



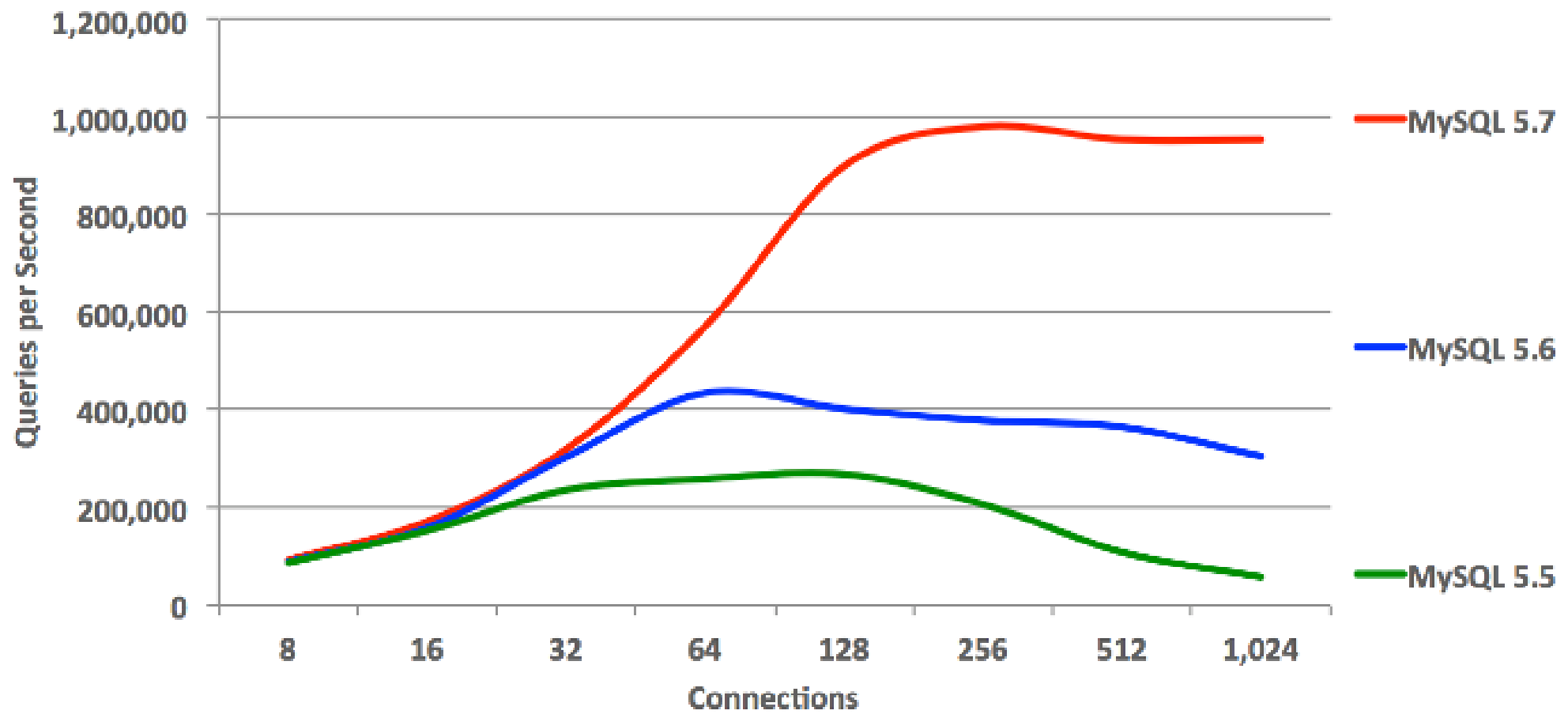
MySQL5.7 新特性

尚伟

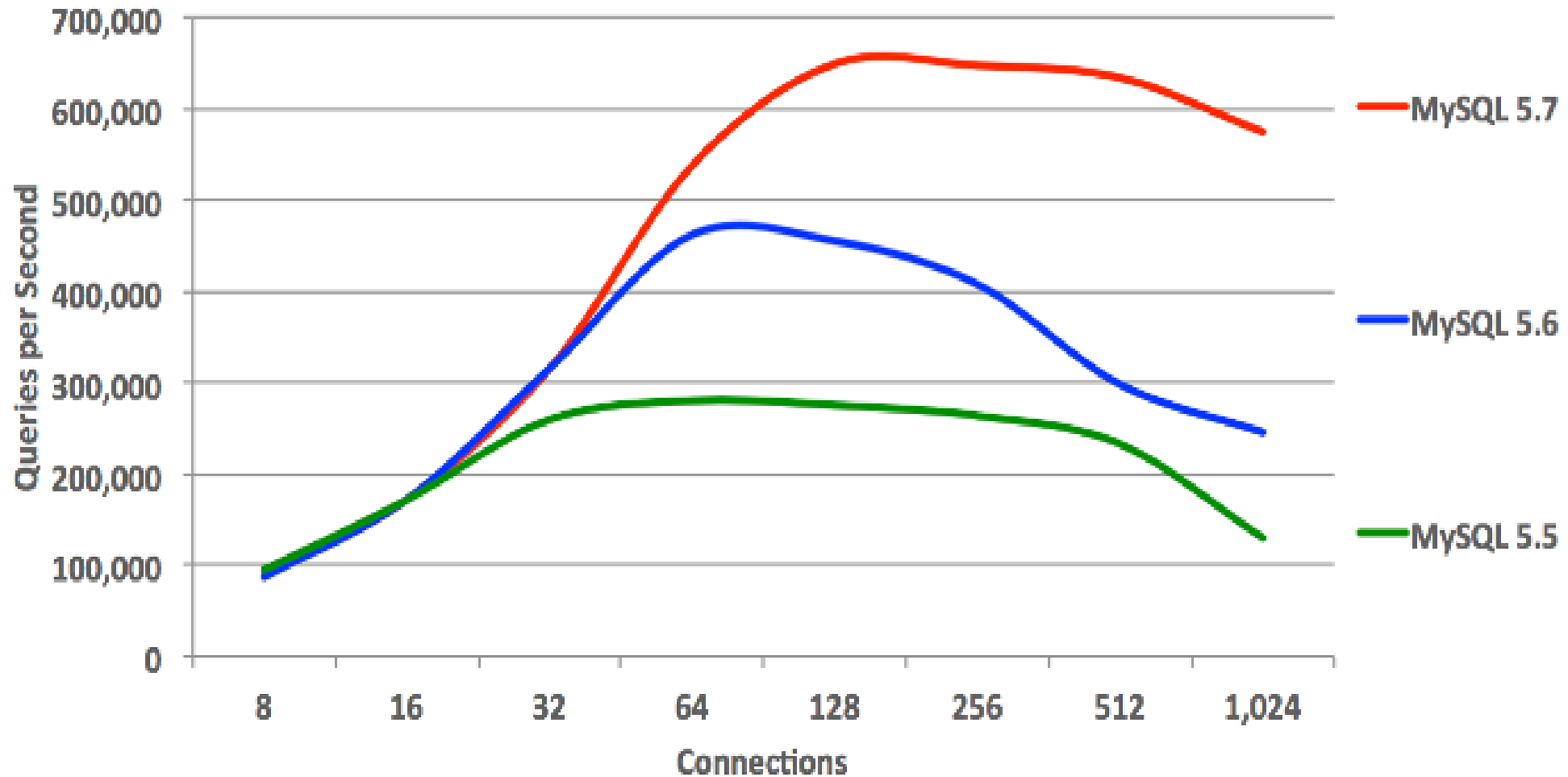
5★ Contents

- 安全提升
- 性能方面
- 复制增强
- 新功能与运维

MySQL 5.7 Sysbench Benchmark: OLTP Read Only



MySQL 5.7 Sysbench Benchmark: OLTP Read Write



- Install mysql
mysql --initialize
create default user root@localhost account
no anonymous account、 no testdb
- User table
mysql_native_password/mysql_old_password
password expiration policy
account lock
- InnoDB tablespace encryption
- SSL
- Sql_mode

■ InnoDB Buffer Pool

InnoDB Buffer Pool Resize

Multithreaded flushing

buffer pool dump/load

innodb_buffer_pool_dump_pct

innodb_io_capacity

■ InnoDB 事务子系统优化

事务池创建，减少事务开销

默认为只读事务

只读事务不在分配事务ID、不分配回滚段 降低开销

遇到写SQL时，自动加入读写列表

■ Undo tablespace

Online Truncate undo log

innodb_undo_directory

innodb_undo_tablespaces

innodb_max_undo_log_size

innodb_undo_log_truncate

■ InnoDB temporary table optimization

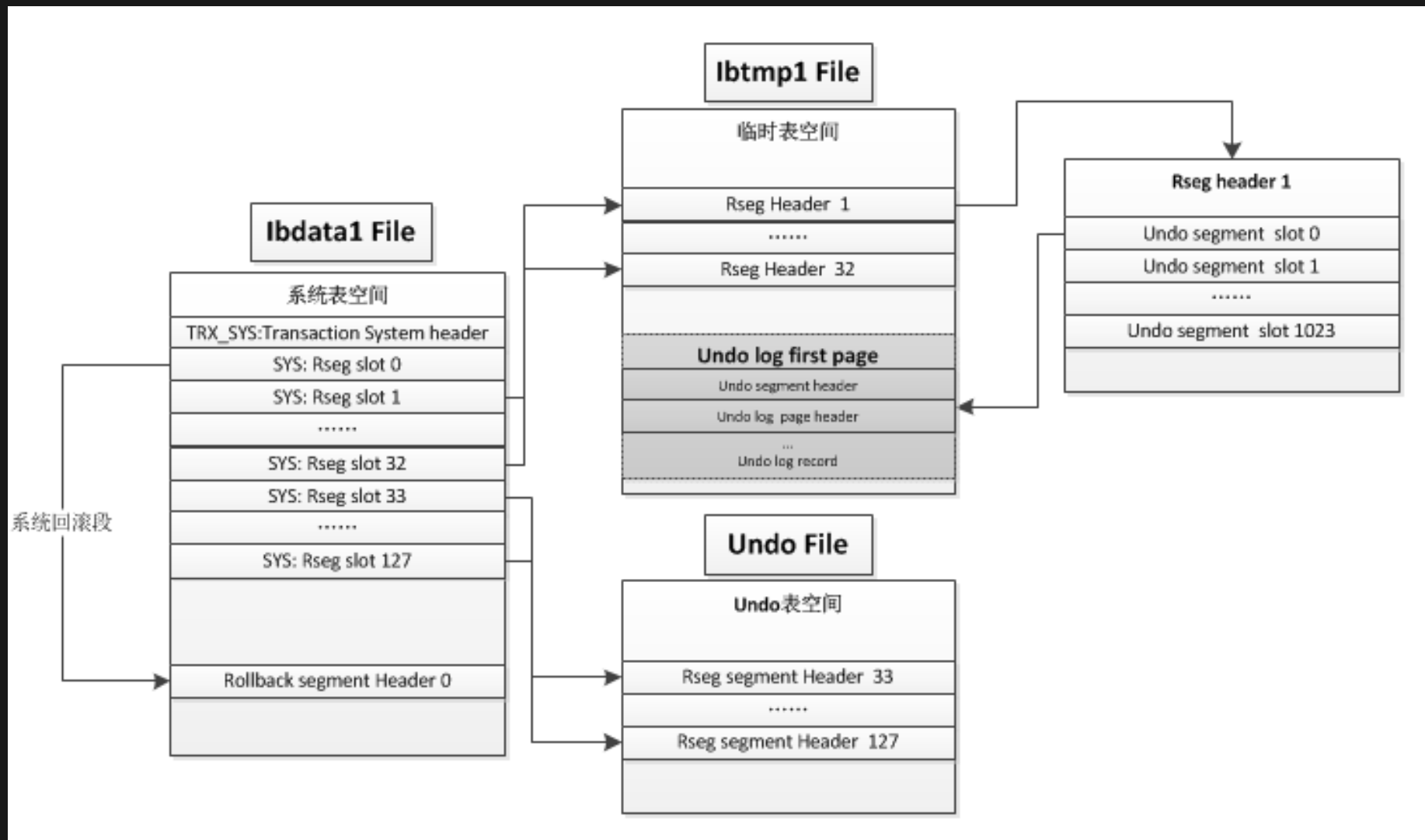
Temporary tablespace

Meta table innodb_temp_table_info

Only undo no redo log (dml)

InnoDB engine

5★ 性能提升-undo表空间



■ InnoDB native partition

less memory

ICP& Transport tbs & Exchange

■ InnoDB General Tablespaces

```
CREATE TABLESPACE `ts01` ADD DATAFILE '/data/mysql/data/ts01.ibd'  
FILE_BLOCK_SIZE=16k Engine=InnoDB;
```

■ Online ddl

in-place varchar

Rename index change

5★ 复制增强

- **Multi-source**

- **MTS**

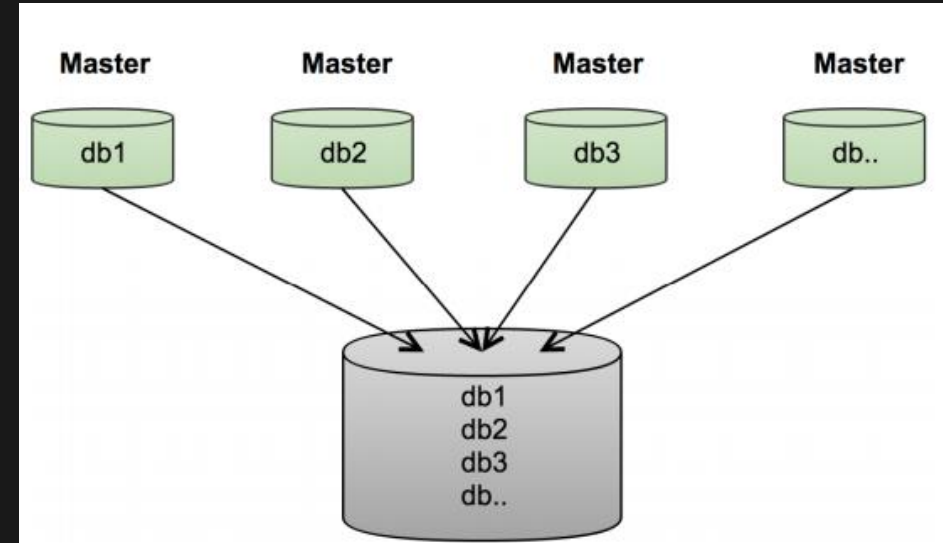
 - group commit
 - LOGICAL_CLOCK
 - slave_parallel_workers

- **Online change replication filter**

- **GTID online**

- **Semisync replication**

 - rpl_semi_sync_master_wait_point



5★ New feature

■ Native JSON support

```
mysql> create table json1(id int auto_increment
-> primary key,
-> data json not null);
Query OK, 0 rows affected (0.02 sec)

mysql> insert into json1(data) values('{"key1":"value1"}');
Query OK, 1 row affected (0.04 sec)
```

■ Generated Column(virtual & stored)

```
mysql> CREATE TABLE triangle (
->   sidea DOUBLE,
->   sideb DOUBLE,
->   sidec DOUBLE AS (SQRT(sidea * sidea + sideb * sideb))
-> );
Query OK, 0 rows affected (0.02 sec)

mysql> insert into triangle(sidea,sideb) values(3,4);
Query OK, 1 row affected (0.01 sec)

mysql> select * from triangle;
+-----+-----+-----+
| sidea | sideb | sidec |
+-----+-----+-----+
|      3 |      4 |      5 |
+-----+-----+-----+
1 row in set (0.00 sec)
```

■ GIS(R-tree 2D) Boost.Geometry

5★ 运维增强

Explain [options] for connection
binlog_rows_query_log_events
max_execution_time
show engine innodb mutex;

Mysqlpump

```
mysqlpump -B sw --add-drop-database -uroot -pmagicsw --log-error-file=/tmp/sw.log >/opt/sw.sql
```

Hint

Hint Name	Description	Applicable Scopes
<u>BKA, NO_BKA</u>	Affects Batched Key Access join processing	Query block, table
<u>BNL, NO_BNL</u>	Affects Block Nested-Loop join processing	Query block, table
<u>MAX_EXECUTION_TIME</u>	Limits statement execution time	Global
<u>MRR, NO_MRR</u>	Affects Multi-Range Read optimization	Table, index
<u>NO_ICP</u>	Affects Index Condition Pushdown optimization	Table, index
<u>NO_RANGE_OPTIMIZATION</u>	Affects range optimization	Table, index
<u>QB_NAME</u>	Assigns name to query block	Query block
<u>SEMIJOIN, NO_SEMIJOIN</u>	Affects semi-join strategies	Query block
<u>SUBQUERY</u>	Affects materialization, IN-to-EXISTS subquery strategies	Query block

sys schema

performance_schema

Information schema

5★ 运维高可用

■ Goup replication

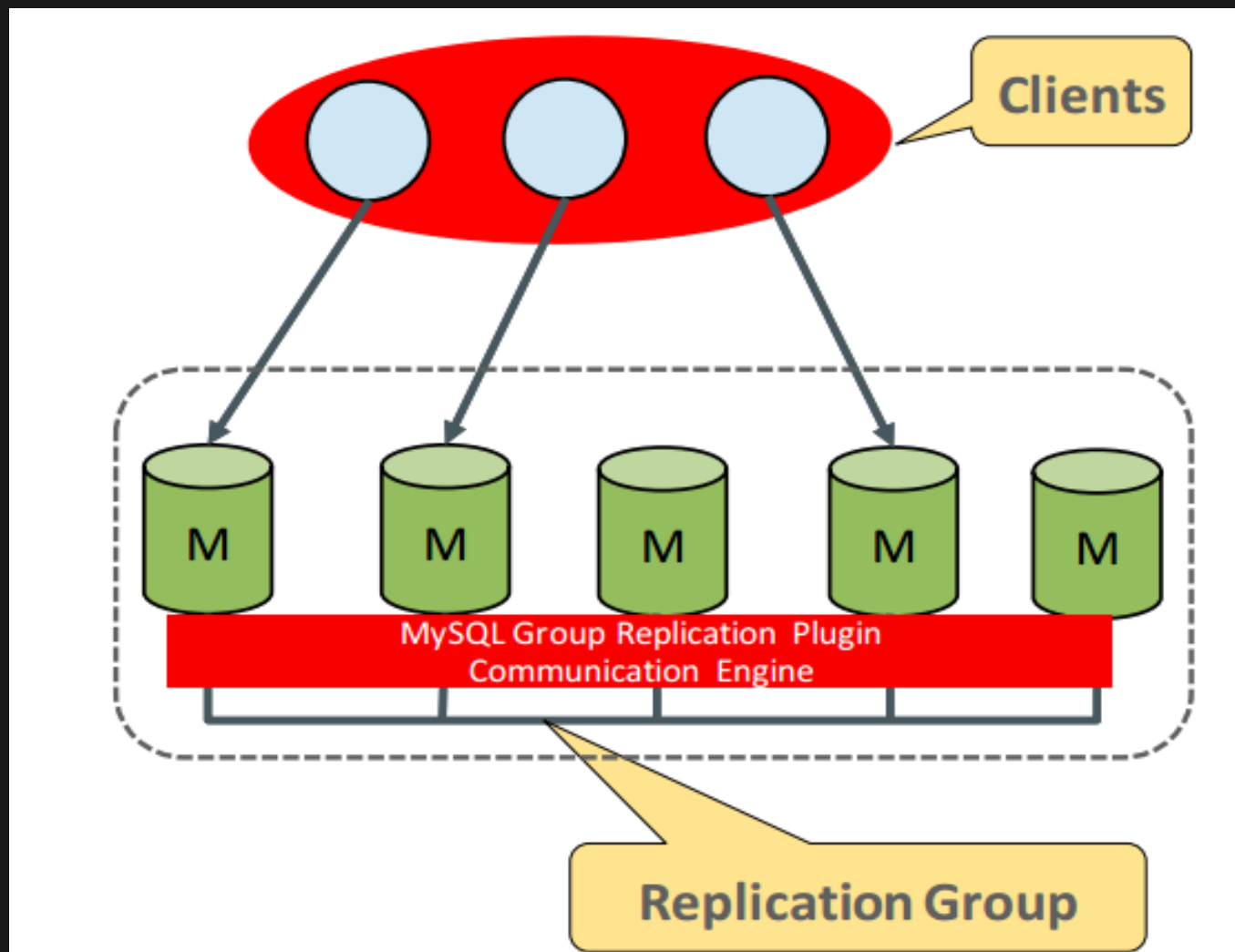
Paxos & share nothing
plugin/innodb/gitd/9
Single/multi-primary

■ PXC

■ Galera

■ MHA

■ MMM





谢谢大家！