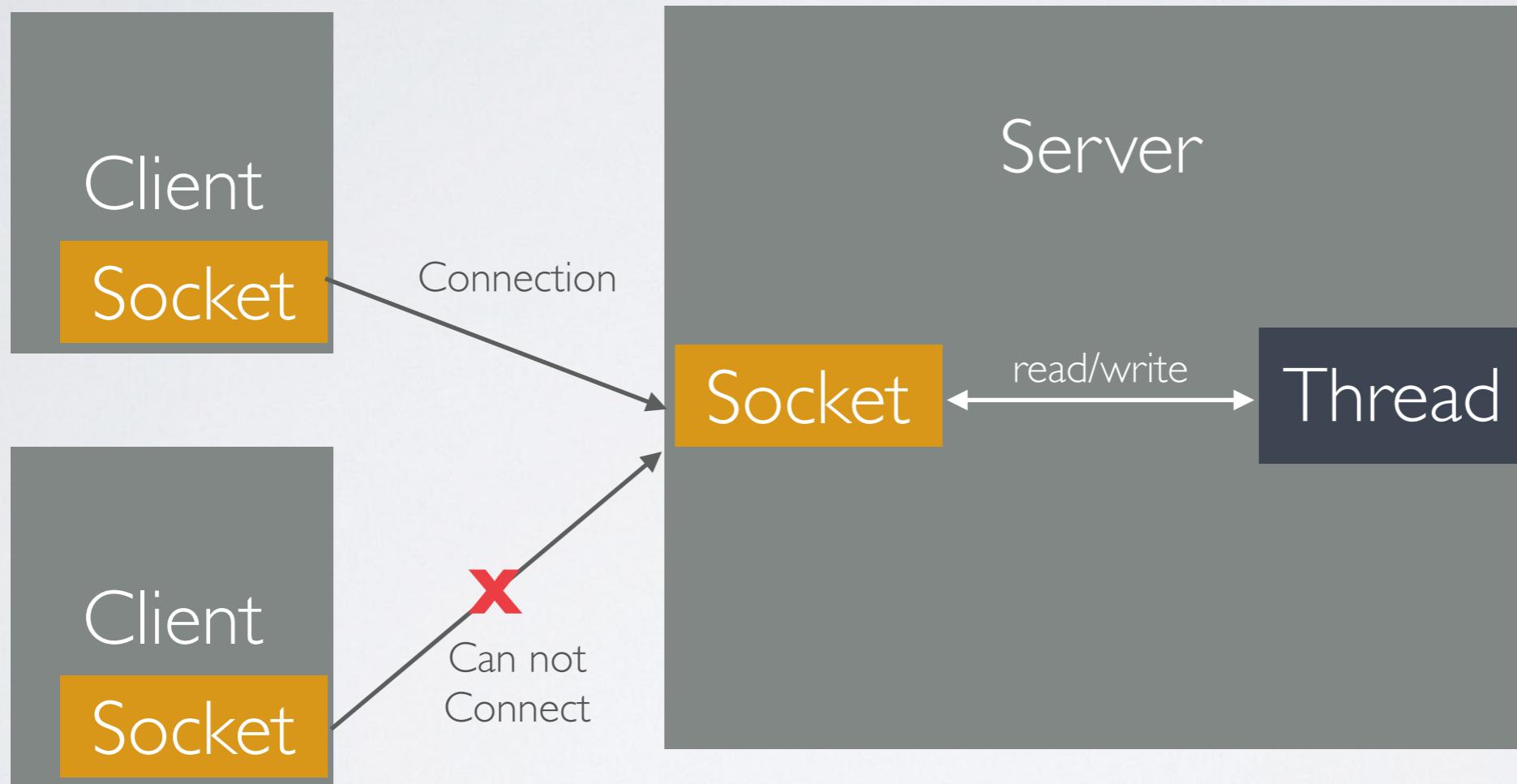
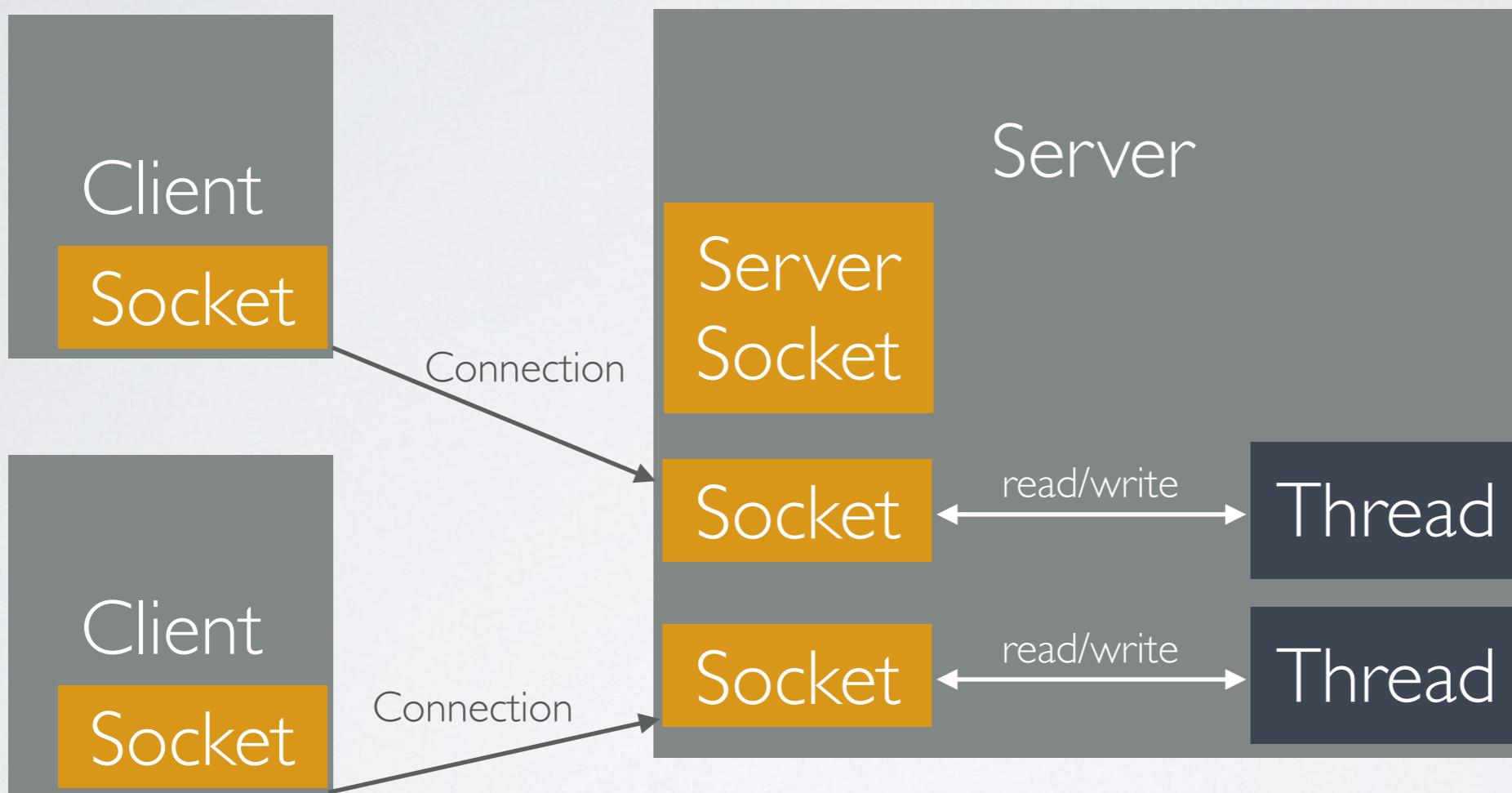


# REACTIVE RELATIONAL DATABASE CONNECTIVITY

# BLOCKING IO

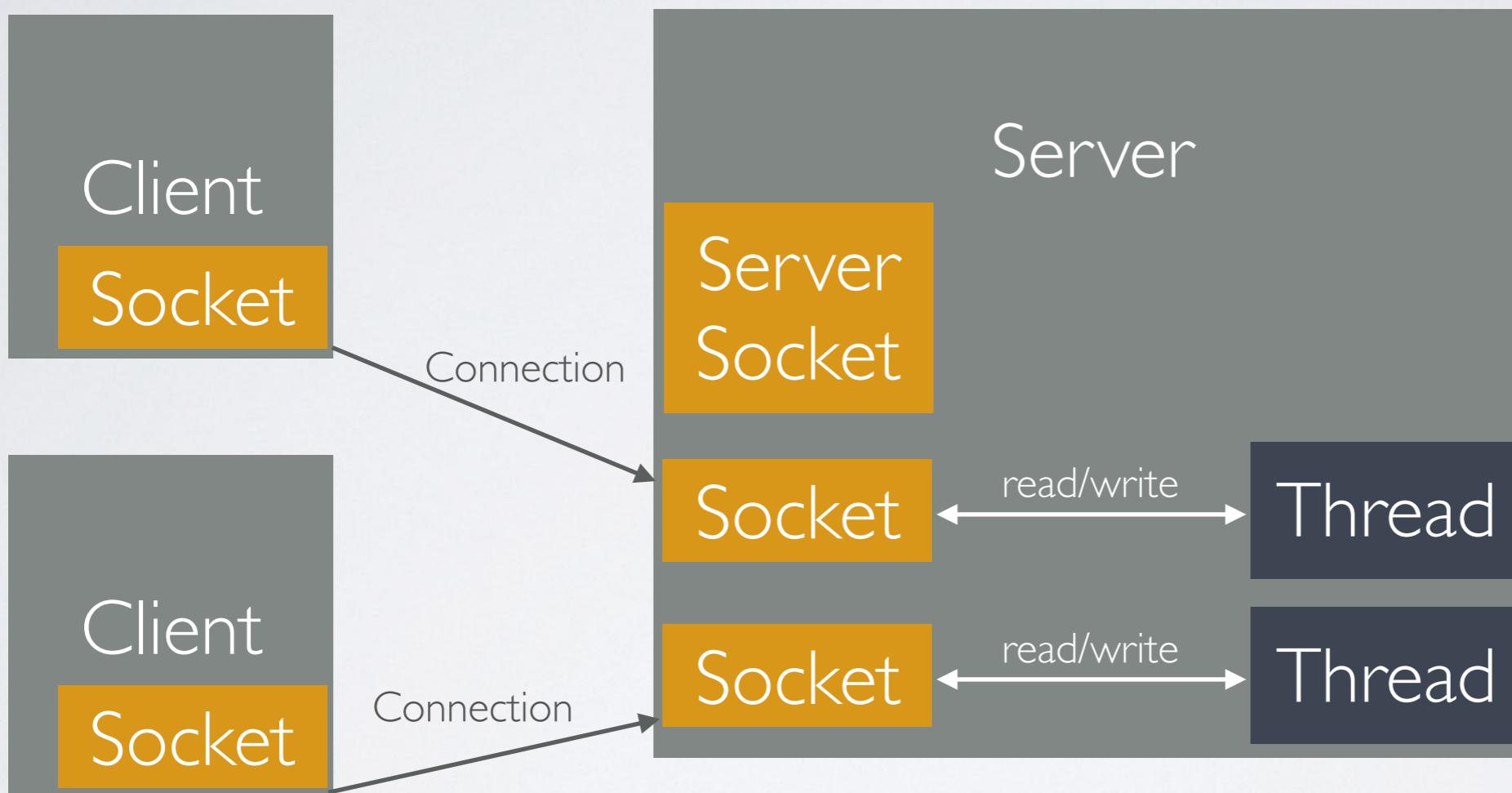


# THREADED BLOCKING IO

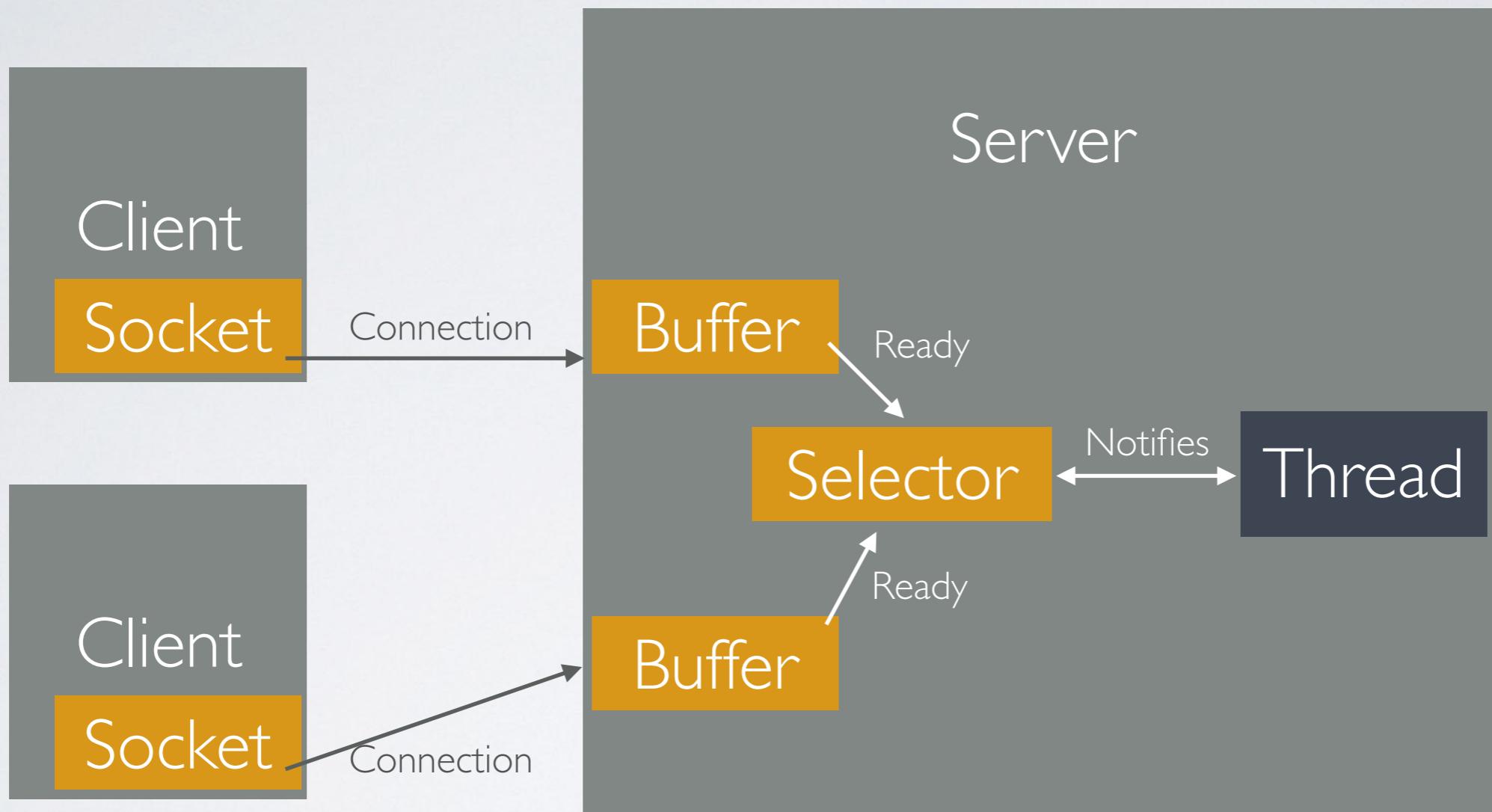


Thread per Request

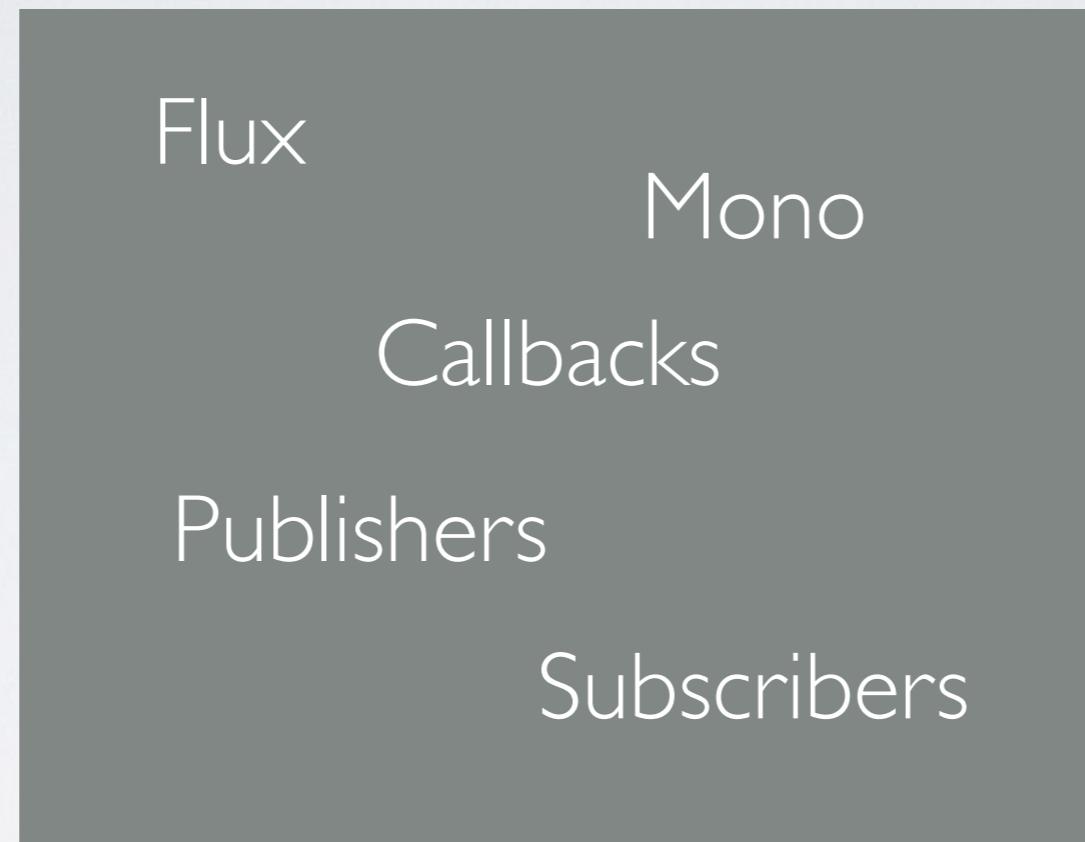
# THREADED BLOCKING IO



# NON - BLOCKING IO

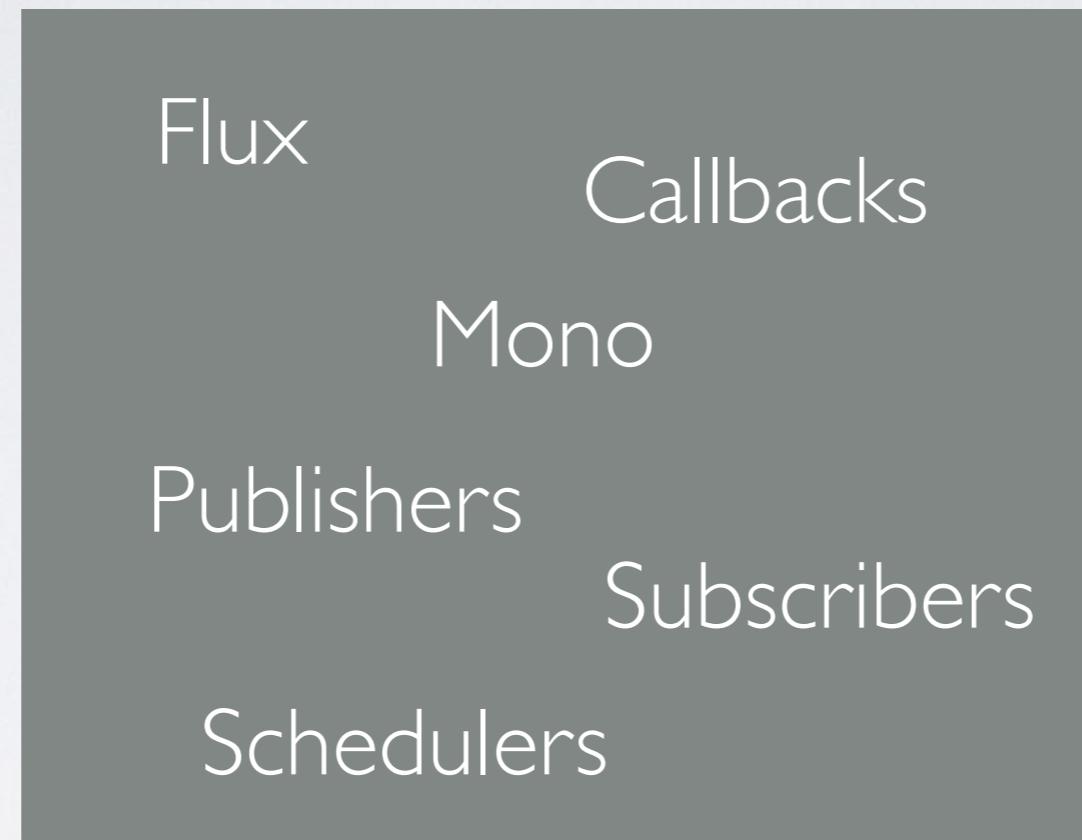


# APPLICATION SERVER



Project Reactor

# APPLICATION SERVER



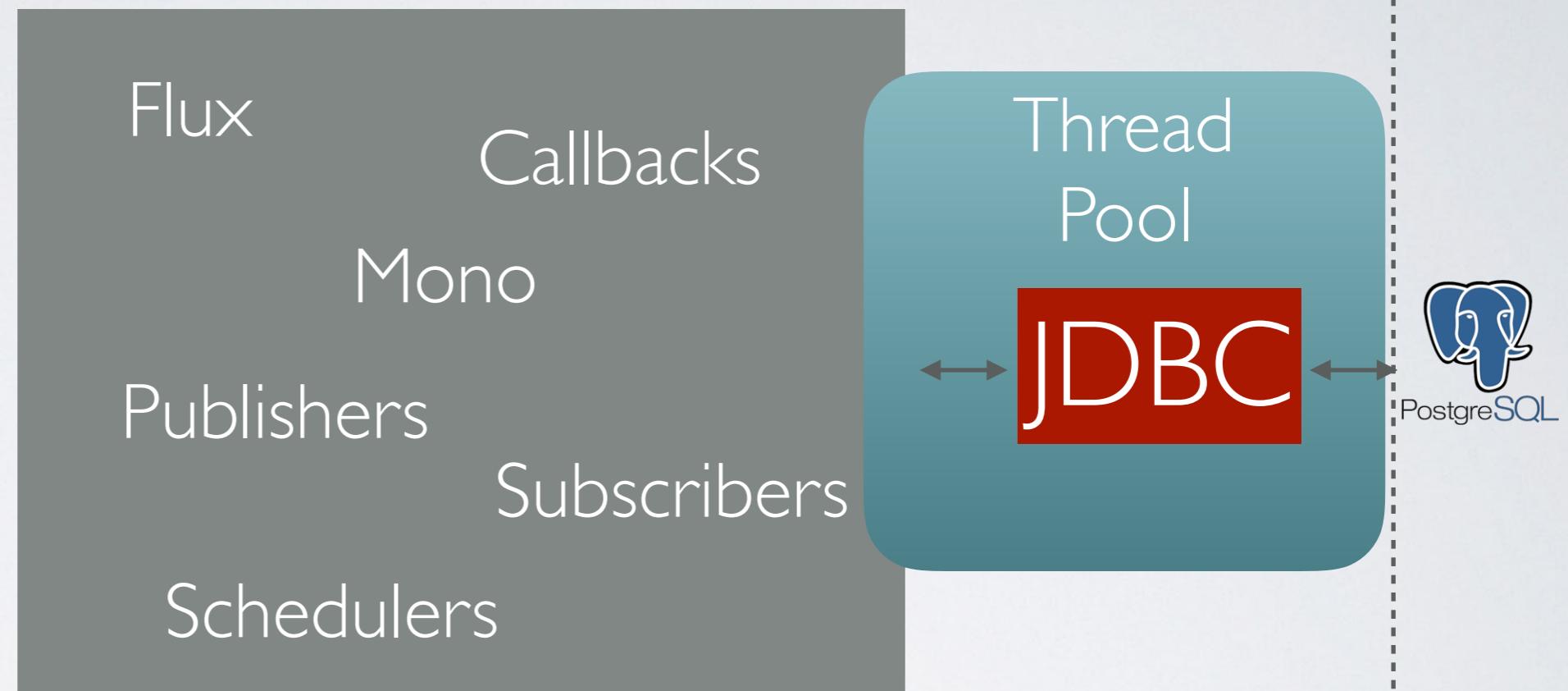
Project Reactor



# APPLICATION SERVER

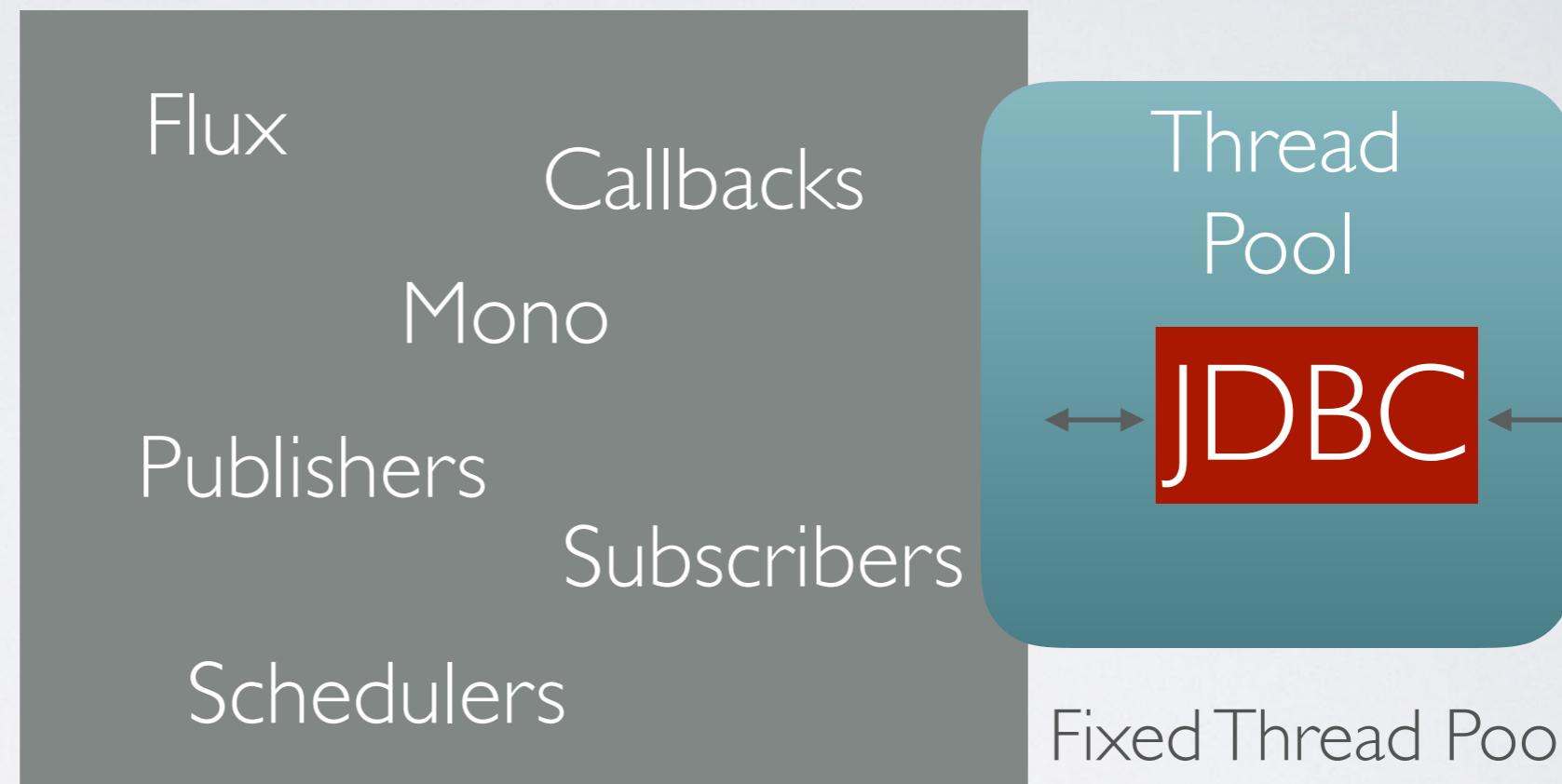
JDBC is blocking

# APPLICATION SERVER



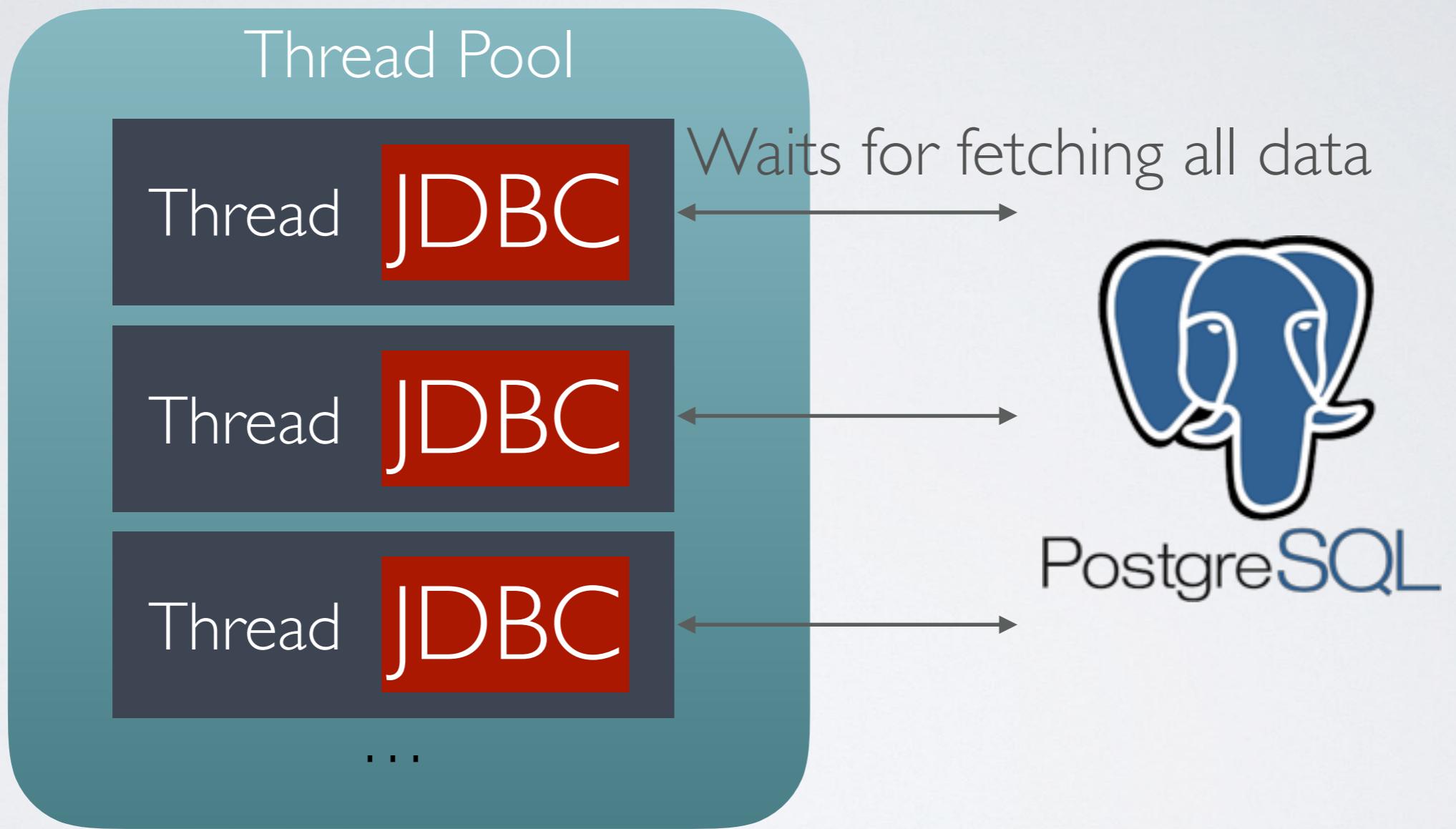
Project Reactor

# APPLICATION SERVER

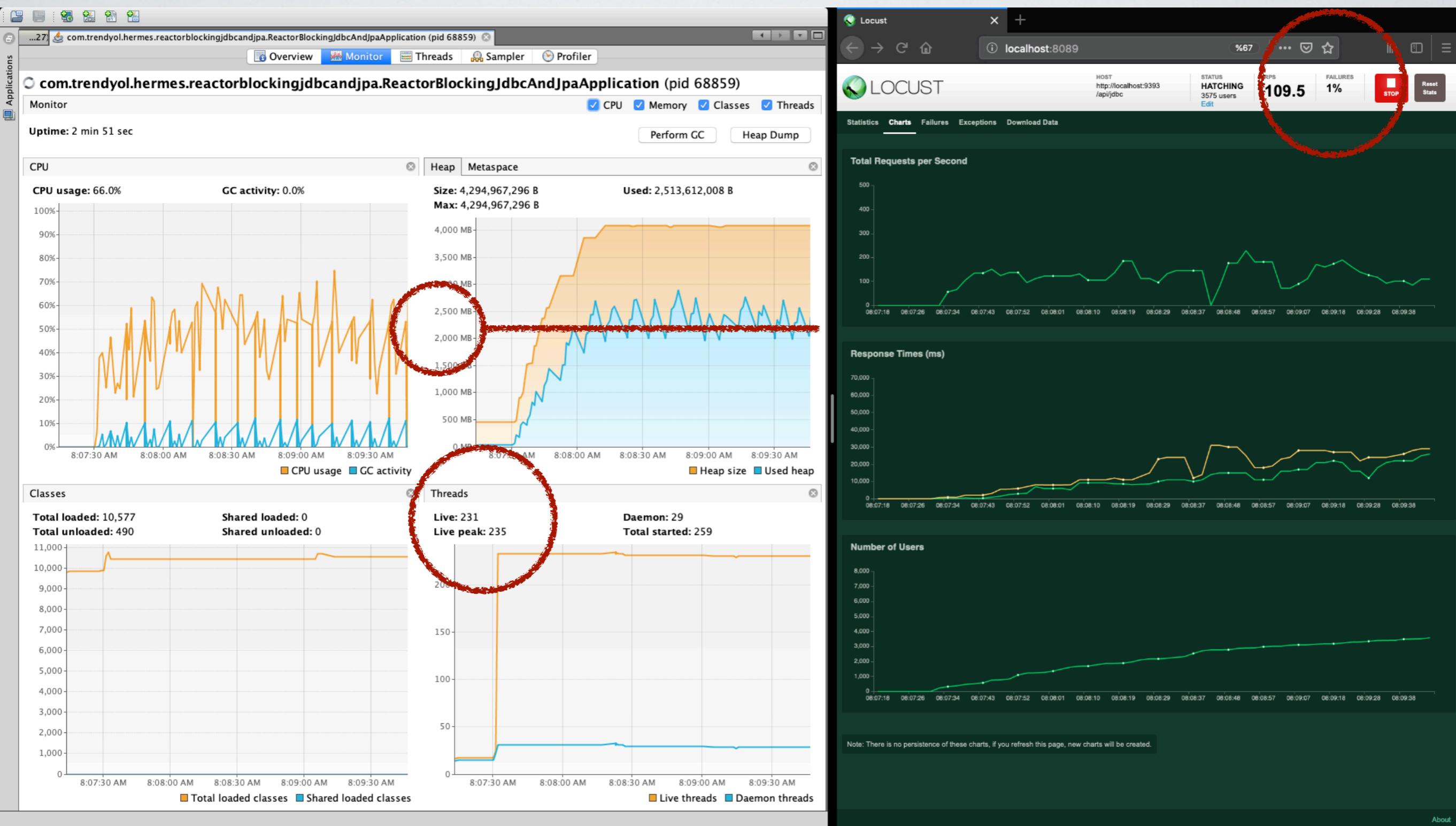


Project Reactor

# APPLICATION SERVER



# REACTOR-200 FIXED THREAD POOL JDBC EXAMPLE

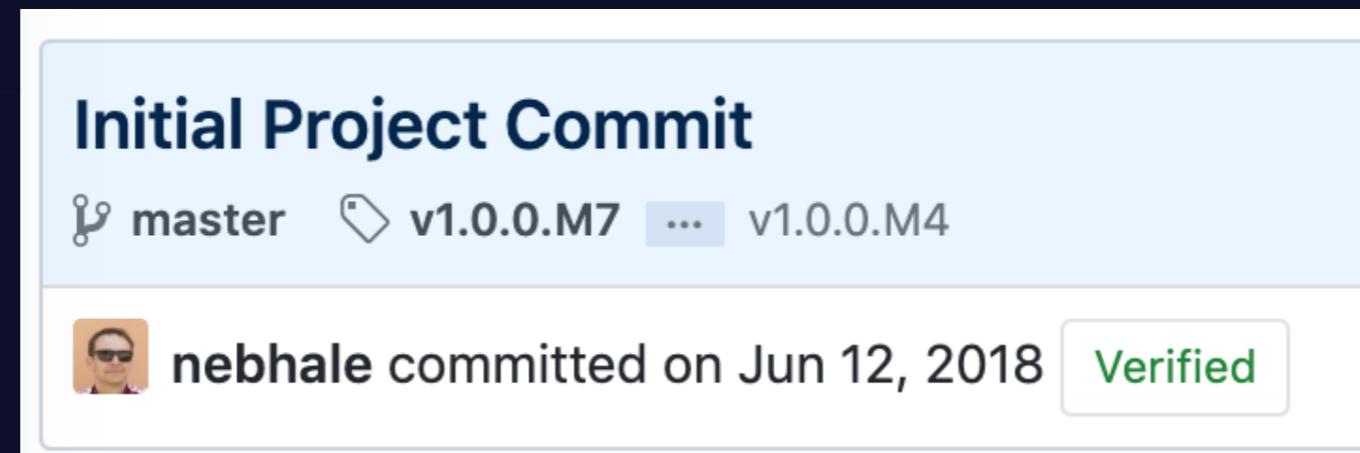


# REACTIVE RELATIONAL DATABASE DRIVERS

# R2DBC

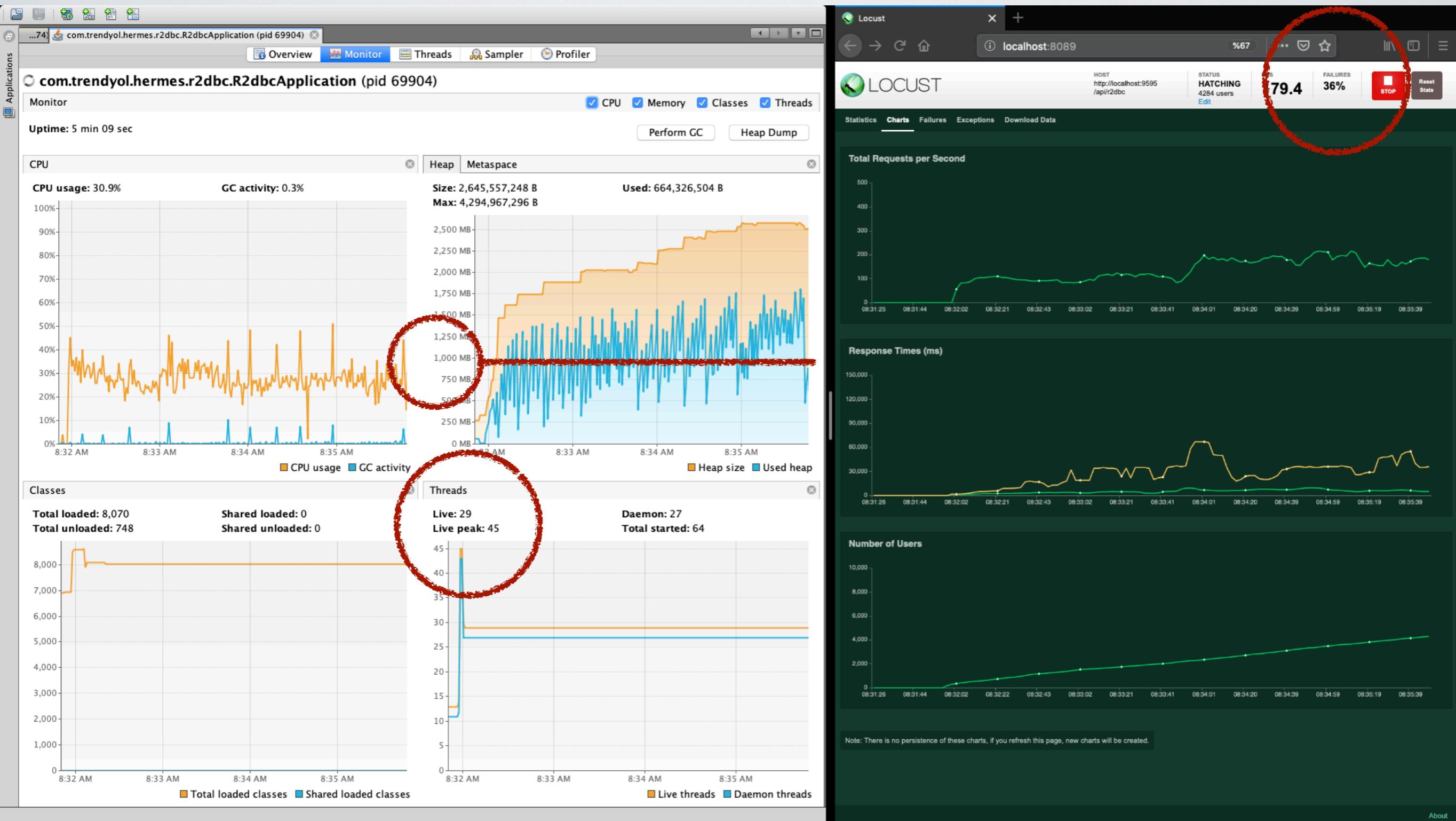
<https://r2dbc.io>

An experimental API designed from the ground up for reactive programming

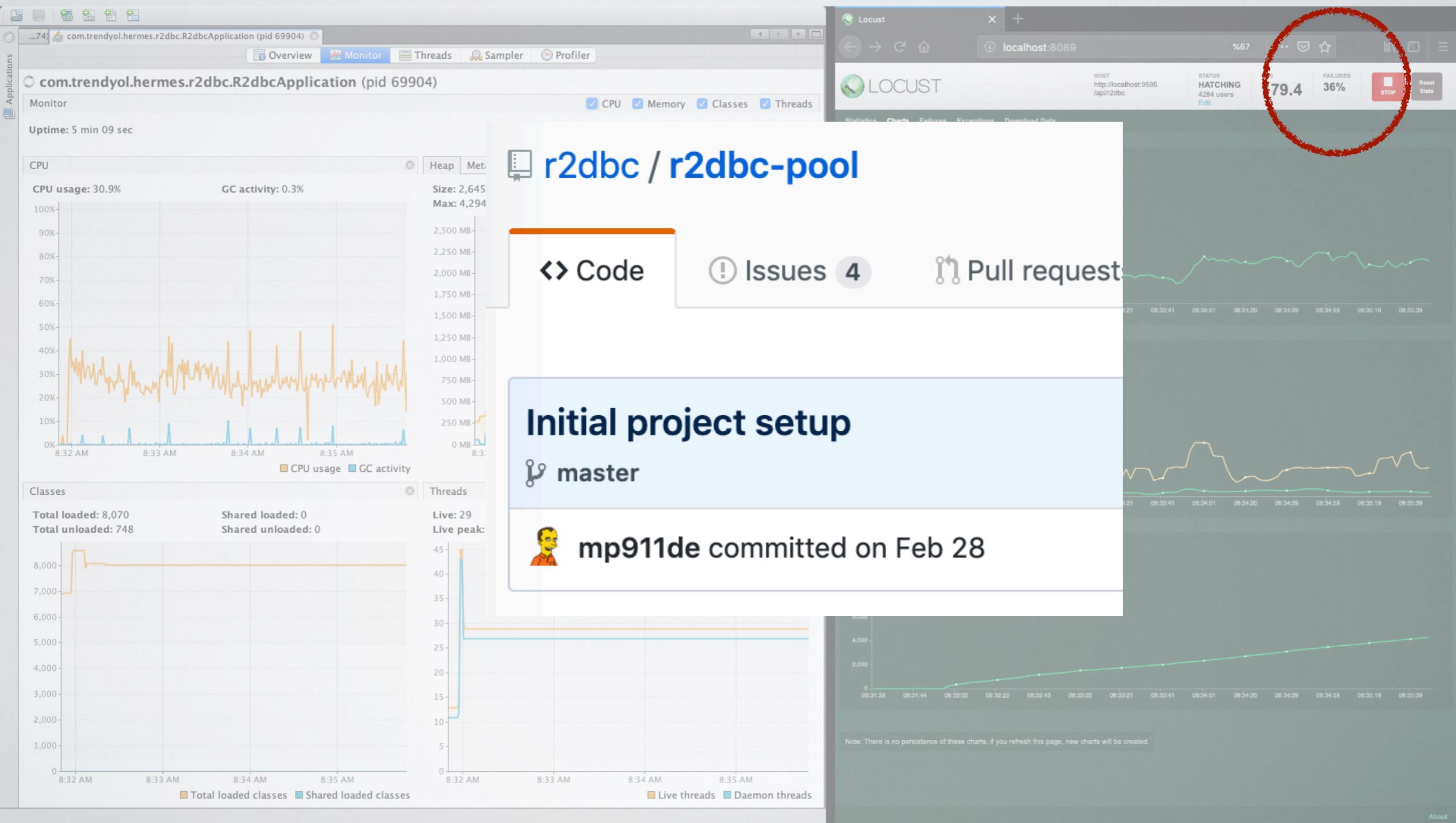


<https://github.com/r2dbc/r2dbc-postgresql>

# REACTOR-R2DBC EXAMPLE



# REACTOR-R2DBC EXAMPLE

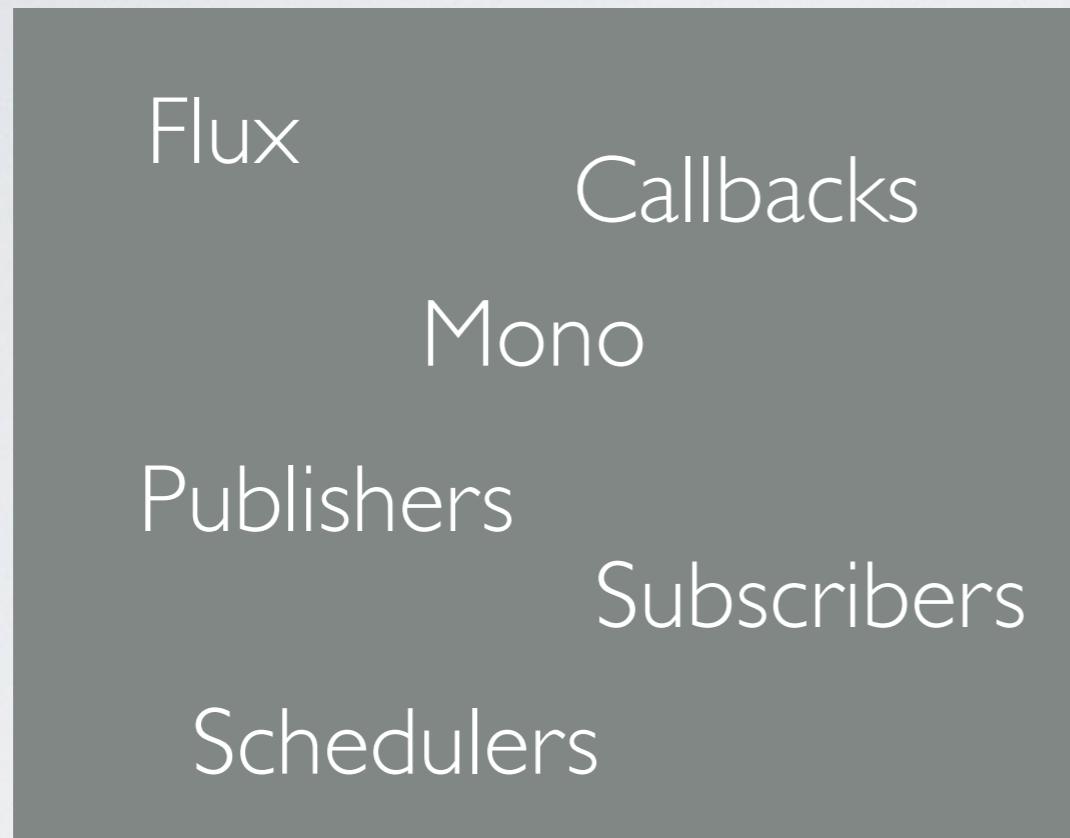


# **REACTIVE PG CLIENT**

BY REACTIVERSE

<https://github.com/reactiverse/reactive-pg-client>

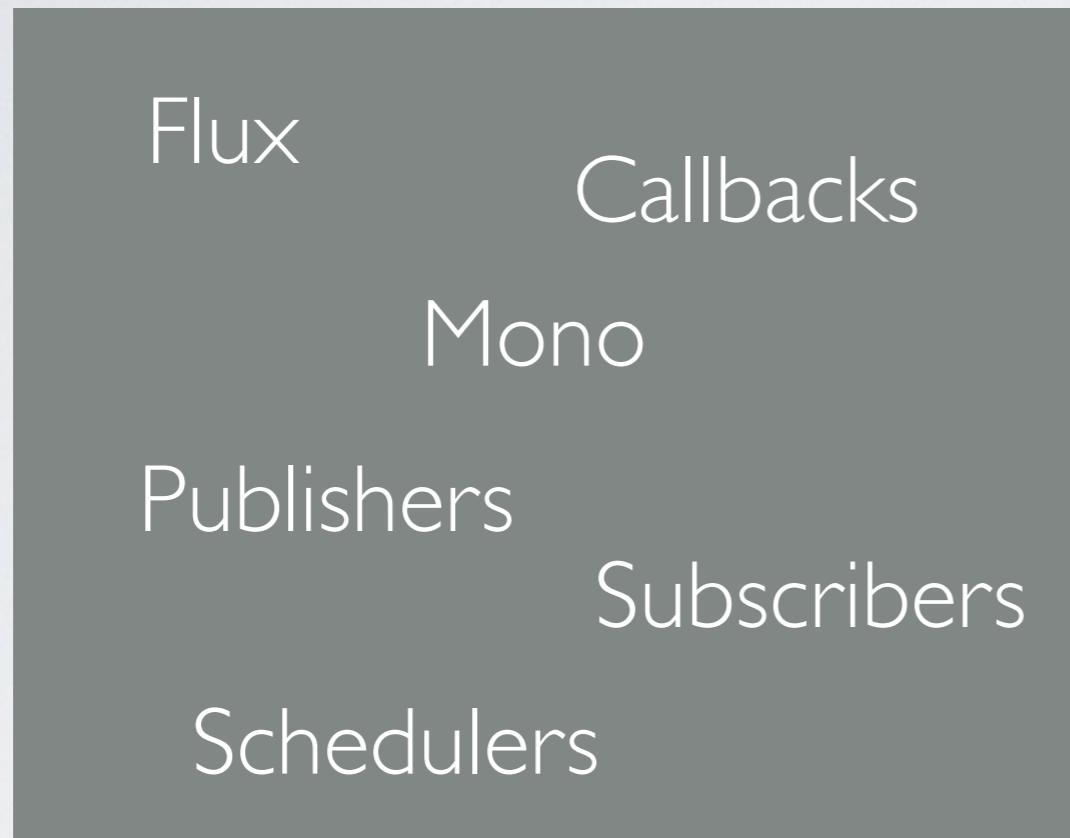
# REACTIVE POSTGRESQL DRIVER EXAMPLE



Project Reactor

Reactive Pg Client

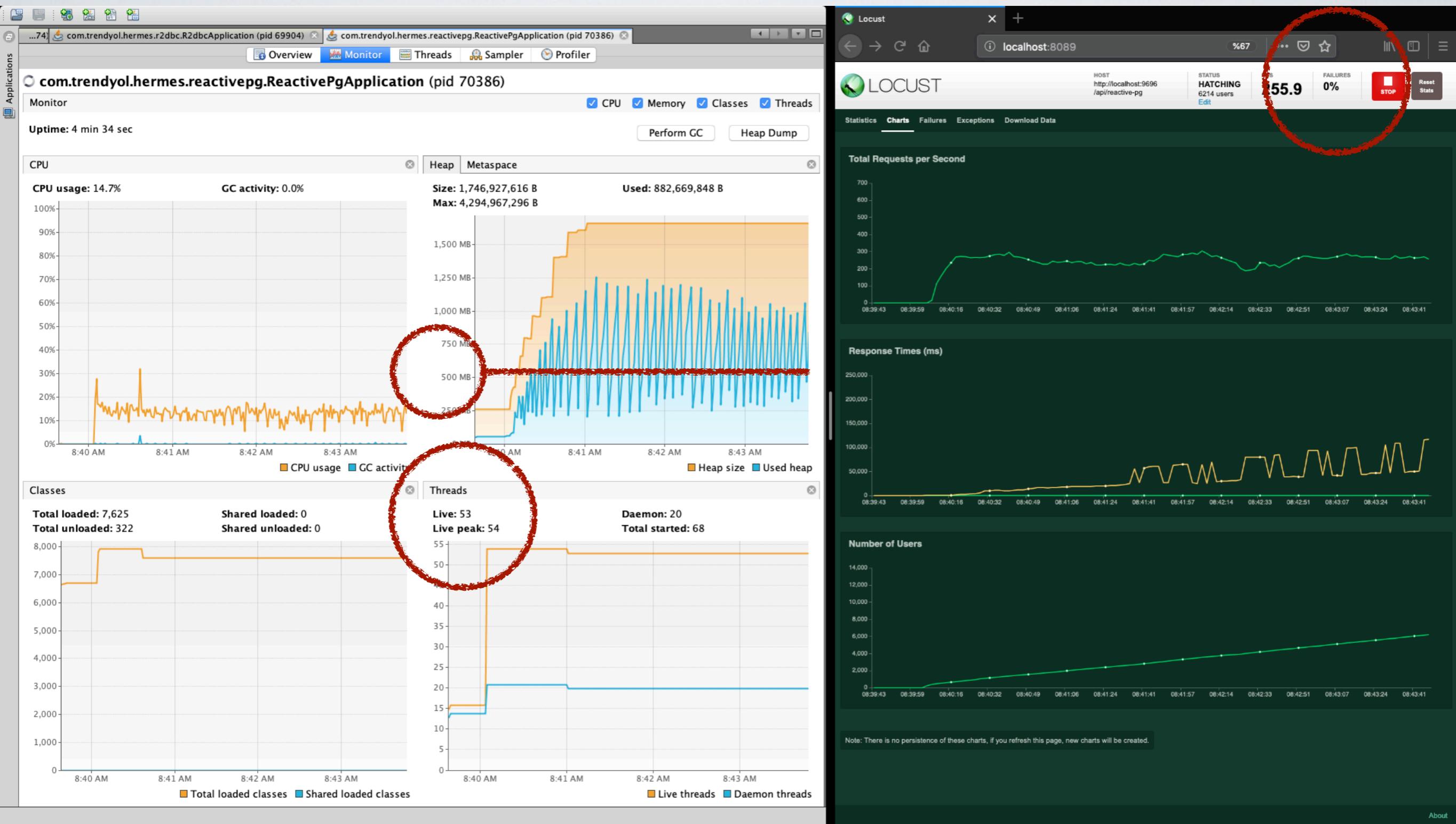
# REACTIVE POSTGRESQL DRIVER EXAMPLE



Project Reactor

Reactive Pg Client  
**Non Blocking**

# REACTOR-REACTIVE PG CLIENT EXAMPLE



[Introduction](#)[Previous Rounds](#)Round 15  
2018-02-14Round 16  
2018-06-06Round 17  
2018-10-30Motivation &  
Questions

Environment

Source code &  
Requirements

In the following tests, we have measured the performance of several web application platforms, full-stack frameworks, and micro-frameworks (collectively, "frameworks"). For more information, read the [introduction](#), [motivation](#), and [latest environment details](#).

Showing 176 of 179 frameworks.

[Show filters panel](#)

Test types

Hardware

JSON serialization

Single query

Multiple queries

Fortunes

Data updates

Plaintext

Physical

Cloud

## Single query

[Best \(bar chart\)](#)[Data table](#)[Latency](#)[Framework overhead](#)

Best database-access responses per second, single query, Dell R440 Xeon Gold + 10 GbE (341 tests)

Rnk	Framework	Best performance (higher is better)			Errors	Cls	Lng	Plt	FE	Aos	DB	Dos	Orm	IA
1	<a href="#">vertx-postgres</a>	656,272	100.0%		0	Plt	Jav	ver	Non	Lin	Pg	Lin	Raw	Rea
2	<a href="#">actix-raw</a>	633,305	96.5%		0	Plt	Rus	Non	act	Lin	Pg	Lin	Raw	Rea
3	<a href="#">actix-pg</a>	572,115	87.2%		0	Mcr	Rus	Non	act	Lin	Pg	Lin	Raw	Rea
4	<a href="#">h2o</a>	511,949	78.0%		0	Plt	C	Non	Non	Lin	Pg	Lin	Raw	Rea
5	<a href="#">revenj-jvm</a>	480,872	73.3%		0	Ful	Jav	Svt	Res	Lin	Pg	Lin	Ful	Rea
6	<a href="#">swoole</a>	461,819	70.4%		0	Plt	PHP	Non	swo	Lin	My	Lin	Raw	Rea
7	<a href="#">vertx-web-postgres</a>	416,897	63.5%		0	Mcr	Jav	vtx	Non	Lin	Pg	Lin	Raw	Rea
8	<a href="#">fasthttp-postgresql</a>	416,641	63.5%		0	Plt	Go	Non	Non	Lin	Pg	Lin	Raw	Rea
9	<a href="#">cpoll_cppsp-postgres-raw</a>	409,617	62.4%		0	Plt	C++	Non	Non	Lin	Pg	Lin	Raw	Rea
10	<a href="#">cpoll_cppsp-raw</a>	406,646	62.0%		0	Plt	C++	Non	Non	Lin	My	Lin	Raw	Rea
11	<a href="#">cpoll_cppsp-postgres-raw-threadpool</a>	402,721	61.4%		0	Plt	C++	Non	Non	Lin	Pg	Lin	Raw	Rea

<https://www.techempower.com/benchmarks/#section=data-r17&hw=ph&test=db>

# IMPLEMENTATION DETAILS

<https://github.com/farukcankaya/reactive-relational-database-tests>

# MyBatis



# REFERENCES

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- <https://stackoverflow.com/questions/53244964/why-does-spring-not-provide-reactive-non-blocking-clients-for-relational-datab>
- <https://www.kotlindevelopment.com/kotlin-webflux/>
- <https://www.slideshare.net/SpringCentral/the-new-kid-on-the-block-spring-data-jdbc>
- <https://jsblog.insiderattack.net/event-loop-and-the-big-picture-nodejs-event-loop-part-1-1cb67a182810>
- <https://reactiverse.io>
- <https://github.com/r2dbc/r2dbc-postgresql>
- <http://www.mybatis.org/mybatis-3/>
- <https://projectreactor.io/>

THANK YOU