

MariaDB

All the New FEATURES



About the talk

- What is MariaDB
- MariaDB Features
 - Storage engines
 - Scalability enhancements
 - Administration & Monitoring
 - Packaging & Connectors
 - Replication
 - Optimizer
- Plans & Goals
- Support and Contact Information



About me

- Sergei Golubchik, MariaDB core developer
- Working on MySQL internals since 1998
- Full-time MySQL AB employee since 2000
- VP Architecture, Monty Program Ab since 2010
- Originally from Ukraine, now living in Germany
- Some of the projects: Fulltext Search, XA, HANDLER, precision math, parallel repair and bulk insert in MyISAM, indexes in MERGE, Plugin API, pluggable authentication, microseconds in TIMESTAMP...



What is MariaDB

- A **branch** of MySQL with extra features
 - features, requested by our **users**
- Backward compatible
 - file formats, replication, configuration files
 - aim at 100% **drop-in replacement**
- Community developed
 - **50%** of maria-captains are from community
 - no hidden agenda



Where to get it

- In distributions
 - openSUSE, Gentoo, Mageia, Slackware, ArchLinux, ALTLinux
 - FreeBSD
 - MacOS X with MacPorts or Homebrew
- From MariaDB.org:
 - sources, binaries in **.tar.gz** (Linux) or **.zip** (Windows)
 - Windows MSI installer
 - MariaDB **apt** and **yum** repositories



New Features

- Storage Engines
- Scalability enhancements
- Reporting and Monitoring
- Administration
- NoSQL style features
- Packaging
- Connectors
- Replication
- Optimizer



Disclaimer: Benchmarks

- All results **are real**
- But you mileage **may vary**
- 100x speedup does **not** mean that your application will be 100x faster
- But some queries might be. Even **1000x faster**



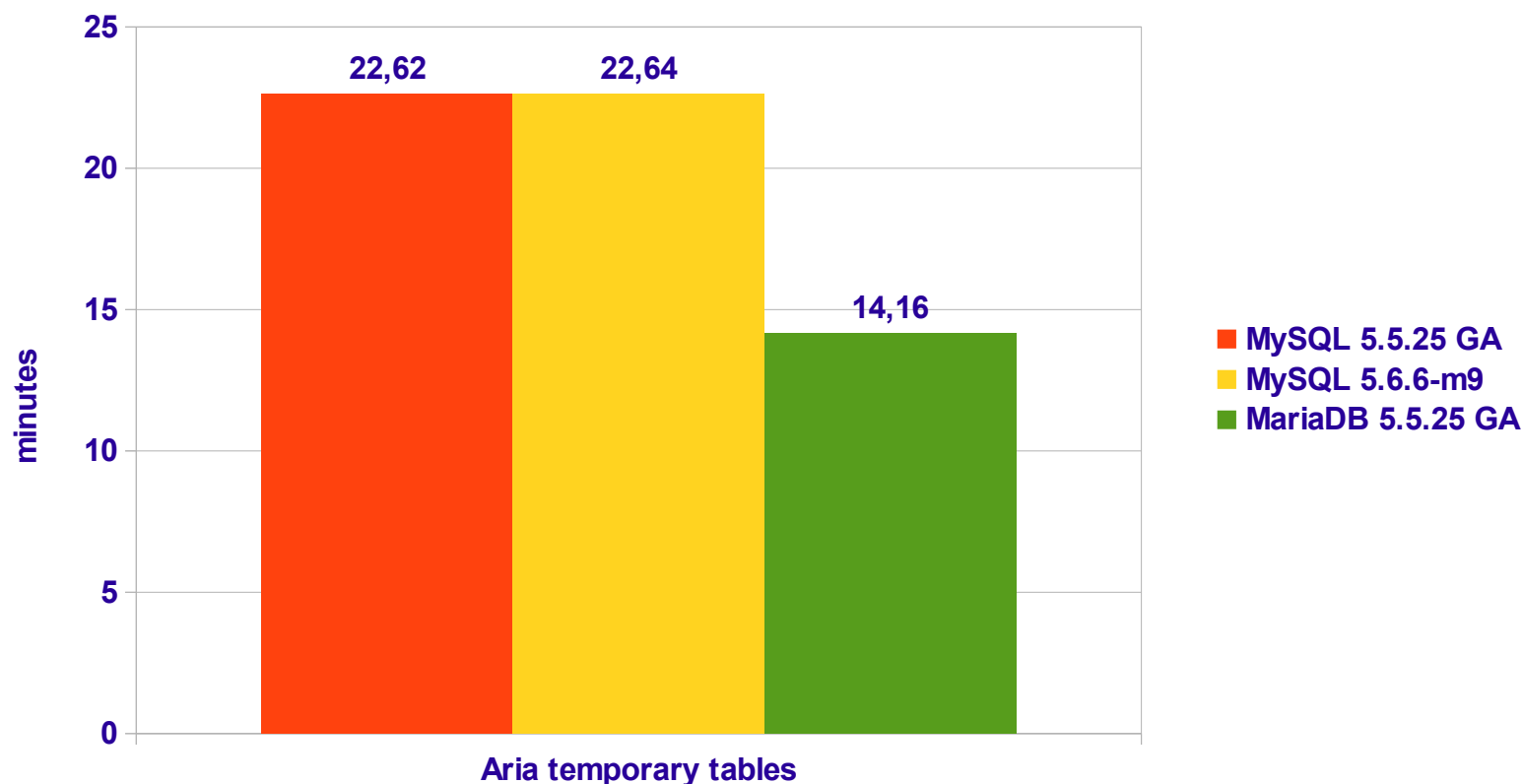
Storage Engines

- Aria. “crash-safe MyISAM”
 - Also used for temporary tables
- Improved MEMORY engine.
 - Also used for temporary tables
- XtraDB. Developed by Percona. InnoDB replacement
 - lost of performance improvements
- FederatedX
 - Improved Federated, with transactions
- PBXT, OQGraph, SphinxSE...



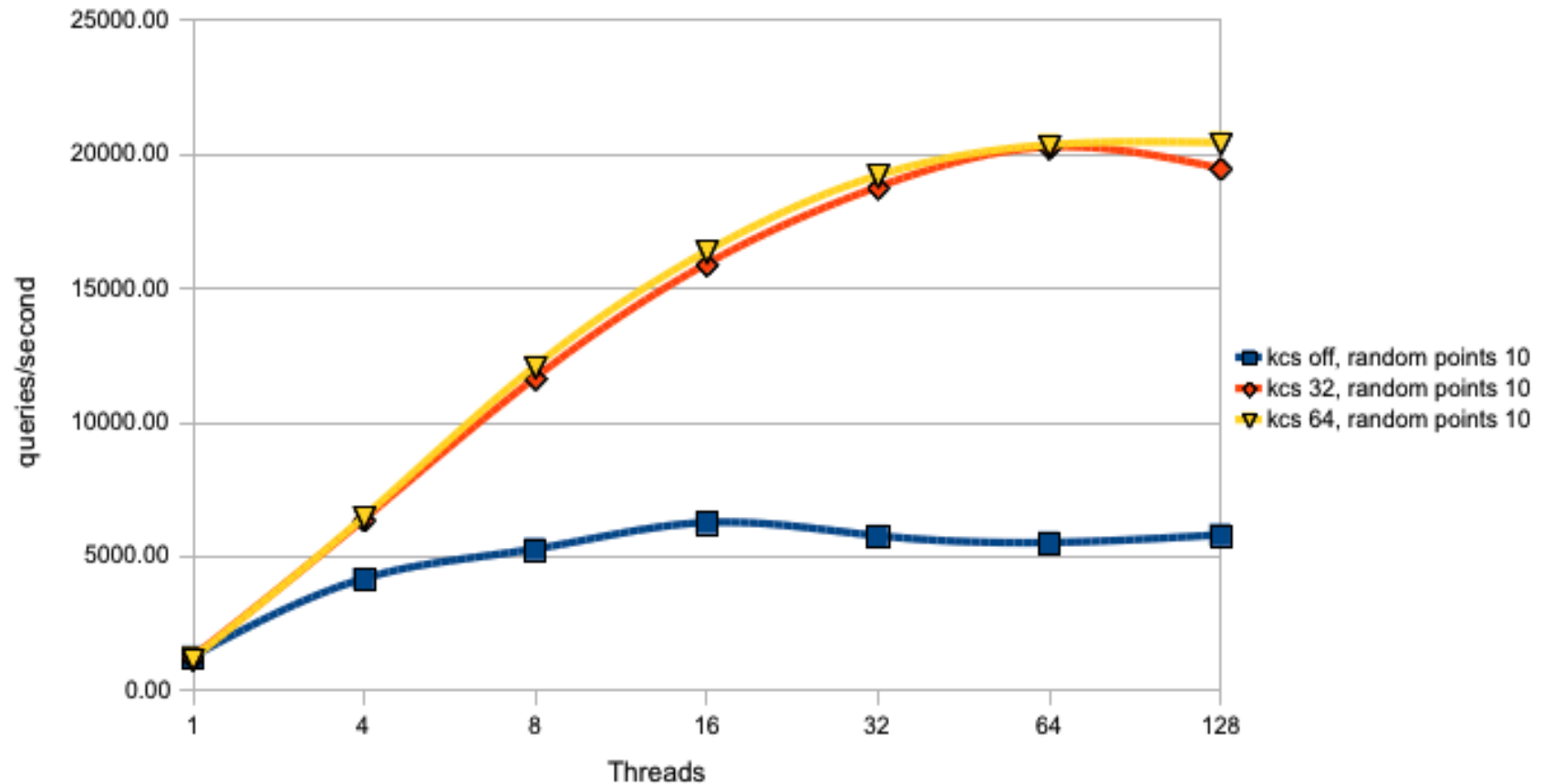
Using temporary

- Aria temporary tables



Scalability

- Segmented MyISAM key cache

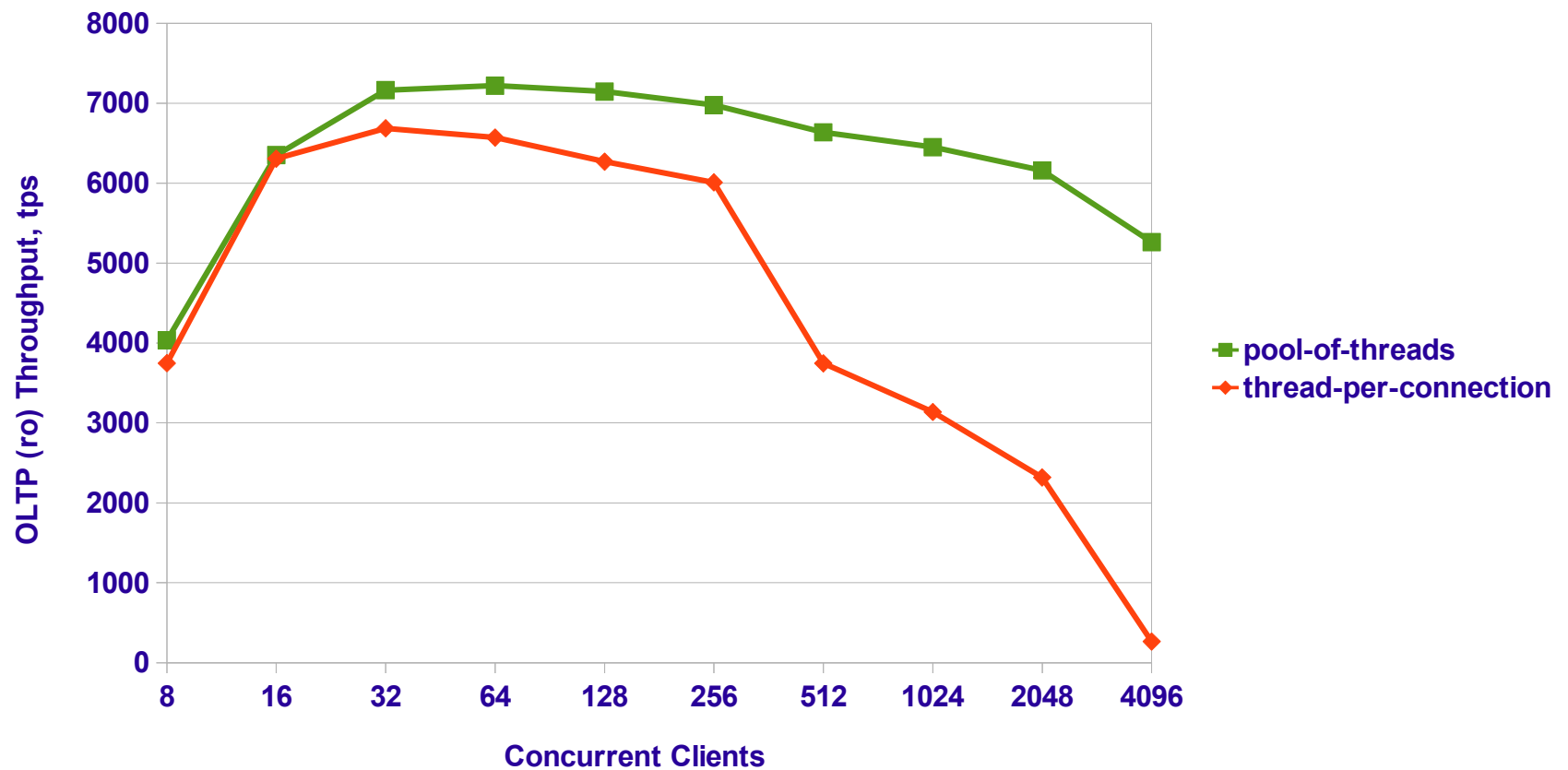


by Hakan Küçükyılmaz. <http://kb.askmonty.org/en/segmented-key-cache-performance/>



Scalability

- Thread pool

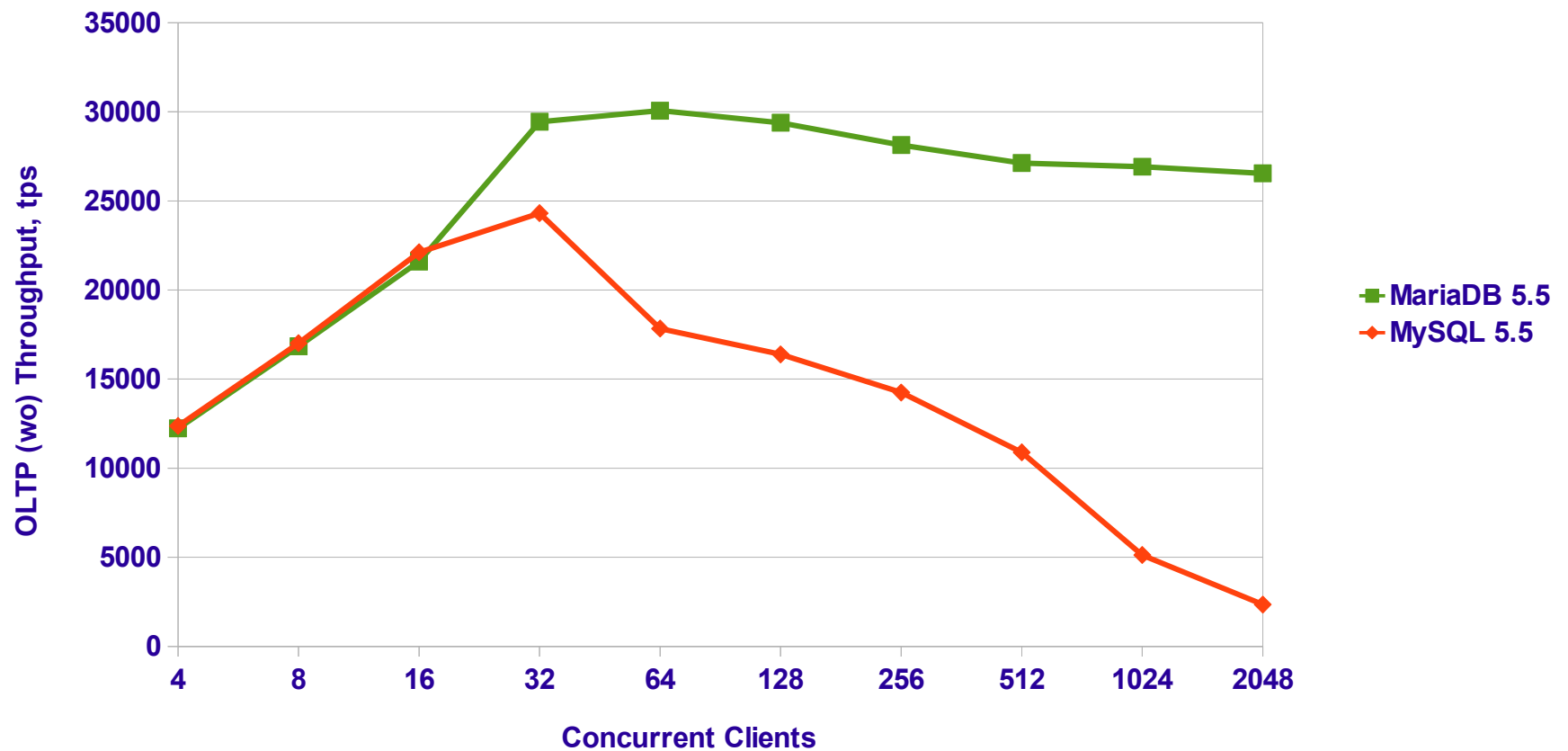


by Axel Schwenke. <http://blog.montyprogram.com/mariadb-5-5-thread-pool-performance/>



Scalability

- on Windows



by Vladislav Vaintroub. <http://blog.montyprogram.com/mariadb-5-5-performance-on-windows/>



Monitoring

- More plugin metadata
- More status variables
- Microsecond precision
- Extended statistics
 - per client, user, table, index
- Plugins
 - sql_errors
 - feedback



Administration

- Enhanced KILL statement
 - KILL USER, KILL SOFT
- INSTALL SONAME
- LIMIT ROWS EXAMINED



NoSQL

- HandlerSocket plugin
- Faster HANDLER statement
- Dynamic columns



Columns and Data Types

- Virtual Columns
- Dynamic Columns
- Microseconds in `TIMESTAMP`, `DATETIME`, `TIME`
- GIS enhancements
 - precise operations (not only MBR)
 - exact math (not floating point)
 - speed optimizations



Packaging

- MSI Windows Installer
 - bundled with HeidiSQL GUI client
 - the **only** GUI client with pluggable authentication support
- YUM and APT repositories
 - online repository generator



Connectors

- Non-blocking Connector/C extension
 - send the query and continue the execution
 - read results later piecewise, when ready
 - event-driven programming
- Progress reporting
 - protocol extension
 - works for LOAD DATA INFILE, ALTER TABLE, CHECK, REPAIR, ANALYZE, OPTIMIZE



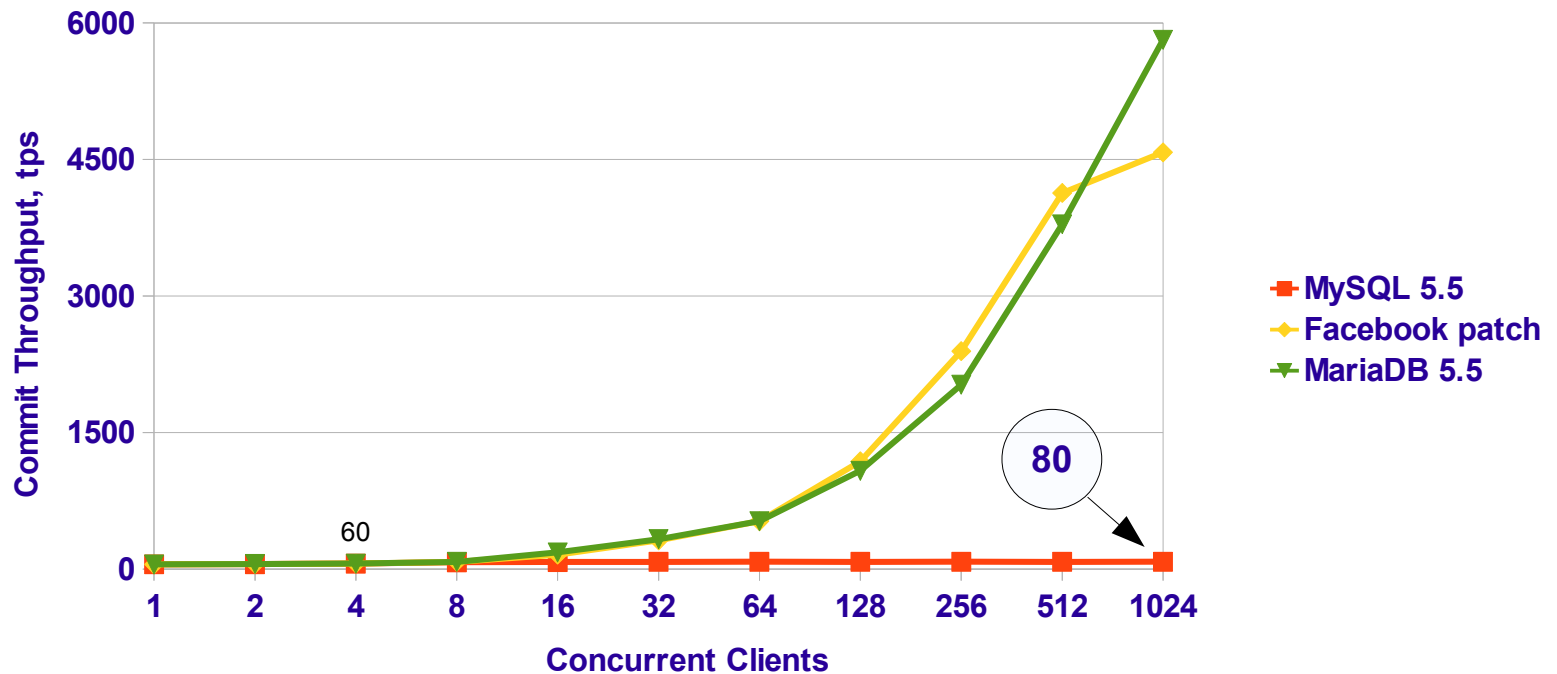
Replication

- RBR Annotations
- Event Checksums
- Faster RBR without a primary key
- Dynamic replication filter variables
 - `replicate_do_db`, `replicate_do_table`,
`replicate_ignore_table`, `replicate_wild_do_table`,
`replicate_wild_ignore_table`
- Skipping events with `@@skip_replication`
- Group Commit



Group Commit

- Hardware limit: 100-200 fsync/second
- Before: three fsync() per commit
- After: many concurrent commits per one fsync()



by Mark Callaghan. http://www.facebook.com/note.php?note_id=10150211546215933



Optimizer

- Our main area of improvements
- Original MySQL optimizer team
- Lots of optimizations
 - Disk access optimizations
 - Join optimizations
 - Subqueries (yeah!)
 - Derived tables
 - and many more...

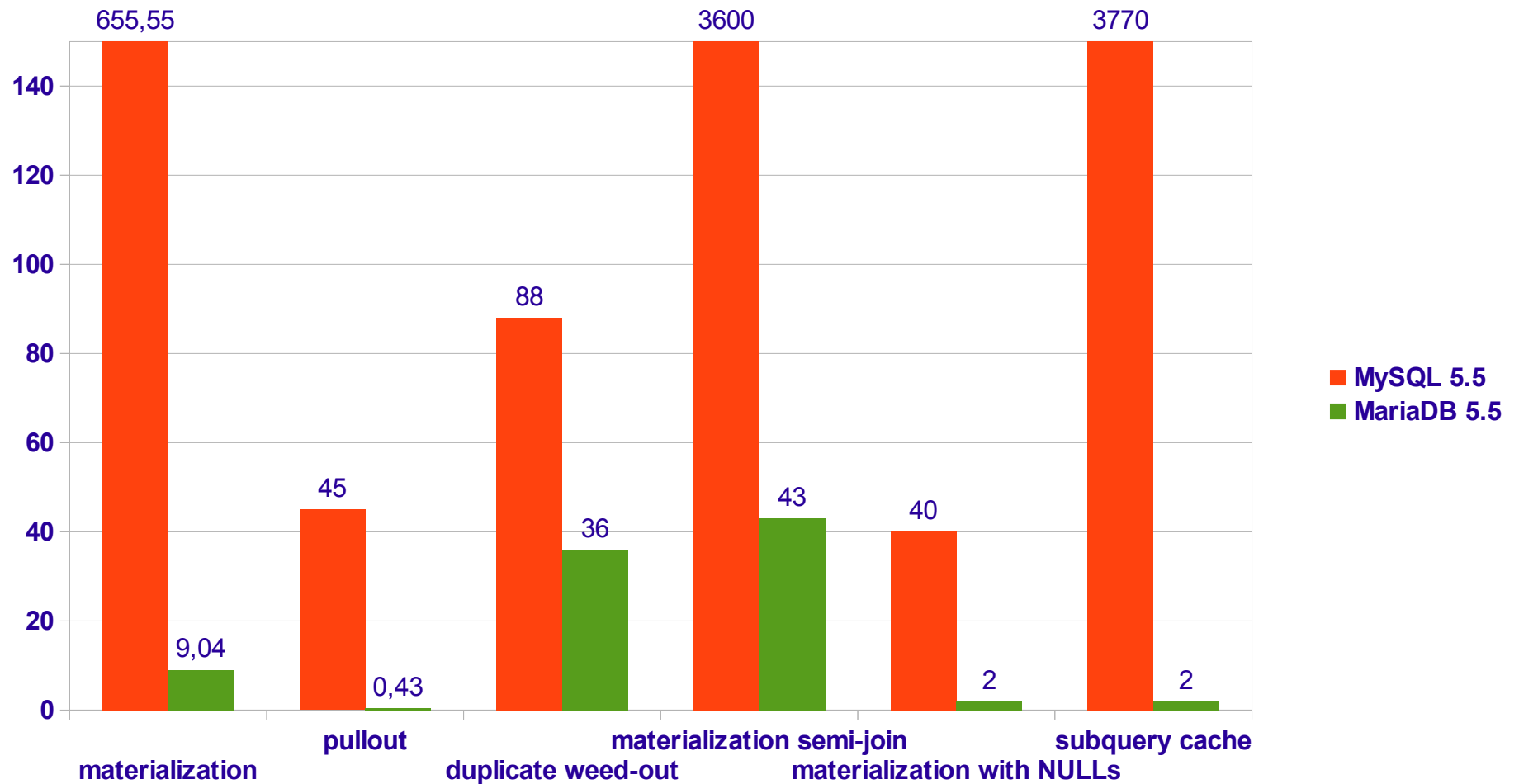


Subqueries

- Finally useful
- Major improvements
- Different strategies
 - Materialization
 - Semi-join
 - Table Pullout optimization
 - First Match execution strategy
 - Semi-join Materialization execution strategy
 - Loose Scan execution strategy
 - Duplicate Weed-out execution strategy
- Subquery cache



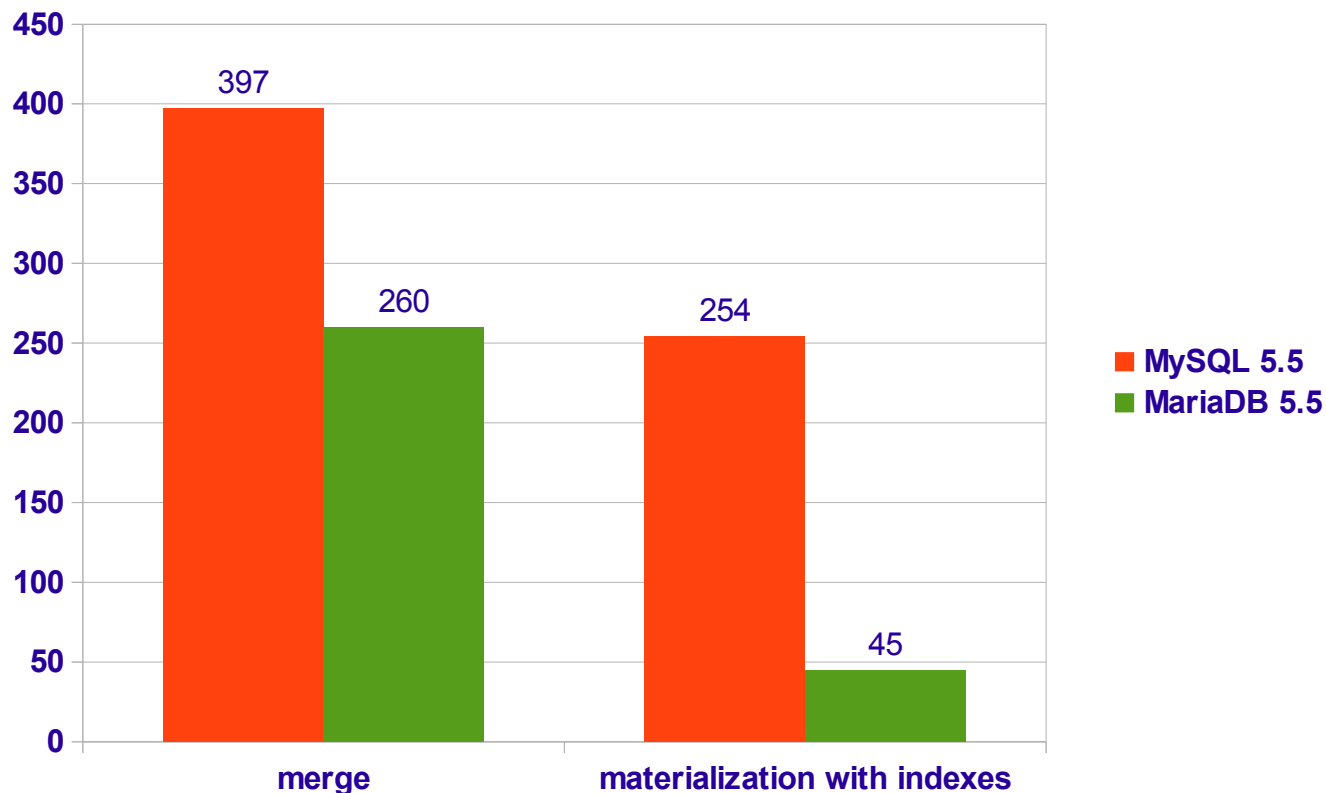
Subqueries



by MariaDB Optimizer Team. <http://en.oreilly.com/mysql2011/public/schedule/detail/20238>

Derived tables

- Merge
- Materialization with indexes

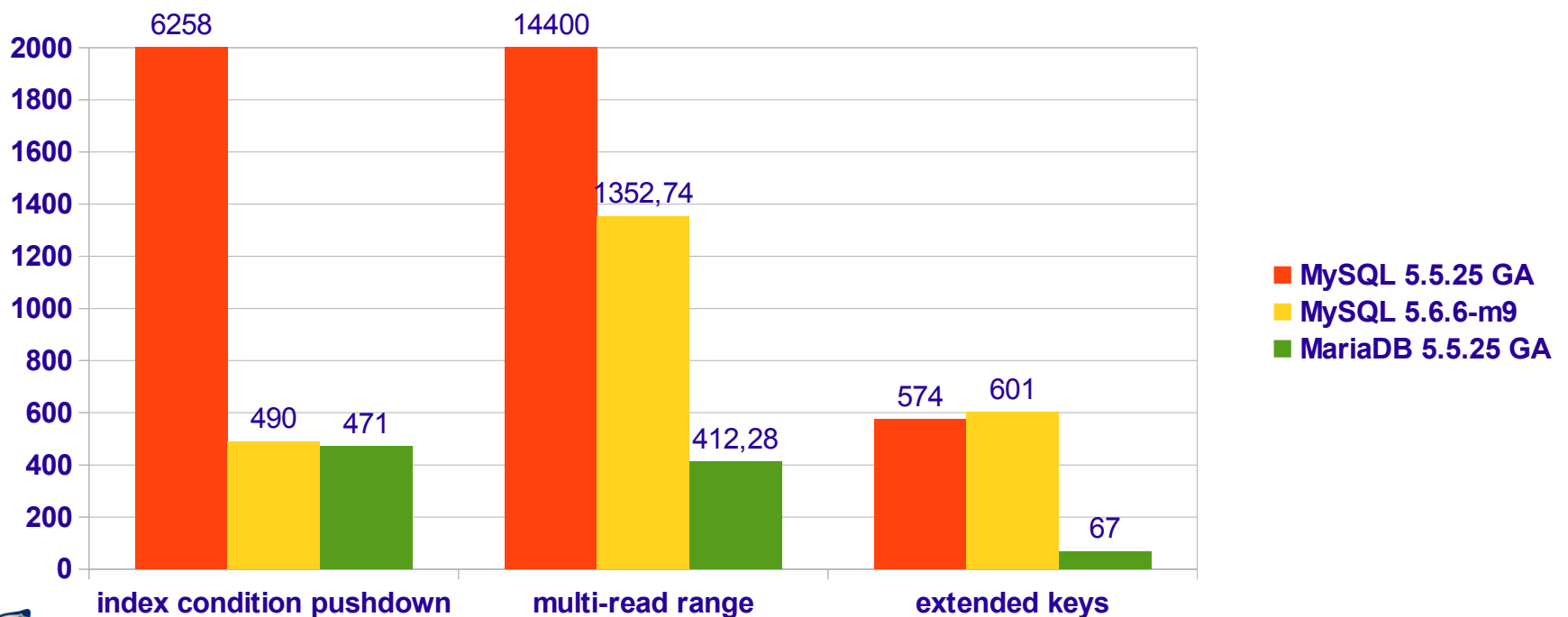


by MariaDB Optimizer Team. <http://en.oreilly.com/mysql2011/public/schedule/detail/20238>



Disk access optimizations

- Index Condition Pushdown
- Multi-Read Range
- InnoDB Extended keys

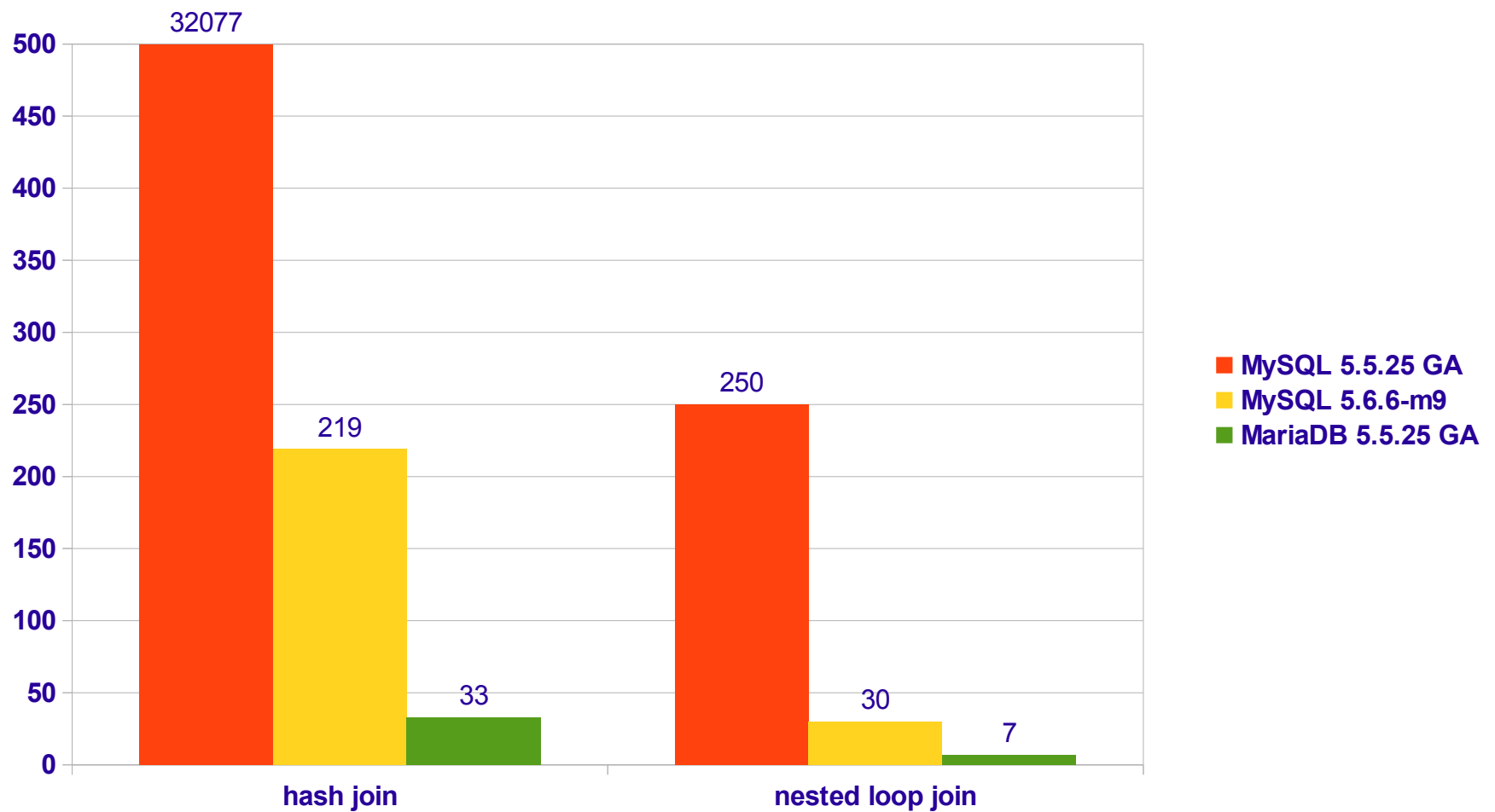


Joins

- Block Nested Loop
- Block Nested Loop Hash
- Batch Key Access (Block Index join)
- Batch Key Access Hash
- lots of smaller optimizations



Joins



Others

- index merge
- instant explain
- table elimination
- fine-grained optimizer control



Plans & Goals

- MariaDB 10.0
- All of MySQL-5.6 features
 - but some 5.6 features are more stable and more important than others
 - we merge and release those first
- New features too
 - UNION ALL optimization
 - SHOW EXPLAIN
 - even faster group commit
 - and many more...



Support

- Monty Program AB
 - Engineering
 - L3 level support
- Partners
 - L1 and L2 support, 24x7, consulting, training
 - SkySQL
 - Percona, Open Query, and many others
- Original MySQL AB employees, with more than 10 years of experience



Contact us

- MariaDB.org, AskMonty.org, MontyProgram.com
- **Knowledge Base:** kb.askmonty.org
- **Mailing lists:** Launchpad
 - maria-discuss@lists.launchpad.net
 - maria-developers@lists.launchpad.net
- **IRC:** #maria channel on FreeNode
- **Jira:** mariadb.org/jira
 - New features and feature requests
 - Bug tracker
 - Release plans



Questions?



Thank you!

