

Go get more drinks -- we
start at 7.30, food served
~8.15

**Open bar till 10.00pm courtesy of SkySQL
Ab**

MariaDB: The New M in LAMP

Colin Charles, Monty Program Ab

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<http://montyprogram.com> / <http://mariadb.org/>

<http://bytebot.net/blog> / @bytebot on Twitter

LeMUG, Paris, France

1 February 2012

whoami

- Chief Evangelist, MariaDB
- Formerly of MySQL AB/Sun Microsystems
- Past lives included FESCO (Fedora Project), OpenOffice.org

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Aims

- Give you an update of what we've done with MariaDB
- Discuss the broader MySQL ecosystem

What is it?

- A branch of MySQL with more features?
- A branch of MySQL with better features?
- A fork?



MariaDB is...

- Community Developed
- Feature Enhanced
- Backward Compatible

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Who's behind it?

- MySQL (database) owned by MySQL AB (company)
- Monty Program is just a sponsor of MariaDB
- maria-captains: 64% Monty Program, 36% community (+16% MP 3Q/2011)

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When did this begin?

- Sun buys MySQL AB in January 2008
- Oracle proposes acquisition of Sun Microsystems in April 2009
- Widenius decides that beyond the engine (February 2009), focus on MariaDB, a complete database solution

Why MariaDB?

- MySQL - an open source product or project?
- MariaDB is an open source project

Aims of MariaDB

- 100% compatible, drop-in replacement to MySQL
- Stable (bug-free) releases
- GPLv2



Compatibility with MySQL

- There is no NDB cluster storage engine
- Client libraries, client-server protocol, SQL dialect, replication master-slave all similar
- Data files are supported as long as its similar between versions
- Tools are similar (some additional tools for Aria, PBXT)
- XtraDB enabled by default; InnoDB included, but not enabled by default
- <http://kb.askmonty.org/v/mariadb-versus-mysql-compatibility>

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What's in MariaDB 5.1

- Released February 2010
- Create external buildsystem using Buildbot + VMs for test + builds
- Release filled with storage engines
- *Croatian collations*
- Numerous bug fixes
- Test cases and coverage improvements
- Removal of mutexes
- Compiler warnings gone!

- *XtraDB, PBXT, FederatedX, (M)Aria*
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What's in MariaDB 5.1

- XtraDB
(ENGINE=InnoDB)
 - enhanced InnoDB designed to better scale on modern hardware; backward compatible, scale better on many cores, use memory more efficiently
- <http://www.percona.com/docs/wiki/percona-xtradb:start>

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What's in MariaDB 5.1

- *Extended statistics for slow query log*
 - based on *microslow* from Percona <http://kb.askmonty.org/v/slow-query-log-extended-statistics>
- *PROCESSLIST with microsecond precision*
 - TIME_MS in INFORMATION_SCHEMA.PROCESSLIST http://kb.askmonty.org/v/time_ms-column-in-information_schemaprocesslist

```
MariaDB [(none)]> select id, time, time_ms, command, state from information_sche
ma.processlist, (select sleep(2)) t;
+-----+-----+-----+-----+-----+
| id | time | time_ms | command | state |
+-----+-----+-----+-----+-----+
| 2 | 2 | 2002.822 | Query | executing |
+-----+-----+-----+-----+-----+
1 row in set (2.01 sec)
```

What's in MariaDB 5.1

- Table elimination
 - Query highly normalised data, it is sometimes possible to resolve a query without accessing some tables the query refers to e.g. <http://kb.askmonty.org/v/what-is-table-elimination>
- Pool of threads (MySQL 6 backport)
 - Use a limited set of threads to handle all queries vs one-thread-per-connection. Win if most queries are short running, and there are few table/row locks. <http://kb.askmonty.org/v/pool-of-threads>



What's in MariaDB 5.2

- Released November 2010
- MariaDB 5.2.10 (MariaDB 5.1.60 - changes up to MySQL 5.1.60)
- Pluggable authentication
 - authentication of users handled by plugins
 - `mysql_native_password` (20 byte) and `mysql_old_password` (8 byte) included by default
 - `CREATE USER foo IDENTIFIED VIA mysql_native_password USING 'pass';`
`== CREATE user foo IDENTIFIED BY PASSWORD 'pass';`
- Use `socket_peercred` - if already logged in via Unix credentials, MariaDB will trust it
- <http://kb.askmonty.org/v/development-pluggable-authentication>
- **Now with a PAM authentication plugin!**
 - <http://kb.askmonty.org/en/pam-authentication-plugin>
- *User Statistics (userstatsv2)*
 - Percona, Google, Weldon Whipple. Understand server activity better, identify database loads <http://kb.askmonty.org/v/user-statistics>
 - Client, user, index, table statistics

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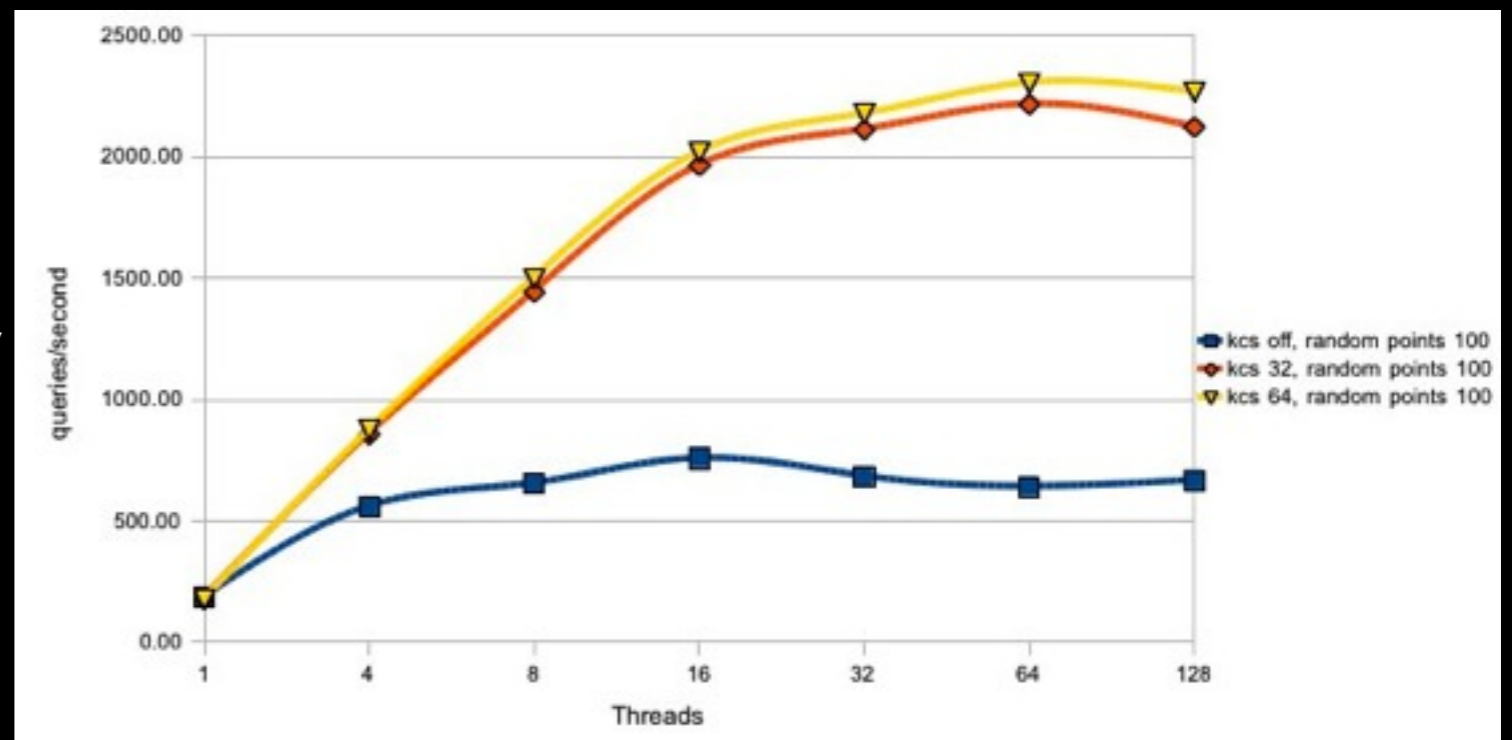
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What's in MariaDB 5.2

- Segmented MyISAM keycache
- mitigates thread contention for key cache lock, with notable 250% performance improvements

[http://
kb.askmonty.org/
v/segmented-key-
cache](http://kb.askmonty.org/v/segmented-key-cache)

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MariaDB 5.2: SphinxSE

- `CREATE TABLE t1 (..) ENGINE=SPHINX CONNECTION="sphinx://localhost:9312/test";`
- `SELECT * from t1 WHERE query='test it;mode=any';`
- matching modes, limits, filters, ranges supported
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- monitor it - `SHOW ENGINE SPHINX STATUS;`
- can JOIN a SphinxSE search table and tables using other engines as well
- <https://kb.askmonty.org/v/about-sphinxse>

MariaDB 5.3: NoSQL

- HandlerSocket
 - direct access to InnoDB/XtraDB
 - no SQL, simple CRUD operations on tables
- Dynamic columns
 - different set of “virtual columns” for each row in your table
 - store different attributes for each item (see: e-commerce shops)



```
MariaDB [test]> create table t1 (id int auto_increment primary key,  
-> name varchar(40),  
-> type enum ("shirt", "phone", "computer"),  
-> price decimal(10,2),  
-> dynstr mediumblob);
```

Query OK, 0 rows affected (0.05 sec)

```
MariaDB [test]> insert into t1 (name, type, price, dynstr) values  
-> ("Funny shirt", "shirt", 10.0, COLUMN_CREATE(1, "blue", 10, "XL")),  
-> ("nokia", "phone", 649, COLUMN_CREATE(1, "black", 2, "touchscreen")),  
-> ("htc Desire hd", "phone", 579, COLUMN_CREATE(1, "black", 3, "Android")),  
-> ("BM/Lenovo Thinkpad X60s", "computer", 419, COLUMN_CREATE(1, "black", 3, "Linux"));
```

Query OK, 4 rows affected (0.00 sec)

Records: 4 Duplicates: 0 Warnings: 0

```
MariaDB [test]> select id, name, type, price, length(dynstr) as len, column_list(dynstr) as list from t1;
```

id	name	type	price	len	list
1	Funny shirt	shirt	10.00	17	1,10
2	nokia	phone	649.00	27	1,2
3	htc Desire hd	phone	579.00	23	1,3
4	BM/Lenovo Thinkpad X60s	computer	419.00	21	1,3

4 rows in set (0.00 sec)

```
MariaDB [test]> SELECT name FROM t1 WHERE COLUMN_GET(dynstr, 1 as char(10)) = "black";
```

name
nokia
htc Desire hd
BM/Lenovo Thinkpad X60s

3 rows in set (0.00 sec)

```
MariaDB [test]> SELECT COLUMN_GET(dynstr, 1 as char(10)) as colour, count(*) FROM t1 group by COLUMN_GET(dynstr, 1 as char(10));
```

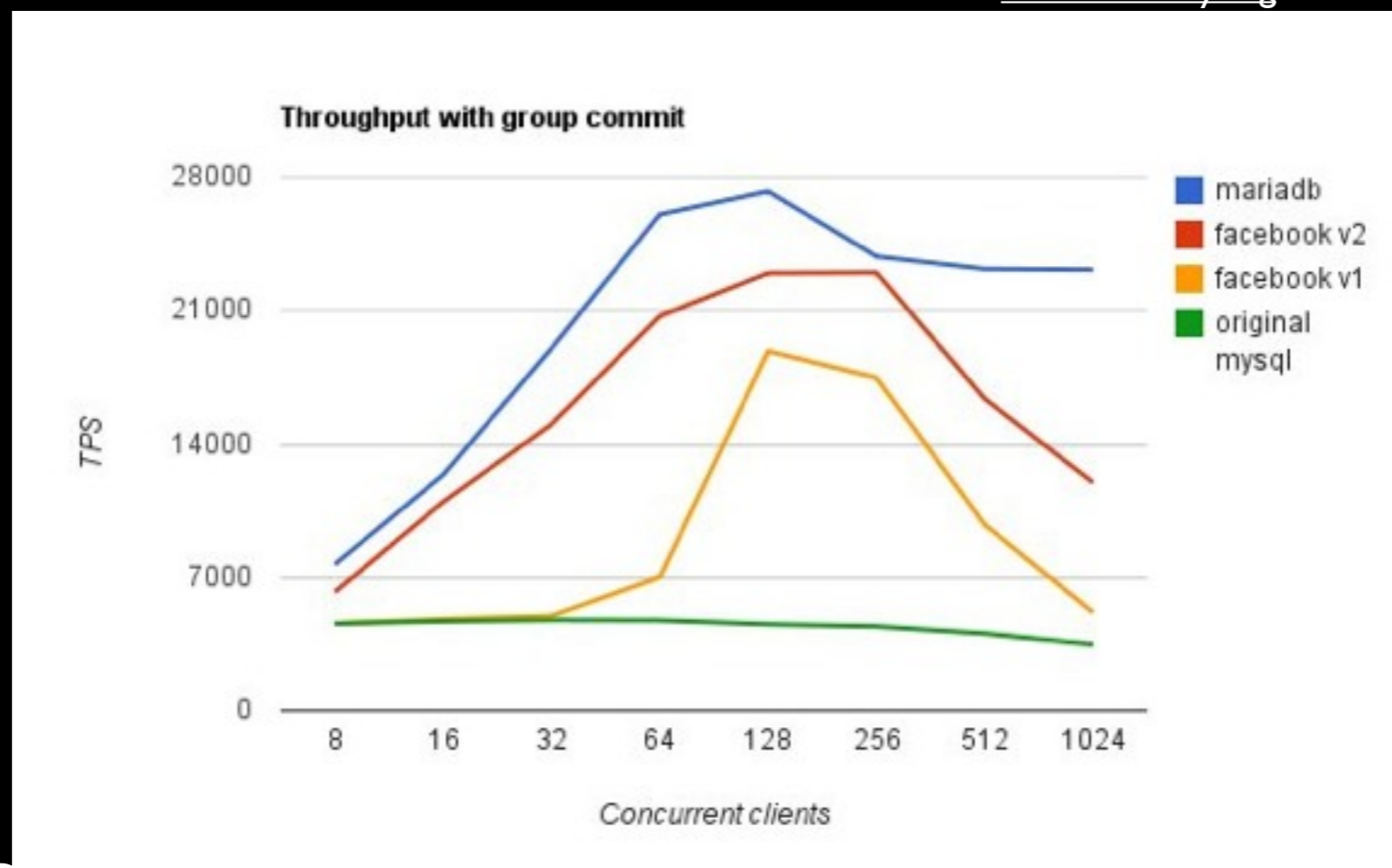
colour	count(*)
black	3
blue	1

2 rows in set (0.00 sec)



MariaDB 5.3: group commit

- Group commit for the binary log
- `sync_binlog=1,`
`innodb_flush_log_at_trx_commit=1`
- https://www.facebook.com/note.php?note_id=10150261692455933
- <http://kb.askmonty.org/en/group-commit-for-the-binary-log>



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MariaDB 5.3: replication

- Checksums for binlog events (5.6 backport)
- START TRANSACTION WITH CONSISTENT SNAPSHOT works w/ binlog
 - obtain binlog pos. w/o blocking other queries
- mysqldump --single-transaction --master-data => non-blocking backup! (new slave provisioning?) Works w/XtraDB+PBXT
- row-based replication for tables w/no primary key

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MariaDB 5.3

- Progress reporting for ALTER TABLE/LOAD DATA INFILE

```
MariaDB [test]> alter table my_mail engine=maria;  
Stage: 1 of 2 'copy to tmp table' 5.37% of stage done
```

- mytop included
 - Optimiser changes
 - @@optimizer_switch flags (default=off)
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- disk access: Index Condition Pushdown (ICP), Multi-Range Read (MRR)
- join: Classic Hash Join, Batched Key Access (ordered retrievals via MRR), and many many more optimizations

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MariaDB 5.3: Subqueries finally!

- DBT-3, 60M line item rows, 29GB XtraDB database
- optimizer_switch='semijoin=on' / materialization=on

Query: orders from customers with negative balance:

```
SELECT * FROM orders
WHERE o_custkey IN
  (SELECT c_custkey FROM customer
   WHERE c_acctbal < -500);
```

MariaDB 5.2 (any MySQL): 45 sec (slow)

id	select_type	table	type	key	ref	rows	Extra
1	PRIMARY	orders	index	i_o_custkey	NULL	1493631	Using where; Using index
2	SUBQUERY	customer	range	c_acctbal	NULL	10536	Using where; Using index

MariaDB 5.3: 0.43 sec (faster ~ 100x)

id	select_type	table	type	key	ref	rows	Extra
1	PRIMARY	customer	range	c_acctbal	NULL	10536	Using where; Using index
1	PRIMARY	orders	ref	i_o_custkey	dbt3sf1.customer.c_custkey	7	Using index

Query: find customers with top balance in their nations:

```
SELECT c_name, c_address
FROM customer
WHERE c_acctbal IN (SELECT max(c_acctbal)
                   FROM customer GROUP BY c_nationkey);
```

MariaDB 5.2 (any MySQL): > 1.5 hours (impossible)

id	select_type	table	type	possible_keys	key	key_len	ref	rows	Extra
1	PRIMARY	customer	ALL	NULL	NULL	NULL	NULL	149637	Using where
2	DEPENDENT SUBQUERY	customer	index	NULL	i_c_nationkey	5	NULL	3117	

MariaDB 5.3: 3.2 sec (faster ~ INF)

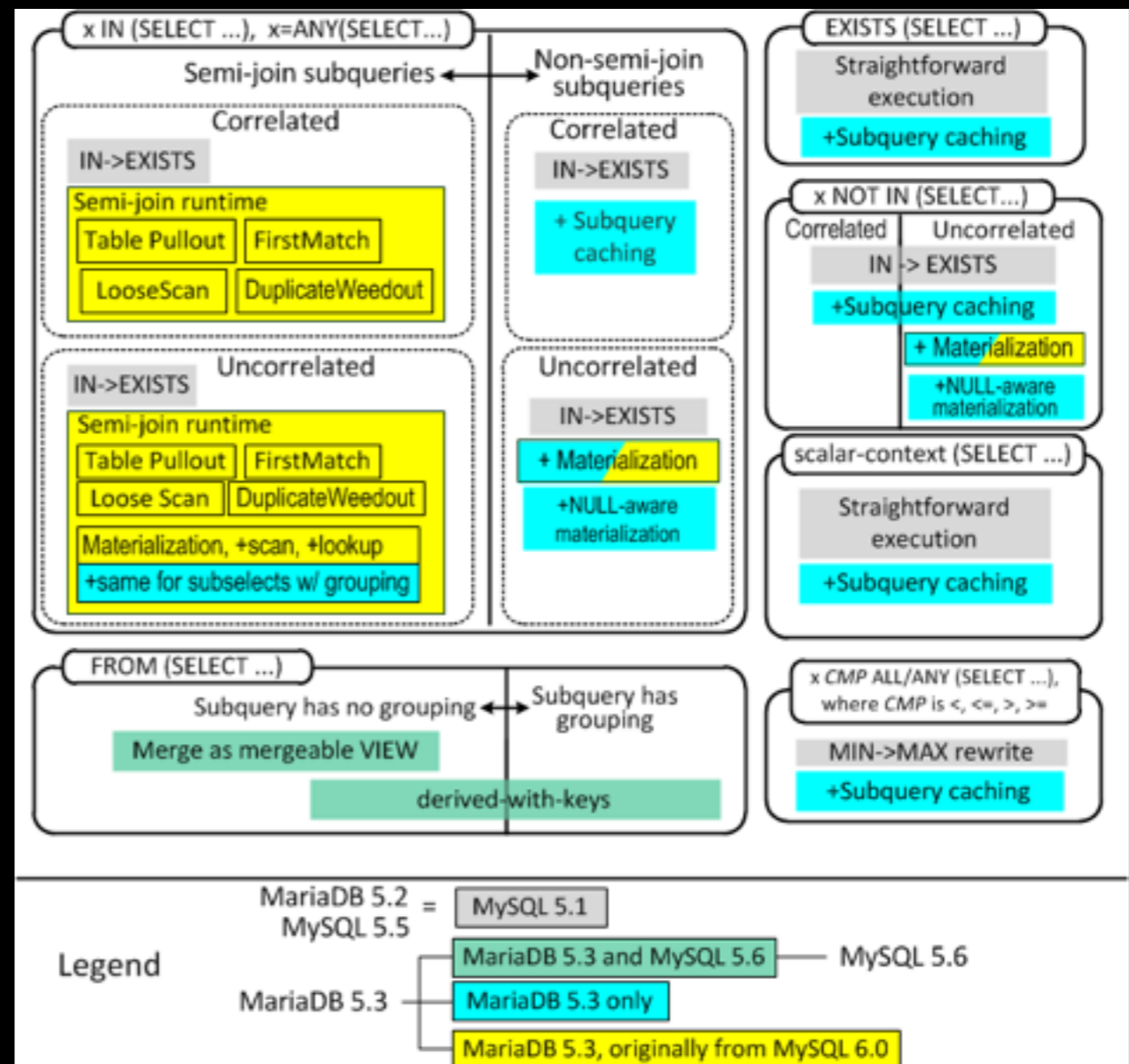
id	select_type	table	type	possible_keys	key	key_len	ref	rows	Extra
1	PRIMARY	<subquery2>	ALL	distinct_key	NULL	NULL	NULL	149637	Using where
1	PRIMARY	customer	ref	c_acctbal	c_acctbal	19	<subquery2>.max(c_acctbal)	1	
2	SUBQUERY	customer	index	NULL	i_c_nationkey	5	NULL	149637	

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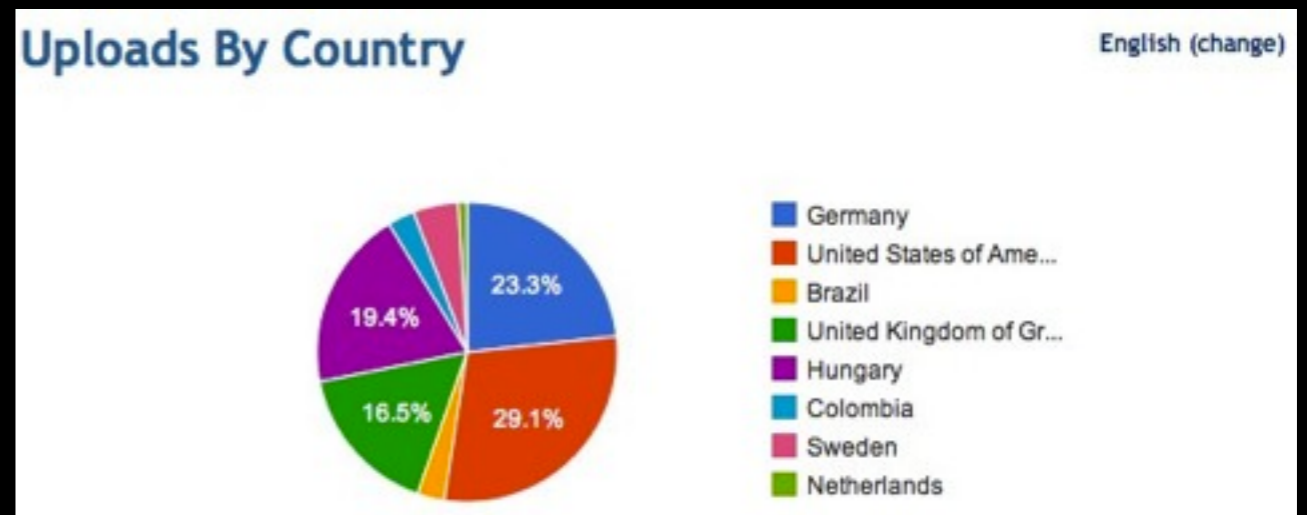
MariaDB 5.3: Subqueries

- Instant EXPLAIN
- <http://kb.askmonty.org/en/the-query-optimizer>



MariaDB 5.3: User Feedback Plugin

- New “phone home” plugin (works with Percona server, MySQL)
- disabled by default -- please consider enabling it (feedback=on)
- http://mariadb.org/feedback_plugin/





MariaDB 5.3 & 5.5

- MariaDB 5.3 - RC now
 - MariaDB 5.3.3 - 21/12/2011
- MariaDB 5.5 - Beta any day now
 - <https://launchpad.net/maria/5.5>

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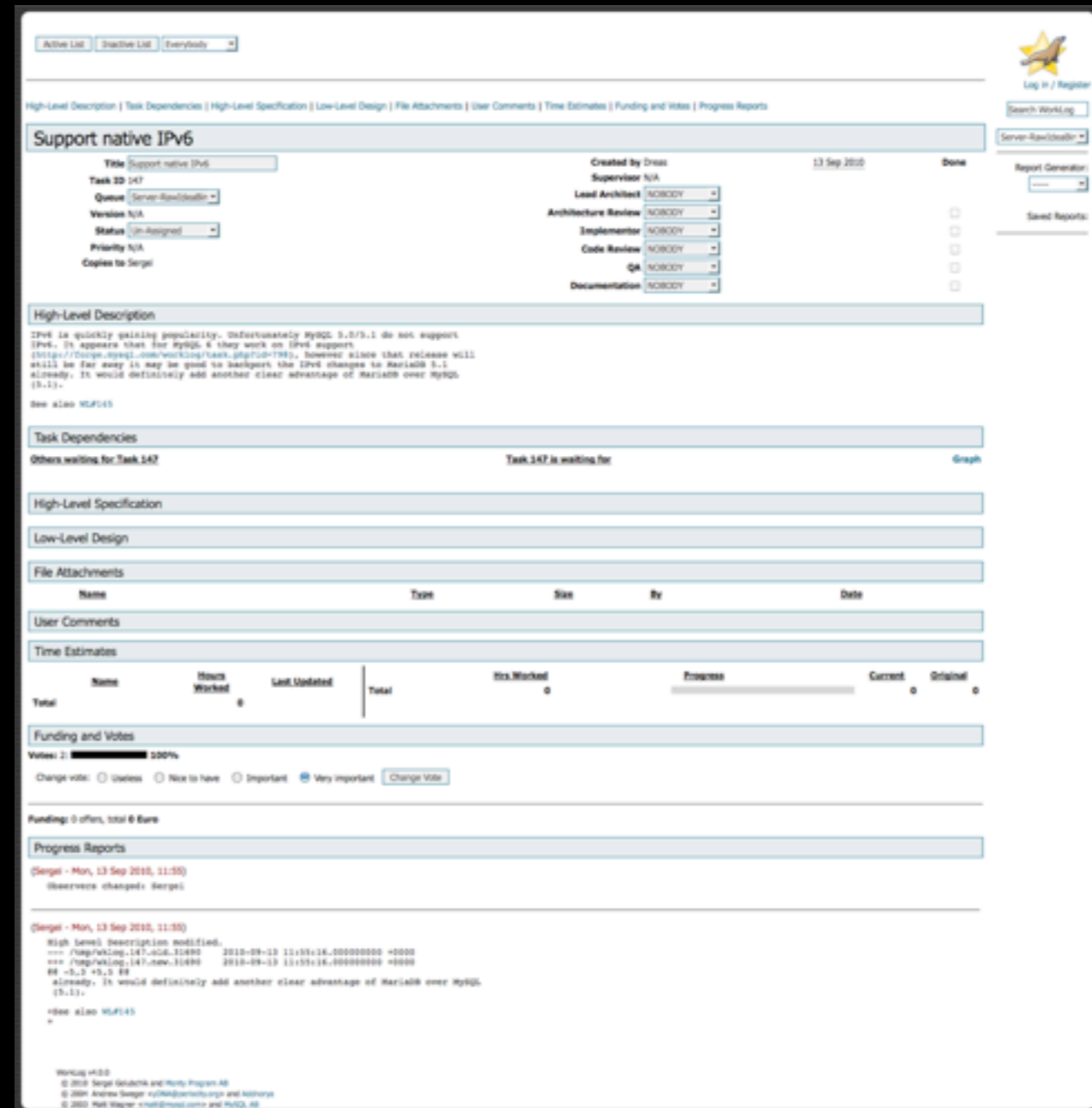
How open is MariaDB?

- Mailing lists: Launchpad
 - maria-developers@lists.launchpad.net
 - maria-discuss@lists.launchpad.net
- Code hosting:
Launchpad
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[@mariadb](https://twitter.com/mariadb)
- <http://launchpad.net/maria>
- Bugs database:
 - <https://bugs.launchpad.net/maria/>
- #maria on FreeNode IRC

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Worklog

- Funding (bounties)
- Votes
- <http://askmonty.org/worklog/>

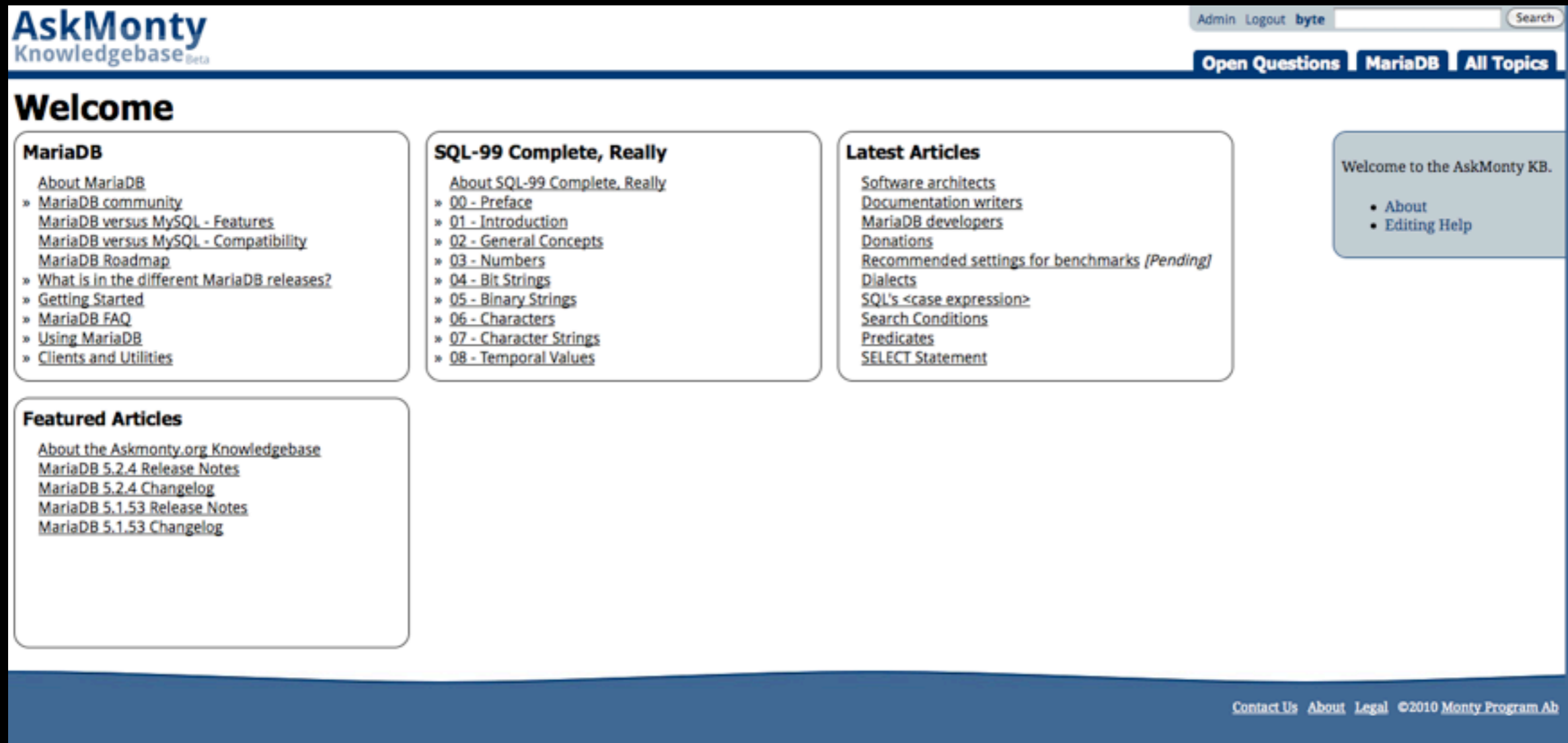


The screenshot shows a web interface for a task titled "Support native IPv6". The task ID is 147. It is created by Dross on 13 Sep 2010. The interface includes sections for: High-Level Description (describing IPv6 support in MySQL 5.5/5.6), Task Dependencies (Task 147 is waiting for others), High-Level Specification, Low-Level Design, File Attachments, User Comments, Time Estimates (table with columns: Name, Hours Worked, Last Updated, Total, Hrs Worked, Progress, Current, Original), Funding and Votes (2 votes, 100%), and Progress Reports (comments from Dross and Serge).

Name	Hours Worked	Last Updated	Total	Hrs Worked	Progress	Current	Original
Total	0			0			0

Knowledgebase

- <http://kb.askmonty.org/>



The screenshot shows the AskMonty Knowledgebase website. The header includes the AskMonty logo, navigation links for 'Admin', 'Logout', and 'byte', and a search bar. Below the header, there are tabs for 'Open Questions', 'MariaDB', and 'All Topics'. The main content area is titled 'Welcome' and contains several sections: 'MariaDB' with a list of links, 'SQL-99 Complete, Really' with a list of links, 'Latest Articles' with a list of links, and 'Featured Articles' with a list of links. A sidebar on the right contains a 'Welcome to the AskMonty KB.' message and links for 'About' and 'Editing Help'. The footer includes links for 'Contact Us', 'About', 'Legal', and a copyright notice for '©2010 Monty Program Ab'.

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Deployments,



deployments, deployments

happy users: pap.fr, wabtec, Paybox Services, OLX, Jelastic, etc.

“MariaDB had these same bugs that we ran into with MySQL. However the big difference was that when we reported these bugs, they were quickly resolved within 48 hours!” -- Dreas van Donselaar, Chief Technology Officer, SpamExperts

B.V. after migrating over 300 servers from MySQL 5.0 to MariaDB 5.1.

“Migrating from MySQL 5.1 to MariaDB 5.2 was as simple as removing MySQL RPMs and installing the MariaDB packages, then running `mysql_upgrade`.” - Panayot Belchev, proprietor, Host Bulgaria on providing MariaDB to over 7,000 of their web hosting customers.

“We made the switch on Saturday – and we’re seeing benefits already – our daily optimization time is down from 24 minutes to just 4 minutes” -- Ali Watters, CEO, travelblog.org

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Getting MariaDB

- <http://mariadb.org/> is the site + downloads
- Get it via OpenSUSE build service
- Its in Gentoo, FreeBSD, Homebrew
- <http://kb.askmonty.org/v/distributions-which-include-mariadb>

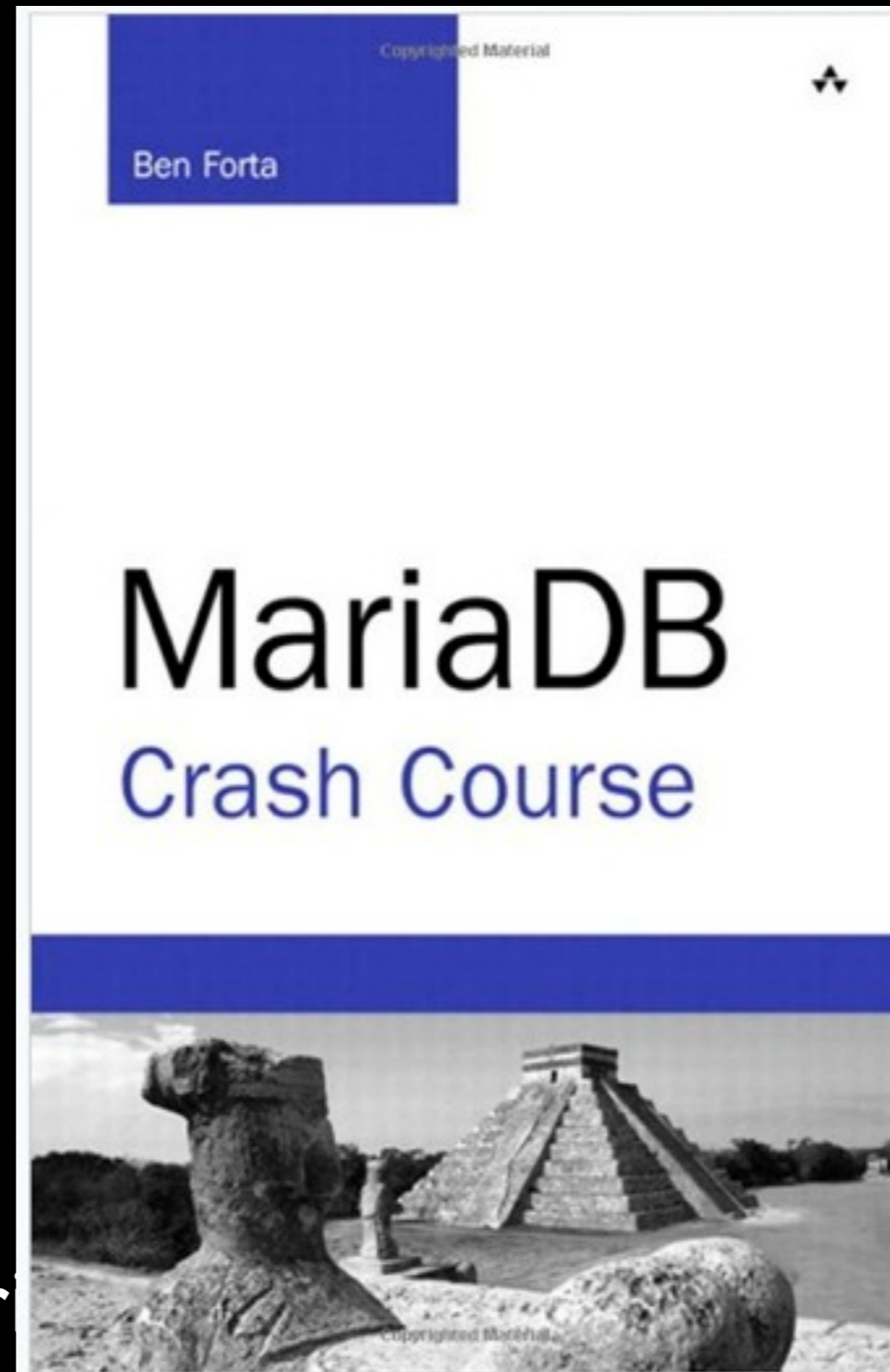
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The future?

- GIS features making it into MariaDB 5.3
- Merging takes time
- Features (different implementations) make it into upstream
- Getting into distributions (Fedora/EPEL policies), Ubuntu/Debian, etc ?

We have a book



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Community Program

Support

- Monty Program does NRE/engineering work for MySQL/MariaDB (not L1/L2 support)
- Support via capable **service providers**
 - <http://mariadb.org/service-providers/>
 - SkySQL (here)

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New Server Functionality

- [http://
www.skysql.c
om/content/
new-server-
functionality-
have-your-say](http://www.skysql.com/content/new-server-functionality-have-your-say)

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New Server Functionality - Have Your Say

[MariaDB](#) [MySQL](#) [Server](#)

Your chance to say what should go in the server!

Did you know that a substantial part of every SkySQL subscription is paid to Monty Program to fund server development and improved functionality in [MariaDB®](#) (which is then sent upstream for inclusion in the MySQL® Server)¹?

In the spirit of Real Community Driven Innovation, we'd like to know what it is that you would want to see in the upcoming releases of the server. Let us know where you want your money to be spent!

With [MariaDB v5.3.3](#) now a release candidate and [v5.5](#) almost ready for a beta release, we're mapping out what to put into [v5.6](#)

MariaDB v5.6 is based on MySQL v5.6 and we'd like to know what features you would like to see added.

I would like to see: *

- Better replication monitoring [2]
- HBase (NoSQL) storage engine
- Open GIS compliance
- Aria improvements, eg. concurrent UPDATE & DELETE
- Global transaction ID [3]
- Prevent full table scans from even running above a certain table size
- Better integration of Spider storage engine
- Better integration of Galera
- Parallel Replication
- Other (please specify below)



We're on social media

- facebook: fb.com/MariaDB.dbms
- twitter: [@mariadb](https://twitter.com/mariadb)
- google plus: search for mariadb

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Q&A?

email: colin@montyprogram.com

<http://montyprogram.com/> | <http://mariadb.org/>

twitter: @bytebot / url: <http://bytebot.net/blog/>