Result_Fetch: 0.008102  dn1_0_Last_Result_Fetch: 0.001255  dn
2_0_First_Result_Fetch: 0.007566  dn2_0_Last_Result_Fetch: 0.001772  Write_Client: 0.002300
SET timestamp=1535017224196;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:24.218000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.021238  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000864  Prepare_Push: 0.001143  dn1_0_First_Result_Fetch: 0.010305  dn1_0_Last_Result_Fetch: 0.000532  Gen
erate_New_Query: 0.001852  dn1_1_First_Result_Fetch: 0.005359  dn1_1_Last_Result_Fetch: 0.000618  Write_Client: 0.000661
SET timestamp=1535017224218;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:25.093000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.029579  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000106  Prepare_Push: 0.000882  dn1_First_Result_Fetch: 0.028241  dn1_Last_Result_Fetch: 0.000069  Write_C
lient: 0.000351
SET timestamp=1535017225093;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:25.121000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.027422  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.001867  Prepare_Push: 0.001330  dn2_First_Result_Fetch: 0.023887  dn2_Last_Result_Fetch: 0.000102  Write_C
lient: 0.000338
SET timestamp=1535017225121;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:25.161000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2
# Query_time: 0.038859  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0  Read_SQL: 0.000050  Prepare_Push: 0.000753  dn2_First_Result_Fetch: 0.019091  dn1_First_Result_Fetch: 0.019189  dn2_La
st_Result_Fetch: 0.000582  dn1_Last_Result_Fetch: 0.000560  Write_Client: 0.018965
SET timestamp=1535017225161;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:25.191000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id:  2

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# Query_time: 0.016379 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000043 Prepare_Push: 0.001276 dn1_0_First_Result_Fetch: 0.007469 dn1_0_Last_Result_Fetch: 0.000678 Generate_New_Query: 0.001327 dn1_1_First_Result_Fetch: 0.003927 dn1_1_Last_Result_Fetch: 0.000787 Write_Client: 0.000893
SET timestamp=1535017225191;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:26.026000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.029878 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000162 Prepare_Push: 0.000916 dn1_First_Result_Fetch: 0.028497 dn1_Last_Result_Fetch: 0.000084 Write_Client: 0.000303
SET timestamp=1535017226026;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:26.051000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.024231 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001105 Prepare_Push: 0.000469 dn2_First_Result_Fetch: 0.022188 dn2_Last_Result_Fetch: 0.000100 Write_Client: 0.000470
SET timestamp=1535017226051;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:26.091000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.039762 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.001669 Prepare_Push: 0.001915 dn2_First_Result_Fetch: 0.018107 dn1_First_Result_Fetch: 0.018187 dn2_Last_Result_Fetch: 0.000633 dn1_Last_Result_Fetch: 0.000832 Write_Client: 0.018071
SET timestamp=1535017226091;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:26.105000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.012664 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000261 Prepare_Push: 0.000935 dn1_0_First_Result_Fetch: 0.007328 dn1_0_Last_Result_Fetch: 0.000733 dn2_0_First_Result_Fetch: 0.006229 dn2_0_Last_Result_Fetch: 0.002592 Write_Client: 0.003554
SET timestamp=1535017226105;
select count(*) from sharding_two_node;
# Time: 2018-08-23T17:40:26.134000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.028335 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000046 Prepare_Push: 0.003442 dn1_0_First_Result_Fetch: 0.009563 dn1_0_Last_Result_Fetch: 0.001069 Generate_New_Query: 0.001856 dn1_1_First_Result_Fetch: 0.010875 dn1_1_Last_Result_Fetch: 0.000798 Write_Client: 0.000712
SET timestamp=1535017226134;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
# Time: 2018-08-23T17:40:26.859000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.014882 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000067 Prepare_Push: 0.001351 dn1_First_Result_Fetch: 0.013084 dn1_Last_Result_Fetch: 0.000137 Write_Client: 0.000381
SET timestamp=1535017226859;
select * from sharding_two_node where id =1;
# Time: 2018-08-23T17:40:26.874000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.010509 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000066 Prepare_Push: 0.001761 dn2_First_Result_Fetch: 0.006921 dn1_First_Result_Fetch: 0.008256 dn2_Last_Result_Fetch: 0.000279 dn1_Last_Result_Fetch: 0.000211 Write_Client: 0.001761
SET timestamp=1535017226874;
select * from sharding_two_node;
# Time: 2018-08-23T17:40:26.931000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.028690 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000237 Prepare_Push: 0.001126 dn1_First_Result_Fetch: 0.026194 dn1_Last_Result_Fetch: 0.000640 Write_Client: 0.001133
SET timestamp=1535017226931;
delete from sharding_two_node where id =15;
# Time: 2018-08-23T17:40:26.951000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.018818 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000342 Prepare_Push: 0.001671 dn2_First_Result_Fetch: 0.016482 dn2_Last_Result_Fetch: 0.000063 Write_Client: 0.000323
SET timestamp=1535017226951;
delete from sharding_two_node where id =519;
# Time: 2018-08-23T17:40:26.991000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.039399 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000082 Prepare_Push: 0.000706 dn2_First_Result_Fetch: 0.019233 dn1_First_Result_Fetch: 0.019167 dn2_Last_Result_Fetch: 0.000426 dn1_Last_Result_Fetch: 0.000739 Write_Client: 0.019444
SET timestamp=1535017226991;
insert into sharding_two_node values(15,'15',15),(519,'519',519);
# Time: 2018-08-23T17:40:27.032000Z
# User@Host: root[root] @ [0:0:0:0:0:0:0:1] Id: 2
# Query_time: 0.029495 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.000064 Prepare_Push: 0.001349 dn1_0_First_Result_Fetch: 0.005745 dn1_0_Last_Result_Fetch: 0.000632 Generate_New_Query: 0.001056 dn1_1_First_Result_Fetch: 0.018101 dn1_1_Last_Result_Fetch: 0.002282 Write_Client: 0.000863
SET timestamp=1535017227032;
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);

```

### 2.20.3.1 mysqldumpslow :

```

Reading mysql slow query log from /tmp/slow3.log
Count: 17 Time=0.05s (0s) Lock=0.00s (0s) Rows=0.0 (0), root[root]@[0:0:0:0:0:0:0:1]
insert into sharding_two_node values(N,'S',N),(N,'S',N)

Count: 13 Time=0.05s (0s) Lock=0.00s (0s) Rows=0.0 (0), root[root]@[0:0:0:0:0:0:0:1]
select count(*) from sharding_two_node

Count: 6 Time=0.04s (0s) Lock=0.00s (0s) Rows=0.0 (0), root[root]@[0:0:0:0:0:0:0:1]
select * from sharding_two_node where id =N

Count: 33 Time=0.03s (0s) Lock=0.00s (0s) Rows=0.0 (0), root[root]@[0:0:0:0:0:0:0:1]
delete from sharding_two_node where id =N

Count: 17 Time=0.03s (0s) Lock=0.00s (0s) Rows=0.0 (0), root[root]@[0:0:0:0:0:0:0:1]
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=N)

Count: 6 Time=0.02s (0s) Lock=0.00s (0s) Rows=0.0 (0), root[root]@[0:0:0:0:0:0:0:1]
select * from sharding_two_node

```

### 2.20.3.2 pt-query-digest :

```

# 710ms user time, 70ms system time, 23.35M rss, 68.36M vsz
# Current date: Thu Aug 23 17:48:25 2018
# Hostname: 10-186-24-63
# Files: /tmp/slow_query4.log
# Overall: 92 total, 6 unique, 5.41 QPS, 0.18x concurrency _____
# Time range: 2018-08-23T17:40:10 to 2018-08-23T17:40:27
# Attribute      total      min      max      avg     95% stddev median

```

```

# =====
# Exec time      3s 10ms 339ms 34ms 75ms 37ms 27ms
# Lock time      0   0    0     0    0    0    0
# Rows sent      0   0    0     0    0    0    0
# Rows examine   0   0    0     0    0    0    0
# Query size    4.91k 31    94   54.64 92.72 20.87 42.48
# Generate New  0.03 0.00 0.00 0.00 0.00 0.00 0.00
# Prepare Push   0.56 0.00 0.26 0.01 0.01 0.03 0.00
# Read SQL       0.07 0.00 0.01 0.00 0.00 0.00 0.00
# Write Client   0.70 0.00 0.11 0.01 0.02 0.01 0.00
# dn1 0 First   0.29 0.00 0.05 0.01 0.01 0.01 0.01
# dn1 0 Last R  0.07 0.00 0.03 0.00 0.01 0.01 0.00
# dn1 1 First   0.12 0.00 0.02 0.01 0.01 0.00 0.01
# dn1 1 Last R  0.03 0.00 0.01 0.00 0.00 0.00 0.00
# dn1 First Re   0.93 0.01 0.05 0.02 0.03 0.01 0.02
# dn1 Last Res   0.04 0.00 0.01 0.00 0.00 0.00 0.00
# dn2 0 First   0.13 0.00 0.04 0.01 0.02 0.01 0.01
# dn2 0 Last R  0.08 0.00 0.03 0.01 0.02 0.01 0.00
# dn2 First Re   0.80 0.01 0.06 0.02 0.03 0.01 0.02
# dn2 Last Res   0.09 0.00 0.04 0.00 0.01 0.01 0.00

# Profile
# Rank Query ID          Response time Calls R/Call V/M   I
# =====
# 1 0x13233F8ADA41C6E2D889AEE0C2B... 0.8815 28.1% 33 0.0267 0.00 DELETE sharding_two_node
# 2 0xF68D16B46E487184E8FD3BB3912... 0.8525 27.1% 17 0.0501 0.01 INSERT sharding_two_node
# 3 0xB46D813C53609C853F7CBA6D2DB... 0.6306 20.1% 13 0.0485 0.15 SELECT sharding_two_node
# 4 0x3FB41587E746A475282C1ED2606... 0.4335 13.8% 17 0.0255 0.00 SELECT sharding_two_node
# 5 0x04CDF91DDFC4E1DD7A22E312C72... 0.2399 7.6% 6 0.0400 0.05 SELECT sharding_two_node
# MISC 0xMISC              0.1028 3.3% 6 0.0171 0.0 <1 ITEMS>

# Query 1: 2.06 QPS, 0.06x concurrency, ID 0x13233F8ADA41C6E2D889AEE0C2BC6CB5 at byte 943
# Scores: V/M = 0.00
# Time range: 2018-08-23T17:40:10 to 2018-08-23T17:40:26
# Attribute pct total min max avg 95% stddev median
# =====
# Count      35      33
# Exec time  28 882ms 18ms 45ms 27ms 31ms 5ms 27ms
# Lock time   0   0    0     0    0    0    0    0
# Rows sent   0   0    0     0    0    0    0    0
# Rows examine 0   0    0     0    0    0    0    0
# Query size  27 1.37k 42   43   42.52 42.48 0.50 42.48
# Prepare Push 6   0.04 0.00 0.00 0.00 0.00 0.00 0.00
# Read SQL    35 0.03 0.00 0.01 0.00 0.00 0.00 0.00
# Write Client 2   0.02 0.00 0.00 0.00 0.00 0.00 0.00
# dn1 First Re 45 0.42 0.02 0.04 0.03 0.03 0.01 0.03
# dn1 Last Res 7   0.00 0.00 0.00 0.00 0.00 0.00 0.00
# dn2 First Re 47 0.38 0.02 0.03 0.02 0.03 0.00 0.02
# dn2 Last Res 3   0.00 0.00 0.00 0.00 0.00 0.00 0.00

# String:
# Hosts      0:0:0:0:0:0:1
# Users      root
# Query_time distribution
#   1us
#   10us
#   100us
#   1ms
#   10ms #####
#   100ms
#   1s
#   10s+
# Tables

# SHOW TABLE STATUS LIKE 'sharding_two_node'\G
# SHOW CREATE TABLE `sharding_two_node`\G
delete from sharding_two_node where id =15\G
# Converted for EXPLAIN
# EXPLAIN /*!50100 PARTITIONS*/
select * from sharding_two_node where id =15\G

# Query 2: 1.06 QPS, 0.05x concurrency, ID 0xF68D16B46E487184E8FD3BB3912A3658 at byte 1690
# Scores: V/M = 0.01
# Time range: 2018-08-23T17:40:10 to 2018-08-23T17:40:26
# Attribute pct total min max avg 95% stddev median
# =====
# Count      18      17
# Exec time  27 853ms 37ms 117ms 50ms 78ms 21ms 40ms
# Lock time   0   0    0     0    0    0    0    0
# Rows sent   0   0    0     0    0    0    0    0
# Rows examine 0   0    0     0    0    0    0    0
# Query size  21 1.06k 64   64   64   64   0    64
# Prepare Push 7   0.04 0.00 0.02 0.00 0.00 0.01 0.00
# Read SQL    32 0.02 0.00 0.01 0.00 0.00 0.00 0.00
# Write Client 63 0.45 0.02 0.06 0.03 0.05 0.01 0.02
# dn1 First Re 37 0.35 0.01 0.04 0.02 0.03 0.00 0.02
# dn1 Last Res 40 0.01 0.00 0.00 0.00 0.00 0.00 0.00
# dn2 First Re 46 0.37 0.01 0.06 0.02 0.03 0.01 0.02
# dn2 Last Res 72 0.07 0.00 0.04 0.00 0.02 0.01 0.00

# String:
# Hosts      0:0:0:0:0:0:1
# Users      root
# Query_time distribution
#   1us
#   10us
#   100us
#   1ms
#   10ms #####
#   100ms #####
#   1s
#   10s+
# Tables

# SHOW TABLE STATUS LIKE 'sharding_two_node'\G
# SHOW CREATE TABLE `sharding_two_node`\G
insert into sharding_two_node values(15,'15',15) /*... omitted ...*/\G

# Query 3: 0.81 QPS, 0.04x concurrency, ID 0xB46D813C53609C853F7CBA6D2DB4047C at byte 2152
# Scores: V/M = 0.15
# Time range: 2018-08-23T17:40:10 to 2018-08-23T17:40:26

```

```

# Attribute   pct   total      min      max      avg     95%   stddev   median
# ======  ==  =====  =====  =====  =====  =====  =====  =====
# Count       14    13
# Exec time  20   631ms   10ms   339ms    49ms   116ms   84ms   12ms
# Lock time   0     0       0       0       0       0       0       0
# Rows sent   0     0       0       0       0       0       0       0
# Rows examine  0     0       0       0       0       0       0       0
# Query size  9    494     38      38      38      38      38      0      38
# Prepare Push 48   0.27    0.00    0.26    0.02    0.00    0.07    0.00
# Read SQL    5    0.00    0.00    0.00    0.00    0.00    0.00    0.00
# Write Client 24   0.17    0.00    0.11    0.01    0.02    0.03    0.00
# dn1 0 First  48   0.14    0.00    0.05    0.01    0.01    0.01    0.01
# dn1 0 Last R  80   0.06    0.00    0.03    0.00    0.01    0.01    0.00
# dn2 0 First 100   0.13    0.00    0.04    0.01    0.02    0.01    0.01
# dn2 0 Last R 100   0.08    0.00    0.03    0.01    0.02    0.01    0.00
# String:
# Hosts      0:0:0:0:0:0:1
# Users      root
# Query_time distribution
#   1us
#  10us
# 100us
#   1ms
# 10ms #####
# 100ms #####
#   1s
# 10s+
# Tables
#   SHOW TABLE STATUS LIKE 'sharding_two_node'\G
#   SHOW CREATE TABLE `sharding_two_node`\G
# EXPLAIN /*!50100 PARTITIONS*/
select count(*) from sharding_two_node\G

# Query 4: 1 QPS, 0.03x concurrency, ID 0x3FB41587E746A475282C1ED2606795FB at byte 2596
# Scores: V/M = 0.00
# Time range: 2018-08-23T17:40:10 to 2018-08-23T17:40:27
# Attribute   pct   total      min      max      avg     95%   stddev   median
# ======  ==  =====  =====  =====  =====  =====  =====  =====
# Count       18    17
# Exec time  13   434ms   16ms   47ms    26ms   38ms    8ms   26ms
# Lock time   0     0       0       0       0       0       0       0
# Rows sent   0     0       0       0       0       0       0       0
# Rows examine  0     0       0       0       0       0       0       0
# Query size 31   1.56k   94      94      94      94      0      94
# Generate New 100   0.03    0.00    0.00    0.00    0.00    0.00    0.00
# Prepare Push 13   0.07    0.00    0.03    0.00    0.01    0.01    0.00
# Read SQL    12   0.01    0.00    0.00    0.00    0.00    0.00    0.00
# Write Client 2    0.02    0.00    0.00    0.00    0.00    0.00    0.00
# dn1 0 First  51   0.15    0.00    0.01    0.01    0.01    0.00    0.01
# dn1 0 Last R 19   0.01    0.00    0.00    0.00    0.00    0.00    0.00
# dn1 1 First 100   0.12    0.00    0.02    0.01    0.01    0.00    0.01
# dn1 1 Last R 100   0.03    0.00    0.01    0.00    0.00    0.00    0.00
# String:
# Hosts      0:0:0:0:0:0:1
# Users      root
# Query_time distribution
#   1us
#  10us
# 100us
#   1ms
# 10ms #####
# 100ms #####
#   1s
# 10s+
# Tables
#   SHOW TABLE STATUS LIKE 'sharding_two_node'\G
#   SHOW CREATE TABLE `sharding_two_node`\G
# EXPLAIN /*!50100 PARTITIONS*/
select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1)\G

# Query 5: 0.38 QPS, 0.01x concurrency, ID 0x04CDF91DDFC4E1DD7A22E312C72C268D at byte 0
# Scores: V/M = 0.05
# Time range: 2018-08-23T17:40:10 to 2018-08-23T17:40:26
# Attribute   pct   total      min      max      avg     95%   stddev   median
# ======  ==  =====  =====  =====  =====  =====  =====  =====
# Count       6     6
# Exec time   7   240ms   10ms   133ms    40ms   128ms   43ms   35ms
# Lock time   0     0       0       0       0       0       0       0
# Rows sent   0     0       0       0       0       0       0       0
# Rows examine  0     0       0       0       0       0       0       0
# Query size  5    258     43      43      43      43      0      43
# Prepare Push 22   0.12    0.00    0.12    0.02    0.12    0.04    0.00
# Read SQL    9   0.01    0.00    0.01    0.00    0.01    0.00    0.00
# Write Client 0   0.01    0.00    0.00    0.00    0.00    0.00    0.00
# dn1 First Re 11   0.10    0.01    0.05    0.02    0.05    0.02    0.01
# dn1 Last Res 6    0.00    0.00    0.00    0.00    0.00    0.00    0.00
# String:
# Hosts      0:0:0:0:0:0:1
# Users      root
# Query_time distribution
#   1us
#  10us
# 100us
#   1ms
# 10ms #####
# 100ms #####
#   1s
# 10s+
# Tables
#   SHOW TABLE STATUS LIKE 'sharding_two_node'\G
#   SHOW CREATE TABLE `sharding_two_node`\G
# EXPLAIN /*!50100 PARTITIONS*/
select * from sharding_two_node where id =1\G

```

## 2.20.3.3

mysqldumpslow5.6mysqldumpslow'190428 10:28:16'Timedble'2019-04-28T10:28:16.515000Z'issue:

<https://github.com/actiontech/dble/issues/908>

## 2.20.4

### 2.20.4.1 MySQL

MySQL

```
/usr/local/mysql5.7.11/bin/mysqld-debug, Version: 5.7.11-debug-log (MySQL Community Server - Debug (GPL)). started with:
Tcp port: 3320 Unix socket: /tmp/mysql_3320.sock

Time          Id Command    Argument
# Time: 2018-05-15T10:53:23.798040Z
# User@Host: action[action] @ [192.168.2.206]  Id:  436
# Query_time: 296.145816  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0
use test;
SET timestamp=1526381603;
drop table sharding_two_node;
# Time: 2018-05-15T11:32:25.549290Z
# User@Host: action[action] @ [192.168.2.206]  Id:  451
# Query_time: 129.555883  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0
use nosharding;
SET timestamp=1526383945;
drop table test4;
# Time: 2018-05-15T11:32:25.550190Z
# User@Host: action[action] @ [192.168.2.206]  Id:  454
# Query_time: 84.316518  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0
SET timestamp=1526383945;
insert into test4 values(1,'1');
# Time: 2018-05-15T11:37:01.079214Z
# User@Host: action[action] @ [192.168.2.206]  Id:  483
# Query_time: 49.571983  Lock_time: 0.000000 Rows_sent: 0  Rows_examined: 0
SET timestamp=1526384221;
drop table test3;
# Time: 2018-07-11T05:28:34.161405Z
# User@Host: action[action] @ [192.168.2.206]  Id: 16421
# Query_time: 10.035706  Lock_time: 0.000000 Rows_sent: 1  Rows_examined: 0
use test;
SET timestamp=1531286914;
insert into test4 values(1,'1');
```

MySQL

#### 1.1

```
/usr/local/mysql5.7.11/bin/mysqld-debug, Version: 5.7.11-debug-log (MySQL Community Server - Debug (GPL)). started with:
```

Tcp port: 3320 Unix socket: /tmp/mysql\_3320.sock

Time Id Command Argument

MySQLlog-short-formattimesession

#### 1.2 time

# Time: 2018-05-15T10:53:23.798040Z

#### 1.3 session

# User@Host: action[action] @ [192.168.2.206] Id: 436

#### 1.4

keyvalue

# Query\_time: 296.145816 Lock\_time: 0.000000 Rows\_sent: 0 Rows\_examined: 0

**1.5 Database changes schema**

```
use nosharding;
```

**1.6 set(mysql dump slow SET timestamp=)**

```
SET timestamp=1526383945;
```

**1.6.1 last\_insert\_id**

```
stmt_depends_on_first_successful_insert_id_in_prev_stmt
```

```
last_insert_id=
```

**1.6.2 insert\_id**

```
log-short-format
```

```
auto_inc_intervals_in_cur_stmt_for_binlog.nb_elements()
```

```
last_id=
```

**1.6.3 timestamp=****1.7**

```
# administrator command
```

```
is_command
```

**1.8 SQL**

```
insert into test4 values(1,'1');
```

**2.20.4.2 dble**

```
mysqldumpslow -pt-query-digest dble
```

**2.1**

```
/FAKE_PATH/mysqld, Version: FAKE_VERSION. started with:
```

```
Tcp port: 3320 Unix socket: FAKE_SOCK
```

Time	Id	Command	Argument
------	----	---------	----------

**2.2 time**

```
java80mysql
```

```
# Time: 2018-08-23T17:40:10.149000Z
```

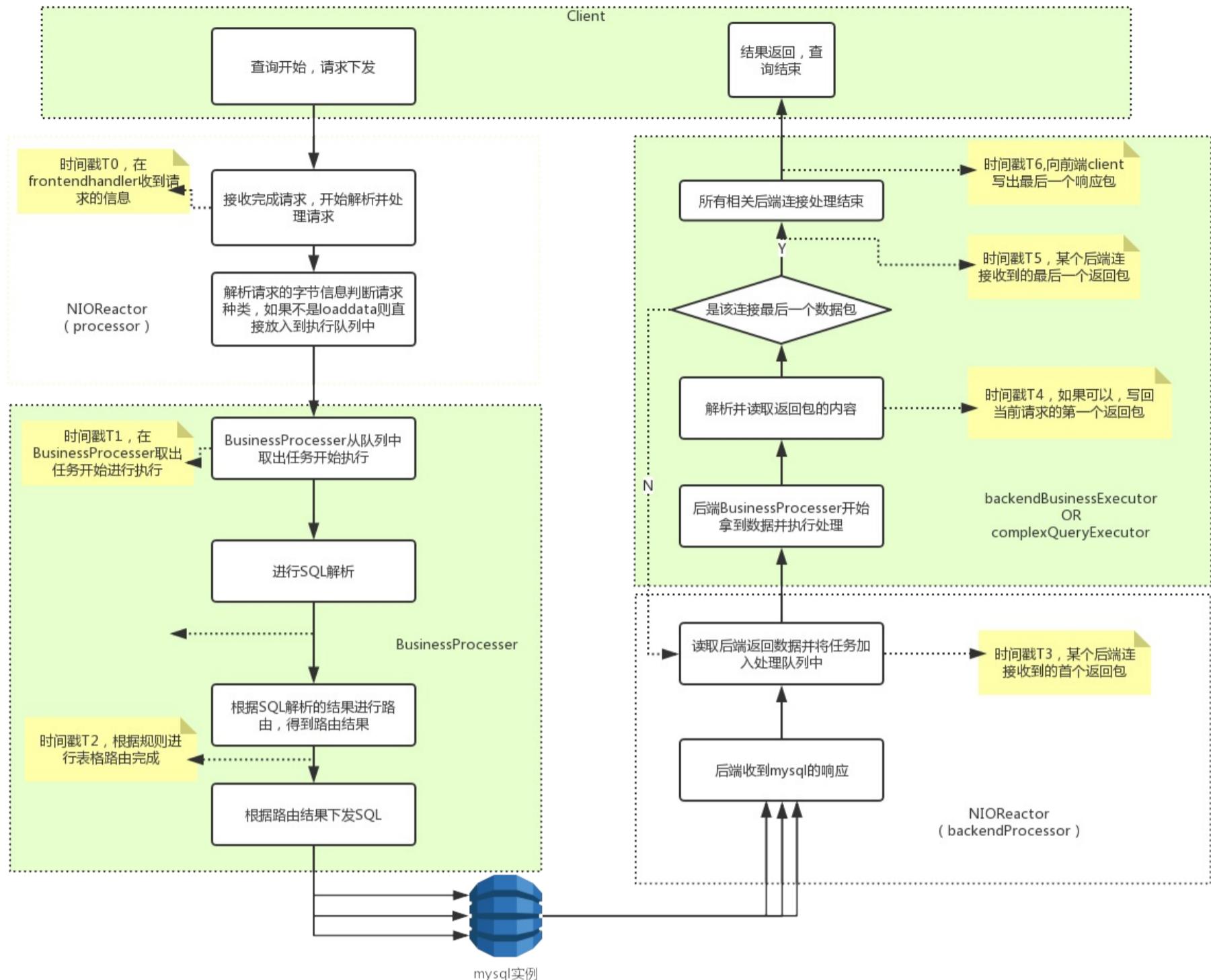
**2.3 session**

```
# User@Host: root[root] @ [0:0:0:0:0:0:1] Id: 2
```

**2.4**

```
keyvalue.
```

```
dble
```



MySQL

Read\_SQL: SQLSQL T1-T0

Prepare\_Push//Read\_SQL,T2-T1

{\$shardingnodeName}\_First\_Result\_Fetch shardingnodeNamePrepare\_Push ,T3-T2 shardingnodeName

{\$shardingnodeName}\_Last\_Result\_Fetch shardingnodeName{\$shardingnodeName}\_\_First\_Result\_Fetch,T5-T3

Write\_Client,T6-T4

MySQLQuery\_timedbleSQL,T6-T0

Lock\_timeRows\_sentRows\_examined0

```
# Query_time: 0.116672 Lock_time: 0.000000 Rows_sent: 0 Rows_examined: 0 Read_SQL: 0.013625 Prepare_Push: 0.024767 dn2_First_Result_Fetch: 0.056395 dn1_First_Result_Fetch: 0.026420
dn2_Last_Result_Fetch: 0.000743 dn1_Last_Result_Fetch: 0.001700 Write_Client: 0.051861
```

**2.5 set(SET timestamp=**

SET timestamp=1535017210432;

**2.6 SQL**

insert into sharding\_two\_node values(15,'15',15),(519,'519',519);

## 2.21 SQLtrace

MySQL profiledableSQLdbe session

### 1. trace

```
mysql> select @@trace;
+-----+
| @@trace |
+-----+
| 0      |
+-----+
1 row in set (0.02 sec)
```

### 2. trace

```
mysql> set trace =1;
Query OK, 0 rows affected (0.09 sec)

mysql> select @@trace;
+-----+
| @@trace |
+-----+
| 1      |
+-----+
1 row in set (0.00 sec)
```

### 3. trace

```
mysql> select * from sharding_two_node where id =1;
+-----+-----+
| id | c_flag | c_decimal |
+-----+-----+
| 1  | 1      | 1.0000 |
+-----+-----+
1 row in set (0.02 sec)

mysql> show trace;
+-----+-----+-----+-----+-----+-----+
| OPERATION | START(ms) | END(ms) | DURATION(ms) | SHARDING_NODE | SQL/REF
+-----+-----+-----+-----+-----+-----+
| Read SQL   | 0.0       | 0.1085  | 0.1085     | -           | -
| Parse SQL  | 0.1085   | 0.49607 | 0.38757    | -           | -
| Route Calculation | 0.49607 | 1.274142 | 0.778072   | -           | -
| Prepare to Push | 1.274142 | 1.560543 | 0.286401   | -           | -
| Execute SQL | 1.560543 | 18.711851 | 17.151308  | dn1         | select * from sharding_two_node where id =1 |
| Fetch result | 18.711851 | 18.978213 | 0.266362   | dn1         | select * from sharding_two_node where id =1 |
| Write to Client | 18.711851 | 19.276344 | 0.564493   | -           | -
| Over All    | 0.0       | 19.276344 | 19.276344  | -           | -
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

### 4. trace

```
mysql> select * from sharding_two_node ;
+-----+-----+
| id | c_flag | c_decimal |
+-----+-----+
| 513 | 513   | 513.0000 |
| 514 | 514   | 514.0000 |
| 515 | 515   | 515.0000 |
| 516 | 516   | 516.0000 |
| 1  | 1      | 1.0000 |
| 2  | 2      | 2.0000 |
| 3  | 3      | 3.0000 |
| 4  | 4      | 4.0000 |
| 5  | 5      | 5.0000 |
| 7  | 7      | 7.0000 |
| 8  | 8      | 8.0000 |
| 9  | 9      | 9.0000 |
| 10 | 10    | 10.0000 |
| 11 | 11    | 11.0000 |
| 12 | 12    | 12.0000 |
+-----+-----+
15 rows in set (0.01 sec)

mysql> show trace;
+-----+-----+-----+-----+-----+-----+
| OPERATION | START(ms) | END(ms) | DURATION(ms) | SHARDING_NODE | SQL/REF
+-----+-----+-----+-----+-----+-----+
| Read SQL   | 0.0       | 0.079175 | 0.079175   | -           | -
| Parse SQL  | 0.079175 | 0.637315 | 0.55814    | -           | -
| Route Calculation | 0.637315 | 1.046389 | 0.409074   | -           | -
| Prepare to Push | 1.046389 | 1.465238 | 0.418849   | -           | -
| Execute SQL | 1.465238 | 8.141409 | 6.676171   | dn1         | SELECT * FROM sharding_two_node LIMIT 100 |
| Execute SQL | 1.465238 | 7.59109  | 6.125852   | dn2         | SELECT * FROM sharding_two_node LIMIT 100 |
| Fetch result | 8.141409 | 8.817824 | 0.676415   | dn1         | SELECT * FROM sharding_two_node LIMIT 100 |
| Fetch result | 7.59109  | 8.366718 | 0.775628   | dn2         | SELECT * FROM sharding_two_node LIMIT 100 |
| Write to Client | 7.59109 | 9.324157 | 1.733067   | -           | -
| Over All    | 0.0       | 9.324157 | 9.324157   | -           | -
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

### 5. SQLtrace,,

```
mysql> insert into sharding_two_node values(15,'15',15),(519,'519',519);
Query OK, 2 rows affected (0.06 sec)
```

```
mysql> show trace;
+-----+-----+-----+-----+-----+-----+
| OPERATION | START(ms) | END(ms) | DURATION(ms) | SHARDING_NODE | SQL/REF
+-----+-----+-----+-----+-----+-----+
| Read SQL | 0.0 | 0.131959 | 0.131959 | - | -
| Parse SQL | 0.131959 | 0.601637 | 0.469678 | - | -
| Route Calculation | 0.601637 | 0.825479 | 0.223842 | - | -
| Prepare to Push | 0.825479 | 1.025374 | 0.199895 | - | -
| Execute SQL | 1.025374 | 27.095675 | 26.070301 | dn1 | INSERT INTO sharding_two_node VALUES (15, '15', 15)
| Execute SQL | 1.025374 | 25.023911 | 23.998537 | dn2 | INSERT INTO sharding_two_node VALUES (519, '519', 519)
| Fetch result | 27.095675 | 27.405046 | 0.309371 | dn1 | INSERT INTO sharding_two_node VALUES (15, '15', 15)
| Fetch result | 25.023911 | 26.478398 | 1.454487 | dn2 | INSERT INTO sharding_two_node VALUES (519, '519', 519)
| Distributed Transaction Prepare | 27.405046 | 27.736411 | 0.331365 | - | -
| Distributed Transaction Commit | 27.736411 | 57.426311 | 29.6899 | - | -
| Write to Client | 25.023911 | 57.428266 | 32.404355 | - | -
| Over All | 0.0 | 57.428266 | 57.428266 | - | -
+-----+-----+-----+-----+-----+-----+
12 rows in set (0.00 sec)
```

**6. trace**

```
mysql> select count(*) from sharding_two_node;
+-----+
| COUNT(*) |
+-----+
| 20 |
+-----+
1 row in set (0.01 sec)

mysql> show trace;
+-----+-----+-----+-----+-----+
| OPERATION | START(ms) | END(ms) | DURATION(ms) | SHARDING_NODE | SQL/REF
+-----+-----+-----+-----+-----+
| Read SQL | 0.0 | 0.08553 | 0.08553 | - | -
| Parse SQL | 0.08553 | 0.56987 | 0.48434 | - | -
| Try Route Calculation | 0.56987 | 0.71698 | 0.14711 | - | -
| Try to Optimize | 0.71698 | 1.237487 | 0.520507 | - | -
| Execute SQL | 1.237487 | 9.091029 | 7.853542 | dn1.0 | select COUNT(*) as `$_COUNT$_rpda_0` from `sharding_two_node` LIMIT 100
| Fetch result | 9.091029 | 10.186782 | 1.095753 | dn1.0 | select COUNT(*) as `$_COUNT$_rpda_0` from `sharding_two_node` LIMIT 100
| Execute SQL | 1.237487 | 8.348635 | 7.111148 | dn2.0 | select COUNT(*) as `$_COUNT$_rpda_0` from `sharding_two_node` LIMIT 100
| Fetch result | 8.348635 | 9.342241 | 0.993606 | dn2.0 | select COUNT(*) as `$_COUNT$_rpda_0` from `sharding_two_node` LIMIT 100
| MERGE | 8.721543 | 10.289905 | 1.568362 | merge.1 | dn1.0; dn2.0
| ORDERED_GROUP | 8.726919 | 10.424309 | 1.69739 | ordered_group.1 | merge.1
| LIMIT | 9.020162 | 10.499574 | 1.479412 | limit.1 | ordered_group.1
| SHUFFLE_FIELD | 9.023584 | 10.501529 | 1.477945 | shuffle_field.1 | limit.1
| Write to Client | 9.072457 | 11.52055 | 2.448093 | - | -
| Over All | 0.0 | 11.52055 | 11.52055 | - | -
+-----+-----+-----+-----+-----+
14 rows in set (0.03 sec)
```

**7. trace**

```
mysql> select count(*) from sharding_two_node where id =(select id from sharding_two_node where id=1);
+-----+
| COUNT(*) |
+-----+
| 1 |
+-----+
1 row in set (0.03 sec)

mysql> show trace;
+-----+-----+-----+-----+-----+
| OPERATION | START(ms) | END(ms) | DURATION(ms) | SHARDING_NODE | SQL/REF
+-----+-----+-----+-----+-----+
| Read SQL | 0.0 | 0.063047 | 0.063047 | - | -
| Parse SQL | 0.063047 | 0.491182 | 0.428135 | - | -
| Try Route Calculation | 0.491182 | 0.799576 | 0.308394 | - | -
| Try to Optimize | 0.799576 | 2.347412 | 1.547836 | - | -
| Execute SQL | 2.347412 | 11.183808 | 8.836396 | dn1.0 | select `sharding_two_node`.`id` as `autoalias_scalar` from `sharding_two_node` where id = 1 LIMIT 2
| Fetch result | 11.183808 | 12.360691 | 1.176883 | dn1.0 | select `sharding_two_node`.`id` as `autoalias_scalar` from `sharding_two_node` where id = 1 LIMIT 2
| MERGE | 11.889546 | 12.436445 | 0.546899 | merge.1 | dn1.0
| LIMIT | 11.894923 | 12.483364 | 0.588441 | limit.1 | merge.1
| SHUFFLE_FIELD | 11.896389 | 12.48483 | 0.588441 | shuffle_field.1 | limit.1
| SCALAR_SUB_QUERY | 12.038123 | 12.485808 | 0.447685 | scalar_sub_query.1 | shuffle_field.1
| Generate New Query | 12.485808 | 13.824463 | 1.338655 | - | -
| Execute SQL | 13.824463 | 26.749647 | 12.925184 | dn1.1 | scalar_sub_query.1; select COUNT(*) as `$_COUNT$_rpda_0` from `sharding_two_node` where sharding_two_node.id = 1
| Fetch result | 26.685134 | 28.753476 | 2.068342 | dn1.1 | scalar_sub_query.1; select COUNT(*) as `$_COUNT$_rpda_0` from `sharding_two_node` where sharding_two_node.id = 1
| MERGE | 26.954918 | 29.091683 | 2.136765 | merge.2 | dn1.1
| ORDERED_GROUP | 26.977889 | 29.563316 | 2.585427 | ordered_group.1 | merge.2
| SHUFFLE_FIELD | 27.568285 | 29.567226 | 1.998941 | shuffle_field.2 | ordered_group.1
| Write to Client | 27.72517 | 30.014911 | 2.289741 | - | -
| Over All | 0.0 | 30.014911 | 30.014911 | - | -
+-----+-----+-----+-----+-----+
```

```
+-----+-----+-----+-----+
-----+
18 rows in set (0.01 sec)
```

## 2.22 KILL @@DDL\_LOCK

dble " There is other session is doing DDL " "xxx is doing DDL " reload

dble ZK DDL universe/dble/{cluster-id}/ddl/{schema.table} json status

1. status INIT table table metakey dble table table meta
2. DDL DDL DDL status SUCCESS FAILED status SUCCESS DDLDDLtable table meta
3. universe/dble/{cluster-id}/ddl/{schema.table}/{dble-id}:SUCCESS

ddl

- universe/dble/{cluster-id}/ddl/{schema.table}/{dble-id}
- universe/dble/{cluster-id}/online/

DDLuniverse/dble/{cluster-id}/ddl/{schema.table}/ online universe/dble/{cluster-id}/ddl/{schema.table}/ DDL ddl

table meta      universe/dble/{cluster-id}/ddl/{schema.table} kv

### kill ddl\_lock

ddlldl universe/dble/{cluster-id}/ddl/{schema.table} kv

1. kill
- 2.

## 2.23

- [2.23.1 MYSQL-HA](#)
- [2.23.2](#)
- [2.23.3](#)
- [2.23.4 HA](#)

## 2.23.1 MYSQL-HA

dble2.19.09.0

- HAdble
- HAMYSQL

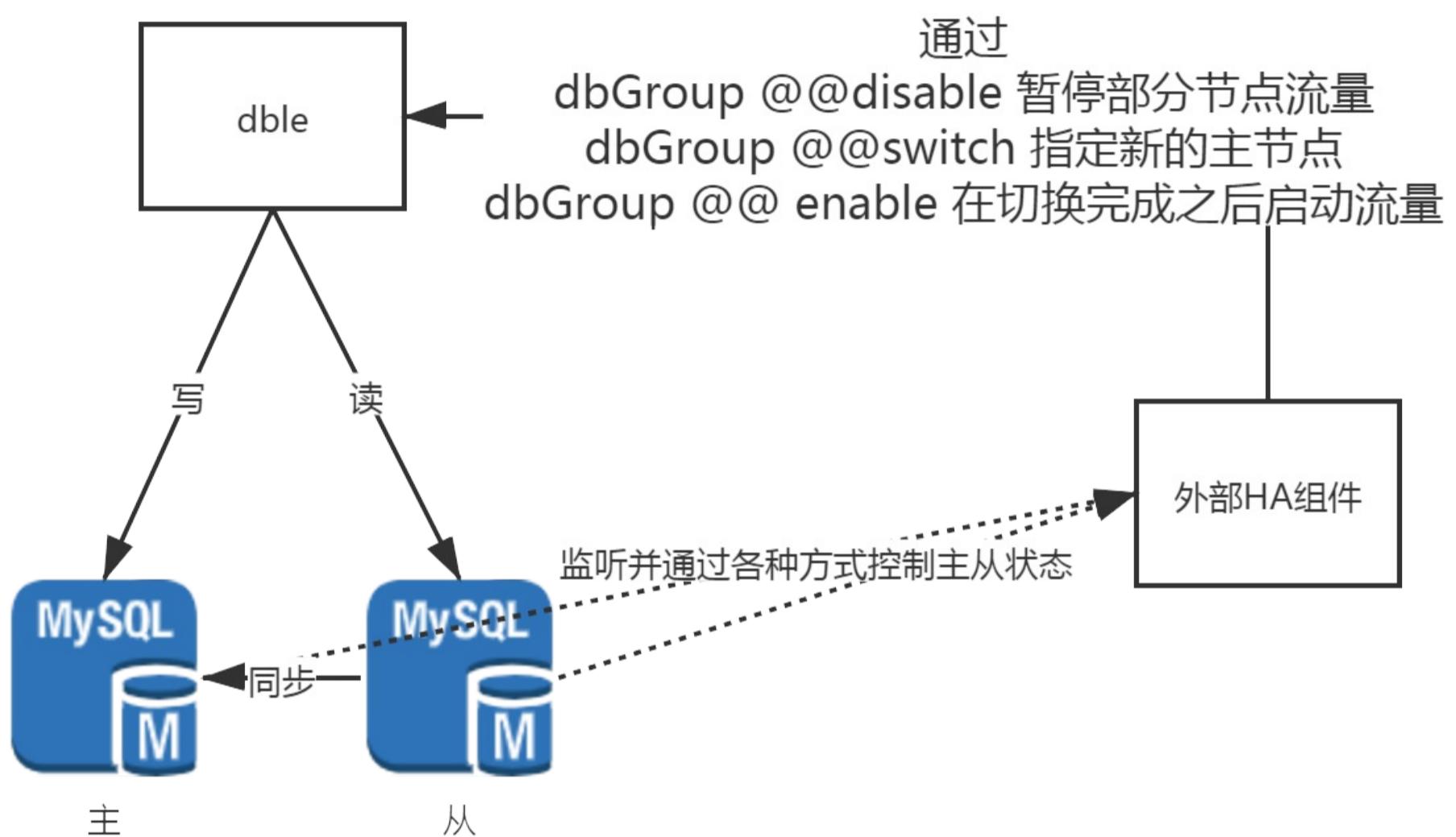
- (dbGroup @@disable)
- (dbGroup @@enable)
- (dbGroup @@switch)

:

- (dbGroup @@events)

HA mysqlmysqldbmysql  
zkzkdbleHA

HAdble



HA

## 2.23.2 dbGroup

### ha

dbLeHa

#### bootstrap.cnf

```
-DuseOuterHa=true
```

:dbLe

#### cluster.cnf

needSyncHa = true

- dbLeDbGroup
- bootstrap.cnf useOuterHa true
- bootstrap.cnf useOuterHa cluster.cnf needSyncHa true dbLeDbGroup

dbLe

#### dbLeMySQL

dbInstance "disabled/enable" dbLeMySQL MySQL

### dbGroup @@disable

dbGroup @@disable name = 'dbGroup\_name' [instance = 'instance\_name']

- dbGroup\_namedb.xml dbGroup instance\_namedb Instance name
- instance = '..' dbGroup dbInstance disabled
- disabledmysql
- dbInstancedisable show @@dbInstance
- dbledisable

### dbGroup @@enable

dbGroup @@enable name = 'dbGroup\_name' [instance = 'instance\_name']

- dbGroup\_namedb.xml dbGroup instance\_namedb Instance name
- instance = '..' dbGroup dbInstance enable

### dbGroup @@switch

dbGroup @@switch name = 'dbGroup\_name' master = 'instance\_name'

- dbGroup\_namedb.xml dbGroup instance\_namedb Instance name
- namemaster
- dbGroup primary dbInstance
- dbInstancedisable dbInstance primary primary dbInstancedb Instance

### 2.23.3

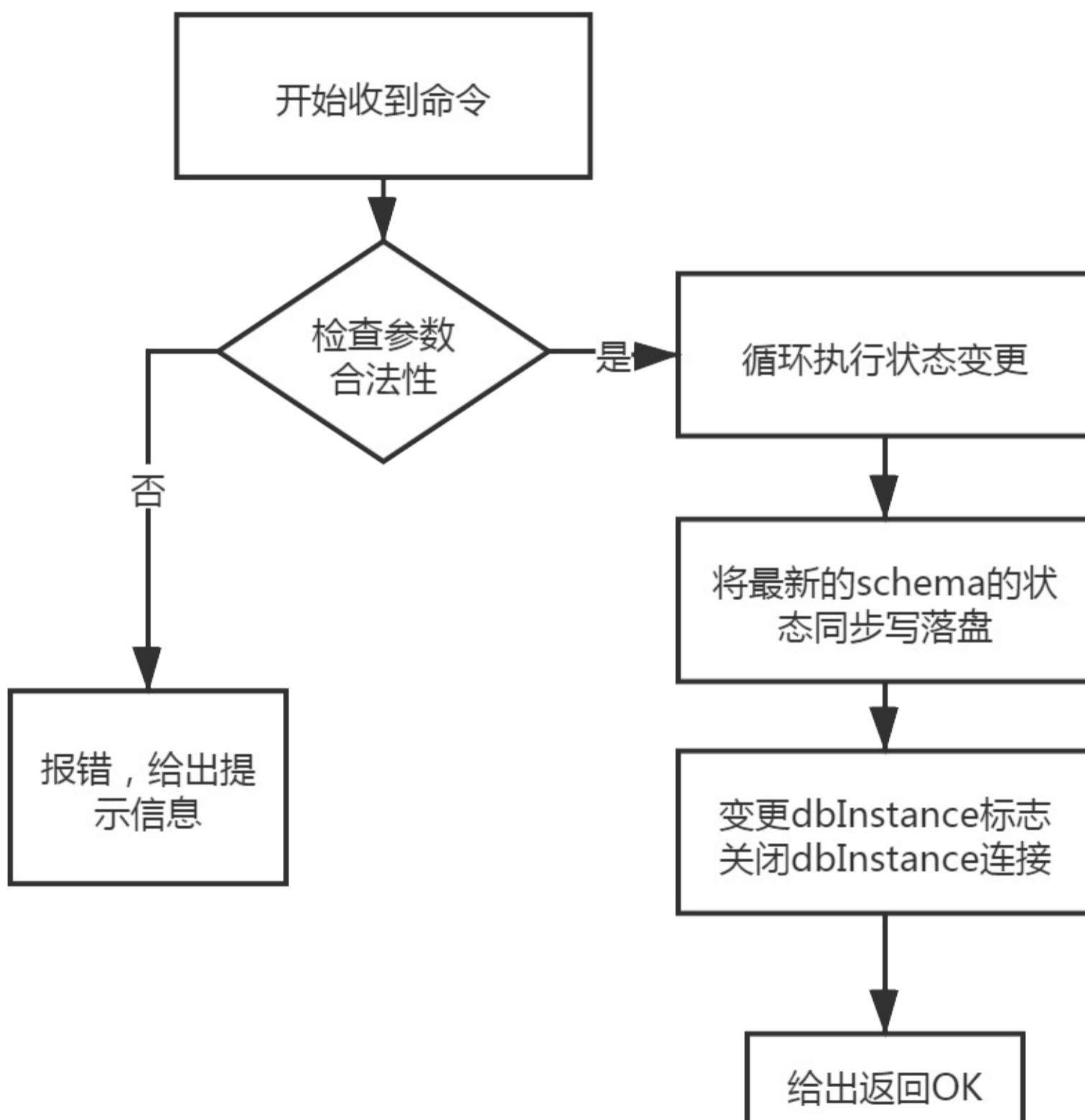
dbledbGroup

- disablezk
- enable
- switchprimary dbInstance

#### dbGroup @@disable

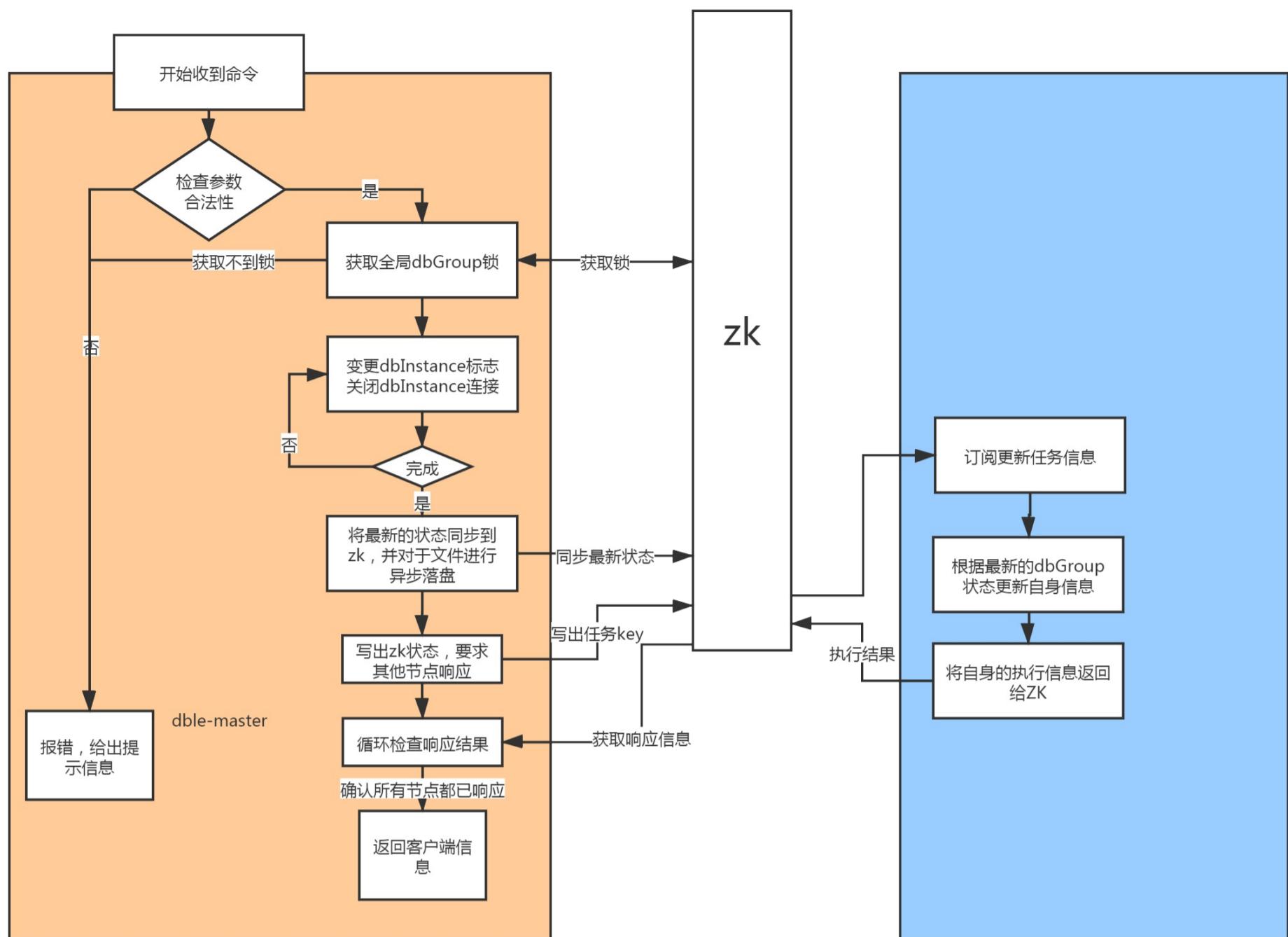
dble

- 
- dbInstance
- 
- dbGroup
- OK



- 
- dbInstance
- 
- dbGroup
- dbGroupzk
- zkkey
-

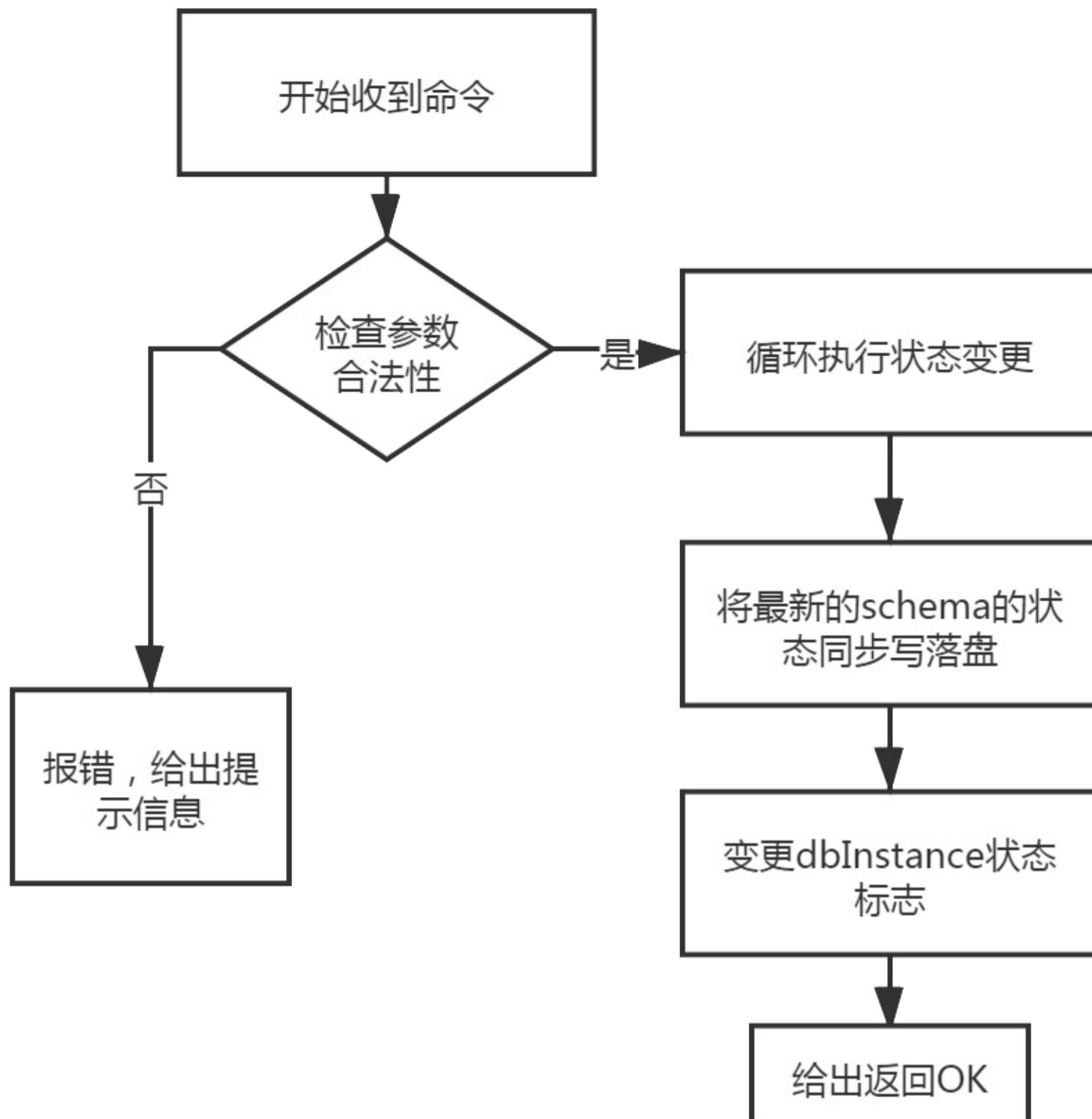
- dble
- 



## dbGroup @@enable

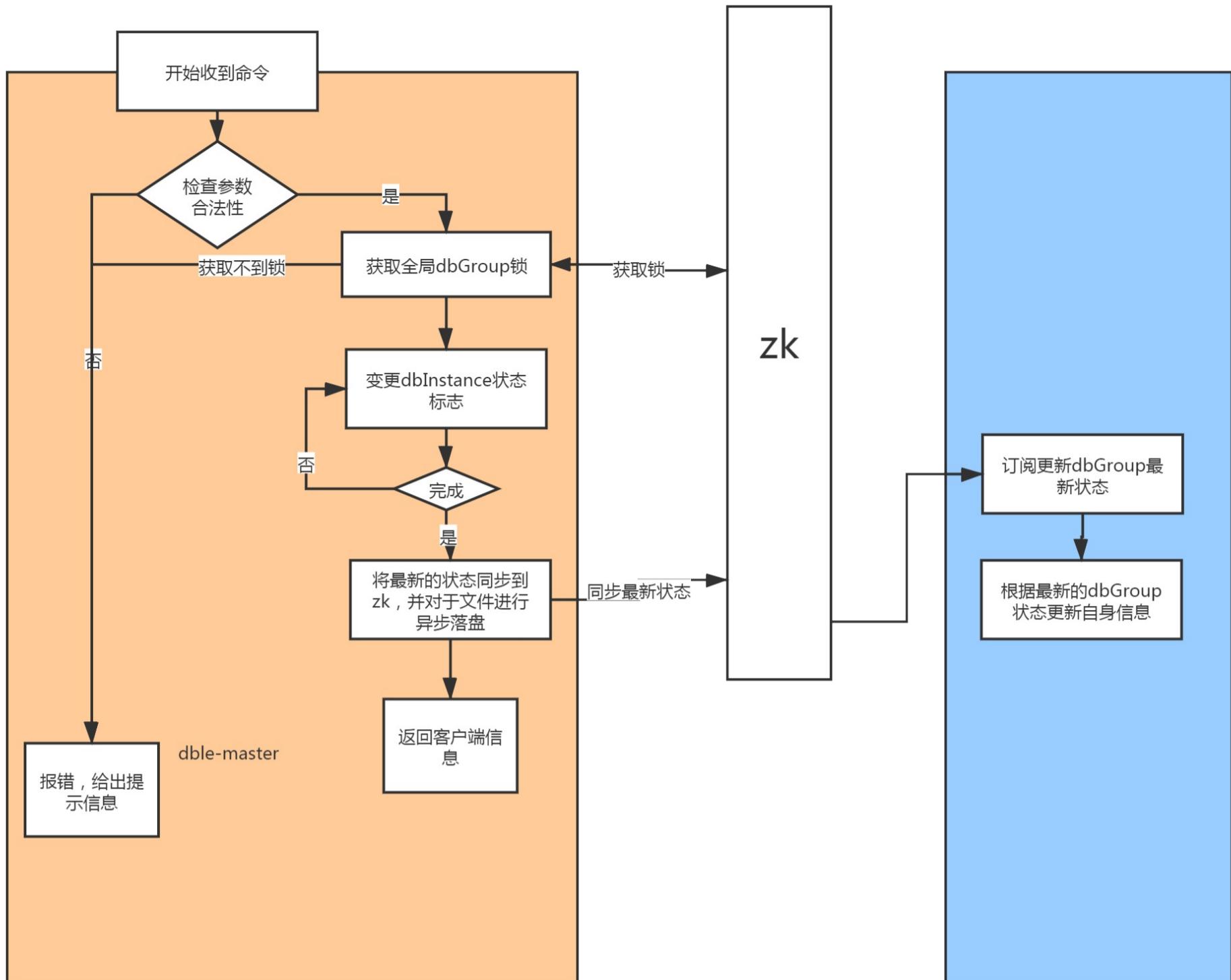
dble

- 
- dbInstance
- dbGroup
- OK



ZK

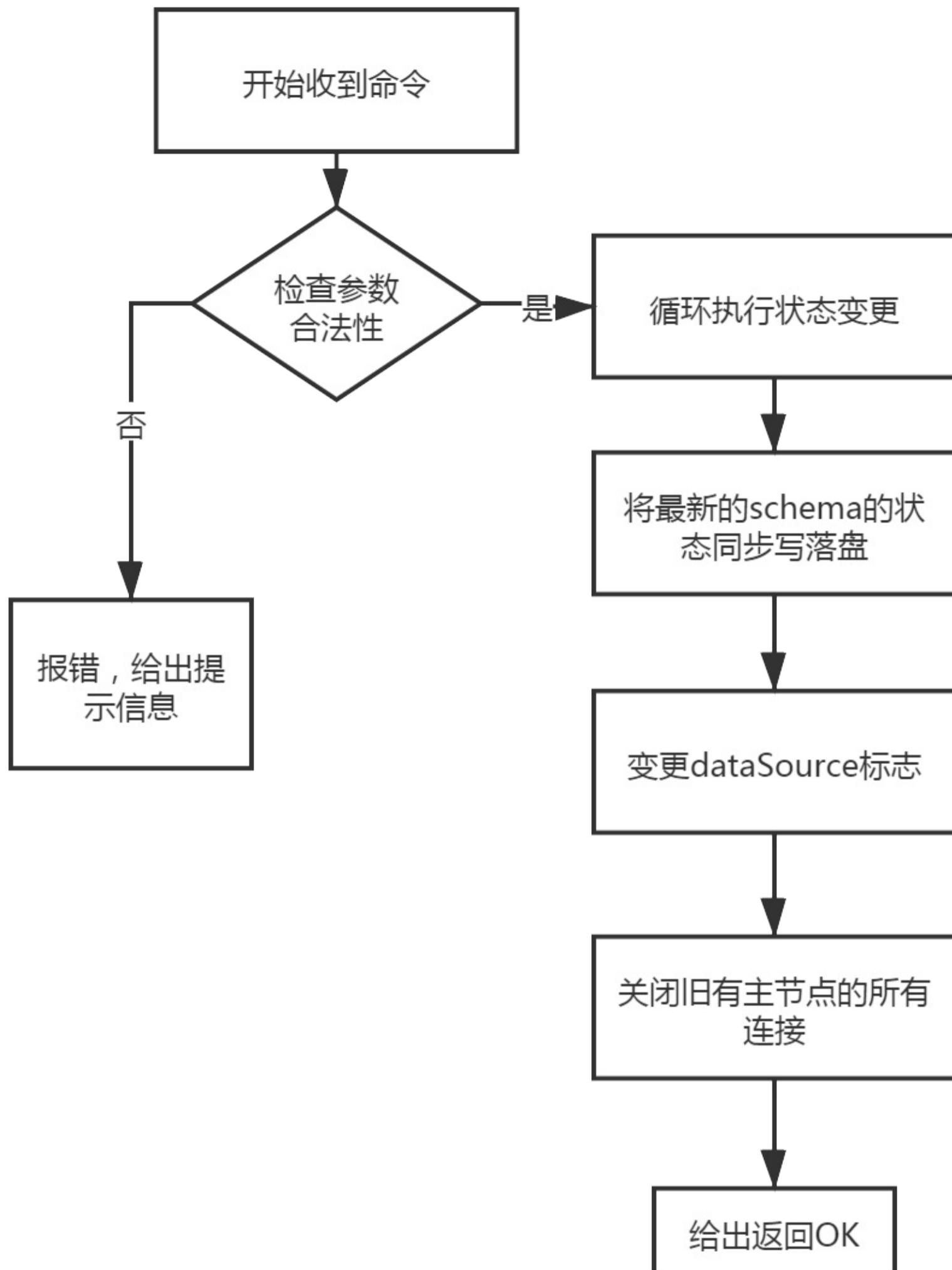
- 
- ddbInstance
- 
- dbGroup
- dbGroupzk
- zkkey
- 
- dble
-



## dbGroup @@switch

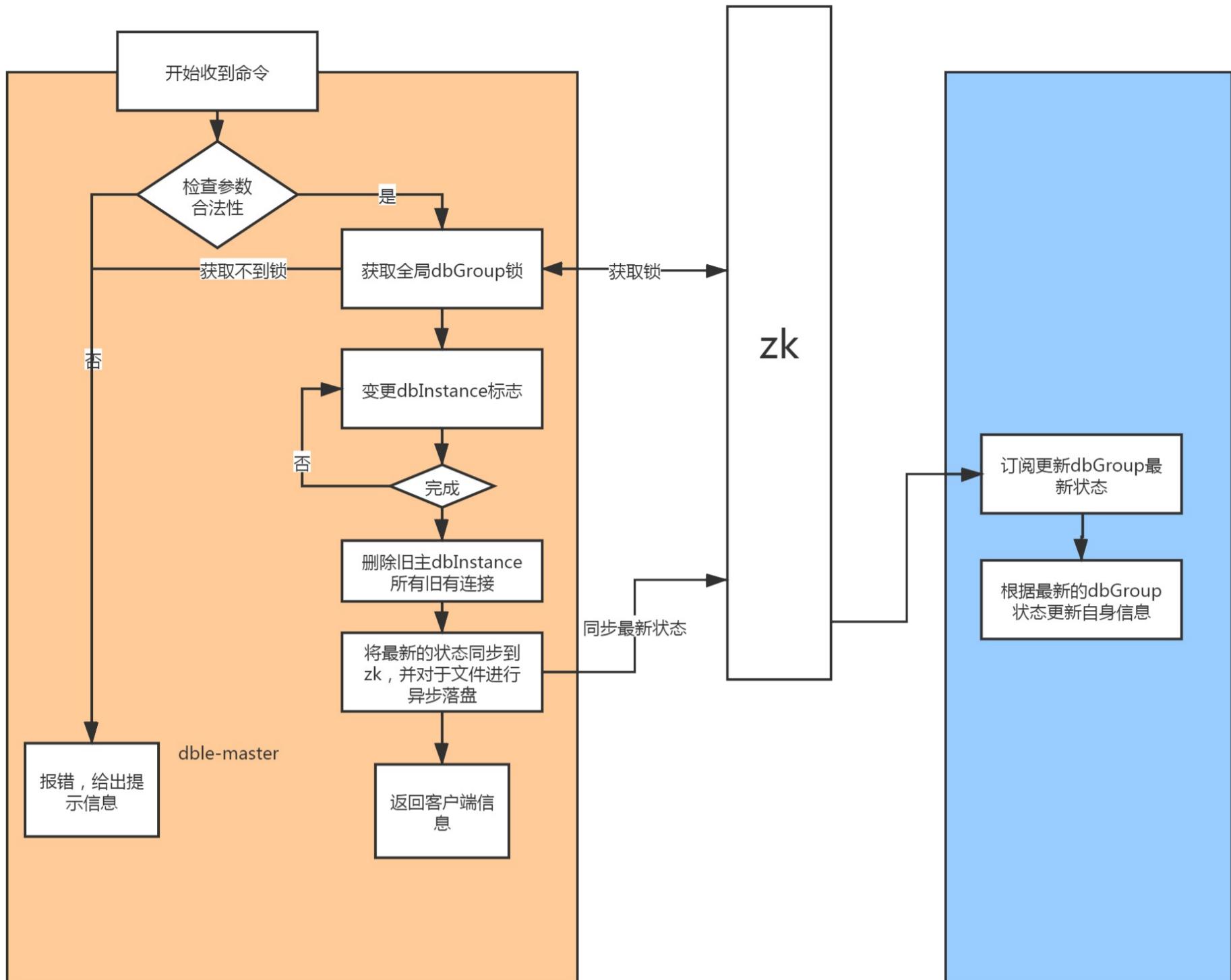
dble

- 
- dbInstance
- primary dbInstance
- dbGroup
- OK



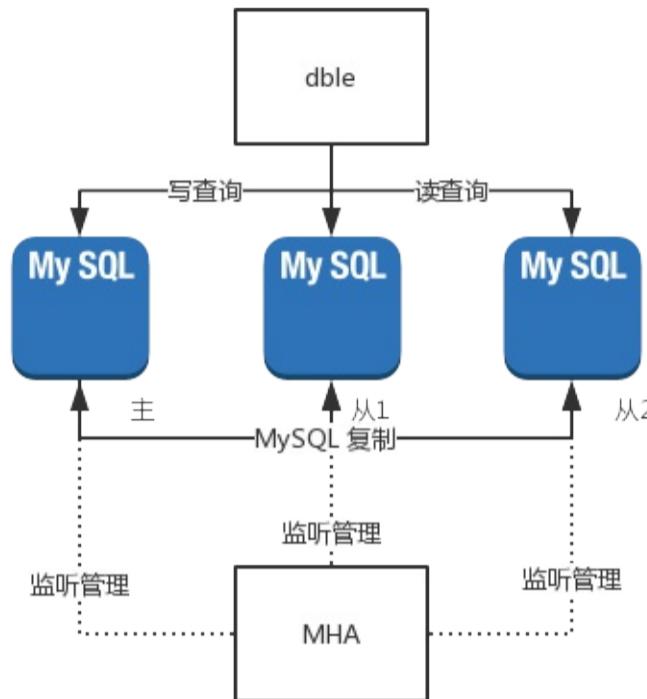
ZK

- 
- dbInstance
- 
- dbGroup
- dbGroupzk
- zkkey
- 
- dble
-

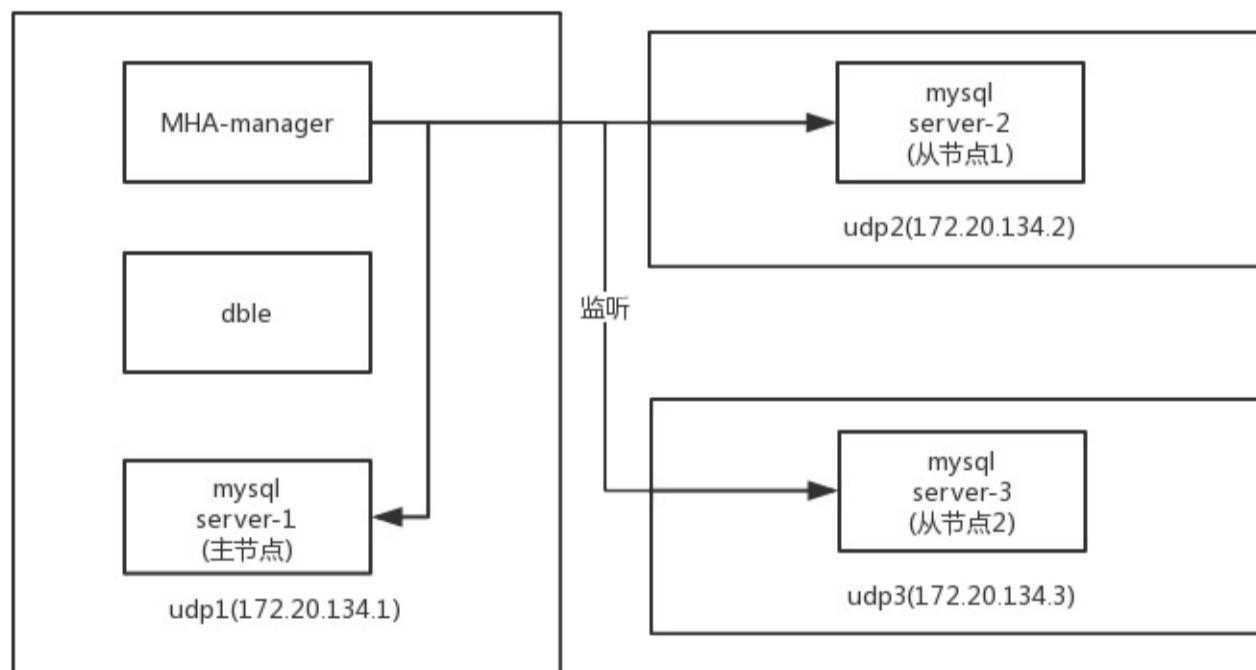


## 2.23.4 mha-dble

dbleMySQLLdbGroupMHAMySQL



docker



- MySQL()
- MHAMySQL
- dbleMySQL
- kill MySQLMHA
- dbleMySQL

- dble2.19.09.0
- MHAdble

dockermysqld()

## mha

- dockersh

```
/usr/sbin/sshd -D
```

- ,

```
ssh-keygen -t rsa
ssh-copy-id -i ~/.ssh/id_rsa.pub root@other1
ssh-copy-id -i ~/.ssh/id_rsa.pub root@other2
ssh-copy-id -i ~/.ssh/id_rsa.pub root@self
```

- /usr/bin/mysqlbinlog/usr/bin/mysqlyummysql

- MHA

```
mkdir /etc/masterha/app1 -p
mkdir /var/log/masterha/app2 -p
mkdir /var/log/masterha/app1 -p
```

- mysql

```
grant all on *.* to root@'%' identified by '123456' with grant option;
grant replication slave on *.* to repl@'%' identified by 'repl';
```

- MHArpm

```
https://github.com/yoshinorim/mha4mysql-manager/wiki/Downloads
MHA Manager 0.56 rpm RHEL6
MHA Node 0.56 rpm RHEL6
rpm
yum localinstall rpmyum
NodeManager
rpm
yumrpmyum
```

mhap erlhamhamaster\_ip\_failover\_script

[https://github.com/yoshinorim/mha4mysql-manager/wiki/Parameters#master\\_ip\\_failover\\_script](https://github.com/yoshinorim/mha4mysql-manager/wiki/Parameters#master_ip_failover_script)

- HAmaster\_ip\_failoverstatus
- MySQL mastermaster\_ip\_failoverstopmaster
- masterread\_only=0master\_ip\_failoverstart

mhadble

- MySQL masterdbGroup disablestop dbledbGroup @@disable
- MySQL masterstartdbGroup @@switchmasterdbGroup

master\_ip\_failover()

```
#!/usr/bin/env perl

# Copyright (C) 2011 DeNA Co.,Ltd.
#
# This program is free software; you can redistribute it and/or modify
# it under the terms of the GNU General Public License as published by
# the Free Software Foundation; either version 2 of the License, or
# (at your option) any later version.
#
# This program is distributed in the hope that it will be useful,
# but WITHOUT ANY WARRANTY; without even the implied warranty of
# MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
# GNU General Public License for more details.
#
# You should have received a copy of the GNU General Public License
# along with this program; if not, write to the Free Software
# Foundation, Inc.,
# 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

## Note: This is a sample script and is not complete. Modify the script based on your environment.

use strict;
use warnings FATAL => 'all';

use Getopt::Long;
use MHA::DBHelper;

my (
    $command,           $ssh_user,           $orig_master_host,
    $orig_master_ip,   $orig_master_port,  $new_master_host,
    $new_master_ip,    $new_master_port,   $new_master_user,
    $new_master_password
);
GetOptions(
    'command=s'          => \$command,
    'ssh_user=s'         => \$ssh_user,
```

```
'orig_master_host=s' => \$orig_master_host,
'orig_master_ip=s' => \$orig_master_ip,
'orig_master_port=i' => \$orig_master_port,
'new_master_host=s' => \$new_master_host,
'new_master_ip=s' => \$new_master_ip,
'new_master_port=i' => \$new_master_port,
'new_master_user=s' => \$new_master_user,
'new_master_password=s' => \$new_master_password,
);

exit &main();

sub main {
    if ( $command eq "stop" || $command eq "stopssh" ) {

        # $orig_master_host, $orig_master_ip, $orig_master_port are passed.
        # If you manage master ip address at global catalog database,
        # invalidate orig_master_ip here.
        my $exit_code = 1;
        eval {

            # dbGroup @@disable name = "dbGroup1" instance='\$orig_master_host'
            # disable
            $orig_master_host =~ tr/.//_;
            system "mysql -P9066 -u man1 -p654321 -h 172.20.134.1 -e \"dbGroup @@disable name = 'dbGroup1' instance='".$orig_master_host."'\"";
            $exit_code = 0;
        };
        if ($@) {
            warn "Got Error: $@\n";
            exit $exit_code;
        }
        exit $exit_code;
    }
    elsif ( $command eq "start" ) {

        # all arguments are passed.
        # If you manage master ip address at global catalog database,
        # activate new_master_ip here.
        # You can also grant write access (create user, set read_only=0, etc) here.
        my $exit_code = 10;
        eval {
            my $new_master_handler = new MHA::DBHelper();

            # args: hostname, port, user, password, raise_error_or_not
            $new_master_handler->connect( $new_master_ip, $new_master_port,
                $new_master_user, $new_master_password, 1 );

            ## Set read_only=0 on the new master
            $new_master_handler->disable_log_bin_local();
            print "Set read_only=0 on the new master.\n";
            $new_master_handler->disable_read_only();

            ## Creating an app user on the new master
            print "Creating app user on the new master..\n";
            $new_master_handler->enable_log_bin_local();
            $new_master_handler->disconnect();

            ## try to switch the dbGroup master into new master
            ## dbGroup switchnew_master_host
            $new_master_host =~ tr/.//_;
            system "mysql -P9066 -u man1 -p654321 -h 172.20.134.1 -e \"dbGroup @@switch name = 'dbGroup1' master='".$new_master_host."'\"";
            $exit_code = 0;
        };
        if ($@) {
            warn $@;

            # If you want to continue failover, exit 10.
            exit $exit_code;
        }
        exit $exit_code;
    }
    elsif ( $command eq "status" ) {
        # test for start command
        exit 0;
    }
    else {
        &usage();
        exit 1;
    }
}

sub usage {
    print
"Usage: master_ip_failover --command=start|stop|stopssh|status --orig_master_host=host --orig_master_ip=ip --orig_master_port=port --new_master_host=host --new_master_ip=ip --new_master_port=port\n";
}
```

/etc/masterha/app1

MHA app1.conf/etc/masterha/app1

```
#mha manager
manager_workdir = /var/log/masterha/app1
manager_log = /var/log/masterha/app1/app1.log
remote_workdir = /var/log/masterha/app2
master_ip_failover_script=/etc/masterha/app1/master_ip_failover
# master_ip_online_change_script=/etc/masterha/app1/master_ip_online_change
# MySQL
user=root
password=123456
# ssh
ssh_user=root

#
repl_user=repl
```

```

repl_password= repl

# ()
ping_interval=1
manager_log=/var/log/masterha/app1/manager.log

[server1]
hostname=172.20.134.1
master_binlog_dir = /opt/3306/
port=3306

[server2]
# mysql
hostname=172.20.134.2
master_binlog_dir = /opt/3306/
candidate_master=1
check_repl_delay=0
port=3306

[server3]
# mysql
hostname=172.20.134.3
master_binlog_dir = /opt/3306/
candidate_master=1
check_repl_delay=0
port=3306

```

## MHA

```
nohup masterha_manager --conf=/etc/masterha/app1/app1.conf >> /var/log/masterha/app1/manager.log 2>&1 &
```

## dble

dblerelease2.19.09.0conf

```

mv cluster_template.cnf cluster.cnf
mv bootstrap_template.cnf bootstrap.cnf
mv db_template.xml db.xml
mv user_template.xml user.xml
mv sharding_template.xml sharding.xml

```

## db.xml

db.xml

```

<dbGroup name="dbGroup1" delayThreshold="100">
  <heartbeat>show slave status</heartbeat>
  <dbInstance name="172_20_134_1" url="172.20.134.1:3306" password="123456" user="root" disabled="false" id="udp-1" primary="true" />
  <dbInstance name="172_20_134_2" url="172.20.134.2:3306" password="123456" user="root" disabled="false" id="udp-3" />
  <dbInstance name="172_20_134_3" url="172.20.134.3:3306" password="123456" user="root" disabled="false" id="udp-2" />
</dbGroup>

```

## dbleman1dble

```

MySQL [(none)]> show @@dbinstance;
+-----+-----+-----+-----+-----+-----+-----+-----+
| DB_GROUP | NAME      | HOST      | PORT | W/R | ACTIVE | IDLE | SIZE | EXECUTE | READ_LOAD | WRITE_LOAD | DISABLED |
+-----+-----+-----+-----+-----+-----+-----+-----+
| dbGroup1 | 172_20_134_1 | 172.20.134.1 | 3306 | W   | 1 | 0 | 1000 | 1 | 0 | 0 | false |
| dbGroup1 | 172_20_134_3 | 172.20.134.3 | 3306 | R   | 1 | 0 | 1000 | 0 | 0 | 0 | false |
| dbGroup1 | 172_20_134_2 | 172.20.134.2 | 3306 | R   | 1 | 0 | 1000 | 0 | 0 | 0 | false |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

172.20.134.1“”

- ps172.20.134.1mysqld
- kill -9 172.20.134.1mysqld
- dble

```

MySQL [(none)]> show @@dbinstance;
+-----+-----+-----+-----+-----+-----+-----+-----+
| DB_GROUP | NAME      | HOST      | PORT | W/R | ACTIVE | IDLE | SIZE | EXECUTE | READ_LOAD | WRITE_LOAD | DISABLED |
+-----+-----+-----+-----+-----+-----+-----+-----+
| dbGroup1 | 172_20_134_2 | 172.20.134.2 | 3306 | W   | 1 | 0 | 1000 | 0 | 0 | 0 | false |
| dbGroup1 | 172_20_134_3 | 172.20.134.3 | 3306 | R   | 1 | 0 | 1000 | 0 | 0 | 0 | false |
| dbGroup1 | 172_20_134_1 | 172.20.134.1 | 3306 | R   | 0 | 0 | 1000 | 0 | 0 | 0 | true  |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

- dble,172\_20\_134\_2

```

<dbGroup name="dbGroup1" delayThreshold="100">
  <heartbeat>show slave status</heartbeat>
  <dbInstance name="172_20_134_1" url="172.20.134.1:3306" password="123456" user="root" disabled="false" id="udp-1" />
  <dbInstance name="172_20_134_2" url="172.20.134.2:3306" password="123456" user="root" disabled="false" id="udp-3" />
  <dbInstance name="172_20_134_3" url="172.20.134.3:3306" password="123456" user="root" disabled="false" id="udp-2" primary="true" />
</dbGroup>

```

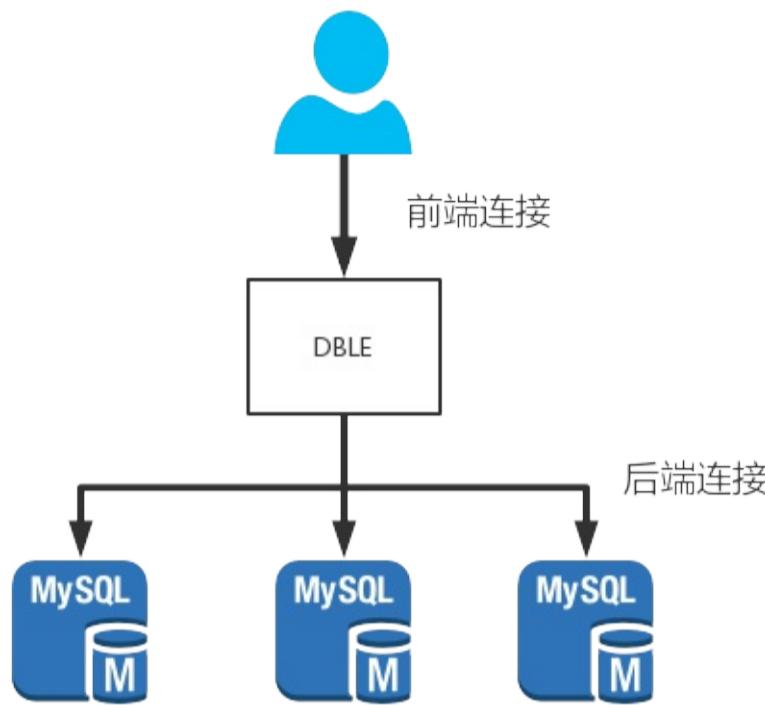
- 172.20.134.3mysql172.20.134.2dble

```
MySQL [(none)]> show slave status\G
```

```
***** 1. row *****
Slave_IO_State: Waiting for master to send event
Master_Host: 172.20.134.2
Master_User: repl
Master_Port: 3306
Connect_Retry: 60
Master_Log_File: mysql-bin.000001
Read_Master_Log_Pos: 2113
Relay_Log_File: udp3-relay-bin.000002
Relay_Log_Pos: 320
Relay_Master_Log_File: mysql-bin.000001
Slave_IO_Running: Yes
Slave_SQL_Running: Yes
.....
```

## 2.24 /

dbledblemysql



TCPdbledble dble

bootstrap.cnf

- sqlExecuteTimeout()
- idleTimeout
- processorCheckPeriod
  
- dbleprocessorCheckPeriod
- - sqlExecuteTimeout
  - DDLxa
- - xacommit/rollback
  - idleTimeout
  
- DDL,XAsqlExecuteTimeout
- XAidleTimeoutloaddata

## SQL

- 
- SQL
- load dataidleTimeoutidleTimeout
- processorCheckPeriodSQL

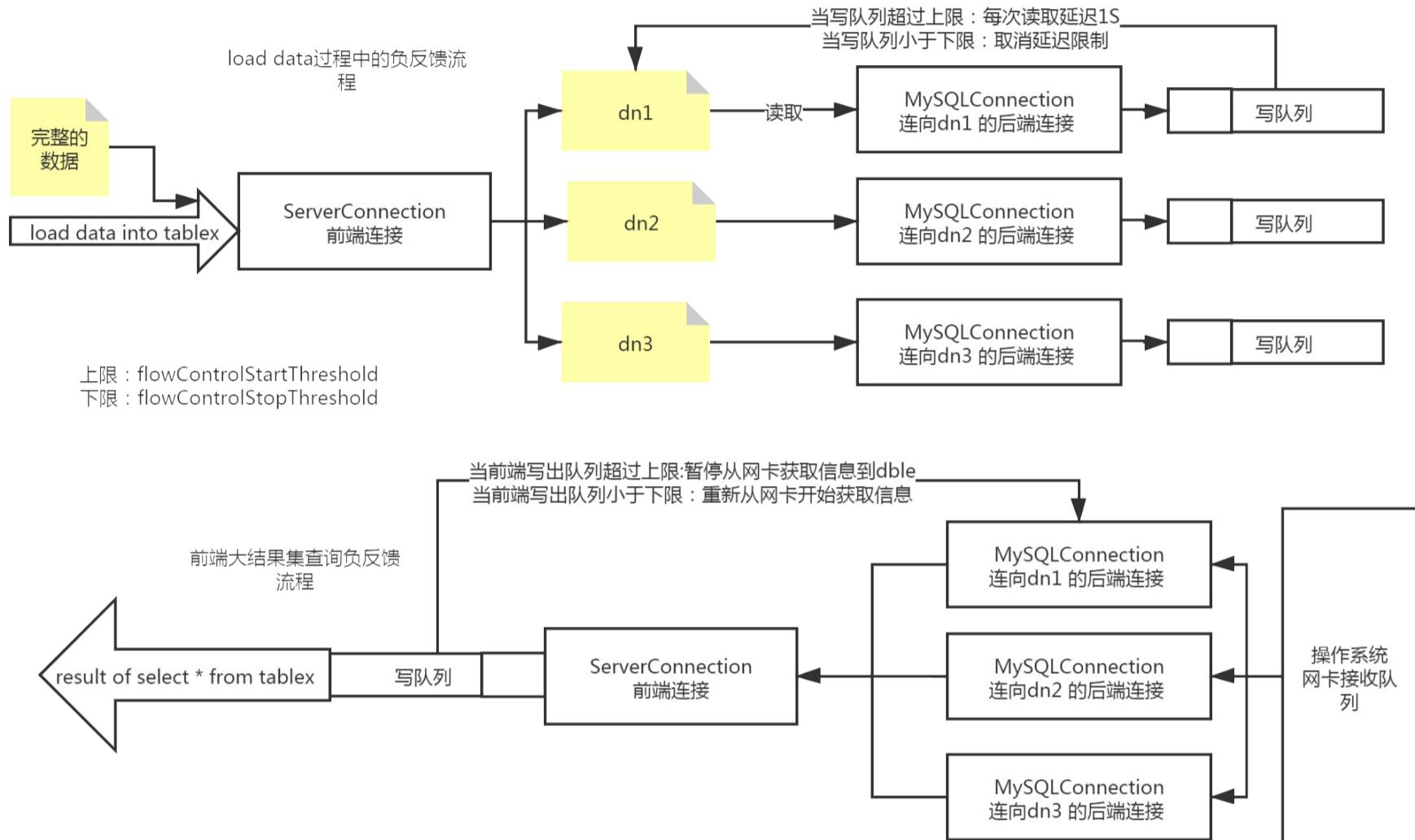
## 2.25 dble

dbleloaddbledbleOOM  
2.20.04@ssxlulu/load

issue #1753

dble

- load data
- Query



bootstrap.cnf

```
enableFlowControl()  
flowControlStartThreshold()  
flowControlStopThreshold()
```

bootstrap.cnf

- flow\_control @@show
- flow\_control @@set [enableFlowControl = true/false] [flowControlStart = ?] [flowControlEnd = ?]
- flow\_control @@list

## 2.26 /client\_found\_rows

### 2.26.1 &

DBLEdbclient\_found\_rows

#### 2.26.1.1 client\_found\_rows

handshakeclient\_found\_rowsDML(found rows)(affect rows)

#### 2.26.1.2 client\_found\_rows

MYSQLclient\_found\_rowaffect rows  
JDBCclient\_found\_rowsfound rows

#### 2.26.1.3 JDBCuseAffectedRowsclient\_found\_row

useAffectedRows=true client\_found\_rows  
useAffectedRows=false() client\_found\_rows

### 2.26.2

#### 2.26.2.1 bootstrap.cnf

```
#client_found_rows
-DcapClientFoundRows=false
```

#### 2.26.2.2

```
show @@cap_client_found_rows; -- client_found_row 0- 1
disable @@cap_client_found_rows; -- client_found_row
enable @@cap_client_found_rows; -- client_found_row
```

dblemysql() insert

### 2.26.3

step1. dble(client\_found\_rows)

step2. client\_found\_rows

```
mysql -uman1 -h192.xx.xx.xx -P9066 -p654321
enable @@cap_client_found_rows;
```

step3.

- 3.20.10.0dbleclient\_found\_rows

```
mysql -uroot -h192.xx.xx.xx -P8066 -p123456
ERROR 1045 (HY000): The client requested CLIENT_FOUND_ROWS capabilities does not match, in the manager use show @@cap_client_found_rows check latest status.
```

- 3.20.10.1dble.logdbleclient\_found\_rowsdbleclient\_found\_rows

```
the client requested CLIENT_FOUND_ROWS capabilities is 'found rows', dble is configured as 'affect rows', pls set the same.
or
the client requested CLIENT_FOUND_ROWS capabilities is 'affect rows', dble is configured as 'found rows', pls set the same.
```

## 2.27 general

### 2.27.1

```
generaldblesql()file 3%5%sql
```

- 1.Executedblelong data16general
- 2.Executesqlsql

### 2.27.2 bootstrap.cnfgeneral log

```
# dble/tmp/
-DhomePath=.

# general long0-1-
 #-DenableGeneralLog=1

# general loggeneral/general.log'/'homepath
# general/general.log/tmp/general/general.log
# /general/general.log/general/general.log
 #-DgeneralLogFile=general/general.log

# 16mb16MBgeneral.logyyy-MM/general-MM-dd-%d.log
 #-DgeneralLogFileSize=16

# 24096
 #-DgeneralLogQueueSize=4096
```

### 2.27.3

#### 2.27.3.1 show @@general\_log

```
generaluse dble_information; select * from dble_variables where variable_name like '%general%';
```

```
show @@general_log;
+-----+-----+
| NAME      | VALUE          |
+-----+-----+
| general_log | ON            |
| general_log_file | /tmp./general/general.log |
+-----+
2 rows in set (0.03 sec)
```

#### 2.27.3.2 disable @@general\_log

```
general log
```

```
disable @@general_log;
Query OK, 1 row affected (0.02 sec)
disable general_log success
```

#### 2.27.3.3 enable @@general\_log

```
general log
```

```
enable @@general_log;
Query OK, 1 row affected (0.02 sec)
enable general_log success
```

#### 2.27.3.4 reload @@general\_log\_file=?

```
general log
```

```
reload @@general_log_file='/tmp/dble-general/general/general.log';
Query OK, 1 row affected (0.00 sec)
reload general log path success
```

## 2.28 sql

### 2.28.1

```
dblesql(CRUD)()
sqlDblesql
5%15%()query statisticQueueSize
1.shardingdblesql2.rwsplitsql3.shardingrwspli
prometheusdble
```

### 2.28.2 bootstrap.cnfsql

```
# statistic0-1-
#-DenableStatistic=1

# 1024
#-DassociateTablesByEntryByUserTableSize=1024
#-DFrontendByBackendByEntryByUserTableSize=1024
#-DtableByUserByEntryTableSize=1024

# 24096
#-DstatisticQueueSize=4096

# [0,100] %
#-DsamplingRate=0

# sql_log
#-DsqlLogTableSize=1024
```

### 2.28.3

#### 2.28.3.1 show @@statistic

statistic

```
show @@statistic;
+-----+-----+
| NAME          | VALUE |
+-----+-----+
| statistic      | OFF   |
| associateTablesByEntryByUserTableSize | 1024 |
| frontendByBackendByEntryByUserTableSize | 1024 |
| tableByUserByEntryTableSize           | 1024 |
| samplingRate        | 0     |
| sqlLogTableSize       | 1024 |
+-----+-----+
6 rows in set (0.01 sec)
```

#### 2.28.3.2 disable @@statistic

sql

```
disable @@statistic;
Query OK, 1 row affected (0.01 sec)
```

#### 2.28.3.3 enable @@statistic

sql

```
enable @@statistic;
Query OK, 1 row affected (4.26 sec)
```

#### 2.28.3.4 reload @@statistic\_table\_size = ? [where table='?' | where table in (dbe\_information.tableA,...)]

```
reload @@statistic_table_size = 90;
Query OK, 1 row affected (0.02 sec)

reload @@statistic_table_size = 90 where table = 'sql_statistic_by_table_by_user_by_entry';
Query OK, 1 row affected (0.02 sec)

reload @@statistic_table_size = 90 where table in(sql_statistic_by_table_by_user_by_entry,sql_statistic_by_associate_tables_by_entry_by_user);
Query OK, 1 row affected (0.02 sec)

reload @@statistic_table_size = 90 where table = 'sql_log';
Query OK, 1 row affected (0.02 sec)
```

### 2.28.5 reload @@samplingRate=?

```
reload @@samplingRate=90;
Query OK, 1 row affected (0.01 sec)
```

## 2.28.6

sql\_statistic\_by\_frontend\_by\_backend\_by\_entry\_by\_user  
sql\_statistic\_by\_table\_by\_user\_by\_entry  
sql\_statistic\_by\_associate\_tables\_by\_entry\_by\_user  
sql\_log

- truncate

## 2.29 load data

### 2.29.1

```
load data load data"“bootstrap.cnf load data load data DBLE load data load data DBLE load data sql load data
:
1. kill @@load_data/temp/error
2.
3.
4.--.txt1-data-dn11datadn1
```

### 2.29.2 bootstrap.cnf load data

```
# BatchLoadData0-1-
 #-DenableBatchLoadData=1
 # 100000
 #-DmaxRowSizeToFile=100000
```

### 2.29.3

#### 2.29.3.1 show @@load\_data.fail

load data

```
show @@load_data.fail;
Empty set (0.01 sec)

if have error file may like
show @@load_data.fail;
+-----+
| error_load_data_file      |
+-----+
| ./temp/error/1-data-dn1.txt |
| ./temp/error/1-data-dn2.txt |
+-----+
2 rows in set (0.01 sec)
```

#### 2.29.3.2 disable @@load\_data\_batch

load data

```
disable @@load_data_batch;
Query OK, 1 row affected (0.00 sec)
disable load_data_batch success
```

#### 2.29.3.3 enable @@load\_data\_batch

load data

```
enable @@load_data_batch;
Query OK, 1 row affected (0.01 sec)
enable load_data_batch success
```

#### 2.29.3.4 reload @@load\_data.num=

load data

```
reload @@load_data.num=200000;
Query OK, 1 row affected (0.00 sec)
reload @@load_data.num success
```

### 2.29.5 kill @@load\_data

```
kill @@load_data;
Query OK, 1 row affected (0.00 sec)
kill @@load_data success
```

### 3.

- [3.1 DDL](#)
  - [3.1.1 DDL&Table Syntax](#)
  - [3.1.2 DDL&View Syntax](#)
  - [3.1.3 DDL&Index Syntax](#)
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- [3.4 Transactional and Locking Statements](#)
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## 3.1 DDL

DDL

DDLDMLDDL

- [3.1.1 DDL&Table Syntax](#)
- [3.1.2 DDL&View Syntax](#)
- [3.1.3 DDL&Index Syntax](#)
- [3.1.4 DDL](#)

### 3.1.1 TABLE DDL

#### 3.1.1.1 CREATE TABLE Syntax

```

CREATE TABLE [IF NOT EXISTS] tbl_name
  (create_definition,...)
  [table_options]
  [partition_options]

create_definition:
  col_name column_definition

column_definition:
  data_type [NOT NULL | NULL] [DEFAULT default_value]
  [AUTO_INCREMENT] [UNIQUE [KEY] | [PRIMARY] KEY]
  [COMMENT 'string']

data_type:
  BIT[(length)]
  | TINYINT[(length)] [UNSIGNED] [ZEROFILL]
  | SMALLINT[(length)] [UNSIGNED] [ZEROFILL]
  | MEDIUMINT[(length)] [UNSIGNED] [ZEROFILL]
  | INT[(length)] [UNSIGNED] [ZEROFILL]
  | INTEGER[(length)] [UNSIGNED] [ZEROFILL]
  | BIGINT[(length)] [UNSIGNED] [ZEROFILL]
  | REAL[(length,decimals)] [UNSIGNED] [ZEROFILL]
  | DOUBLE[(length,decimals)] [UNSIGNED] [ZEROFILL]
  | FLOAT[(length,decimals)] [UNSIGNED] [ZEROFILL]
  | DECIMAL[(length[,decimals])] [UNSIGNED] [ZEROFILL]
  | NUMERIC[(length[,decimals])] [UNSIGNED] [ZEROFILL]
  | DATE
  | TIME[(fsp)]
  | TIMESTAMP[(fsp)]
  | DATETIME[(fsp)]
  | YEAR
  | CHAR[(length)]
  | VARCHAR(length)
  | BINARY[(length)]
  | VARBINARY(length)
  | TINYBLOB
  | BLOB
  | MEDIUMBLOB
  | LONGBLOB
  | TINYTEXT
  | TEXT
  | MEDIUMTEXT
  | LONGTEXT
  | ENUM(value1,value2,value3,...)

table_options:
  table_option [[,] table_option] ...

table_option:
  ENGINE [=] engine_name
  | [DEFAULT] CHARACTER SET [=] charset_name
  | CHECKSUM [=] {0 | 1}
  | [DEFAULT] COLLATE [=] collation_name
  | COMMENT [=] 'string'
  | CONNECTION [=] 'connect_string'
  | KEY_BLOCK_SIZE [=] value
  | MAX_ROWS [=] value
  | MIN_ROWS [=] value
  | PASSWORD [=] 'string'
  | ROW_FORMAT [=] {DEFAULT|DYNAMIC|FIXED|COMPRESSED|REDUNDANT|COMPACT}
  | STATS_AUTO_RECALC [=] {DEFAULT|0|1}
  | STATS_PERSISTENT [=] {DEFAULT|0|1}

partition_options:
  {[LINEAR] HASH(expr)
  | PARTITION BY [linear] KEY (column_list)
  | RANGE{(expr) | COLUMNS(column_list)}
  | LIST{(expr) | COLUMNS(column_list)}
  }
  [(partition_definition [, partition_definition] ...)]

```

- engine\_name“InnoDB”

- CREATE TABLE `test` (`id` enum('1','2','3') DEFAULT '1')id'1'1dbeissue

<https://github.com/actiontech/dble/issues/816>

```

create table if not exists test(
id bigint primary key AUTO_INCREMENT,
col1 int not null default 5,
col2 int null COMMENT 'info for col1',
col3 varchar(20) not null,
col4 varchar(20) unique key
);

create table test(
id int primary key,
col_bit    BIT(1),
col_tinyint TINYINT(2) UNSIGNED ZEROFILL,
col_smallint SMALLINT(3) UNSIGNED ZEROFILL,
col_mediumint MEDIUMINT(4) UNSIGNED ZEROFILL,
col_int INT(5) UNSIGNED ZEROFILL,
col_integer INTEGER(6) UNSIGNED ZEROFILL,
col_bigint BIGINT(7) UNSIGNED ZEROFILL,
col_real REAL(8,1) UNSIGNED ZEROFILL,
col_double DOUBLE(9,2) UNSIGNED ZEROFILL,
col_float FLOAT(10,3) UNSIGNED ZEROFILL,

```

```

col_decimal DECIMAL(11,4) UNSIGNED ZEROFILL,
col_numeric NUMERIC(12,5) UNSIGNED ZEROFILL,
col_date DATE,
col_time TIME(3),
col_timestamp TIMESTAMP(4),
col_datetime DATETIME(5),
col_year YEAR,
col_char CHAR(10) ,
col_varcgar VARCHAR(20) ,
col_binary BINARY(30),
col_varbinary VARBINARY(40),
col_tinyblob TINYBLOB,
col_blob BLOB,
col_mediumblob MEDIUMBLOB,
col_longblob LONGBLOB,
col_tinytext TINYTEXT ,
col_text TEXT ,
col_mediumtext MEDIUMTEXT ,
col_longtext LONGTEXT ,
col_enum ENUM('a','b','c')
);

```

```

create table test(
id int primary key,
col1 varchar(20)
)ENGINE = innodb
AVG_ROW_LENGTH = 20
DEFAULT CHARACTER SET = utf8
CHECKSUM = 1
DEFAULT COLLATE = utf8_general_ci
COMMENT = 'info of table test'
CONNECTION = '111111'
DELAY_KEY_WRITE = 1
INSERT_METHOD = LAST
KEY_BLOCK_SIZE = 65536
MAX_ROWS = 3
MIN_ROWS = 2
PACK_KEYS = 1
ROW_FORMAT = DEFAULT;

```

### 3.1.1.2 ALTER TABLE Syntax

```

ALTER [IGNORE] TABLE tbl_name
[alter_specification [, alter_specification] ...]

alter_specification:
| ADD [COLUMN] col_name column_definition
| [FIRST | AFTER col_name ]
| ADD [COLUMN] (col_name column_definition,...)
| ADD {INDEX | KEY} [index_name]
| CHANGE [COLUMN] old_col_name new_col_name column_definition
| [FIRST|AFTER col_name]
| MODIFY [COLUMN] col_name column_definition
| [FIRST | AFTER col_name]
| DROP [COLUMN] col_name
| DROP {INDEX | KEY} index_name
| ADD [INDEX|KEY] [index_name] (index_col_name,...)
| DROP {INDEX|KEY} index_name
| ADD PRIMARY KEY (index_col_name,...)
| DROP PRIMARY KEY
| ALTER [COLUMN] col_name
| {SET DEFAULT {literal | (expr)} | DROP DEFAULT}
| COMMENT [=] 'string'

```

```

alter table test add column col5 int not null default 1 first,add column col6 int after col4;
alter table test change column col1 col1_new int after col3;
alter table test modify column col1_new varchar(20) after id;
alter table test drop column col6;
alter table test add key idx_col4(col4);
alter table test add index idx_col4(col4);
alter table test drop key idx_col4;
alter table test drop index idx_col4;
alter table test drop primary key;
alter table test add primary key (id);
alter table test alter column col set default 0;
alter table test alter column col drop default;
alter table test comment = 'string';

```

### 3.1.1.3 DROP TABLE Syntax

```

DROP TABLE [IF EXISTS]
tbl_name [, tbl_name] ...
[RESTRICT | CASCADE]

```

```

drop table if exists test cascade;
drop table test restrict;

```

### 3.1.1.4 TRUNCATE TABLE Syntax

```
TRUNCATE [TABLE] tbl_name
```

```
truncate table test;
```

### 3.1.2 VIEW DDL

Syntax

**create view :**

```
CREATE [OR REPLACE] VIEW  
    view_name [(column_list)]  
    AS select_statement
```

**alter view :**

```
ALTER VIEW  
    view_name [(column_list)]  
    AS select_statement
```

**drop view:**

```
DROP VIEW [IF EXISTS] view_name [, view_name]
```

**show create view :**

```
SHOW CREATE VIEW view_name;
```

### 3.1.3 INDEX DDL

#### 3.1.3.1 CREATE INDEX Syntax

```
CREATE [UNIQUE|FULLTEXT] INDEX index_name  
[index_type]  
ON tbl_name (index_col_name,...)  
  
index_col_name:  
  col_name [(length)] [ASC | DESC]  
  
index_type:  
  USING {BTREE | HASH}
```

```
create unique index idx1 using btree on test(col1);  
create index idx2 using hash on test(col2);  
create fulltext index idx3 on test(col4);  
create fulltext index idx4 on test(col4(10));
```

#### 3.1.3.2 DROP INDEX Syntax

```
DROP INDEX index_name ON tbl_name
```

```
drop index idx1 on test;
```

### 3.1.4 DDL

DDLdbлемysqlDDL(eg. ALTER EVENT)  
dbлемysqlDDL

```
/*!dbe:sql=select ... from tbx where id=M*/ ddl statement
```

tbx idM

```
MySQL [TESTDB]> /*!dbe:sql=select * from a_test where id=2*/CREATE PROCEDURE account_count()  
BEGIN  SELECT 'Number of accounts:', COUNT(*) FROM mysql.user;  
END//
```

### 3.1.5 DATABASE DDL

#### 3.1.5.1 CREATE DATABASE Syntax

```
CREATE {DATABASE | SCHEMA} [IF NOT EXISTS] db_name
```

```
    [create_specification] ...
```

```
create_specification:
```

```
    [DEFAULT] CHARACTER SET [=] charset_name
```

```
    | [DEFAULT] COLLATE [=] collation_name
```

```
    | DEFAULT ENCRYPTION [=] {'Y' | 'N'}
```

- schemashema.xml
- create\_specification
-

### 3.1.6 ONLINE DDL

#### 3.1.6.1

1. 3.20.04.0dbledddbleSQLdddbleshow create table dble
2. SQLdbledbledbledbnullsqlmysqlonlineDDL

#### 3.1.6.2 ONLINE DDL

MySQL 8.0online ddldbbleonline ddl

- Index Operations
- Primary Key Operations
- Column Operations
- Generated Column Operations
- Foreign Key Operations
- Table Operations
- Tablespace Operations
- Partitioning Operations

1			CREATE INDEX <i>name</i> ON <i>table</i> ( <i>col_list</i> );ALTER TABLE <i>tbl_name</i> ADD INDEX <i>name</i> ( <i>col_list</i> );		
2			DROP INDEX <i>name</i> ON <i>table</i> ;ALTER TABLE <i>tbl_name</i> DROP INDEX <i>name</i> ;		
3			ALTER TABLE <i>tbl_name</i> RENAME INDEX <i>old_index_name</i> TO <i>new_index_name</i> , ALGORITHM=INPLACE, LOCK=NONE;		mysql 5.6 online ddl
4		FULLTEXT	CREATE FULLTEXT INDEX <i>name</i> ON <i>table(column)</i> ;		mysql
5		Spatial	CREATE TABLE geom (g GEOMETRY NOT NULL); ALTER TABLE geom ADD SPATIAL INDEX(g), ALGORITHM=INPLACE, LOCK=SHARED;		mysql
6			ALTER TABLE <i>tbl_name</i> DROP INDEX i1, ADD INDEX i1( <i>key_part</i> ,... ) USING BTREE, ALGORITHM=INSTANT;		
7			ALTER TABLE <i>tbl_name</i> ADD PRIMARY KEY ( <i>column</i> ), ALGORITHM=INPLACE, LOCK=NONE;		
8			ALTER TABLE <i>tbl_name</i> DROP PRIMARY KEY, ALGORITHM=COPY;		COPYdml
9			ALTER TABLE <i>tbl_name</i> DROP PRIMARY KEY, ADD PRIMARY KEY ( <i>column</i> ), ALGORITHM=INPLACE, LOCK=NONE;		
10			ALTER TABLE <i>tbl_name</i> ADD COLUMN <i>column_name</i> <i>column_definition</i> , ALGORITHM=INSTANT;		dble
11			ALTER TABLE <i>tbl_name</i> DROP COLUMN <i>column_name</i> , ALGORITHM=INPLACE, LOCK=NONE;		dble
12			ALTER TABLE <i>tbl</i> CHANGE <i>old_col_name</i> <i>new_col_name data_type</i> , ALGORITHM=INPLACE, LOCK=NONE;		dble
13			ALTER TABLE <i>tbl_name</i> MODIFY COLUMN <i>col_name column_definition</i> FIRST, ALGORITHM=INPLACE, LOCK=NONE;		
14			ALTER TABLE <i>tbl_name</i> CHANGE c1 c1 BIGINT,		dml

			ALGORITHM=COPY;		
15		VARCHAR	ALTER TABLE <i>tbl_name</i> CHANGE COLUMN c1 <i>c1</i> VARCHAR(255), ALGORITHM=INPLACE, LOCK=NONE;		dble
16			ALTER TABLE <i>tbl_name</i> ALTER COLUMN <i>col</i> SET DEFAULT <i>literal</i> , ALGORITHM=INSTANT;		
17			ALTER TABLE <i>tbl</i> ALTER COLUMN <i>col</i> DROP DEFAULT, ALGORITHM=INSTANT;		
18			ALTER TABLE <i>table</i> AUTO_INCREMENT= <i>next_value</i> , ALGORITHM=INPLACE, LOCK=NONE;		
19		NULL	ALTER TABLE <i>tbl_name</i> MODIFY COLUMN <i>column_name</i> <i>data_type</i> NULL, ALGORITHM=INPLACE, LOCK=NONE;		dble
20		NULL	ALTER TABLE <i>tbl_name</i> MODIFY COLUMN <i>column_name</i> <i>data_type</i> NOT NULL, ALGORITHM=INPLACE, LOCK=NONE;		dble
21		ENUM    SET	CREATE TABLE t1 (c1 ENUM('a', 'b', 'c')); ALTER TABLE t1 MODIFY COLUMN c1 ENUM('a', 'b', 'c', 'd'), ALGORITHM=INSTANT;		
22			ALTER TABLE <i>tbl1</i> ADD CONSTRAINT <i>fk_name</i> FOREIGN KEY <i>index</i> ( <i>col1</i> ) REFERENCES <i>tbl2</i> ( <i>col2</i> ) <i>referential_actions</i> ;		dble
23			ALTER TABLE <i>tbl</i> DROP FOREIGN KEY <i>fk_name</i> ;		
24	Generated	Generated	ALTER TABLE t1 ADD COLUMN (c2 INT GENERATED ALWAYS AS (c1 + 1) STORED), ALGORITHM=COPY;		
25		Generated	ALTER TABLE t1 MODIFY COLUMN c2 INT GENERATED ALWAYS AS (c1 + 1) STORED FIRST, ALGORITHM=COPY;		
26		Generated	ALTER TABLE t1 DROP COLUMN c2, ALGORITHM=INPLACE, LOCK=NONE;		
27		VIRTUAL	ALTER TABLE t1 ADD COLUMN (c2 INT GENERATED ALWAYS AS (c1 + 1) VIRTUAL), ALGORITHM=INSTANT;		
28		VIRTUAL	ALTER TABLE t1 MODIFY COLUMN c2 INT GENERATED ALWAYS AS (c1 + 1) VIRTUAL FIRST, ALGORITHM=COPY;		
29		VIRTUAL	ALTER TABLE t1 DROP COLUMN c2, ALGORITHM=INSTANT;		
30					MySQL
31					dble

### 3.1.6.3

1. dble druidonline ddl “ALGORITHM=INPLACE, LOCK=NONE” <https://github.com/alibaba/druid/issues/3750>

## 3.2 DML

### DML

- [3.2.1 INSERT](#)
- [3.2.2 REPLACE](#)
- [3.2.3 DELETE](#)
- [3.2.4 UPDATE](#)
- [3.2.5 SELECT](#)
- [3.2.6 SELECT JOIN syntax](#)
- [3.2.7 SELECT UNION Syntax](#)
- [3.2.8 SELECT Subquery Syntax](#)
- [3.2.9 LOAD DATA](#)
- [3.2.10](#)

### 3.2.1 INSERT

#### 3.2.1.1 Syntax

```

INSERT [INTO] tbl_name
[(col_name,...)]
{VALUES | VALUE} ({expr },...),(...),...
[ ON DUPLICATE KEY UPDATE
  col_name=expr
  [, col_name=expr] ... ]
OR
INSERT [INTO] tbl_name
SET col_name={expr | DEFAULT}, ...
[ ON DUPLICATE KEY UPDATE
  col_name=expr [, col_name=expr] ... ]

```

#### 3.2.1.2

```

insert into test (col1,col3) values(1,'cust1'),(2,'cust2');
insert into test (col1,col3) values(default,'cust3');
insert into test set col1=4,col3='cust4';
insert into test set col1=default,col3='cust5';
insert into test (col1,col3) values(default,cast(now() as char));

```

#### 3.2.1.3

- ERROW
- dble
- CREATE TABLE `test` (`id` enum('1','2','3') DEFAULT '1')id'1'dbleissue <https://github.com/actiontech/dble/issues/816>
- insert/replace... select dbleSQL
  - 
  - 
  - select

### 3.2.2 REPLACE

#### 3.2.2.1 Syntax

REPLACE

[INTO] tbl\_name [(col\_name [, col\_name] ...)]

{VALUES | VALUE} (value\_list) [, (value\_list)] ...

OR

REPLACE

[INTO] tbl\_name SET assignment\_list

#### 3.2.2.2

```
REPLACE INTO test VALUES (1, 'Old', '2014-08-20 18:47:00');
REPLACE INTO test set id = 1, type= 'Old',create_date =  '2014-08-20 18:47:00';
```

#### 3.2.2.3

- replace
- replaceIDIDID
- insert/replacedbleSQL
  - 
  - 
  - select

### 3.2.3 DELETE

#### 3.2.3.1 Syntax

DELETE [IGNORE]

FROM tbl\_name [WHERE where\_condition]

#### 3.2.3.2

```
delete from test where id>5;
```

#### 3.2.3.3

- Delete where condition
- Join DELETE
- DELETEDELETE
  - update/delete where where
  - update/delete where where

### 3.2.4 UPDATE

#### 3.2.4.1 Syntax

```
UPDATE table_reference  
SET col_name1={expr1} [, col_name2={expr2}] ...  
[WHERE where_condition]
```

#### 3.2.4.2

```
UPDATE test SET VALUE =1 where id=5;
```

#### 3.2.4.3

- UPDATEwhere\_condition
- Join UPDATE
- updateDELETE
  - update/deletewhere where
  - update/deletewherewhere

### 3.2.5 SELECT

#### 3.2.5.1 Syntax

```
SELECT  
[ALL | DISTINCT | DISTINCTROW ]  
select_expr  
[, select_expr ...]  
[FROM table_references [WHERE where_condition]  
[GROUP BY {col_name | expr | position} [ASC | DESC], ...]  
[HAVING where_condition] [ORDER BY {col_name | expr | position} [ASC | DESC], ...]  
[LIMIT {[offset,] row_count | row_count OFFSET offset}]
```

#### 3.2.5.2

```
select id,col1,col3 from test where id=3;  
select distinct col1,col3 from test where id>=3;  
select count(*),max(id),col1 from test group by col1 desc having(count(*)>1) order by col1 desc;  
select id,col1,col3 from test order by id limit 2 offset 2;  
select id,col1,col3 from test order by id limit 2,2;  
select 1+1,'test',id,col1*1.1,now() from test limit 3;  
select current_date,current_timestamp;
```

### 3.2.6 JOIN Syntax:

table\_references:

```
table_reference [, table_reference] ...
```

table\_reference:

```
table_factor | join_table
```

table\_factor:

```
tbl_name [[AS] alias]
| table_subquery [AS] alias
| ( table_references )
```

join\_table:

```
table_reference [INNER | CROSS] JOIN table_factor [join_condition]
| table_reference STRAIGHT_JOIN table_factor
| table_reference STRAIGHT_JOIN table_factor ON conditional_expr
| table_reference {LEFT|RIGHT} [OUTER] JOIN table_reference join_condition
| table_reference NATURAL [{LEFT|RIGHT} [OUTER]] JOIN table_factor
```

join\_condition:

```
ON conditional_expr
| USING (column_list)
```

### 3.2.7 UNION Syntax:

```
SELECT ...  
UNION [ALL | DISTINCT] SELECT ...  
[UNION [ALL | DISTINCT] SELECT ...]
```

## 3.2.8 Subquery

### 3.2.8.1 The Subquery as Scalar Operand

For example :

```
SELECT (SELECT s2 FROM t1);
SELECT (SELECT s1 FROM t2) FROM t1;
SELECT UPPER((SELECT s1 FROM t1)) FROM t2;
```

### 3.2.8.2 Comparisons Using Subqueries

The most common use of a subquery is in the form:

```
non_subquery_operand comparison_operator (subquery)
```

Where comparison\_operator is one of these operators:

```
= > < >= <= <> != <=>
```

MySQL also permits this construct:

```
non_subquery_operand LIKE (subquery)
```

### 3.2.8.3 Subqueries with ANY, IN, or SOME

Syntax:

```
operand comparison_operator ANY (subquery)
operand IN (subquery)
operand comparison_operator SOME (subquery)
```

Where comparison\_operator is one of these operators:

```
= > < >= <= <> !=
```

### 3.2.8.4 Subqueries with ALL

Syntax:

```
operand comparison_operator ALL (subquery)
```

### 3.2.8.5 Subqueries with EXISTS or NOT EXISTS

For example:

```
SELECT column1 FROM t1 WHERE EXISTS (SELECT * FROM t2);
```

Not support Correlated Subqueries for now.

### 3.2.8.6 Derived Tables (Subqueries in the FROM Clause)

```
SELECT ... FROM (subquery) [AS] tbl_name ...
```

### 3.2.9 LOAD DATA

#### 3.2.9.1 Syntax

LOAD DATA

[LOCAL]

INFILE 'file\_name' INTO TABLE tbl\_name

[CHARACTER SET charset\_name]

[{FIELDS | COLUMNS}

[TERMINATED BY 'string']

[[OPTIONALLY] ENCLOSED BY 'char']

[ESCAPED BY 'char'] ]

[LINES [STARTING BY 'string']]

[TERMINATED BY 'string']]

#### 3.2.9.2

```
load data infile 'data.txt' into table test_table CHARACTER SET 'utf8' FIELDS TERMINATED by ',';
```

#### 3.2.9.3

dbleMySQL,maxRowSizeToFile(bootstrap.cnf) load data local infile

`local_infile`load data.

#1085

#### 3.2.9.4

- BUGdbleCHARACTER SET charset\_name
- mysqldbleload data
- ENCLOSED BYBUG
- loaddata65535bootstrap.cnfmaxCharsPerColumn
- load data,,dble.issue: <https://github.com/actiontech/dble/issues/770>
- load data,druid,,druid,.issue: <https://github.com/actiontech/dble/issues/1248>
- load data: <https://github.com/actiontech/dble/issues/1507>
- load dataissue <https://github.com/actiontech/dble/issues/1761>

### 3.2.10 DML

**DO Syntax**

**HANDLER Syntax**

**LOAD XML Syntax**

## 3.3 PREPARE SQL Syntax

### 3.3.1 PREPARE Syntax

```
PREPARE stmt_name FROM preparable_stmt
```

```
prepare stmt1 from "select * from a_test where id=?";
```

### 3.3.2 EXECUTE Syntax

```
EXECUTE stmt_name  
[USING @var_name [, @var_name] ...]
```

```
SET @a = 1;  
EXECUTE stmt1 USING @a;
```

### 3.3.3 DEALLOCATE PREPARE Syntax

```
{DEALLOCATE | DROP} PREPARE stmt_name
```

```
DROP PREPARE stmt1;
```

## 3.4 Transactional and Locking Statements

Transactional and Locking Statements

- [3.4.1 Lock&unlock](#)
- [3.4.2 XA](#)
- [3.4.3](#)
- [3.4.4 SET TRANSACTION Syntax](#)

### 3.4.1 Lock&unlock

#### 3.4.1.1 Syntax

```
LOCK TABLES tbl_name [[AS] alias] lock_type
```

**lock\_type:** READ | WRITE

UNLOCK TABLES

#### 3.4.1.2

```
lock tables test_table read;  
unlock tables;
```

#### 3.4.1.3

1. session
- 2.
3. xa lock table dblexa

### 3.4.2 XA

#### 3.4.2.1 Syntax

XA

set xa = {0|1}

START TRANSACTION;

BEGIN

SET autocommit = {0 | 1}

COMMIT

ROLLBACK

#### 3.4.2.2

1. DbleSQLBEGIN(druid)
2. lock table xa

### 3.4.3

#### 3.4.3.1 Syntax

```
START TRANSACTION;
```

```
BEGIN
```

```
SET autocommit = {0 | 1}
```

```
COMMIT
```

```
ROLLBACK
```

#### 3.4.3.2

- DbleSQLBEGIN(druid)
- 2PC(xa)commit,XA

### 3.4.4 SET TRANSACTION Syntax

SET SESSION TRANSACTION ISOLATION LEVEL level

**level:**

| REPEATABLE READ  
| READ COMMITTED  
| READ UNCOMMITTED  
| SERIALIZABLE

SET @@SESSION.TX\_ISOLATION = 'level\_str'

**level\_str:** REPEATABLE-READ

| READ-COMMITTED  
| READ-UNCOMMITTED  
| SERIALIZABLE

session

### 3.4.5 SAVEPOINT, ROLLBACK TO SAVEPOINT, and RELEASE SAVEPOINT Syntax

#### 3.4.5.1 Syntax

SAVEPOINT *identifier*

ROLLBACK [WORK] TO [SAVEPOINT] *identifier*

RELEASE SAVEPOINT *identifier*

#### 3.4.5.1

```
# start transaction
set autocommit = 0;

# savepoint
savepoint s0;
insert into test value(1);
savepoint s1;
insert into test value(2);
savepoint s2;
insert into test value(3);

# rollback to
rollback to s0

# release
release savepoint s0
```

#### 3.4.5.2

1. mysql,savepoint,savepoint.dblesavepoint,.
2. ROLLBACK TO [SAVEPOINT] *identifier* work .

## 3.5 DAL

DAL

- [3.5.1 SET](#)
- [3.5.2 SHOW](#)
- [3.5.3 KILL](#)

### 3.5.1 SET

#### 3.5.1.1 XA

```
set xa=value

value:
  0
  | off
  | false
  | 1
  | on
  | true
```

```
set xa=1
```

XA

#### 3.5.1.2 AUTOCOMMIT

```
set autocommit=value

value:
  0
  | off
  | false
  | 1
  | on
  | true
```

```
set autocommit=1
```

AUTOCOMMIT

#### 3.5.1.3 NAMES

```
SET NAMES {'charset_name' [COLLATE 'collation_name'] | DEFAULT}
```

```
set names utf8;
set names utf8 collate utf8_general_ci;
set names default;
```

#### 3.5.1.4 CHARSET

```
SET {CHARACTER SET | CHARSET}
{'charset_name' | DEFAULT}
```

```
set CHARACTER SET utf8;
```

#### 3.5.1.5 COLLATION\_CONNECTION/CHARSET\_SET\_X

```
SET COLLATION_CONNECTION='collation_name'
SET CHARSET_SET_CLIENT='charset_name'
SET CHARSET_SET_RESULTS='charset_name' 'charset_name' NULL
SET CHARSET_SET_CONNECTION='charset_name'
```

```
set collation_connection=utf8_general_ci;
set CHARSET_SET_CLIENT=utf8
set CHARSET_SET_RESULTS=utf8;
set CHARSET_SET_CONNECTION=utf8;
```

#### 3.5.1.6 TRANSACTION ACCESS MODE

```
SET SESSION { TX_READ_ONLY | TRANSACTION_READ_ONLY}=value
```

```
value:
  0
  | off
  | false
  | 1
  | on
  | true
```

```
set session @@tx_read_only=1;
```

### 3.5.1.7 TRANSACTION ISOLATION LEVEL

```
SET SESSION {TRANSACTION_ISOLATION | TX_ISOLATION}=level
level:
READ-UNCOMMITTED | READ-COMMITTED | REPEATABLE-READ | SERIALIZABLE
```

```
SET SESSION TX_ISOLATION=READ-COMMITTED;
```

### 3.5.1.8 USER/SYSTEM VARIABLE

```
SET variable_assignment[, variable_assignment ] ...
variable_assignment:
@user_var_name = expr
| SESSION system_var_name = expr
| system_var_name = expr
| @@system_var_name = expr
| @@session.system_var_name = expr
```

- 1.
- 2.

```
audit_log_current_session
audit_log_filter_id
auto_increment_increment
auto_increment_offset
autocommit
big_tables
binlog_direct_non_transactional_updates
binlog_error_action
binlog_format
binlog_row_image
binlog_rows_query_log_events
binlogging_impossible_mode
block_encryption_mode
bulk_insert_buffer_size
character_set_client
character_set_connection
character_set_database
character_set_filesystem
character_set_results
character_set_server
collation_connection
collation_database
collation_server
completion_type
debug
debug_sync
default_storage_engine
default_tmp_storage_engine
default_week_format
disconnect_on_expired_password
div_precision_increment
end_markers_in_json
eq_range_index_dive_limit
error_count
explicit_defaults_for_timestamp
external_user
foreign_key_checks
group_concat_max_len
gtid_next
gtid_owned
identity
innodb_create_intrinsic
innodb_ft_user_stopword_table
innodb_lock_wait_timeout
innodb_optimize_point_storage
innodb_strict_mode
innodb_support_xa
innodb_table_locks
innodb_tmpdir
insert_id
interactive_timeout
join_buffer_size
```

```
keep_files_on_create
last_insert_id
lc_messages
lc_time_names
lock_wait_timeout
long_query_time
low_priority_updates
max_allowed_packet
max_delayed_threads
max_error_count
max_execution_time
max_heap_table_size
max_insert_delayed_threads
max_join_size
max_length_for_sort_data
max_seeks_for_key
max_sort_length
max_sp_recursion_depth
max_statement_time
max_user_connections
min_examined_row_limit
myisam_repair_threads
myisam_sort_buffer_size
myisam_stats_method
ndb-allow-copying-alter-table
ndb_autoincrement_prefetch_sz
ndb_blob-read-batch-bytes
ndb_blob-write-batch-bytes
ndb_deferred_constraints
ndb_force_send
ndb_fully_replicated
ndb_index_stat_enable
ndb_index_stat_option
ndb_join_pushdown
ndb_log_bin
ndb_log_bin
ndb_table_no_logging
ndb_table_temporary
ndb_use_copying_alter_table
ndb_use_exact_count
ndb_use_transactions
ndbinfo_max_bytes
ndbinfo_max_rows
ndbinfo_show_hidden
ndbinfo_table_prefix
net_buffer_length
net_read_timeout
net_retry_count
net_write_timeout
new
old_alter_table
old_passwords
optimizer_prune_level
optimizer_search_depth
optimizer_switch
optimizer_trace
optimizer_trace_features
optimizer_trace_limit
optimizer_trace_max_mem_size
optimizer_trace_offset
parser_max_mem_size
preload_buffer_size
profiling
profiling_history_size
proxy_user
pseudo_slave_mode
pseudo_thread_id
query_alloc_block_size
query_cache_type
query_cache_wlock_invalidate
query_prealloc_size
rand_seed1
rand_seed2
range_alloc_block_size
range_optimizer_max_mem_size
rbr_exec_mode
read_buffer_size
read_rnd_buffer_size
session_track_gtids
session_track_schema
session_track_state_change
session_track_system_variables
show_old_temporals
sort_buffer_size
sql_auto_is_null
sql_big_selects
sql_buffer_result
sql_log_bin
sql_log_off
sql_mode
sql_notes
sql_quote_show_create
sql_safe_updates
sql_select_limit
sql_warnings
storage_engine
thread_pool_high_priority_connection
thread_pool_prio_kickup_timer
time_zone
timestamp
tmp_table_size
transaction_alloc_block_size
transaction_allow_batching
transaction_prealloc_size
transaction_write_set_extraction
tx_isolation
tx_read_only
```

```
unique_checks  
updateable_views_with_limit  
version_tokens_session  
version_tokens_session_number  
wait_timeout  
warning_count
```

```
set @a=20  
  
SET SESSION sql_mode = 'TRADITIONAL';  
  
SET sql_mode = 'TRADITIONAL';
```

1. insert\_id sql\_auto\_is\_null insert\_id issue <https://github.com/actiontech/dble/issues/1252>.

### 3.5.1.9 TRACE

```
SQL,      show trace  
select @@trace      SQLtrace  
  
set trace=value  
  
value:  
  0  
  | off  
  | false  
  | 1  
  | on  
  | true
```

```
set trace=1
```

## 3.5.2 SHOW

### 3.5.2.1 dbleSHOW

- SHOW DATABASES  
sharding.xml schema
- SHOW CREATE DATABASE [IF NOT EXISTS] schema  
sharding.xml schemadb
- SHOW [FULL|ALL] TABLES [FROM db\_name] [LIKE 'pattern' WHERE expr]  
schmeaschematables  
schemaschematables
- SHOW ALL TABLES [FROM db\_name] [LIKE 'pattern' WHERE expr]  
dbleSHOW FULL TABLES Table\_type SHARDING TABLEsharding table GLOBAL TABLE [6.Differenrece\\_from\\_SQL\\_Server.md](#)
- SHOW [FULL] {COLUMNS | FIELDS} FROM tbl\_name [{FROM|IN} db\_name] [LIKE 'pattern' | WHERE expr]  
schemaschema
- SHOW { INDEX | INDEXES | KEYS } {FROM | IN} tbl\_name [ {FROM | IN} db\_name ] [ WHERE expr ]  
schemaschema
- SHOW CREATE TABLE tbl\_name  
schemaschema
- SHOW [GLOBAL | SESSION] VARIABLES [LIKE 'pattern' | WHERE expr]  
global
- SHOW CREATE VIEW view\_name  
dbleview
- SHOW CHARSET  
show character set
- SHOW TABLE STATUS [{FROM | IN} db\_name] [LIKE 'pattern' | WHERE expr]  
SQLyognameshow tables
- SHOW TRACE  
trace [SQLtrace](#)

explain

```
show databases
show full tables
show columns from a_test;
show index from a_test;
show create table a_test;
show variables;
show charset;
```

### 3.5.2.2 dbleSHOW

dbleSHOWSHOWmysql

```
SHOW CHARACTER SET;
SHOW CHARACTER SET like 'utf8';
SHOW CHARACTER SET where maxlen=2;
```

### 3.5.3 KILL

#### 3.5.3.1 KILL conn\_id

conn\_id idshow @@connection

##### 3.5.3.1.1

```
kill 1;
```

##### 3.5.3.1.2

- KillOK
- KillXA
- MYSQL KILL processlist\_id

#### 3.5.3.2 KILL query conn\_id

conn\_id idshow @@connection

##### 3.5.3.2.1

```
kill query 1;
```

##### 3.5.3.2.3

- dble kill query
- mysql

##### 3.5.3.2.2

- ddl
- dml

## 3.6

### 3.6.1 Syntax

#### Create procedure

```
/Hint/ CREATE [DEFINER = { user | CURRENT_USER }]
```

```
PROCEDURE sp_name ([proc_parameter[,...]])
```

```
[characteristic ...] routine_body
```

```
/Hint/ CREATE
```

```
[DEFINER = { user | CURRENT_USER }]
```

```
FUNCTION sp_name ([func_parameter[,...]])
```

```
RETURNS type [characteristic ...] routine_body
```

#### drop procedure

```
/Hint/ DROP {PROCEDURE | FUNCTION} [IF EXISTS] sp_name
```

#### call procedure

```
[/Hint/] CALL sp_name([parameter[,...]])
```

```
[/Hint/] CALL sp_name[()]
```

### 3.6.2

```
/*!dbe:sql=select 1 from account */drop procedure if exists proc_arc;

/*!dbe:sql=select 1 from account */create procedure proc_arc(userid1 int)
begin
    insert into account_arc select * from account where userid=userid1;
    update account set arc_flag=true,arc_time=now() where userid=userid1;
end;

/*!dbe:sql=select 1 from account */call proc_arc(1);
```

### 3.6.3

- dbleMySQLMySQL
- 
- dble

## 3.7 Utility Statements

### 3.7.1 USE

```
USE db_name
```

```
use TESTDB;
```

### 3.7.2 EXPLAIN

```
EXPLAIN explainable_stmt  
SELECT statement  
| DELETE statement  
| INSERT statement  
| REPLACE statement  
| UPDATE statement
```

#### 1. INSERT

```
explain SELECT select * from a_test where id=1;
```

#### 2. dbleEXPLAIN DESC

### 3.7.3 EXPLAIN2

```
EXPLAIN2 shardingNode=node_name sql$sql_stmt
```

```
explain2 shardingNode=dn2 sql=select * from a_test where id=1;
```

### 3.7.4 DESC

```
{DESCRIBE | DESC} tbl_name [col_name | wild]
```

```
DESC a_test id;
```

```
:dbleEXPLAIN DESC
```

## 3.8 Hint

### 3.8.1 -Syntax

```
/* { ! | #}dbe: {sql=SELECT select_expr FROM table_references WHERE where_condition
|shardingNode=shardingNode_name
|db_type={slave|master}}
*/
ordinary_sql
```

### 3.8.2 -Syntax

```
/* { ! | #}dbe: {db_type={slave|master}}
|db_instance_url={ip:port}}
*/
ordinary_sql
/* master */ ordinary_sql
/* uproxy_dest: ip:port */ ordinary_sql
```

- sql /\* master \*/ /\* uproxy\_dest: ip:port \*/ sql

### 3.8.3

```
/*!dbe:sql=select 1 from sbtest */ call p_show_time();
/*!dbe:shardingNode=dn1*/ update sbtest set name = 'test';
/*!dbe:db_type=master*/ select count(*) from sbtest;
/*!dbe:db_instance_url=127.0.0.1:3307*/ select count(*) from sbtest;
/*#dbe:sql=select 1 from sbtest */ call p_show_time();
/*#dbe:shardingNode=dn1*/ update sbtest set name = 'test';
/*#dbe:db_type=master*/ select count(*) from sbtest;
/*#dbe:db_instance_url=127.0.0.1:3307*/ select count(*) from sbtest;
select /* master */ * from sbtest;
show processlist /* uproxy_dest: 127.0.0.1:3307 */
```

## 3.9

- Compound-Statement Syntax
- Replication Statements
- DDL
  - databasealter databasedrop databasecreate database schemaok
  - databasealter database
  - createtableoptionDATA DIRECTORYALGORITHMtable optionalter table
  - ALTER TABLE ... LOCK ...
  - ALTER TABLE ... ORDER BY ...
  - create table ... select ...
  - 
  - 
  - 
  - 
  -
- DML
  - INSERT... VALUES(expr)expr
  - INSERT... SELECT...

```
<shardingTable name="test10" shardingNode="dn2,dn3,dn4" function="hash-three" shardingColumn="id"/>
<shardingTable name="test11" shardingNode="dn2,dn3,dn4" function="hash-three" shardingColumn="id"/>
<shardingTable name="test12" shardingNode="dn3,dn4" function="hash-two" shardingColumn="id"/>
<singleTable name="test20" shardingNode="dn2" />
<singleTable name="test22" shardingNode="dn1" />
<globalTable name="test30" shardingNode="dn1,dn2,dn3,dn4" />
<globalTable name="test31" shardingNode="dn1,dn2,dn3,dn4" />
```

- insert into test10(id,name) select id,name from test11; insert into test30(id,name) select id,name from test31;
- insert into test30(id,score) select id,score from test10;
- insert into test20(id,score) select id,score from test22;insert into test10(id,score) select id,score from test12;
- INSERT
- HANDLER
- 
- DELETE ... ORDER BY ... LIMIT ...
- DELETE/UPDATE ...LIMIT
- DO
- - select ... use/ignore index ...
  - select ... group by ... with rollup
  - select ... for update | lock in share mode
  - select ... into outfile ...
  - Row Subqueries
  - select ... union [all] select ... order by ...;(select ...) union [all] (select ...) order by ...
  - sessionset @rowid=0;select @rowid:=@rowid+1,id from user;
- 
- ANALYZE/CHECK/CHECKSUM/OPTIMIZE/REPAIR TABLE
- INSTALL/UNINSTALL PLUGIN
- BINLOG
- CACHE INDEX/ LOAD INDEX INTO CACHE
- FLUSH TABLES [WITH READ LOCK]FLUSHFLUSH TABLE
- RESET
- SHOWSHOW PROFILESSHOW ERRORS

## 3.10 (alpha)

### 3.10.0

1. SQLMySQL.
2. 2.18.09.0 bug
- 3.
- 4.

#### 3.10.1 Operators

Name	Description	Support
AND, &&	Logical AND	Y
=	Assign a value (as part of a SET statement, or as part of the SET clause in an UPDATE statement)	Y
:=	Assign a value	N
BETWEEN ... AND ...	Check whether a value is within a range of values	Y
BINARY	Cast a string to a binary string	N
&	Bitwise AND	Y
~	Bitwise inversion	Y
	Bitwise OR	Y
^	Bitwise XOR	Y
CASE	Case operator	Y
DIV	Integer division	Y
/	Division operator	Y
=	Equal operator	Y
<=>	NULL-safe equal to operator	Y
>	Greater than operator	Y
>=	Greater than or equal operator	Y
IS	Test a value against a boolean	Y
IS NOT	Test a value against a boolean	Y
IS NOT NULL	NOT NULL value test	Y
IS NULL	NULL value test	Y
->	Return value from JSON column after evaluating path; equivalent to JSON_EXTRACT().	N
->>	Return value from JSON column after evaluating path and unquoting the result; equivalent to JSON_UNQUOTE(JSON_EXTRACT()).	N
<<	Left shift	Y
<	Less than operator	Y
<=	Less than or equal operator	Y
LIKE	Simple pattern matching	Y
-	Minus operator	Y
%, MOD	Modulo operator	Y
NOT, !	Negates value	Y
NOT BETWEEN ... AND ...	Check whether a value is not within a range of values	Y
!=,<>	Not equal operator	Y
NOT LIKE	Negation of simple pattern matching	Y
NOT REGEXP	Negation of REGEXP	Y
, OR	Logical OR	Y
+	Addition operator	Y
REGEXP	Whether string matches regular expression	Y
>>	Right shift	Y
RLIKE	Whether string matches regular expression	N
SOUNDS LIKE	Compare sounds	N
*	Multiplication operator	N
-	Change the sign of the argument	Y
XOR	Logical XOR	Y
COALESCE()	Return the first non-NULL argument	Y

GREATEST()	Return the largest argument	Y
IN()	Check whether a value is within a set of values	Y
INTERVAL()	Return the index of the argument that is less than the first argument	Y
ISNULL()	Test whether the argument is NULL	Y
LEAST()	Return the smallest argument	Y
STRCMP()	Compare two strings	Y

### 3.10.2 Control Flow Functions

Name	Description	Support
CASE	Case operator	Y
IF()	If/else construct	Y
IFNULL()	Null if/else construct	Y
NULLIF()	Return NULL if expr1 = expr2	Y

### 3.10.3 String Functions

Name	Description	Support
ASCII()	Return numeric value of left-most character	Y
BIN()	Return a string containing binary representation of a number	N
BIT_LENGTH()	Return length of argument in bits	Y
CHAR()	Return the character for each integer passed	Y
CHAR_LENGTH()	Return number of characters in argument	Y
CHARACTER_LENGTH()	Synonym for CHAR_LENGTH()	Y
CONCAT()	Return concatenated string	Y
CONCAT_WS()	Return concatenate with separator	Y
ELT()	Return string at index number	Y
EXPORT_SET()	Return a string such that for every bit set in the value bits, you get an on string and for every unset bit, you get an off string	N
FIELD()	Return the index (position) of the first argument in the subsequent arguments	Y
FIND_IN_SET()	Return the index position of the first argument within the second argument	Y
FORMAT()	Return a number formatted to specified number of decimal places	Y
FROM_BASE64()	Decode base64 encoded string and return result	N
HEX()	Return a hexadecimal representation of a decimal or string value	Y
INSERT()	Insert a substring at the specified position up to the specified number of characters	Y
INSTR()	Return the index of the first occurrence of substring	Y
LCASE()	Synonym for LOWER()	Y
LEFT()	Return the leftmost number of characters as specified	Y
LENGTH()	Return the length of a string in bytes	Y
LIKE	Simple pattern matching	Y
LOAD_FILE()	Load the named file	N
LOCATE()	Return the position of the first occurrence of substring	Y
LOWER()	Return the argument in lowercase	Y
LPAD()	Return the string argument, left-padded with the specified string	Y
LTRIM()	Remove leading spaces	Y
MAKE_SET()	Return a set of comma-separated strings that have the corresponding bit in bits set	Y
MATCH	Perform full-text search	N
MID()	Return a substring starting from the specified position	N
NOT LIKE	Negation of simple pattern matching	Y
NOT REGEXP	Negation of REGEXP	Y
OCT()	Return a string containing octal representation of a number	N
OCTET_LENGTH()	Synonym for LENGTH()	N
ORD()	Return character code for leftmost character of the argument	Y
POSITION()	Synonym for LOCATE()	N

QUOTE()	Escape the argument for use in an SQL statement	Y
REGEXP	Whether string matches regular expression	Y
REPEAT()	Repeat a string the specified number of times	Y
REPLACE()	Replace occurrences of a specified string	Y
REVERSE()	Reverse the characters in a string	Y
RIGHT()	Return the specified rightmost number of characters	Y
RLIKE	Whether string matches regular expression	N
RPAD()	Append string the specified number of times	Y
RTRIM()	Remove trailing spaces	Y
SOUNDEX()	Return a soundex string	Y
SOUNDS LIKE	Compare sounds	Y
SPACE()	Return a string of the specified number of spaces	Y
STRCMP()	Compare two strings	Y
SUBSTR()	Return the substring as specified	Y
SUBSTRING()	Return the substring as specified	Y
SUBSTRING_INDEX()	Return a substring from a string before the specified number of occurrences of the delimiter	Y
TO_BASE64()	Return the argument converted to a base-64 string	N
TRIM()	Remove leading and trailing spaces	Y
UCASE()	Synonym for UPPER()	Y
UNHEX()	Return a string containing hex representation of a number	Y
UPPER()	Convert to uppercase	Y
WEIGHT_STRING()	Return the weight string for a string	N

### 3.10.3.1 HEX

MySQL HEX <=64string>64MySQL 8.0 MySQL 5.7 dble HEX MySQL 8

### 3.10.4 Numeric Functions and Operators

Name	Description	Support
ABS()	Return the absolute value	Y
ACOS()	Return the arc cosine	Y
ASIN()	Return the arc sine	Y
ATAN()	Return the arc tangent	Y
ATAN2(), ATANO	Return the arc tangent of the two arguments	Y
CEIL()	Return the smallest integer value not less than the argument	Y
CEILING()	Return the smallest integer value not less than the argument	Y
CONV()	Convert numbers between different number bases	Y
COS()	Return the cosine	Y
COT()	Return the cotangent	Y
CRC32()	Compute a cyclic redundancy check value	Y
DEGREES()	Convert radians to degrees	Y
DIV	Integer division	Y
/	Division operator	Y
EXP()	Raise to the power of	Y
FLOOR()	Return the largest integer value not greater than the argument	Y
LN()	Return the natural logarithm of the argument	Y
LOG()	Return the natural logarithm of the first argument	Y
LOG10()	Return the base-10 logarithm of the argument	Y
LOG2()	Return the base-2 logarithm of the argument	Y
-	Minus operator	Y
MOD()	Return the remainder	Y
%, MOD	Modulo operator	Y
PI()	Return the value of pi	Y
+	Addition operator	Y
POW()	Return the argument raised to the specified power	Y
POWER()	Return the argument raised to the specified power	Y

RADIANS()	Return argument converted to radians	Y
RAND()	Return a random floating-point value	Y
ROUND()	Round the argument	Y
SIGN()	Return the sign of the argument	Y
SIN()	Return the sine of the argument	Y
SQRT()	Return the square root of the argument	Y
TAN()	Return the tangent of the argument	Y
*	Multiplication operator	Y
TRUNCATE()	Truncate to specified number of decimal places	Y
-	Change the sign of the argument	Y

### 3.10.5 Date and Time Functions

Name	Description	Support
ADDDATE()	Add time values (intervals) to a date value	Y
ADDTIME()	Add time	Y
CONVERT_TZ()	Convert from one time zone to another	N
CURDATE()	Return the current date	Y
CURRENT_DATE()	Synonyms for CURDATE()	Y
CURRENT_TIME()	Synonyms for CURTIME()	Y
CURRENT_TIMESTAMP()	Synonyms for NOW()	Y
CURTIME()	Return the current time	Y
DATE()	Extract the date part of a date or datetime expression	Y
DATE_ADD()	Add time values (intervals) to a date value	Y
DATE_FORMAT()	Format date as specified	Y
DATE_SUB()	Subtract a time value (interval) from a date	Y
DATEDIFF()	Subtract two dates	Y
DAY()	Synonym for DAYOFMONTH()	N
DAYNAME()	Return the name of the weekday	Y
DAYOFMONTH()	Return the day of the month (0-31)	Y
DAYOFWEEK()	Return the weekday index of the argument	Y
DAYOFYEAR()	Return the day of the year (1-366)	Y
EXTRACT()	Extract part of a date	Y
FROM_DAYS()	Convert a day number to a date	Y
FROM_UNIXTIME()	Format Unix timestamp as a date	Y
GET_FORMAT()	Return a date format string	Y
HOUR()	Extract the hour	Y
LAST_DAY	Return the last day of the month for the argument	N
LOCALTIME()	Synonym for NOW()	Y
LOCALTIMESTAMP()	Synonym for NOW()	Y
MAKEDATE()	Create a date from the year and day of year	Y
MAKETIME()	Create time from hour, minute, second	Y
MICROSECOND()	Return the microseconds from argument	Y
MINUTE()	Return the minute from the argument	Y
MONTH()	Return the month from the date passed	Y
MONTHNAME()	Return the name of the month	Y
NOW()	Return the current date and time	Y
PERIOD_ADD()	Add a period to a year-month	Y
PERIOD_DIFF()	Return the number of months between periods	Y
QUARTER()	Return the quarter from a date argument	Y
SEC_TO_TIME()	Converts seconds to 'HH:MM:SS' format	Y
SECOND()	Return the second (0-59)	Y
STR_TO_DATE()	Convert a string to a date	Y
SUBDATE()	Synonym for DATE_SUB() when invoked with three arguments	Y
SUBTIME()	Subtract times	Y
SYSDATE()	Return the time at which the function executes	Y

TIME()	Extract the time portion of the expression passed	Y
TIME_FORMAT()	Format as time	Y
TIME_TO_SEC()	Return the argument converted to seconds	Y
TIMEDIFF()	Subtract time	Y
TIMESTAMP()	With a single argument, this function returns the date or datetime expression; with two arguments, the sum of the arguments	N
TIMESTAMPADD()	Add an interval to a datetime expression	Y
TIMESTAMPDIFF()	Subtract an interval from a datetime expression	Y
TO_DAYS()	Return the date argument converted to days	Y
TO_SECONDS()	Return the date or datetime argument converted to seconds since Year 0	Y
UNIX_TIMESTAMP()	Return a Unix timestamp	Y
UTC_DATE()	Return the current UTC date	Y
UTC_TIME()	Return the current UTC time	Y
UTC_TIMESTAMP()	Return the current UTC date and time	Y
WEEK()	Return the week number	Y
WEEKDAY()	Return the weekday index	Y
WEEKOFYEAR()	Return the calendar week of the date (1-53)	Y
YEAR()	Return the year	Y
YEARWEEK()	Return the year and week	Y
CURRENT_DATE	Synonyms for CURDATE()	N
CURRENT_TIME	Synonyms for CURTIME()	N
CURRENT_TIMESTAMP	Synonyms for NOW()	N
LOCALTIME	Synonym for NOW()	N
LOCALTIMESTAMP()	Synonym for NOW()	N

### 3.10.6 Cast Functions and Operators

Name	Description	Support
BINARY	Cast a string to a binary string	N
CAST()	Cast a value as a certain type	Y
CONVERT()	Cast a value as a certain type	Y

#### 3.10.6.1 CAST

BINARY  
 CHAR[(N)] [charset\_info] charset\_info  
 JSON  
 SIGNED [INTEGER] INTEGER(druid)  
 UNSIGNED [INTEGER] INTEGER (druid)

#### 3.10.6.2 CONVERT

BINARY  
 CHAR[(N)] [charset\_info] charset\_info  
 JSON  
 SIGNED [INTEGER] INTEGER(druid)  
 UNSIGNED [INTEGER] INTEGER (druid)

### 3.10.7 Bit Functions and Operators

Name	Description	Support
BIT_COUNT()	Return the number of bits that are set	Y
&	Bitwise AND	Y
~	Bitwise inversion	Y
	Bitwise OR	Y
^	Bitwise XOR	Y
<<	Left shift	Y
>>	Right shift	Y

### 3.10.8 Aggregate (GROUP BY) Functions

Name	Description	Support
AVG()	Return the average value of the argument	Y

BIT_AND()	Return bitwise AND	Y
BIT_OR()	Return bitwise OR	Y
BIT_XOR()	Return bitwise XOR	Y
COUNT()	Return a count of the number of rows returned	Y
COUNT(DISTINCT)	Return the count of a number of different values	Y
GROUP_CONCAT()	Return a concatenated string	Y
JSON_ARRAYAGG()	Return result set as a single JSON array	N
JSON_OBJECTAGG()	Return result set as a single JSON object	N
MAX()	Return the maximum value	Y
MIN()	Return the minimum value	Y
STD()	Return the population standard deviation	Y
STDDEV()	Return the population standard deviation	Y
STDDEV_POP()	Return the population standard deviation	Y
STDDEV_SAMP()	Return the sample standard deviation	Y
SUM()	Return the sum	Y
VAR_POP()	Return the population standard variance	Y
VAR_SAMP()	Return the sample variance	Y
VARIANCE()	Return the population standard variance	Y

: STD VARIANCE  
 AVG\SUMdbleMySQL  
 MySQLMySQL,  
 for data type float, dble and mysql may get different results

### 3.10.9 Full-Text Search Functions

not supported

### 3.10.10 XML Functions

not supported

### 3.10.11 Encryption and Compression Functions

not supported

### 3.10.12 Information Functions

not supported

### 3.10.13 Spatial Analysis Functions

not supported

### 3.10.14 JSON Functions

not supported

### 3.10.15 Functions Used with Global Transaction IDs

not supported

### 3.10.16 MySQL Enterprise Encryption Functions

not supported

### 3.10.17 Miscellaneous Functions

not supported

[MySQL5.7](#)

1. workbench
- 2.dbeaver
3. mysqldump
4. navicat
5. mysqlsource load data

1. mysqldump mysqldump dble

```
./mysqldump -h127.0.0.1 -utest -P3306 -p111111 --default-character-set=utf8mb4 --master-data=2 --single-transaction --set-gtid-purged=off --hex-blob --databases schema1 > export.sql
```

- 1.
2. dbledble

**4**

- [4.1](#)
- [4.2](#)
- [4.3](#)
- [4.4 \(Prepared Statements\)](#)
- [4.5](#)

## 4.1

- 
- 16M
- , bootstrap.cnf
-

## 4.2

### 4.2.1 Authentication Plugin

a.(mysql\_native\_password 8.0caching\_sha2\_password)  
 b.mysql\_native\_password  
 c.caching\_sha2\_password

### 4.2.2 Capabilities

dble  
 jdbcdbleCLIENT\_FOUND\_ROWS  
 dbleIGNORE\_SPACE select @@sql\_mode IGNORE\_SPACE  
[MySQL issue-972](#)  
 IGNORE\_SPACEsessionsql\_mode  
 dble

CLIENT_LONG_PASSWORD	1	Use the improved version of Old Password Authentication.Assumed to be set since 4.1.1.	Y	Y
CLIENT_FOUND_ROWS	2	Send found rows instead of affected rows in EOF_Packet	Y	Y
CLIENT_LONG_FLAG	4	Get all column flags.	Y	Y
CONNECT_WITH_DB	8	Database (schema) name can be specified on connect in Handshake Response Packet.	Y	Y
CLIENT_NO_SCHEMA	16	Don't allow database.table.column.	N	N
CLIENT_COMPRESS	32	Compression protocol supported	bootstrap.cnfuseCompression	
CLIENT_ODBC	64	Special handling of ODBC behavior.No special behavior since 3.22.	Y	Y
CLIENT_LOCAL_FILES	128	Can use LOAD DATA LOCAL.	Y	Y
CLIENT_IGNORE_SPACE	256	Ignore spaces before '('.	Y	Y
CLIENT_PROTOCOL_41	512	New 4.1 protocol	Y	Y
CLIENT_INTERACTIVE	1024	This is an interactive client.	Y	Y
CLIENT_SSL	2048	Use SSL encryption for the session	N	N
CLIENT_IGNORE_SIGPIPE	4096	Client only flag.Not used.	Y	Y
CLIENT_TRANSACTIONS	8192	Client knows about transactions	Y	Y
CLIENT_RESERVED	16384	DEPRECATED:Old flag for 4.1 protocol.	N	N
CLIENT_RESERVED2	32768	DEPRECATED:Old flag for 4.1 authentication.	Y	Y
CLIENT_MULTI_STATEMENTS	65536	Enable/disable multi-stmt support	Y	Y
CLIENT_MULTI_RESULTS	131072	Enable/disable multi-results	Y	Y
CLIENT_PS_MULTI_RESULTS	262144	Multi-results and OUT parameters in PS-protocol	N	N
CLIENT_PLUGIN_AUTH	524288	Client supports plugin authentication.	N	Y
CLIENT_CONNECT_ATTRS	1048576	Client supports connection attributes.	N	N
CLIENT_PLUGIN_AUTH_LENENC_CLIENT_DATA	2097152	Enable authentication response packet to be larger than 255 bytes.	N	N
CLIENT_CAN_HANDLE_EXPIRED_PASSWORDS	4194304	Don't close the connection for a user account with expired password.	N	N
CLIENT_SESSION_TRACK	8388608	Capable of handling server state change information.	N	N
CLIENT_DEPRECATED_EOF	16777216	Client no longer needs EOF_Packet and will use OK_Packet instead.	N	N
CLIENT_SSL_VERIFY_SERVER_CERT	1UL << 30	Verify server certificate	N	N

CLIENT_REMEMBER_OPTION S	1UL << 31	Don't reset the options after an unsuccessful connect.	N	N
-----------------------------	-----------	--------------------------------------------------------	---	---

:

[https://dev.mysql.com/doc/dev/mysql-server/8.0.13/group\\_\\_group\\_\\_cs\\_\\_capabilities\\_\\_flags.html](https://dev.mysql.com/doc/dev/mysql-server/8.0.13/group__group__cs__capabilities__flags.html)

## 4.3

### 4.3.1 Supported

- COM\_INIT\_DB  
Specifies the default schema for the connection.
- COM\_PING  
Sends a packet containing one byte to check that the connection is active.
- COM\_QUERY  
Sends the server an SQL statement to be executed immediately. Support Multi-Statement.
- COM\_QUIT  
Client tells the server that the connection should be terminated.
- COM\_SET\_OPTION  
Enables or disables server option.
- COM\_CHANGE\_USER  
Resets the connection and re-authenticates with the given credentials.
- COM\_RESET\_CONNECTION  
Resets a connection without re-authentication.
  - (rollback & unlock)
  - 
  - 
  - 
  - prepare
  - ()
  - LAST\_INSERT\_ID
- COM\_FIELD\_LIST  
MySQL Doc said that it is deprecated from 5.7.11 . But some tools are still use it, like OGG or MariaDB client.

#### 4.3.1.1 Multi-Statement

- Supported
  - DML:select insert update replace delete
  - DDL
  - OTHER
    - BEGIN;
    - COMMIT;
    - LOCK TABLE
    - UNLOCK TABLES
    - START
    - KILL
    - USE
    - ROLLBACK
    - MYSQL\_CMD\_COMMENT
    - MYSQL\_COMMENT
    - SELECT VERSION\_COMMENT (SELECT @@VERSION\_COMMENT)
    - SELECT DATABASE select database()
    - SELECT USERselect user()
    - SELECT VERSION (select version())
    - SELECT SESSION\_INCREMENT(select @@session.auto\_increment\_increment)
    - SELECT SESSION\_ISOLATION(select @@session.tx\_isolation)
    - SELECT LAST\_INSERT\_ID(select last\_insert\_id() as id )
    - SELECT IDENTITY(select @@identity)
    - SELECT SESSION\_TX\_READ\_ONLYselect @@session.tx\_read\_only
- Not Supported
  - EXPLAIN
  - EXPLAIN2
  - DESCRIBE
  - SET
  - SHOW DATABASES/TABLES/TABLE\_STATUS/COLUMNS/INDEX/CREATE\_TABLE/VARIABLES/CREATE\_VIEW/CHARSET
  - HELP
  - LOAD\_DATA\_INFILE\_SQL
  - CREATE\_VIEW
  - REPLACE\_VIEW
  - ALTER\_VIEW
  - DROP\_VIEW

### 4.3.2 Not Supported

- COM\_DEBUG  
Forces the server to dump debug information to stdout
- COM\_STATISTICS  
Get internal server statistics.
- COM\_CREATE\_DB
- COM\_DROP\_DB

### 4.3.3 Internal

- COM\_SLEEP  
Used inside the server only.
- COM\_CONNECT an internal command in the server.
- COM\_TIME an internal command in the server.
- COM\_DAEMON an internal command in the server.
- COM\_DELAYED\_INSERT an internal command in the server.

#### 4.3.4 Deprecated

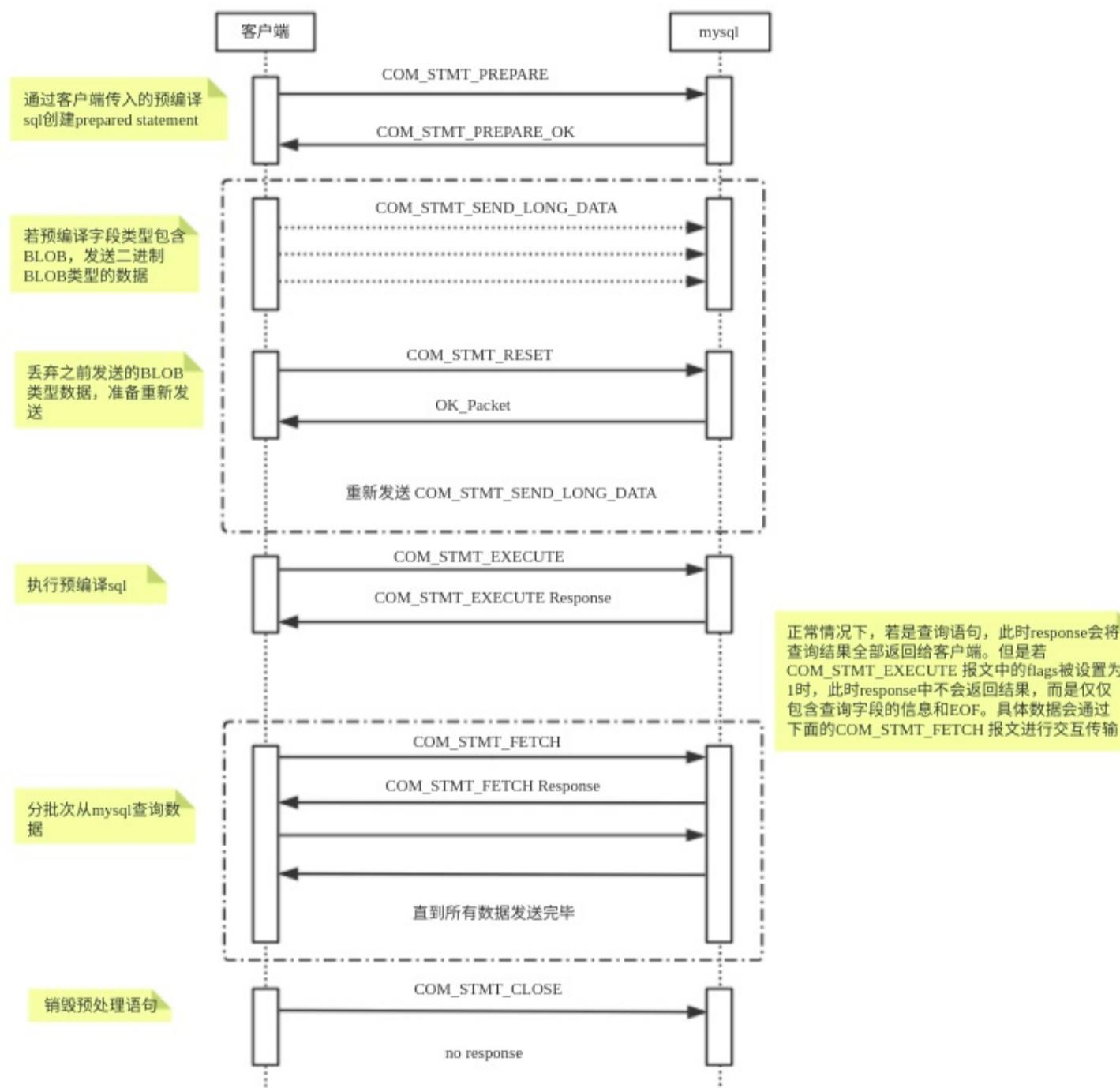
- COM\_PROCESS\_INFO  
Deprecated from 5.7.11.
- COM\_PROCESS\_KILL  
Deprecated from 5.7.11.
- COM\_SHUTDOWN  
Deprecated from 5.7.9.
- COM\_REFRESH  
Deprecated from 5.7.11.

## 4.4 (Prepared Statements)

### 4.4.1 Supported

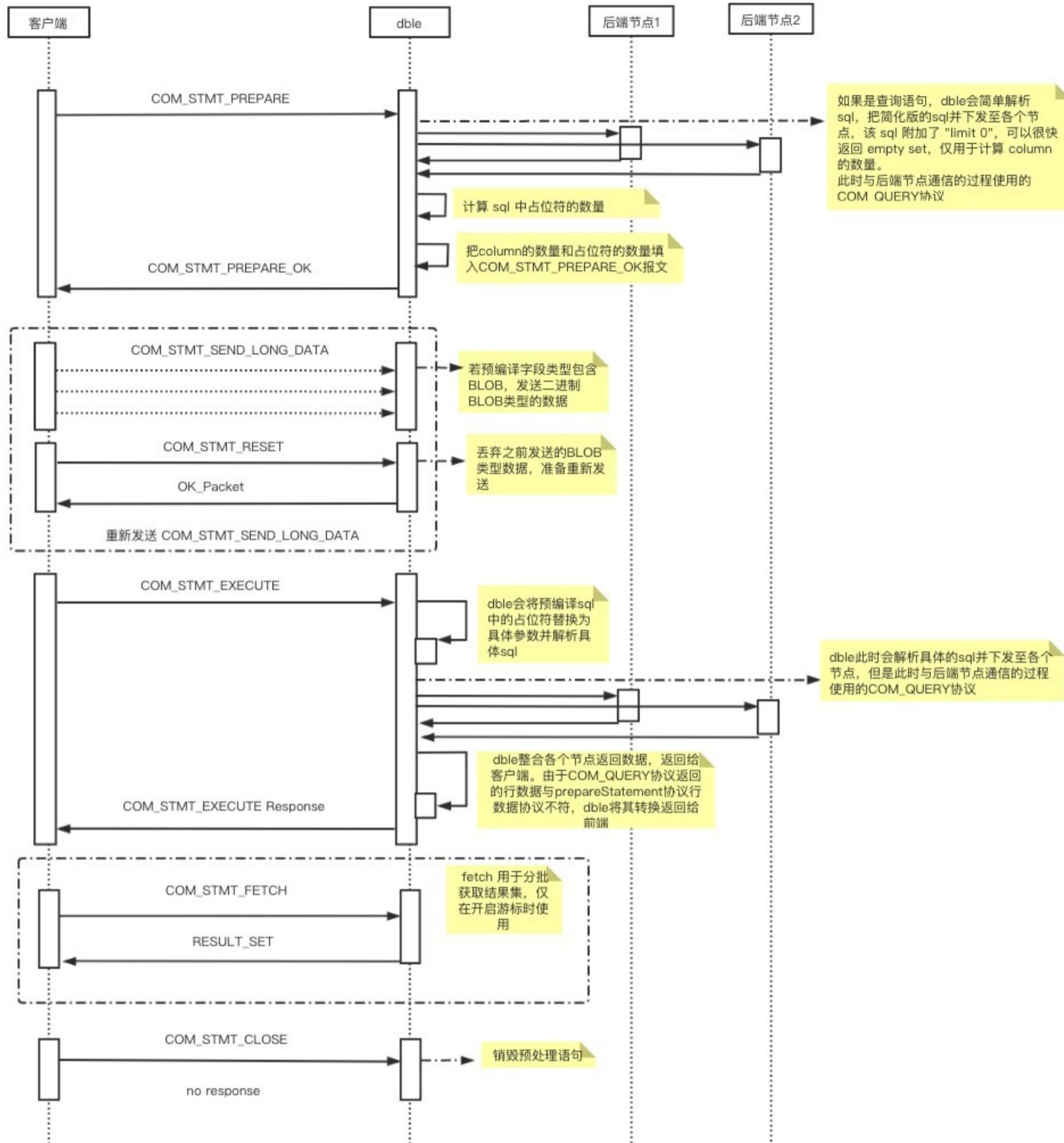
- COM\_STMT\_CLOSE  
Closes a previously prepared statement.
  - COM\_STMT\_EXECUTE  
Executes a previously prepared statement.
  - COM\_STMT\_RESET  
Resets a prepared statement on client and server to state after preparing.
  - COM\_STMT\_SEND\_LONG\_DATA  
When data for a specific column is big, it can be sent separately.
  - COM\_STMT\_PREPARE  
Prepares a statement on the server
- NOTICE: Although COM\_STMT\_PREPARE works , but it will not do pre-compile .
- COM\_STMT\_FETCH  
Fetches rows from a prepared statement

### 4.4.2 MySQL Flow



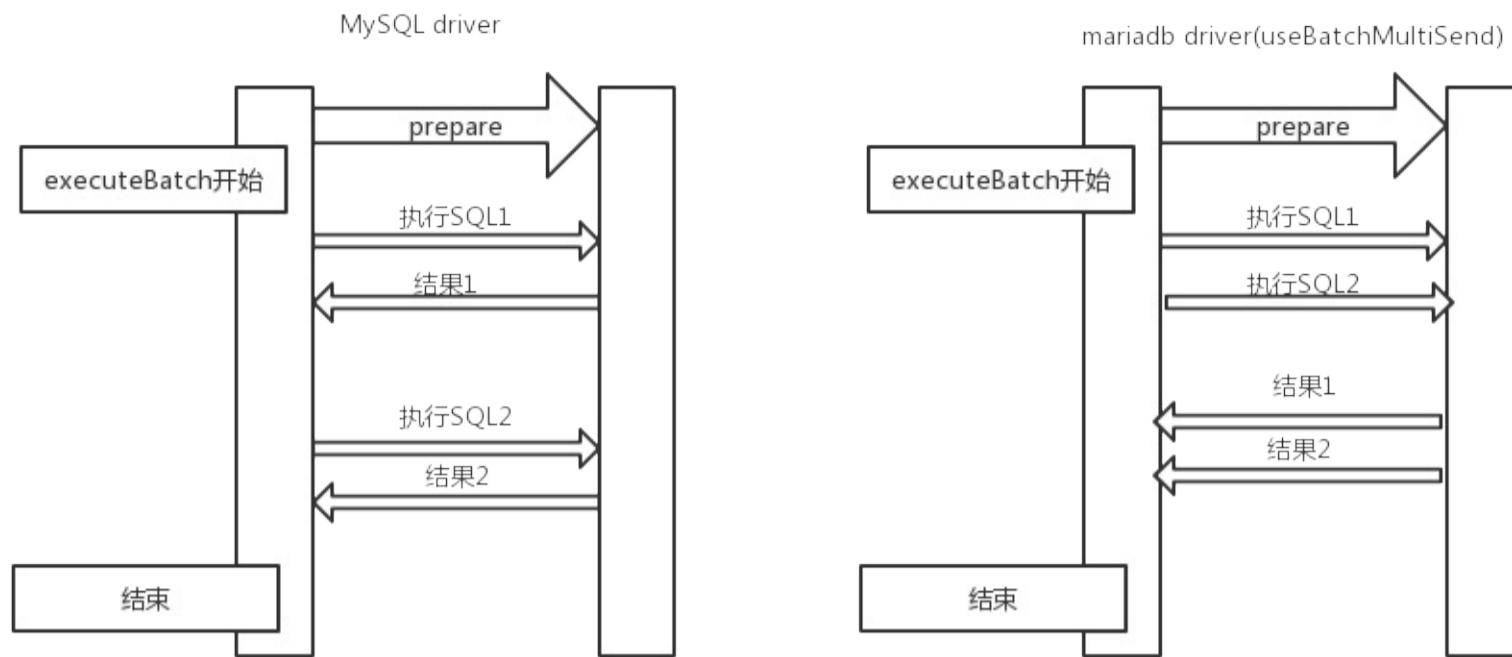
- urluseCursorFetch=true&server=jdbcfetchSize>0&fetchPrepareStatement

### 4.4.3 Dble Flow



#### 4.4.4

```
mariadb-java-client1.5.0dbledbexecuteBatchdriveruseBatchMultiSend
mariadb-java-client1.5.0useBatchMultiSendexecuteBatchdriverdbledb
```



: <https://mariadb.com/kb/en/library/option-batchmultisend-description/>

## 4.5

- EOF\_Packet
- ERR\_Packet
- OK\_Packet
- LOCAL\_INFILE Packet
- PACKET\_LOCAL\_INFILE
- PACKET\_RESULTSET

**5.**

- [5.1 druid](#)
- [5.2](#)

## 5.1 druid

1. INSERT ... VALUE ... INSERT ... VALUES ...VALUE[S]

druidbugVALUES[S]druid

druid[issue2218](#)

dbleissue [dble\\_issue\\_379](#).

2. SHOW ALL TABLES dble

3.

[dble\\_issue\\_788](#)

## 5.2

1. : ,parentkey  
issue : <https://github.com/actiontech/dble/issues/12>
2. JDBCrewiteBatchedStatements=true  
:  
insert : insertinsert.. values(),(),com\_query dble
3. JDBCuseServerPrepStmts=true  
: dbleBinary Protocol Text Protocol
4. lock/unlock  
issue : <https://github.com/actiontech/dble/issues/38>
5. schema.xml3.20.07.0  
: schema.xml  
issue : <https://github.com/actiontech/dble/issues/70>
6. dbletabledble, dble
7. /  
: sql  
issue : <https://github.com/actiontech/dble/issues/85>
8. : dropjavatcp\_keepalive  
issue : <https://github.com/actiontech/dble/issues/87>
9. /  
:  
issue : <https://github.com/actiontech/dble/issues/100>
10. order by lock in share mode/for update , lock clause is ignored  
:  
issue : <https://github.com/actiontech/dble/issues/127>
11. \_charset\_name 'string' \_charset\_name+b'val'  
issue : <https://github.com/actiontech/dble/issues/262>  
issue : <https://github.com/actiontech/dble/issues/267>
12. set sql\_select\_limit  
issue : <https://github.com/actiontech/dble/issues/331>
13. sEndDatedefault node  
:  
issue : <https://github.com/actiontech/dble/issues/357>
14. selece @@sql\_mode IGNORE\_SPACE  
: 4.2  
issue : <https://github.com/actiontech/dble/issues/364>
15. replace ... into  
replace replaceIDIDID
16. kill sessionok
17. 2.19.01rule/schema/server.xmlversionBUG2.19.01zkversion
18. mysql set global local\_infile = 0 ,dble load data  
: dbleload data load data local infile ... mysql local\_infile  
issue : <https://github.com/actiontech/dble/issues/1111>
19. set @@sql\_auto\_is\_null=on; : set @@sql\_auto\_is\_null=on null,dble  
issue : <https://github.com/actiontech/dble/issues/978>
20. mariadb-java-client1.5.0useBatchMultiSend mariadb-java-client1.5.0prepare issue <https://github.com/actiontech/dble/issues/1244>
21. explain . issue <https://github.com/actiontech/dble/issues/1449>

## 6. MySQL Server

MySQL ServerbugMySQL

- [6.1](#)
- [6.2 INSERT](#)
- [6.3 "show all tables"](#)
- [6.4 message](#)
- [6.5 information\\_schema](#)

## 6.1 MySQL

:

MySQL:

```
[test_yhq]>select * from char_columns_4;
+----+-----+
| id | c_char |
+----+-----+
| 1  | xx   |
| 4  | z    |
+----+-----+
2 rows in set (0.02 sec)
[test_yhq]>begin;
Query OK, 0 rows affected (0.01 sec)

[test_yhq]>insert into char_columns_4 values(1,'yy');
ERROR 1062 (23000): Duplicate entry '1' for key 'PRIMARY'
[test_yhq]>insert into char_columns_4 values(2,'yy');
Query OK, 1 row affected (0.00 sec)

[test_yhq]>commit;
Query OK, 0 rows affected (0.02 sec)
```

dble:

```
[testdb]>select * from sharding_four_node order by id;
+----+-----+-----+
| id | c_flag | c_decimal |
+----+-----+-----+
| 1  | 1_1   | 1.0000 |
| 2  | 2     | 2.0000 |
| 3  | 3     | 3.0000 |
+----+-----+-----+
3 rows in set (0.28 sec)

begin;
Query OK, 0 rows affected (0.01 sec)

[testdb]>insert into sharding_four_node values(1,'1',1.0);
ERROR 1062 (23000): Duplicate entry '1' for key 'PRIMARY'
[testdb]>insert into sharding_four_node values(13,'13',13.0);
ERROR 1003 (HY000): Transaction error, need to rollback.Reason:[ errNo:1062 Duplicate entry '1' for key 'PRIMARY']
[testdb]>commit;
ERROR 1003 (HY000): Transaction error, need to rollback.Reason:[ errNo:1062 Duplicate entry '1' for key 'PRIMARY']
```

## 6.2 INSERTdbleMySQL

:

MySQL:

```
desc mysql_autoinc;
+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra      |
+-----+-----+-----+-----+
| c_char | char(255) | YES  |     | NULL    |             |
| id     | bigint(20) | NO   | PRI | NULL    | auto_increment |
+-----+-----+-----+-----+
2 rows in set (0.02 sec)
```

```
[test_yhq]>insert into mysql_autoinc values('1',1);
Query OK, 1 row affected (0.01 sec)
```

dble

```
desc sharding_four_node_autoinc;
+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra      |
+-----+-----+-----+-----+
| c_char | char(255) | YES  |     | NULL    |             |
| id     | bigint(20) | NO   | PRI | NULL    | auto_increment |
+-----+-----+-----+-----+
2 rows in set (0.01 sec)

[testdb]>insert into sharding_four_node_autoinc values('2',2);
ERROR 1064 (HY000): In insert Syntax, you can't set value for Autoincrement column!
```

## 6.3 ADD "show all tables"

The optional ALL modifier causes SHOW TABLES to display a second output column with values of BASE TABLE for a table ,VIEW for a view, SHARDING TABLE for a sharding table and GLOBAL TABLE for a global table.

:

```
[testdb]>show all tables;
+-----+-----+
| Tables in testdb | Table_type |
+-----+-----+
| global_four_node | GLOBAL TABLE |
| global_four_node_autoinc | GLOBAL TABLE |
| global_two_node | GLOBAL TABLE |
| sbtest1 | SHARDING TABLE |
| sharding_four_node | SHARDING TABLE |
| sharding_four_node2 | SHARDING TABLE |
| sharding_four_node_autoinc | SHARDING TABLE |
| sharding_two_node | SHARDING TABLE |
| single | SHARDING TABLE |
| customer | BASE TABLE |
| district | BASE TABLE |
+-----+-----+
11 rows in set (0.02 sec)
```

## 6.4 message

:

MySQL:

```
mysql> insert into sharding_two_node values(9,'9',9.0),(10,'10',10.0);
Query OK, 2 rows affected (0.24 sec)
Records: 2  Duplicates: 0  Warnings: 0
```

dble:

```
mysql> insert into sharding_two_node values(11,'11',11.0),(12,'12',12.0);
Query OK, 2 rows affected (0.49 sec)
```

## 6.5 information\_schema

Navicat Premium 12 dbleNavicat Premium 12 information\_schemamysql  
dble driver

### Navicat Premium12

1. SELECT SCHEMA\_NAME, DEFAULT\_CHARACTER\_SET\_NAME, DEFAULT\_COLLATION\_NAME FROM information\_schema.SCHEMATA;

mysql schemecharacter set collationNavicat Premium 12  
dblescheme SchemeConfig scheme scheme character set collation  
1dbleschemeshardingNodeshardingNode character set collation character set collation ,MySQL  
2dble SCHEMATA

### driver

0

```

1. SELECT TABLE_SCHEMA, TABLE_NAME, TABLE_TYPE
   FROM information_schema.TABLES WHERE TABLE_SCHEMA = 'testdb'
   ORDER BY TABLE_SCHEMA, TABLE_TYPE
2. SELECT TABLE_SCHEMA, TABLE_NAME, COLUMN_NAME, COLUMN_TYPE
   FROM information_schema.COLUMNS
  WHERE TABLE_SCHEMA = 'testdb'
  ORDER BY TABLE_SCHEMA, TABLE_NAME
3. SELECT DISTINCT ROUTINE_SCHEMA, ROUTINE_NAME, PARAMS.PARAMETER
   FROM information_schema.ROUTINES LEFT JOIN
   ( SELECT SPECIFIC_SCHEMA, SPECIFIC_NAME,
          GROUP_CONCAT(CONCAT(DATA_TYPE, ' ', PARAMETER_NAME) ORDER BY ORDINAL_POSITION SEPARATOR ', ') PARAMETER, ROUTINE_TYPE
     FROM information_schema.PARAMETERS GROUP BY SPECIFIC_SCHEMA, SPECIFIC_NAME, ROUTINE_TYPE
   )PARAMS
  ON ROUTINES.ROUTINE_SCHEMA = PARAMS.SPECIFIC_SCHEMA AND
  ROUTINES.ROUTINE_NAME = PARAMS.SPECIFIC_NAME AND
  ROUTINES.ROUTINE_TYPE = PARAMS.ROUTINE_TYPE
  WHERE ROUTINE_SCHEMA = 'testdb' ORDER BY ROUTINE_SCHEMA
4. SELECT TABLE_NAME, CHECK_OPTION, IS_UPDATABLE, SECURITY_TYPE, DEFINER
   FROM information_schema.VIEWS
  WHERE TABLE_SCHEMA = 'testdb' ORDER BY TABLE_NAME ASC
5. SELECT * FROM information_schema.ROUTINES
  WHERE ROUTINE_SCHEMA = 'testdb' ORDER BY ROUTINE_NAME
6. SELECT EVENT_CATALOG, EVENT_SCHEMA, EVENT_NAME, DEFINER, TIME_ZONE,
   EVENT_DEFINITION, EVENT_BODY, EVENT_TYPE, SQL_MODE, STATUS, EXECUTE_AT,
   INTERVAL_VALUE, INTERVAL_FIELD, STARTS, ENDS, ON_COMPLETION, CREATED,
   LAST_ALTERED, LAST_EXECUTED, ORIGINATOR, CHARACTER_SET_CLIENT,
   COLLATION_CONNECTION, DATABASE_COLLATION, EVENT_COMMENT
  FROM information_schema.EVENTS WHERE EVENT_SCHEMA = 'testdb'
  ORDER BY EVENT_NAME ASC
7. SELECT COUNT(*) FROM information_schema.TABLES
  WHERE TABLE_SCHEMA = 'testdb' UNION
SELECT COUNT(*)
  FROM information_schema.COLUMNS
  WHERE TABLE_SCHEMA = 'testdb' UNION
SELECT COUNT(*) FROM information_schema.ROUTINES WHERE ROUTINE_SCHEMA = 'testdb'
```

## 7

- [7.1 SQL](#)
- [7.2 dbleDemo](#)
- [7.3](#)

## 7.1 SQL

- SQLSQLSQL

1

```
dbledbleSQLSQL SQLdbeSQLSQLSQL dbleMySQL dbleEXPLAINdbe
```

```
explain select id,accountno from account where userid=2;
```

EXPLAINSQL EXPLAIN2

```
explain2 shardingNode=dn1 sql=select id,accountno from account where userid=2;
```

explain2sqlexplainshardingNodeexplain

## 2SQL

SQL:

- SQL
- 
- INININ
- SQLDISTINCTGROUP BYORDER BYSQL
- 

3

- Join
- 
- 
- 
- JoinJoinJoin
- Join
- JoinJoin
- limit a,b
- GROUP
- 
- Join

## 7.2 dbleDemo

### ibatis

ibatisdbleMySQL JDBC

```
jdbc.driverClass=com.mysql.jdbc.Driver
jdbc.jdbcUrl=jdbc:mysql://127.0.0.1:8066/TESTDB?useUnicode=true&characterEncoding=utf-8
jdbc.user=root
jdbc.password=123456
```

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper
PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
"http://mybatis.org/dtd/mybatis-3-mapper.dtd">
<mapper namespace="com.mapper.UserMapper">
<insert id="saveUser" parameterType="com.bean.User">
    insert into user(id,name,phone,birthday)
    values (0,#{name},#{phone},#{birthday})
    <selectKey keyProperty="id" order="after" resultType="int">
        select last_insert_id() as id
    </selectKey>
</insert>
<delete id="deleteUserById" parameterType="java.lang.String">
    delete from user where id=#{id}
</delete>
<update id="updateUser" parameterType="com.bean.User">
    update user set name=#{name},phone=#{phone},birthday=#{birthday} where id=#{id}
</update>
<update id="updateUsers">
    /*!dble:sql=select * from user;*/update users set usercount=(select count(*) from user),ts=now()
</update>
<select id="getUserById" parameterType="java.lang.String" resultType="com.bean.User">
    select * from user where id=#{id}
</select>
<select id="getUsers" resultType="com.bean.User">
    select * from user
</select>
```

select last\_insert\_id() as idID updateUsers dbleibatis##

### hibernate

hibernatedbleMySQL hibernate.cfg.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE hibernate-configuration PUBLIC
"-//Hibernate/Hibernate Configuration DTD 3.0//EN"
"http://www.hibernate.org/dtd/hibernate-configuration-3.0.dtd">
<hibernate-configuration>
<session-factory>
    <property name="hibernate.connection.driver_class">com.mysql.jdbc.Driver</property>
    <property name="hibernate.connection.url">jdbc:mysql://192.168.58.51:8066/testdb?useUnicode=true&characterEncoding=utf-8</property>
    <property name="hibernate.connection.username">root</property>
    <property name="hibernate.connection.password">123456</property>
    <property name="hibernate.dialect">org.hibernate.dialect.MySQLInnoDBDialect</property>
    <property name="hibernate.format_sql">true</property>
    <property name="hibernate.hbm2ddl.auto">update</property>
    <mapping resource="com/actiontech/test/News.hbm.xml"/>
</session-factory>
</hibernate-configuration>
```

News.hbm.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE hibernate-mapping PUBLIC
"-//Hibernate/Hibernate Mapping DTD 3.0//EN"
"http://www.hibernate.org/dtd/hibernate-mapping-3.0.dtd">
<hibernate-mapping>
    <class name="com.actiontech.test.News" table="news_table">
        <id name="id" type="java.lang.Integer">
            <column name="id" />
```

```

</id>
<property name="title" type="java.lang.String">
  <column name="title" />
</property>
<property name="content" type="java.lang.String">
  <column name="content" />
</property>
</class>
</hibernate-mapping>

```

News.java

```

package com.actiontech.test;
public class News {
    private Integer id;
    private String title;
    private String content;
    public Integer getId() {
        return id;
    }
    public void setId(Integer id) {
        this.id = id;
    }
    public String getTitle() {
        return title;
    }
    public void setTitle(String title) {
        this.title = title;
    }
}

```

public String getContent() { return content; } public void setContent(String content) { this.content = content; } &lt;/pre&gt; NewsManager.java

```

package com.actiontech.test;
import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;
import org.hibernate.cfg.Configuration;
public class NewsManager {
    public static void main(String[] args)
        throws Exception {
        Configuration config = new Configuration().configure();
        SessionFactory factory = config.buildSessionFactory();
        Session session = factory.openSession();
        Transaction transaction = session.beginTransaction();
        News news = new News();
        news.setId(10);
        news.setTitle("dble");
        news.setContent("Hibernate dble");
        session.save(news);
        transaction.commit();
        session.close();
        factory.close();
    }
}

```

dbleHibernateHibernateSQLSQL

## JDBC

JDBCdbleMySQL

```

package com.actiontech.test;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
import java.util.Properties;
import java.util.concurrent.CountDownLatch;
import java.util.concurrent.atomic.AtomicLong;
public class SingleMixEngine {
    public static void main(String[] args) throws Exception {
        Class.forName("com.mysql.jdbc.Driver");
        Properties props = new Properties();
        props.setProperty("user", "root");
        props.setProperty("password", "123456");
        SingleMixEngine engine = new SingleMixEngine();
        engine.execute(props, "jdbc:mysql://192.168.58.51:8066/testdb");
    }
    final AtomicLong tmAl = new AtomicLong();
    final String tableName="news_table";
    public void execute(Properties props, String url) {
        CountDownLatch cdl = new CountDownLatch(1);

```

```

long start = System.currentTimeMillis();
for (int i = 0; i < 1; i++) {
    TestThread insertThread = new TestThread(props,cdl, url);
    Thread t = new Thread(insertThread);
    t.start();
    System.out.println("Test start");
}
try {
    cdl.await();
    long end = System.currentTimeMillis();
    System.out.println("Test end,total cost:" + (end-start) + "ms");
} catch (Exception e) {
}
}

class TestThread implements Runnable {
    Properties props;
    private CountDownLatch countDownLatch;
    String url;
    public TestThread(Properties props,CountDownLatch cdl,String url) {
        this.props = props;
        this.countDownLatch = cdl;
        this.url = url;
    }
    public void run() {
        Connection connection = null;
        PreparedStatement ps = null;
        Statement st = null;
        try {
            connection = DriverManager.getConnection(url,props);
            connection.setAutoCommit(true);
            st = connection.createStatement();
            String dropSql = "drop table if exists " + tableName;
            System.out.println("Execute SQL:\n\t"+dropSql);
            st.execute(dropSql);

            String createSql = "create table " + tableName + "(id int,title varchar(20),content varchar(50))";
            System.out.println("Execute SQL:\n\t"+createSql);
            st.execute(createSql);

            String insertSql = "insert into " + tableName + " (id,title,content) values(?, ?, ?)";
            System.out.println("Prepared SQL:\n\t"+insertSql);
            ps = connection.prepareStatement(insertSql);
            for (int i = 1; i <= 3; i++) {
                ps.setInt(1,i);
                ps.setString(2, ""+i);
                ps.setString(3, ""+i+"");
                ps.execute();
                System.out.println("Insert data:\t"+i+"\t"+i+"\t"+i+"");
            }

            String querySQL = "select * from " + tableName + " order by id";
            System.out.println("Execute SQL:\n\t"+querySQL);
            ResultSet rs = st.executeQuery(querySQL);
            int colcount = rs.getMetaData().getColumnCount();
            System.out.println("Current Data:");
            while(rs.next()){
                for(int i=1;i<=colcount;i++){
                    System.out.print("\t"+rs.getString(i));
                }
                System.out.println();
            }

            String updateSql = "update " + tableName + " set title='test1' where id=1";
            System.out.println("Execute SQL:\n\t"+updateSql);
            st.execute(updateSql);
            rs = st.executeQuery(querySQL);
            System.out.println("Current Data:");
            while(rs.next()){
                for(int i=1;i<=colcount;i++){
                    System.out.print("\t"+rs.getString(i));
                }
                System.out.println();
            }

            String deleteSql = "delete from " + tableName + " where id=2";
            System.out.println("Execute SQL:\n\t"+deleteSql);
            st.execute(deleteSql);
            rs = st.executeQuery(querySQL);
            System.out.println("Current Data:");
            while(rs.next()){
                for(int i=1;i<=colcount;i++){
                    System.out.print("\t"+rs.getString(i));
                }
                System.out.println();
            }

            String createIndexSql = "create index idx_1 on " + tableName + "(title)";
            System.out.println("Execute SQL:\n\t"+createIndexSql);
            st.execute(createIndexSql);

            String dropIndexSql = "drop index idx_1 on " + tableName;
            System.out.println("Execute SQL:\n\t"+dropIndexSql);
            st.execute(dropIndexSql);
        } catch (Exception e) {
            System.out.println(new java.util.Date().toString());
            e.printStackTrace();
        } finally {
            if (ps != null)
                try {
                    ps.close();
                } catch (SQLException e1) {
                    e1.printStackTrace();
                }
            if (connection != null)
                try {
                    connection.close();
                }
        }
    }
}

```

```
        } catch (SQLException e1) {
            e1.printStackTrace();
        }
        this.countDownLatch.countDown();
    }
}
```

### 7.3

- 
- MySQL
- 
- DDLDDL

**8**

- [8.1](#)
- [8.2 MySQL-offset-step](#)

## 8.1

tbidid

### 1cluster.conf

```
sequenceHandlerType=2
sequenceStartTime=2010-10-01 09:42:54
...
```

### 2bootstrap.conf

```
instanceId=1
...
```

### 3user.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE dble:user SYSTEM "user.dtd">
<dble:user xmlns:dble="http://dble.cloud/">
    <managerUser name="test" password="test"/>
    <shardingUser name="abc" password="abc" schemas="myschema" maxCon="1000000">
    </shardingUser>

</dble:user>
```

### 4db.xml

```
<?xml version="1.0"?>
<!DOCTYPE dble:db SYSTEM "db.dtd">
<dble:db xmlns:dble="http://dble.cloud/">
    <dbGroup name="host_1" rwSplitMode="0" delayThreshold="100">
        <heartbeat>select USER()</heartbeat>
        <dbInstance name="hostM1" url="172.100.10.101:3306" user="test1" password="test1" maxCon="1000" minCon="1000" primary="true" />
    </dbGroup>
    <dbGroup name="host_2" rwSplitMode="0" delayThreshold="100">
        <heartbeat>select USER()</heartbeat>
        <dbInstance name="hostM2" url="172.100.10.102:3306" user="test1" password="test1" maxCon="1000" minCon="1000" primary="true" />
    </dbGroup>
</dble:db>
```

### 5sharding.xml

```
<?xml version="1.0"?>
<!DOCTYPE dble:sharding SYSTEM "sharding.dtd">
<dble:sharding xmlns:dble="http://dble.cloud/">
    <schema name="myschema" shardingNode="dn1">
        <shardingTable name="sbtest1" shardingNode="dn1,dn2" function="mod" shardingColumn="id" incrementColumn="id" />
    </schema>
    <shardingNode name="dn1" dbGroup="host_1" database="db1"/>
    <shardingNode name="dn2" dbGroup="host_2" database="db2"/>
    <function name="mod" class="Hash">
        <property name="partitionCount">2</property>
        <property name="partitionLength">1</property>
    </function>
</dble:sharding>
```

### 6

```
```mysql mysql -utest -p111111 -h127.0.0.1 -P8066 -Dmyschema mysql> drop table if exists sbtest1; Query OK, 0 rows affected (0.05 sec) mysql> create table sbtest1(id bigint(20), k int unsigned not null default '0', primary key(id)); Query OK, 0 rows affected (0.05 sec)

mysql> insert into sbtest1 values(2); Query OK, 1 row affected (0.11 sec)

mysql> select * from sbtest1;

bigint
```

## 8.2 MySQL-offset-step

sbtest1idMySQL-offset-stepid

### 1cluster.conf

```
sequenceHandlerType=1
...
```

### 2user.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE dble:user SYSTEM "user.dtd">
<db:User xmlns:db="http://db.ble.cloud/">
  <managerUser name="test" password="test"/>

  <shardingUser name="abc" password="abc" schemas="myschema" maxCon="1000000">
    </shardingUser>

</db:User>
```

### 3db.xml

```
<?xml version="1.0"?>
<!DOCTYPE db:db SYSTEM "db.dtd">
<db:db xmlns:db="http://db.ble.cloud/">
  <dbGroup name="host_1" rwSplitMode="0" delayThreshold="100">
    <heartbeat>select USER()</heartbeat>
    <dbInstance name="hostM1" url="172.100.10.101:3306" user="test1" password="test1" maxCon="1000" minCon="1000" primary="true" />
  </dbGroup>
  <dbGroup name="host_2" rwSplitMode="0" delayThreshold="100">
    <heartbeat>select USER()</heartbeat>
    <dbInstance name="hostM2" url="172.100.10.102:3306" user="test1" password="test1" maxCon="1000" minCon="1000" primary="true" />
  </dbGroup>
</db:db>
```

### 4sharding.xml

```
<?xml version="1.0"?>
<!DOCTYPE dble:sharding SYSTEM "sharding.dtd">
<db:sharding xmlns:db="http://db.ble.cloud/">
  <schema name="myschema" shardingNode="dn1">
    <shardingTable name="sbtest1" shardingNode="dn1,dn2" function="mod" shardingColumn="id" incrementColumn="id" />
  </schema>
  <shardingNode name="dn1" dbGroup="host_1" database="db.ble"/>
  <shardingNode name="dn2" dbGroup="host_2" database="db.ble"/>

  <function name="mod" class="Hash">
    <property name="partitionCount">2</property>
    <property name="partitionLength">1</property>
  </function>
</db:sharding>
```

### 5sequence\_db\_conf.properties

```
#sequence stored in shardingNode
`myschema`.`sbtest1`=dn1
```

myschema, sbtest1, dn1sharding.xml

dn1host\_1/db.bleconf/dbseq.sql()

```
mysql -h172.100.10.101 -utest1 -ptest1 -Ddb.ble
mysql>source conf/dbseq.sql
```

sqlDBLE\_SEQUENCE

```
mysql -h172.100.10.101 -utest1 -ptest1 -Ddb.ble
mysql>INSERT INTO DBLE_SEQUENCE VALUES ('`mytest`.`sbtest1`', 16, 1);
```

DBLE\_SEQUENCE

- namesequence\_db\_conf.properties
- current\_value
- increment1

## 6

db.ble

```
mysql -utest -p111111 -h127.0.0.1 -P8066 -Dmyschema
mysql> drop table if exists sbtest1;
Query OK, 0 rows affected (0.05 sec)
mysql> create table sbtest1(id int, k int unsigned not null default '0', primary key(id));
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> insert into sbtest1 values(2);
Query OK, 1 row affected (0.11 sec)
```

```
mysql> select * from sbtest1;
+---+---+
| id | k |
+---+---+
| 17 | 2 |
+---+---+
1 row in set (0.01 sec)
```

sqlDBLE\_SEQUENCEcurrent\_value16insert17

- sequence\_db\_conf.properties

```
`myschema`.`sbtest1`=dn1
```

- sequence\_db\_conf.propertiesdn1dbseq.sql

## 9 sysbenchdbe

- [9.1](#)
- [9.2 dble](#)
- [9.3 sysbench](#)

## 9.1

- Sysbench version: 1.0
- Dble version: 5.6.23-dble-2.19.11.0-2d7c4911b7a4fecaa9eb0299f49c32ec11e97c42-20200228124218
- MySQL version: 5.7.25

- sysbench172.20.134.1
- dble172.20.134.2
- 3mysql172.20.134.3172.20.134.4172.20.134.5

2.18

## 9.2 dble

-Dprocessors=10 -DbackendProcessors=10 -DprocessorExecutor=8 -DbackendProcessorExecutor=6 -DsqlExecuteTimeout=3000000

### 1. bootstrap.cnf

```
-Dprocessors=10 -DbackendProcessors=10 -DprocessorExecutor=8 -DbackendProcessorExecutor=6 -DsqlExecuteTimeout=3000000
```

### 2.user.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE dble:user SYSTEM "user.dtd">
<dble:user xmlns:dble="http://dble.cloud/" version="4.0">
    <managerUser name="root" password="111111" />
    <shardingUser name="test" password="111111" schemas="sbtest" maxCon="1000000">
        </shardingUser>
    </dble:user>
```

### 3.db.xml

```
<?xml version="1.0"?>
<!DOCTYPE dble:db SYSTEM "db.dtd">
<dble:db xmlns:dble="http://dble.cloud/" version="4.0">
    <dbGroup name="host_1" rwSplitMode="0" delayThreshold="-1">
        <heartbeat>select USER()</heartbeat>
        <dbInstance name="hostM1" url="172.20.134.3:3306" user="test1" password="test1" maxCon="1000" minCon="100" primary="true"/>
    </dbGroup>
    <dbGroup name="host_2" rwSplitMode="0" delayThreshold="-1">
        <heartbeat>select USER()</heartbeat>
        <dbInstance name="hostM1" url="172.20.134.4:3306" user="test1" password="test1" maxCon="1000" minCon="100" primary="true"/>
    </dbGroup>
    <dbGroup name="host_3" rwSplitMode="0" delayThreshold="-1">
        <heartbeat>select USER()</heartbeat>
        <dbInstance name="hostM1" url="172.20.134.5:3306" user="test1" password="test1" maxCon="1000" minCon="100" primary="true"/>
    </dbGroup>
</dble:db>
```

### 4.sharding.xml

```
<?xml version="1.0"?>
<!DOCTYPE dble:sharding SYSTEM "sharding.dtd">
<dble:sharding xmlns:dble="http://dble.cloud/" version="4.0">
    <schema name="sbtest">
        <shardingTable name="sbtest1" shardingNode="dn$1-9" function="hash-sysbench" shardingColumn="id" />
    </schema>
    <shardingNode name="dn$1-3" dbGroup="host_1" database="dbledb$1-3" />
    <shardingNode name="dn$4-6" dbGroup="host_2" database="dbledb$4-6" />
    <shardingNode name="dn$7-9" dbGroup="host_3" database="dbledb$7-9" />
    <function name="hash-sysbench" class="Hash">
        <property name="partitionCount">9</property>
        <property name="partitionLength">1</property>
    </function>
</dble:sharding>
```

### 5.mysql

- 172.20.134.3:3306 dbledb1, dbledb2, dbledb3
- 172.20.134.4:3306 dbledb4, dbledb5, dbledb6
- 172.20.134.5:33066 dbledb7, dbledb8, dbledb9

## 9.3 sysbench

how about a [sysbench-testing-quick-start](#); issue

sysbench

```
FATAL: mysql_drv_query() returned error 1062 (Duplicate entry '49823' for key 'PRIMARY') for query 'INSERT INTO sbtest1 (id, k, c, pad) VALUES (49823, 58210, '2711667985-11552069038-79242882109-05602914209-02374993639-32242662584-65155028223-08319627673-44873060047-22215118936', '07405724915-32799061660-96650146042-59717172693-66753749407')'
```

```
/usr/share/sysbench/oltp_read_write.lua --mysql-db=sbtest --mysql-host=172.20.134.2 --mysql-port=8066 --mysql-user=test1 --mysql-password=test1 --auto_inc=off --tables=1 --table-size=100000 --threads=4 --time=30 --report-interval=1 --max-requests=0 --percentile=95 --db-ps-mode=disable --skip-trx=on cleanup
```

```
/usr/share/sysbench/oltp_read_write.lua --mysql-db=sbtest --mysql-host=172.20.134.2 --mysql-port=8066 --mysql-user=test1 --mysql-password=test1 --auto_inc=off --tables=1 --table-size=100000 --threads=4 --time=30 --report-interval=1 --max-requests=0 --percentile=95 --db-ps-mode=disable --skip-trx=on prepare
```

```
/usr/share/sysbench/oltp_read_write.lua --mysql-db=sbtest --mysql-host=172.20.134.2 --mysql-port=8066 --mysql-user=test1 --mysql-password=test1 --auto_inc=off --tables=1 --table-size=100000 --threads=4 --time=30 --report-interval=1 --max-requests=0 --percentile=95 --db-ps-mode=disable --skip-trx=on run
```

- [A.1 ErrorCode](#)
- [A.2](#)
- [A.3](#)

- [Max Connections](#)
- [Out Of Memory Error](#)
- [The Problem Of Hint](#)
- [NestLoop Parameters Lead To Temptable Exception](#)
- [Can't Get Variables From ShardingNode](#)
- [Port Already In Use 1984](#)
- [Sharding Column Cannot Be Null](#)

## dble-MaxConnections

### Issue

- [Err] 3009 - java.io.IOException: the max activeConnections size can not be max than maxconnections.

### Resolution

1. dble
2. maxConmaxCon

		/	
maxCon		1024	,,maxcon maxConmanager

### Root Cause

### Relevant Content

1. **maxWait**
  - maxActive
2. **connectionProperties**
  - connectTimeout socketTimeout connectTimeout TCP socketTimeout
    - socket socket DB
3. **maxActive**
  - maxWait 0

## dble-OutOfMemoryError

### Setting

load data17G4K  
load data

### Issue

- INFO | jvm 1 | 2019/06/28 14:55:37 | Exception in thread "backendBusinessExecutor17" java.lang.OutOfMemoryError: GC overhead limit exceeded.

### Resolution

- maxRowSizeToFile

maxCharsPerColumn		65535	
maxRowSizeToFile		10000	load dataOOM

- wrapper.confXmx  
OOM

### Root Cause

- maxRowSizeToFile
- Xmx  
On-Heap JVM Xms ,Xmx jvm

### Relevant Content

#### load data

load dataOOM

#### JVM

- dble=0.6 (,
- Xmx = 0.4 dble
- MaxDirectMemorySize = 0.6 \* dble

- JVM-Xms1/64
- JVM-Xmx1/4
- 40%JVM-Xmx70%JVM-Xms

## dble-TheProblemOfHint

### Setting

- mysql> /\*dble:sql=select 1 from rp\_cre\_data\_mobile\_track\_cmcc / call update\_track();
- sql
- 

### Issue

- mysql> show @@processlist;

Front_Id	shardingNode	BconnID	user	Front_Host	db	Command	Time	State	Info
33	NULL	NULL	root		NULL	NULL	0	updating	NULL
34	NULL	NULL	root		NULL	NULL	0	updating	NULL
35	NULL	NULL	root		NULL	NULL	0	updating	NULL
41	dn9	9372	root		db9	Query	0	updating	NULL
42	NULL	NULL	root		NULL	NULL	0	updating	NULL
43	NULL	NULL	root		NULL	NULL	0	updating	NULL
30	NULL	NULL	admin		NULL	NULL	0	updating	NULL

### Resolution

- /\*dble:type=..../
  - !/dble:type=..../
2. mysql client -c

```
mysql --help
-c, --comments
```

Preserve comments. Send comments to the server. The default is --skip-comments (discard comments), enable with --comments.

### Root Cause

- /\*dble:type=..../ mysql
- c skip

### Relevant Content

#### hint

- 1.
2. dbleinsert...select...

#### Hint

##### Hint

- /\*!dble:type=....\*/
- /\*#dble:type=...\*/
- /\* \*/()

type4shardingNodedb\_typesql\_db\_instance\_url  
type [https://actiontech.github.io/dble-docs-cn/2.Function/2.04\\_hint.html](https://actiontech.github.io/dble-docs-cn/2.Function/2.04_hint.html)

#### Hint

- selectSQLdelete/update/insert delete/update/insert SQL
- SQL
- hintDDLreload @@metadata
- hintsession
- dbleMySQL, MySQL#1169
- SQLSQL select id from tab\_a where id='10000'
-

## dble-NestLoop Parameters Lead To Temptable Exception

### Setting

- NestLoopNestLoop4
- jointstudentclass
- studentidnameclass\_nameid
- classidclass\_nameteacher\_name
- SELECT class.teacher\_name FROM student LEFT JOIN class on student.class\_name=class.class\_name WHERE student.name=""

### Issue

- com.actiontech.dble.plan.common.exception.TempTableException: temptable too much rows,[rows size is 5].

### Resolution

- NestLoop

		/	
useJoinStrategy	nestLoop		joinwhereSQL
nestLoopConnSize		4	
nestLoopRowsSize		2000	

- NestLoop
  - <property name="useJoinStrategy">false</property>
- 

### Root Cause

- NestLoopNestLoopNestLoop
- NestLoop
  - joinNestLoop join
  - wherewhere
  - wherewhereNestLoop
  - NestLoop
- SQL
  - SELECT class.teacher\_name FROM student LEFT JOIN class on student.class\_name=class.class\_name WHERE student.name=""

dbleNestLoop

1. SQLstudentclass
2. wherestudentNestLoopstudent
3. SQLstudentNestLoop

### Relevant Content

#### MySQLNestLoop

1. NestLoop:
  - Nested Loop
  - Nested LoopJoinJoin Nested Loop
  - Nested Loop“”——
2. NestLoop

NestLoop		CPUI/O	

## dble-Can't get variables from shardingNode

### Setting

- db.xml

```
<dbGroup name="localhost1" rwSplitMode="0" delayThreshold="100">
<heartbeat>show slave status</heartbeat>
<dbInstance host="hostM1" url="localhost:3306" user="root" password="nE7ja%5m" maxCon="1000" minCon="10" primary="true" > </dbInstance>
</dbGroup>
<dbGroup name="localhost2" rwSplitMode="0" delayThreshold="100">
<heartbeat>show slave status</heartbeat>
<dbInstance host="hostM2" url="localhost:3306" user="root" password="nE7ja%5m" maxCon="1000" minCon="10" primary="true"> </dbInstance> </dbGroup>
```

### Issue

- dble

```
Running dble-server...
wrapper | --> Wrapper Started as Console
wrapper | Launching a JVM...
jvm 1  | Wrapper (Version 3.2.3)
http://wrapper.tanukisoftware.org
jvm 1  | Copyright 1999-2006 Tanuki Software, Inc. All Rights Reserved.
jvm 1  |
jvm 1  | java.io.IOException:Can't get variables from shardingNode ...
wrapper | <-- Wrapper Stopped
```

### Resolution

1. mysqlmysql5.1mysql,
2. db.xmlrootmysql
3. root
4. mysqlshow variables
5. dbGroupdble

### Root Cause

- db.xml mysqlshow variables
- mysql 5.7

### Relevant Content

1. mysql5.7
2. mysqlmysqlMysql
3.
  - o mysql> show databases;
  - o ERROR 1820 (HY000): You must reset your password using ALTER USER statement before executing this statement.
  - o mysql > set password = password('xxxxxx');

## dble-Port already in use:1984

### Issue

- wrapper.log-Error1

```
STATUS | wrapper | 2019/07/23 16:37:06 | --> Wrapper Started as Daemon
STATUS | wrapper | 2019/07/23 16:37:06 | Launching a JVM...
INFO | jvm 1 | 2019/07/23 16:37:06 | OpenJDK 64-Bit Server VM warning: ignoring option MaxPermSize=64M; support was removed in 8.0
INFO | jvm 1 | 2019/07/23 16:37:07 | : : java.rmi.server.ExportException: Port already in use: 1984; nested exception is:
INFO | jvm 1 | 2019/07/23 16:37:07 | java.net.BindException: Address already in use (Bind failed)
INFO | jvm 1 | 2019/07/23 16:37:07 | sun.management.AgentConfigurationError: java.rmi.server.ExportException: Port already in use: 1984;
```

- wrapper.log-Error2

```
STATUS | wrapper | 2019/07/26 16:12:48 | --> Wrapper Started as Daemon
STATUS | wrapper | 2019/07/26 16:12:49 | Launching a JVM...
INFO | jvm 1 | 2019/07/26 16:12:49 | Wrapper (Version 3.2.3) http://wrapper.tanukisoftware.org
INFO | jvm 1 | 2019/07/26 16:12:49 | Copyright 1999-2006 Tanuki Software, Inc. All Rights Reserved.
INFO | jvm 1 | 2019/07/26 16:12:49 |
INFO | jvm 1 | 2019/07/26 16:12:51 | java.net.BindException: Address already in use
INFO | jvm 1 | 2019/07/26 16:12:51 | at sun.nio.ch.Net.bind0(Native Method)
INFO | jvm 1 | 2019/07/26 16:12:51 | at sun.nio.ch.Net.bind(Net.java:433)
INFO | jvm 1 | 2019/07/26 16:12:51 | at sun.nio.ch.Net.bind(Net.java:425)
INFO | jvm 1 | 2019/07/26 16:12:51 | at sun.nio.ch.ServerSocketChannelImpl.bind(ServerSocketChannelImpl.java:223)
INFO | jvm 1 | 2019/07/26 16:12:51 | at com.actiontech.dble.net.NIOAcceptor.<init>(NIOAcceptor.java:46)
```

### Resolution

- Error1  
wrapper.conf1984  
-Dcom.sun.management.jmxremote.port=1984
- Error2  
netstat -nap pid80669066  
kill -9 pid
- dble

### Root Cause

- jmxjavadble
- dblejvmjmx
- jmxjconsolejvmjvm

### Relevant Content

1. JVM  
JVMJavaJava  
JavaJavacc++
2. JMX  
JM XJava Management ExtensionsJava  
JP AJMS
3. Jconsole  
JconsoleJDKJVM.java

## double-Sharding column can't be null

### Setting

- sharding.xml

```
<sharingTable shadingColumn="number" ... >
...
<function name="rangeLong" class="NumberRange">
<property name="mapFile">partition.txt</property>
<property name="defaultNode">0</property>
</function>
```

- create table account (id int(10),number int(10) not null,name varchar(20) not null);
- insert into account (id,number,name) values (1,NULL,'aaa');

### Issue

ERROR 1064 (HY000): Sharding column can't be null when the table in MySQL column is not null

### Resolution

- numbernameNULL
  - numberNULL;
- ```
ALTER TABLE account MODIFY number VARCHAR (20);
```
- blacklistalterTableAllow;

```
<blacklist name="bk1">
<property name="alterTableAllow">true</property>
</blacklist>
```

sharding-by-rangedbleERalter

```
<sharingTable shadingColumn="id" ... >
```

- alter

### Root Cause

- MySQLInsert
 

ERROR 1048 (23000): Column 'number' cannot be null
- descnumbername

Field	Type	Null	Key	Default	Extra
id	int(10)	YES		NULL	
number	int(10)	NO		NULL	
name	varchar(20)	NO		NULL	

- How To Use Explain To Resolve The Distribution Rules Of Group Gy
- Hash And ConsistentHashing And Jumpstringhash

## dble-How To Use Explain To Resolve The Distribution Rules Of Group Gy

### Questions

group by

### Conclusions

- 1. explainsql
  2. dble explainmycatSQL

### For Example

1.

sharding.xml

```
<shardingTable name="eee" shardingNode="dn1,dn2" function="hashLong" shardingColumn="id"/>
...
<function name="hashLong" class="Hash">
  <property name="partitionCount">2</property>
  <property name="partitionLength">128</property>
</function>
```

1. dble client eee mysql> select \* from eee;

```
| id | name | -- | -- | 1 | 2 | 3 | 4 | 5 | 130 | 131 | 132 | 133 | 134 |
```

mysql> select name,count(name) from eee group by name;

name	COUNT(name)
	4
	4
	1
	1

1. explainsql

SHARDING_NODE	TYPE	SQL/REF
dn1_0	BASE SQL	select eee . name ,COUNT(name) as _\$COUNT\$_rpda_0 from eee GROUP BY eee . name ASC
dn2_0	BASE SQL	select eee . name ,COUNT(name) as _\$COUNT\$_rpda_0 from eee GROUP BY eee . name ASC
merge_1	MERGE	dn1_0; dn2_0
aggregate_1	AGGREGATE	merge_1
shuffle_field_1	SHUFFLE_FIELD	aggregate_1

### Instructions

explain

1. dblesqlshardingnode
2. shardingnodemerge
3. mergegroup by
4. SHUFFLE\_FIELD
  - SHUFFLE\_FIELD

### Relevant Content

#### dble

1. dbleappmysq
- 2.

- /
- dblejoingroup by
- <https://opensource.actionsky.com/dble-lesson-one/>

#### dble

1. IO MySQLsql
2. MySQL

### 3. MySQL

PSdble

## dble-Hash And ConsistentHashing And Jumpstringhash

### Questions

- dblehashhash
- hash

### Conclusions

- dblehashhash
- hashhash

### Instructions

#### dble-hash

- 
- sharding.xml

```
<function name="hashLong" class="hash">
<property name="partitionCount">1,2</property>
<property name="partitionLength">10,20</property>
</function>
```

- 

```
<function name="hashLong" class="hash">
<property name="partitionCount">4</property>
<property name="partitionLength">10</property>
</function>
```

partitionCount  
partitionLength  
MC<sub>1</sub>L<sub>1</sub> + ... + C<sub>n</sub>L<sub>n</sub>

#### dble-hash

Count=2,Length=2 -> [0,2][2,4] -> =4  
key 1,2,3,4,5,6,7,8

node1	node2
1,4,5,8	2,3,6,7

Count=3,Length=2 -> [0,2][2,4][4,6] -> =6 key 1,2,3,4,5,6,7,8

node1	node2	node3
1,6,7	2,3,8	4,5

count

#### summary

node

### Consistent Hashing

NodeA NodeB NodeC NodeD ABCD A B C D AB CD

```
A ----> NodeA
B ----> NodeB
C ----> NodeC
D ----> NodeD
```

Node CABDC Node D Node X:

```
A ----> NodeA
B ----> NodeB
-----> NodeX
C ----> NodeC
D ----> NodeD
```

ABDC Node X

Hash node

“”

NodeA  
Node B “Node A#1”“Node A#2”“Node A#3”“Node B#1”“Node B#2”“Node B#3”  
“Node A#1”“Node A#2”“Node A#3”Node A,“Node B#1”“Node B#2”“Node B#3”Node B

```
Node A#1 ——> NodeA
Node A#2 ——> NodeA
Node A#3 ——> NodeA
Node B#1 ——> NodeB
Node B#2 ——> NodeB
Node B#3 ——> NodeB
```

“”“”

## summary

hashnode

## Jumpstringhash

- 
- sharding.xml

```
<function name="jumphash" class="jumpStringHash">
<property name="partitionCount">2</property>
<property name="hashSlice">0:2</property>
</function>
```

partitionCount hashSlice

GoogleA Fast, Minimal Memory, Consistent Hash Algorithmhash1/n

- 0,1,2,3
- $(0)1(1)1/(n+1)1/2(2)1/(n+1)1/3(3)1/(n+1)1/4$
- $n/(n+1)$   $1/(n+1)$   $n+1$
- indexmaxa0,1,2,33

0,1,2,30,1,2,3,4

## summary

Jumpstringhashhash

- Jumpstringhashhash
- Jumpstringhashhash
- Jumpstringhashhashdble-hash
- dble-hashJumpstringhashhash

- [ToBeContinued2](#)

