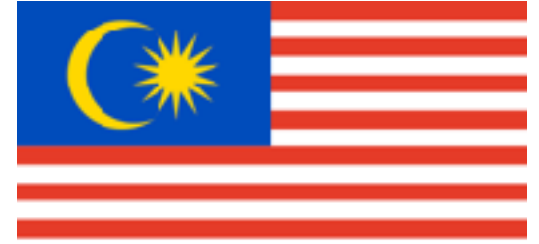


The Proxy Wars: MySQL Router, ProxySQL, MariaDB MaxScale

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<http://bytebot.net/blog/> | @bytebot on Twitter
Percona Webminar
15 November 2017



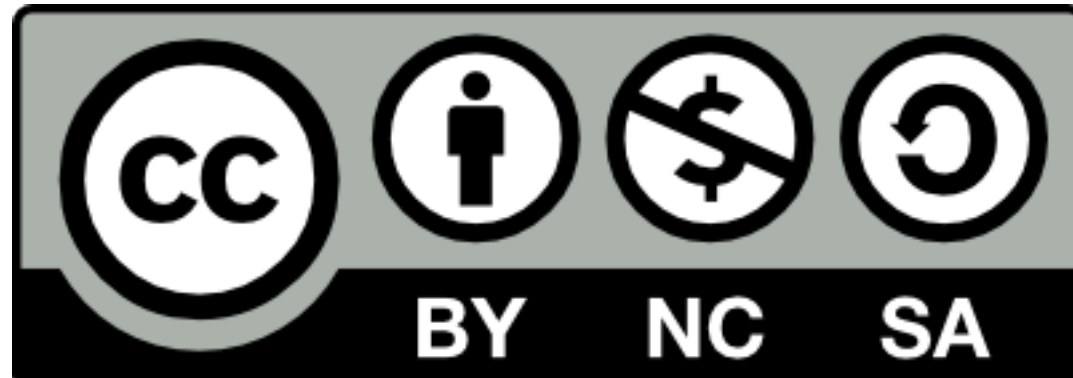
whoami



- **Chief Evangelist, Percona Inc**
 - Focusing on the MySQL ecosystem (MySQL, Percona Server, MariaDB Server), as well as the MongoDB ecosystem (Percona Server for MongoDB) + **100% open source** tools from Percona like Percona Monitoring & Management, Percona xtrabackup, Percona Toolkit, etc.
- **Founding team of MariaDB Server (2009-2016)**, previously at Monty Program Ab, merged with SkySQL Ab, now MariaDB Corporation
- Formerly MySQL AB (exit: Sun Microsystems)
- Past lives include Fedora Project (FESCO), OpenOffice.org
- MySQL Community Contributor of the Year Award winner 2014

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What is a proxy?

- Lightweight application between the MySQL clients and the server
- Man-in-the-middle between client/server
- Communicate with one or more clients/servers

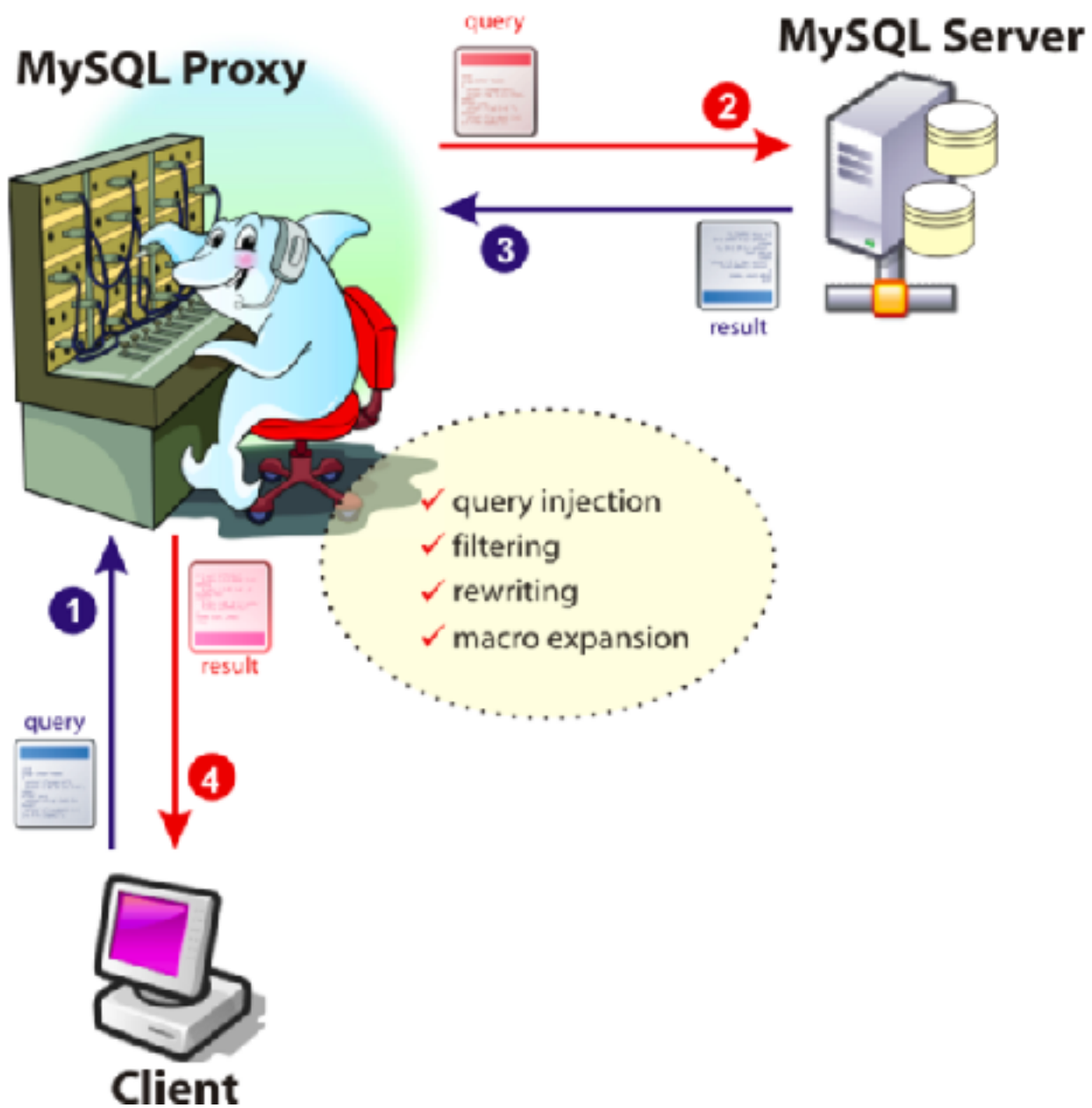


Image via Giuseppe Maxia

MySQL Proxy - ten years ago!

- The first proxy, which had an embedded Lua interpreter
- It is used in MySQL Enterprise Monitor
- Lua was flexible to allow you to rewrite queries, add statements, filter, etc.
- 2007-2014

MariaDB MaxScale 1.0...1.4.x

- GA January 2015
- The “Swiss Army Knife” - pluggable router with an extensible architecture
- Logging, writing to other backends (besides MySQL), firewall filter, routing via hints, query rewriting
- Binlog Server - popularised by [booking.com](https://www.booking.com) to not have intermediate masters
- Popular use case: sitting in front of a 3-node Galera Cluster

MariaDB MaxScale ecosystem

- First known plugin: Kafka backend written by Yves Trudeau
 - <https://www.percona.com/blog/2015/06/08/maxscale-a-new-tool-to-solve-your-mysql-scalability-problems/>
- First known *credible* fork: AirBnB MaxScale 1.3
 - connection pooling (not 1:1, multiplexed N:M, $N > M$ connections), requests throttling, denylist query rejection, monitoring

MariaDB MaxScale 2.0

- Same Github repository, unlinked against MySQL client libraries (replaced with SQLite), CDC to Kafka, binlog events to Avro/JSON
- License change from GPLv2 to Business Source License (BSL)

Use Limitation: Usage of the software is free when your application uses the Software with a total of less than three database server instances for production purposes.

Change Date: 2019-01-01

Change License: Version 2 or later of the GNU General Public License as published by the Free Software Foundation.

For information about alternative licensing arrangements for the Software, please visit: <https://mariadb.com/products/mariadb-enterprise>

Parameters

Licenser: MariaDB Corporation Ab

Licensed Work: MariaDB MaxScale™ v.2.0 (until v.2.0.4 as [BSL 1.0](#)) and MariaDB MaxScale™ v.2.1. The Licensed Work is © 2016-2017 MariaDB Corporation Ab

Additional Use Grant: You may use the Licensed Work when your application uses the Licensed Work with a total of less than three server instances for any purpose.

Change Date: 2019-01-01 (for MaxScale 2.0), 2019-07-01 (for MaxScale 2.1)

Change License: Version 2 or later of the GNU General Public License as published by the Free Software Foundation.

MariaDB MaxScale 2.1

- Dynamic (re)configuration
- Performance

For MariaDB MaxScale 2.1 we did some rather significant changes regarding how the worker threads are used. Up until version 2.0 all threads were used in a completely symmetric way with respect to all connections, both from client to MaxScale and from MaxScale to the backends, which implied a fair amount of locking inside MaxScale. In version 2.1 a session and all its related connections are pinned to a particular worker thread. That means that there is a need for significantly less locking and that the possibility for races has been reduced.

MySQL Router - GPLv2

- GA October 2015
- Transparent routing between applications and any backend MySQL servers
- Pluggable architecture via the MySQL Harness
- Failover, load balancing
- This is how you manage MySQL InnoDB Cluster with `mysqlsh` - <https://www.youtube.com/watch?v=JWy7ZLXxtZ4>

ProxySQL - GPLv3

- Stable December 2015
- ProxySQL - included with Percona XtraDB Cluster 5.7, proxysql-admin tool available for PXC configurations
- Improve database operations, understand and solve performance issues, HA to DB topology
- Connection Pooling & Multiplexing
- Read/Write Split and Sharding
- Seamless failover (including query rerouting), load balancing
- Query caching
- Query rewriting
- Query blocking (database aware firewall)
- Query mirroring (cache warming)
- Query throttling and timeouts
- Runtime reconfigurable
- Monitoring built-in

Comparison

- <http://www.proxysql.com/compare>

	GET PROXYSQL				
	ProxySQL 1.3.2	MariaDB MaxScale 2.0.3	HAProxy 1.7	NGINX 1.11.8	MySQL Router 2.0
LICENSE					
Open Source	✓ (GPL)	✗ (Proprietary)	✓ (GPL)	✓ (BSD 2-Clause)	✓ (GPL)
LOAD BALANCING					
Application Layer balancer	✓	✓	✗ (transport layer only)	✗ (transport layer only)	✗ (transport layer only)
Weighted Balance	✓	✓	✓	✓	✓
TOPOLOGIES					
MySQL Master/Slave Replication	✓	✓	✓ (external script)	✓ (external script)	✗ (very limited)
MySQL Group Replication	✓ (external script)	✗	✗	✗	✓ (not GA)
MySQL NDB Cluster	✓ (external script)	✓	✗	✗	✗
Galera Replication	✓ (external script)	✓	✓ (external script)	✓ (external script)	✗
Custom membership	✓ (external script)	✗	✓ (HTTP request)	✗ (yes commercial)	✗
PROTOCOLS					
MySQL native protocol	✓	✓	✗	✗	✗

ProxySQL missing features from MariaDB MaxScale

- Front-end SSL encryption (client -> SSL -> proxy -> application) - issue#891
- Binlog router
- Streaming binlogs to Kafka
 - use Maxwell's Daemon: <http://maxwells-daemon.io/>
- Binlogs to Avro

ProxySQL Resources

- Marco Tusa: <https://tusacentral.net/joomla/index.php/mysql-blogs>
- SeveralNines: <https://severalnines.com/blog?keywords=%23proxysql>
- Pythian: <https://www.pythian.com/blog/tag/proxysql/>
- Percona: <https://www.percona.com/blog/category/proxysql/>

Health of these projects

- MariaDB MaxScale: 142 watchers, 670 stars, 199 forks, 19 contributors
- MySQL Router: 25 watchers, 47 stars, 30 forks, 8 contributors
- ProxySQL: 119 watchers, 951 stars, 145 forks, 25 contributors

Pu

 Code

 Pull requests 3

 Projects 0

 Wiki

 Pulse

 Graphs

Contributors

Commits

Code frequency

Punch card

Network

Members

Dependents

Sunday



Monday



Tuesday



Wednesday



Thursday



Friday



Saturday



12a 1a 2a 3a 4a 5a 6a 7a 8a 9a 10a 11a 12p 1p 2p 3p 4p 5p 6p 7p 8p 9p 10p 11p

CONA

<> Code

🔍 Issues 266

🔗 Pull requests 14

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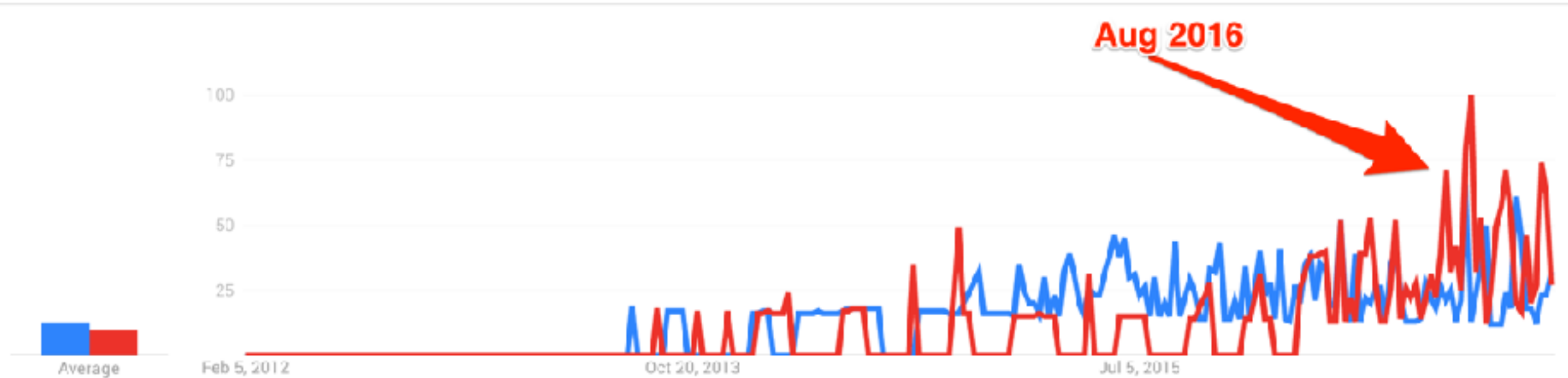


12a 1a 2a 3a 4a 5a 6a 7a 8a 9a 10a 11a 12p 1p 2p 3p 4p 5p 6p 7p 8p 9p 10p 11p

RCONA

Google Trends

Interest over time ?



What do you use?

- MySQL Router is clearly very interesting going forward, especially with the advent of the MySQL InnoDB Cluster
- ProxySQL is a great choice today, has wide use, also has Percona Monitoring & Management (PMM) integration
- MariaDB MaxScale pre-2.0 if you *really* need a binlog router
- Server you're using?

Resources

- ProxySQL: <https://groups.google.com/forum/#!forum/proxysql>
- MariaDB MaxScale: <https://groups.google.com/forum/#!forum/maxscale>
- MySQL Router: <https://forums.mysql.com/list.php?146>
- Vitess: <https://groups.google.com/forum/#!forum/vitess>

Percona Live Santa Clara 2018

- <https://www.percona.com/live/18/>
- April 23-25 2018, Santa Clara, California, USA
- Call for Papers/Presentations are now open!

Thank you!

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<http://bytebot.net/blog> | [@bytebot](#) on twitter

slides: slideshare.net/bytebot