MariaDB 10.5 Galera Features

A sneak peek

MariaDB 10.5
Galera

MariaDB 10.5
Galera

MariaDB 10.5
Galera
CEO Codership
Developer role, 15 yrs with MySQL engineering

Background:
- DBMS Engineering
- Data Security

Seppo Jaakola
Galera in 10.5

- GTID Consistency
- Cluster Error Voting
- XA Transactions in Cluster
- Non Blocking DDL
- Black Box
GTID Compatibility

- By: Mario Karuza
- For 10.4 and 10.5
- Store and show only MariaDB format GTID
- Store GTID from MariaDB master in cluster binlogs
Cluster Error Voting

• By: Alexey Yurchenko
• Protocol for nodes to decide how cluster will react to problems in replication
Cluster Error Voting

Error voting initiated

Galera

Galera

Galera

Galera

Galera
Cluster Error Voting

![Diagram showing Galera Cluster Error Voting](image-url)
XA Transaction Support

- By: Daniele Sciaccia and Leandro Pacheco de Sousa
- 10.5 pipeline has refactoring for XA transaction support
- XA transactions can be supported in cluster through 10.4 Streaming Replication
XA Transaction Support

XA begin

XA trx

Galera

Galera

Galera
XA Transaction Support

DML...

XA trx

Galera Galera Galera
XA Transaction Support
XA Transaction Support

- XA prepare
- XA trx

Galera

www.galeracluster.com
XA Transaction Support

Galera

XA trx
SR trx
SR trx
Insert into t values...

Table t

A

B

Shard A

Shard B
Insert into `t` values.
Non Blocking DDL

• By: Teemu Ollakka

• DDL execution in three phases
  • Phase 1: replicate MDL lock request for the operation
  • Phase 2: execute the DDL natively, with the MDL protection
  • Phase 3: replicate MDL lock release

• \texttt{wsrep_osu_method = TOI | RSU | NBO}
NBO Replication

client → node-1
ALTER TABLE

node-1 → node-2
NBO phase 1
MDL locking

node-2 → node-1
ALTER processing

node-1 → node-2
NBO phase 3
MDL unlocking
Black Box

- By: Pekka Lampio
- Debug message storage in main memory (shm) ring buffer
- Posix shm API used
- Helps in troubleshooting a crashed server
- Helps in cluster testing
Black Box

- Configured by:
  - `wsrep_black_box_name`
  - `wsrep_black_box_size`
- Black box is truncated at graceful shutdown
- If mysqld crashes, BB ring buffer remains in shm
- If BB is not empty at startup, BB contents are written in dump file before server startup
- BB should not affect transaction throughput
Black Box

- BB should not affect transaction throughput
  - << 5% performance drop requirement in SRS
- Black Box tool = command line tool for managing and querying black box contents
Thank You

- www.galeracluster.com