

How Drizzle Approaches Performance of the Server

April 22, 2008



Hi, I'm Jay.
I'm a Drizzle code
monkey.

And you can too.





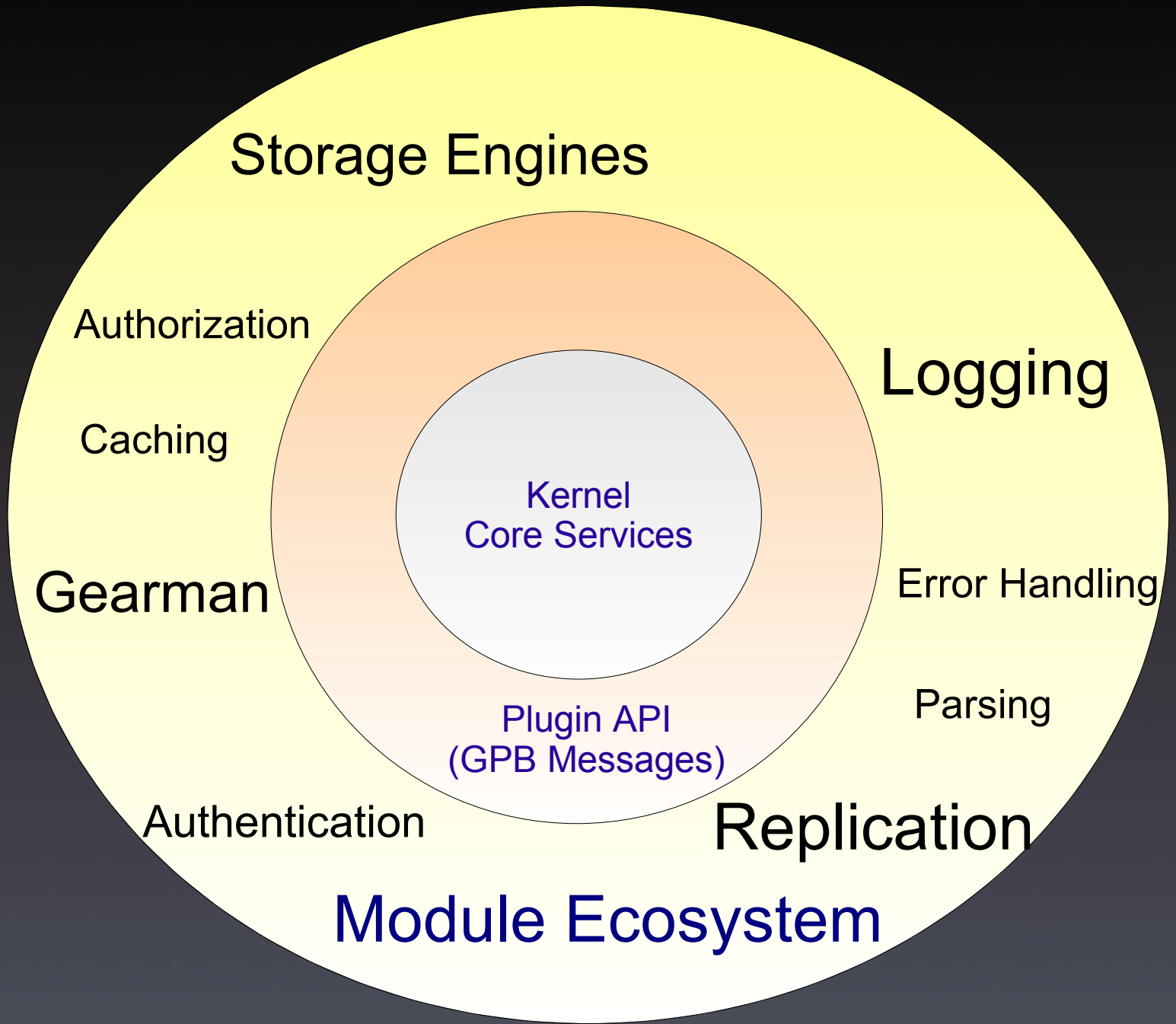
(A few of) our values

- Open and public discourse about performance
 - And problems!
- Focus on the interface, not the implementation
 - No “One Right Way” of doing something
 - Innovation happens in the community
- Say no to magic
 - Let compiler developers do their job
- Use standard, open source libraries
 - Let the experts be experts
- No new global contention points



Open and public discourse

- Benchmarks should be published online and peer-reviewed
- Methodology for benchmarks should be clear and well-documented on our wiki
- Discussions and debates about performance issues are actively encouraged on the list
- No shame
- No hiding
- No secrets



Storage Engines

Authorization

Caching

Gearman

Authentication

Kernel
Core Services

Plugin API
(GPB Messages)

Logging

Error Handling

Parsing

Replication

Module Ecosystem



Interface vs. Implementation

- Features are *implemented* in modules
- The kernel provides *interfaces* for modules to communicate with the kernel
- Recognize that one implementation of something may perform well for one problem domain, but poorly for others
 - So, provide interfaces so different, targeted implementations may be built to address differences in application domains



Interfaces

- The community should play an active role in defining interfaces
 - Well, duh, they're the ones who will be using the interfaces
- Interfaces pass “messages”, which are GPB-generated classes
- The message classes simply define the information which is passed-on from the kernel to the module



Google Protobuffers

- GPB Message classes provide a serializable container for information
 - Think: XML on crack.
- Eventually, all interfaces between the kernel and the module subsystems will pass only GPB messages
- No more having to understand kernel internals in order to add features



Say NO to ~~Crack~~ Magic

- Magic is code that works but is difficult or impossible to understand
- Magic is code which attempts to fix problems better fixed by compiler and library developers
- Magic is code which only one or two people know how to use
- The amount of magic in the code is *inversely* proportional to the number of developers who can contribute

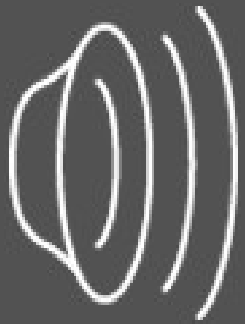


Cleaning up the code

- So much mess, so little time
- Any code base gets some cobwebs over the years -- MySQL is no different
- We're focusing on cleaning and refactoring the code base to make it easier for lots of developers to contribute

But sometimes, you run into a few road blocks...

The following makes
baby kittens cry





Use standard libraries

- Related to magic in the code
- Enables code re-use and allows Drizzle to take advantage of a large community of domain experts and developers
- Allows Drizzle to focus on Drizzle, and library developers to focus on library code
- Happy to send patches to library developers, but not good to reinvent the wheel



No new global contention points

- Performance != scalability
- Drizzle is focused more on scalability than raw performance
- The days of 16 concurrent connections are OVER
- Drizzle is targeting applications which consistently serve 1024+ concurrent connections
- Global mutexes negatively impact scalability, so no new global mutexes
- Remove existing global contention points in favor of atomics, RCU, and other strategies



The soundbite

- **More contributors**
 - Focus on APIs, clean code, standard libraries, open and public discourse
- **Easier to contribute**
 - Cleaner, more standardized code, fully public peer and code review, friendly community of mentors
- **Scalability over raw performance**
 - No new global mutexes, research on atomics, RCU, and other modern lock-free techniques



And we hope this leads to...



More eyes capable of
disecting and discussing the
code, which leads to steady
progress in performance and
scalability



Join us.



Resources

Launchpad - <http://launchpad.net/drizzle>

Wiki - http://drizzle.org/wiki/Main_Page

Discuss - <https://launchpad.net/~drizzle-discuss>

Freenode - [#drizzle](#)