

YES JAVASCRIPT IS FASTER THAN JAVA*!

*** WHEN YOU USE GRAALVM**

Paulo Lopes - @pml0pes

I'M A ... DEVELOPER!

- Polyglot
- Game
- Open Source

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- Polyglot Java (since 1.1.4)
- Game
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- **RedHat Principal Software Engineer**

JAVASCRIPT

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PROPERTIES

JAVASCRIPT

PROPERTIES

Infinity

JAVASCRIPT

PROPERTIES

Infinity NaN

JAVASCRIPT

PROPERTIES

Infinity NaN undefined

JAVASCRIPT

PROPERTIES

Infinity NaN undefined null

JAVASCRIPT

PROPERTIES

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FUNCTIONS

JAVASCRIPT

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Object Function

JAVASCRIPT

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OBJECTS

Object Function Boolean

JAVASCRIPT

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Object Function Boolean Error Number Math

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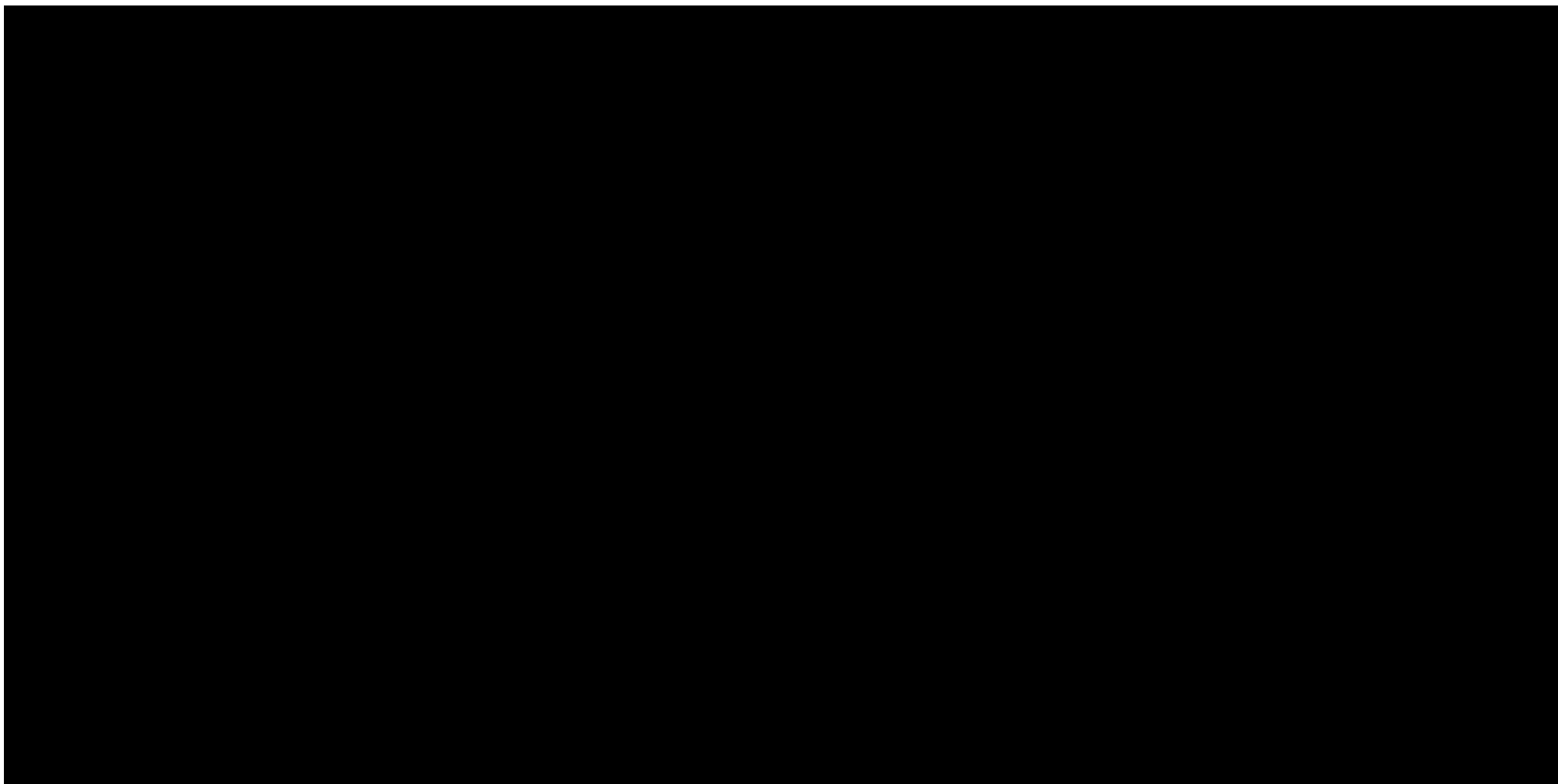
FUNCTIONS

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OBJECTS

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I KNOW JAVASCRIPT!

JAVASCRIPT (AND THE JVM)

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- (Mar 2013) Node.js 0.10.x release
- (Mar 2014) Nashorn is bundled with Java 8

WHY CARE ABOUT JAVASCRIPT?

- *Everyone* knows the language

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- Productive ^{write, (debug), run!}

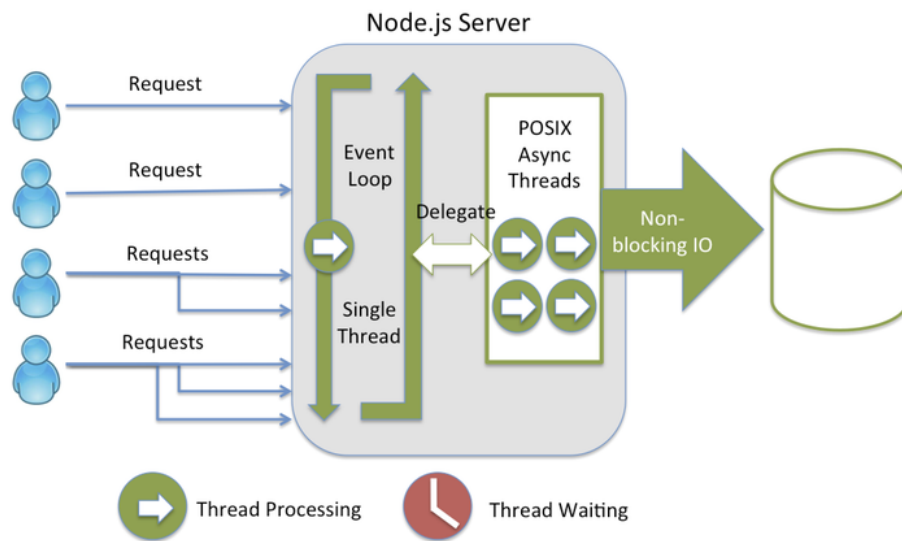
WHY CARE ABOUT JAVASCRIPT?

- *Everyone* knows the language
- Productive write, (debug), run!
- Millions of libraries on NPM Yes I know leftpad!

WHY CARE ABOUT JAVASCRIPT?

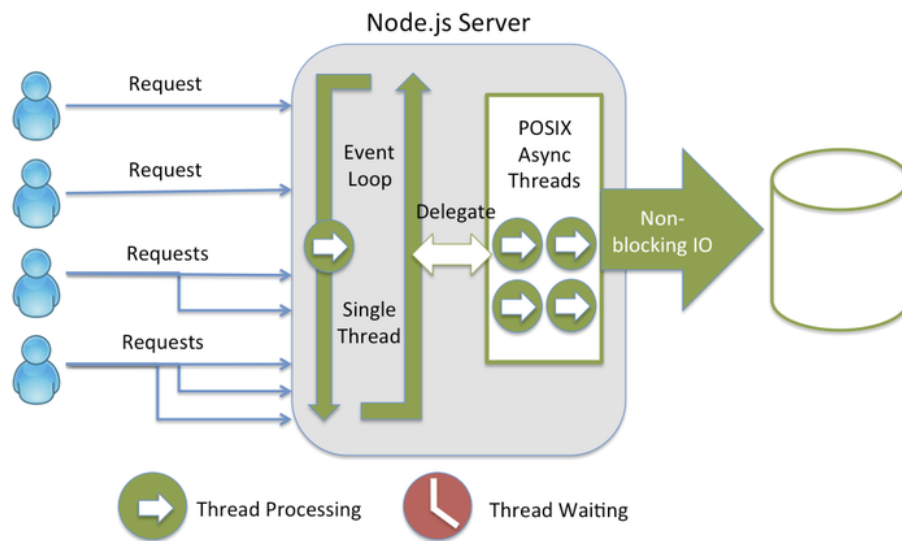
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- Fullstack

NODEJS IS FAST!



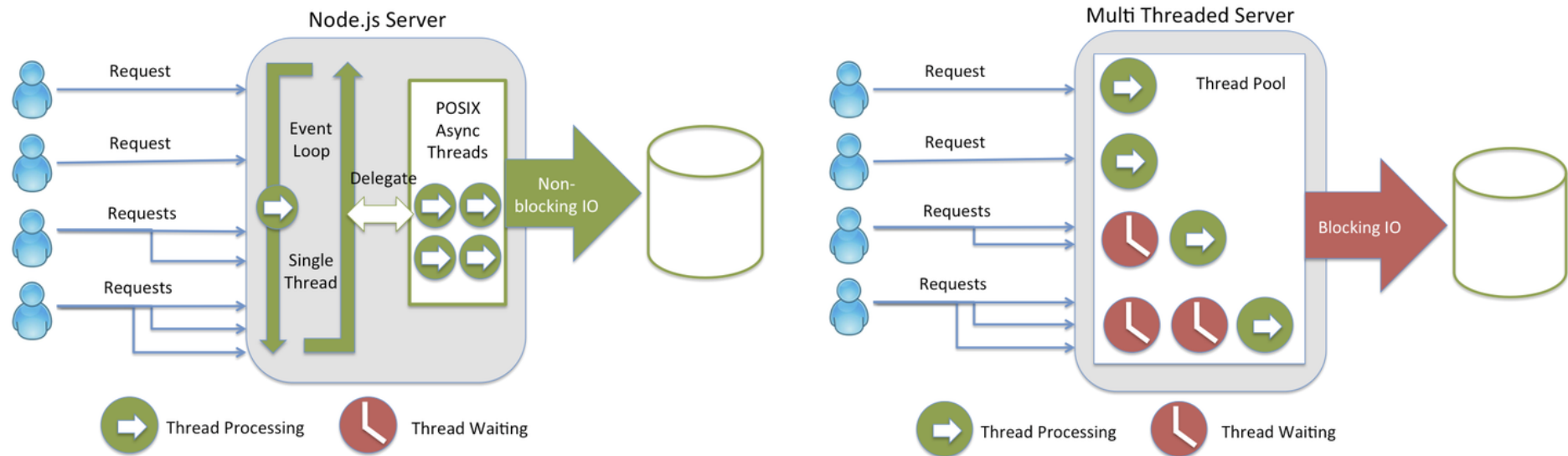
<https://strongloop.com/strongblog/node-js-is-faster-than-java/>

NODEJS IS FAST! (NOT REALLY!)

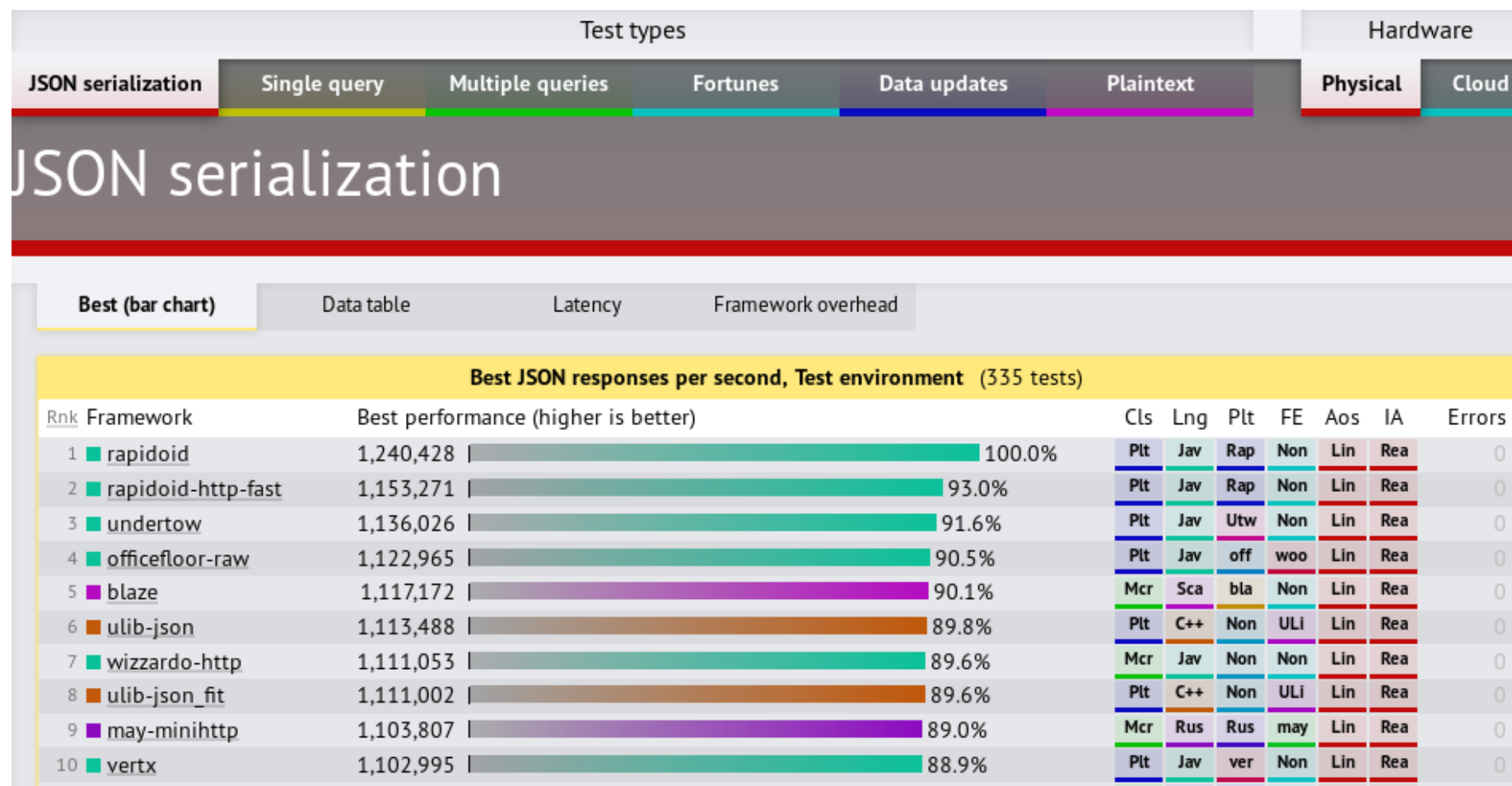


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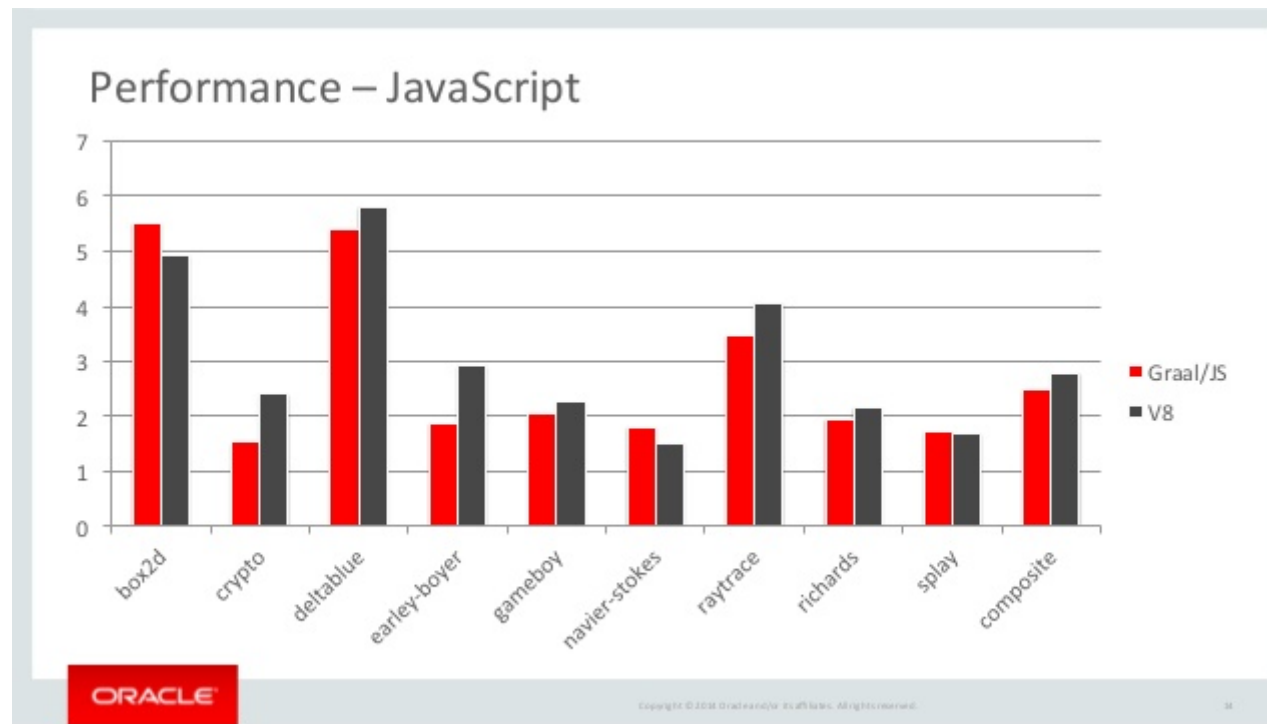


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<https://www.techempower.com/benchmarks/>

GRAALJS



<https://www.slideshare.net/ThomasWuerthinger/2015-cgo-graal>

THE NEED FOR SPEED

- Fast
- Faster
- Fastest

THE NEED FOR SPEED

- Fast ^{nashorn}
- Faster
- Fastest

THE NEED FOR SPEED

- Fast ^{nashorn}
- Faster ^{nodejs}
- Fastest

THE NEED FOR SPEED

- Fast ^{nashorn}
- Faster ^{nodejs}
- Fastest ^{graaljs}

PERFORMANCE

- Get closer to the Hardware
- Go Hybrid

CLOSE TO THE HARDWARE

```
.text
.global _start
_start:
    movl    $len,%edx
    movl    $msg,%ecx
    movl    $1,%ebx
    movl    $4,%eax
    int     $0x80
    movl    $0,%ebx
    movl    $1,%eax
    int     $0x80
...
```


HYBRID MODEL

- pick a good jvm framework
- make it polyglot
- profit

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HYBRID MODEL

- pick a good jvm framework ^{Vert.x}
- make it polyglot ^{JavaScript + Tooling}
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HYBRID MODEL

- pick a good jvm framework ^{Vert.x}
- make it polyglot ^{JavaScript + Tooling}
- profit ^{ES4X}

ES4X

- latest JavaScript support *With GraalVM*
- `package.json` / "NPM" development style
- great tooling IntelliSense, Debugging
With TypeScript
- insane performance!

WHY VERT.X?

- Toolkit

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WHY VERT.X?

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- Distributed

DEMO 0

<https://github.com/pmlopes/presentations/tree/codeone/demo-0>

HOW FAST?



Web Framework Benchmarks

[Introduction](#) [Previous Rounds](#) [Round 14
2017-05-10](#) [Round 15
2018-02-14](#) [Round 16
2018-06-06](#) [Motivation & 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](#).

0000-00-00

Test

a0d6e357-e8e3-4a5b-9ef0-6175ed824b20

You are viewing results from run-id a0d6e357-e8e3-4a5b-9ef0-6175ed824b20.

Showing 180 of 183 frameworks.

Show filters panel

Test types

Hardware

JSON serialization

Single query

Multiple queries

Fortunes

Data updates

Plaintext

Physical

Cloud

Data updates

20-updates (bar)

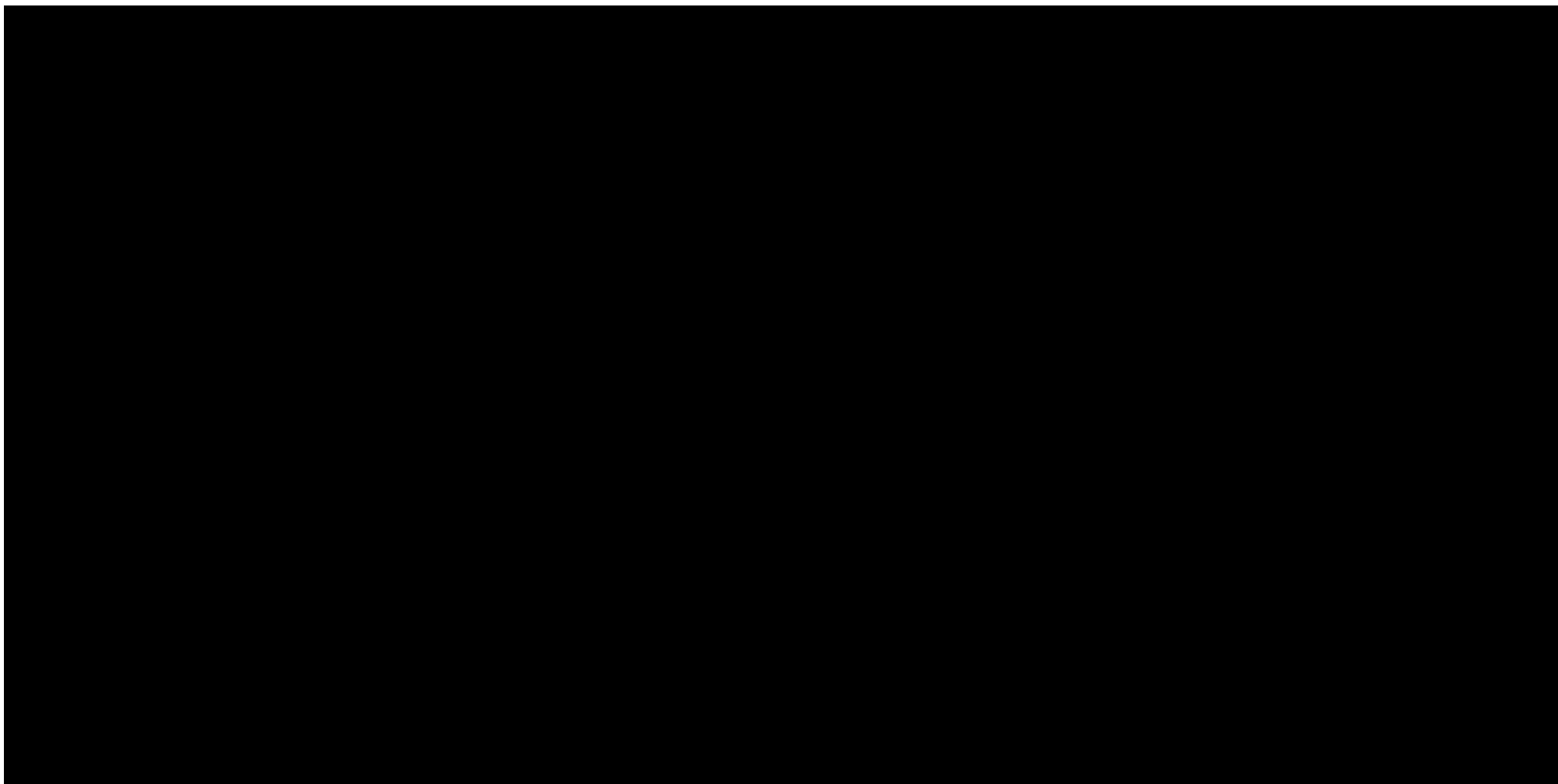
Data table

Latency

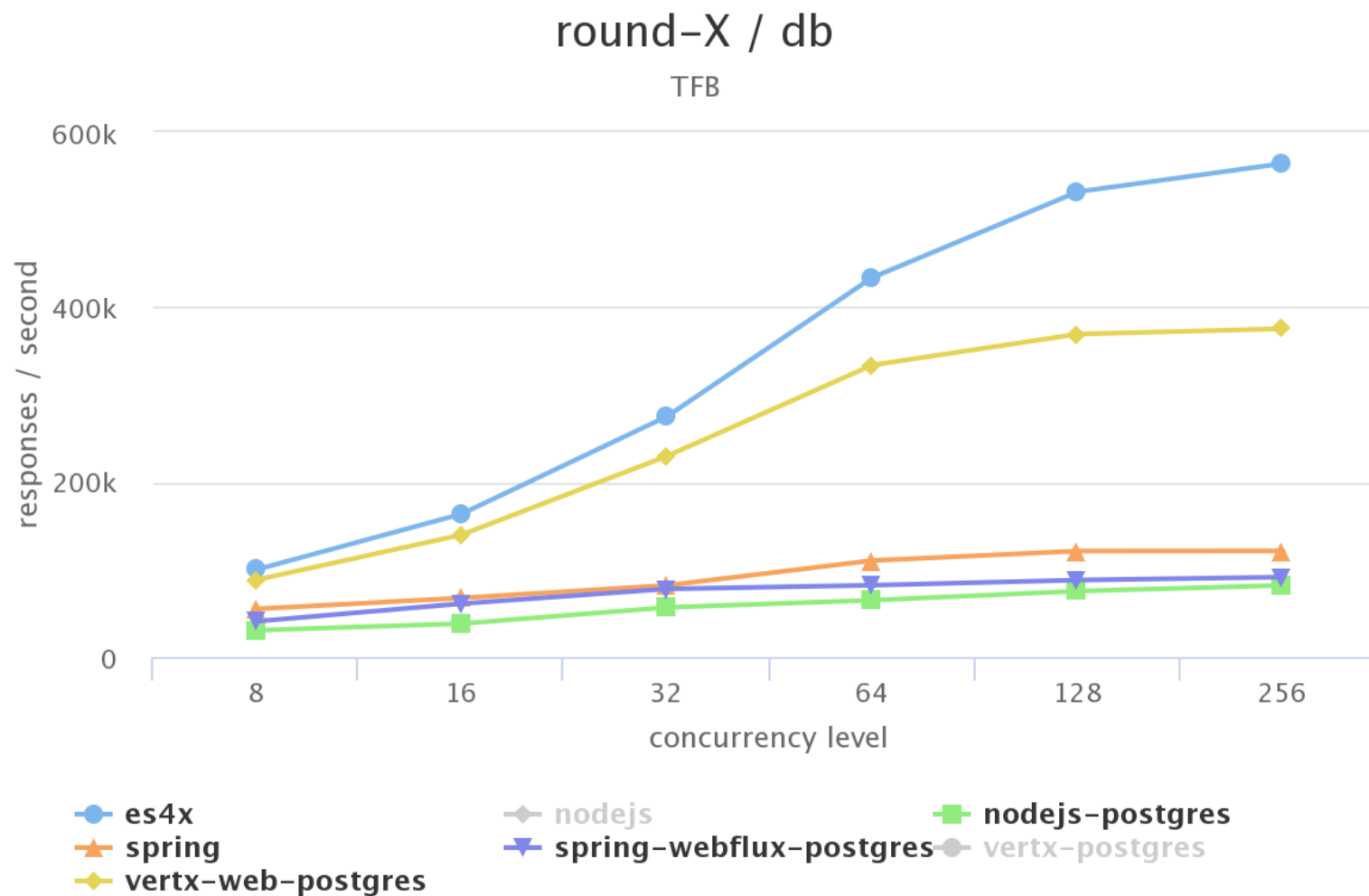
Framework overhead

Responses per second at 20 updates per request, Test environment (305 tests)

Rnk	Framework	Performance (higher is better)	Cls	Lng	Plt	FE	Aos	DB	Dos	Orm	IA	Errors
1	actix-rt	23,955 100.0%	Mcr	Rus	Non	act	Lin	Pg	Lin	Raw	Rea	0
2	es4x	20,386 85.1%	Mcr	JS	ver	Non	Lin	Pg	Lin	Raw	Rea	0
3	wizzardo-http	20,287 84.7%	Mcr	Jav	Non	Non	Lin	Pg	Lin	Raw	Rea	0
4	vertx-web-postgres	19,294 80.5%	Mcr	Jav	vtx	Non	Lin	Pg	Lin	Raw	Rea	0
5	undertow-postgresql	17,970 75.0%	Plt	Jav	Utw	Non	Lin	Pg	Lin	Raw	Rea	0
6	h2o	16,921 70.6%	Plt	C	Non	Non	Lin	Pg	Lin	Raw	Rea	0
7	actix-raw	16,643 69.5%	Plt	Rus	Non	act	Lin	Pg	Lin	Raw	Rea	0
8	vertx-postgres	15,481 64.6%	Plt	Jav	ver	Non	Lin	Pg	Lin	Raw	Rea	0
9	officefloor-tpc	12,027 50.2%	Ful	Jav	off	woo	Lin	Pg	Lin	Raw	Rea	0



FASTER THAN JAVA



WHY TYPESCRIPT?



TypeScript

THE BASICS

- bootstrap project
- create simple app the code from the previous slide
 - code completion
 - debugging
- (bonus) async await

DEMO I

<https://github.com/pmlopes/presentations/tree/codeone/demo-1>

LETS INTEGRATE!

- server side rendering with `reactjs`
- integrate with drools `^-_(ツ)^_-`

DEMO II

<https://github.com/pmlopes/presentations/tree/codeone/demo-2>

VERT.X

VERT.X

+

VERT.X

+

GRAALVM

VERT.X

+

GRAALVM

= 

THANK YOU!

- <https://reactiverse.io/es4x>
- <https://www.graalvm.org>
- <https://vertx.io>
- <https://www.jetdrone.xyz>
- <https://twitter.com/pml0pes>