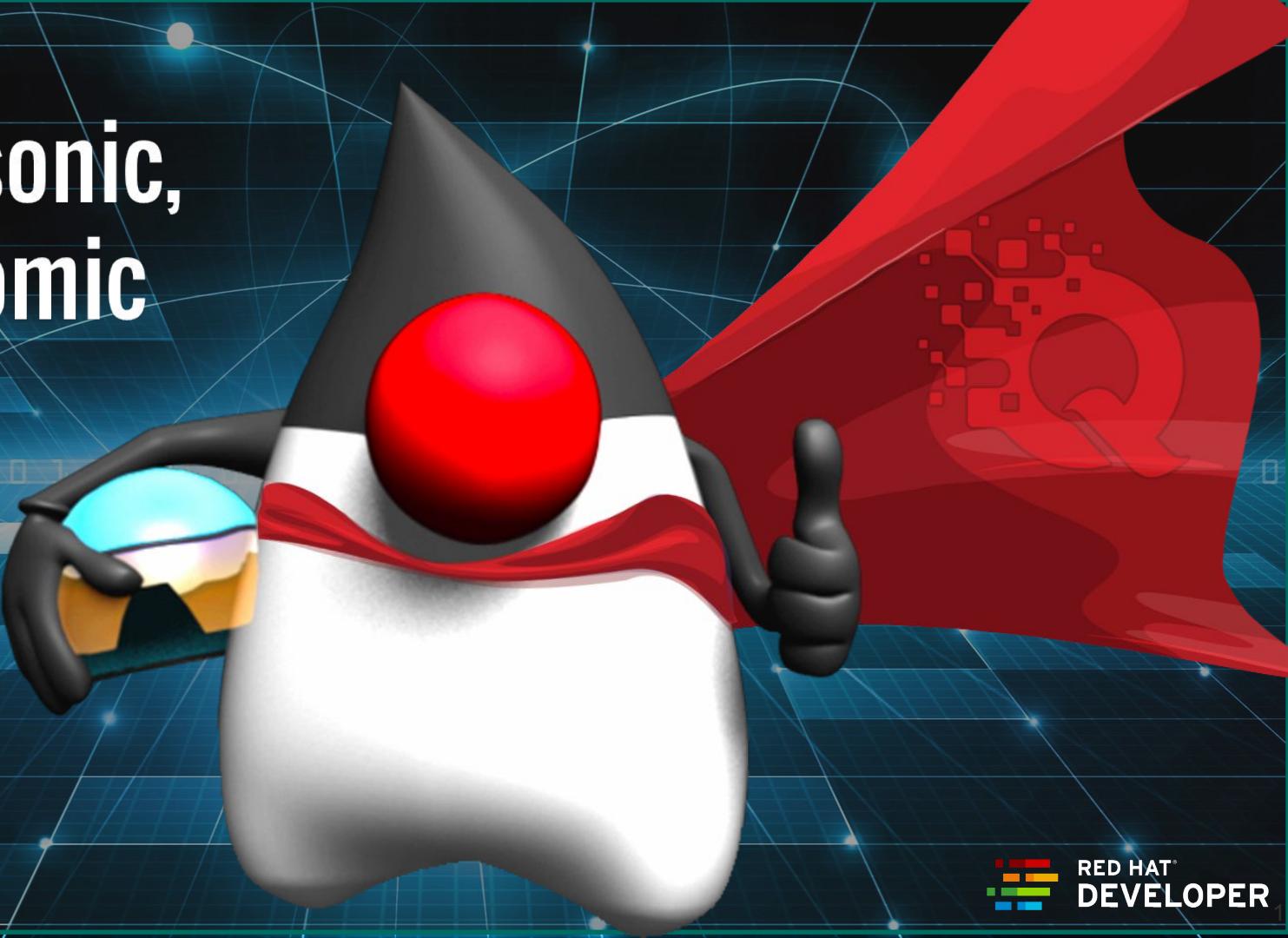


Supersonic, Subatomic Java

QUARKUS.IO



@xstefank

whoami

- Martin Štefanko
- Red Hat middleware
 - WildFly/EAP, RestEasy, ActiveMQ, Weld...
- MicroProfile contributor
 - Thorntail, SmallRye, Quarkus
- @xstefank



“The reports of my death are greatly exaggerated.”

"Today, Java is old hat."

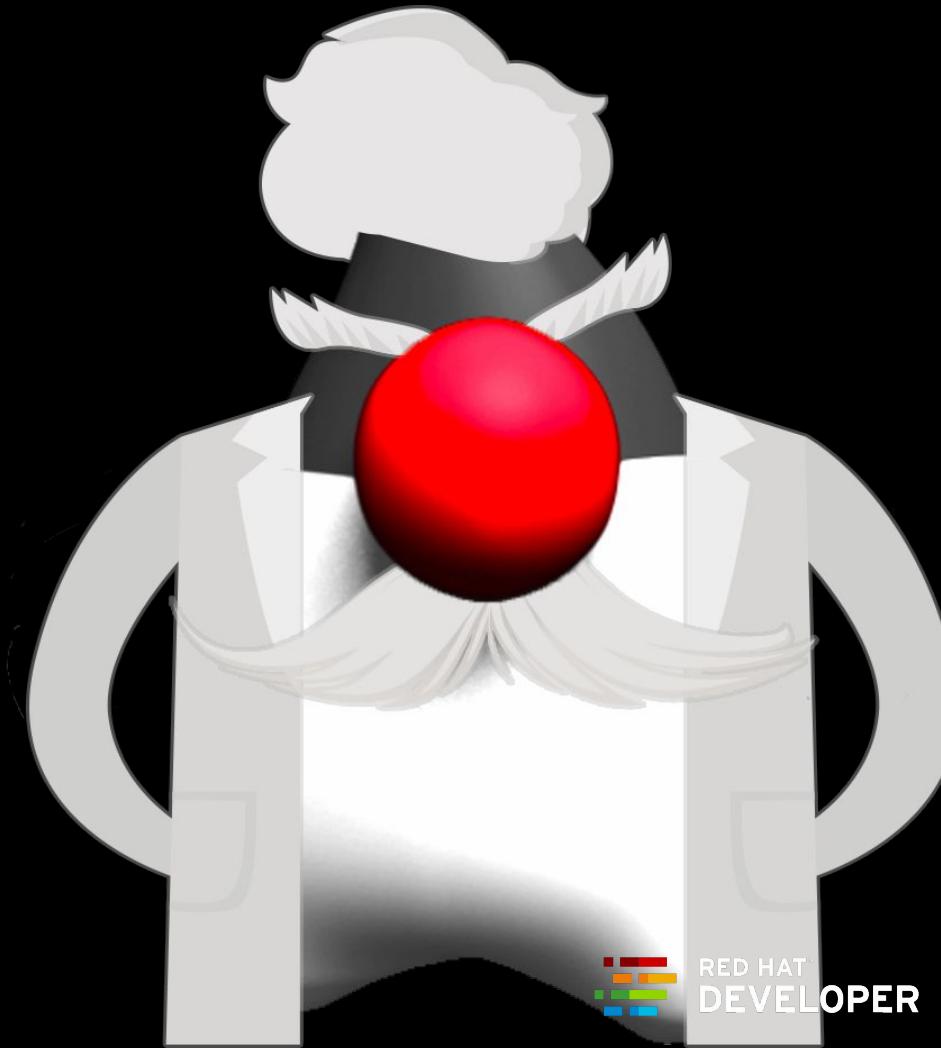
Computer World, May 22, 2006

FRANK HAYES ■ FRANKLY SPEAKING

Not Dead Yet

IS JAVA DEAD? Come on, seriously — why else would Sun Microsystems be offering it up to the open-source crowd? (See story, page 1.) A decade ago, Java was the hottest, most exciting thing in IT, a certified Windows-killer that was going to wipe out Microsoft's monopoly and revolutionize the way software was made, distributed and run. Today? Today, Java is old hat. It's been eclipsed by open-source, the *new* hottest thing in IT that's going to wipe out Microsoft's monopoly and revolutionize the way software is made, distributed and run.

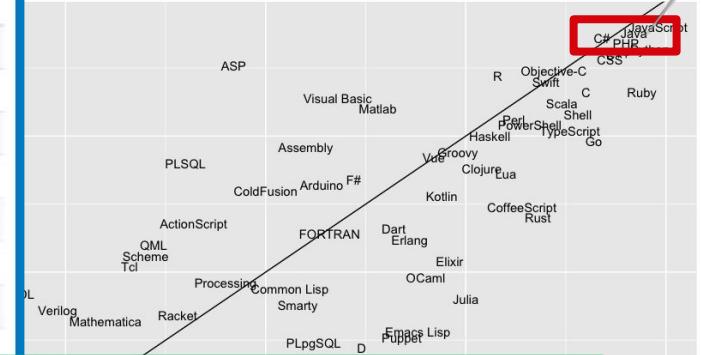
@xstefank



RED HAT
DEVELOPER

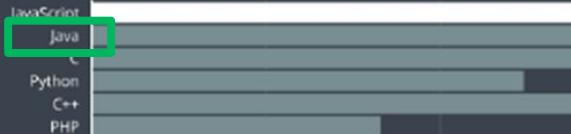
Feb 2019	Feb 2018	Change	Programming Language	Ratings	Change
1	1		Java	15.876%	+0.89%
2	2		C	12.424%	+0.57%
3	4	▲	Python	7.574%	+2.41%
4	3	▼	C++	7.444%	+1.72%
5	6	▲	Visual Basic .NET	7.095%	+3.02%
6	8	▲	JavaScript	2.848%	-0.32%
7	5	▼	C#	2.346%	-1.61%
8	7	▼	PHP	2.271%	-1.15%

RedMonk Q318 Programming Language Rankings

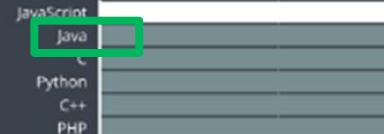


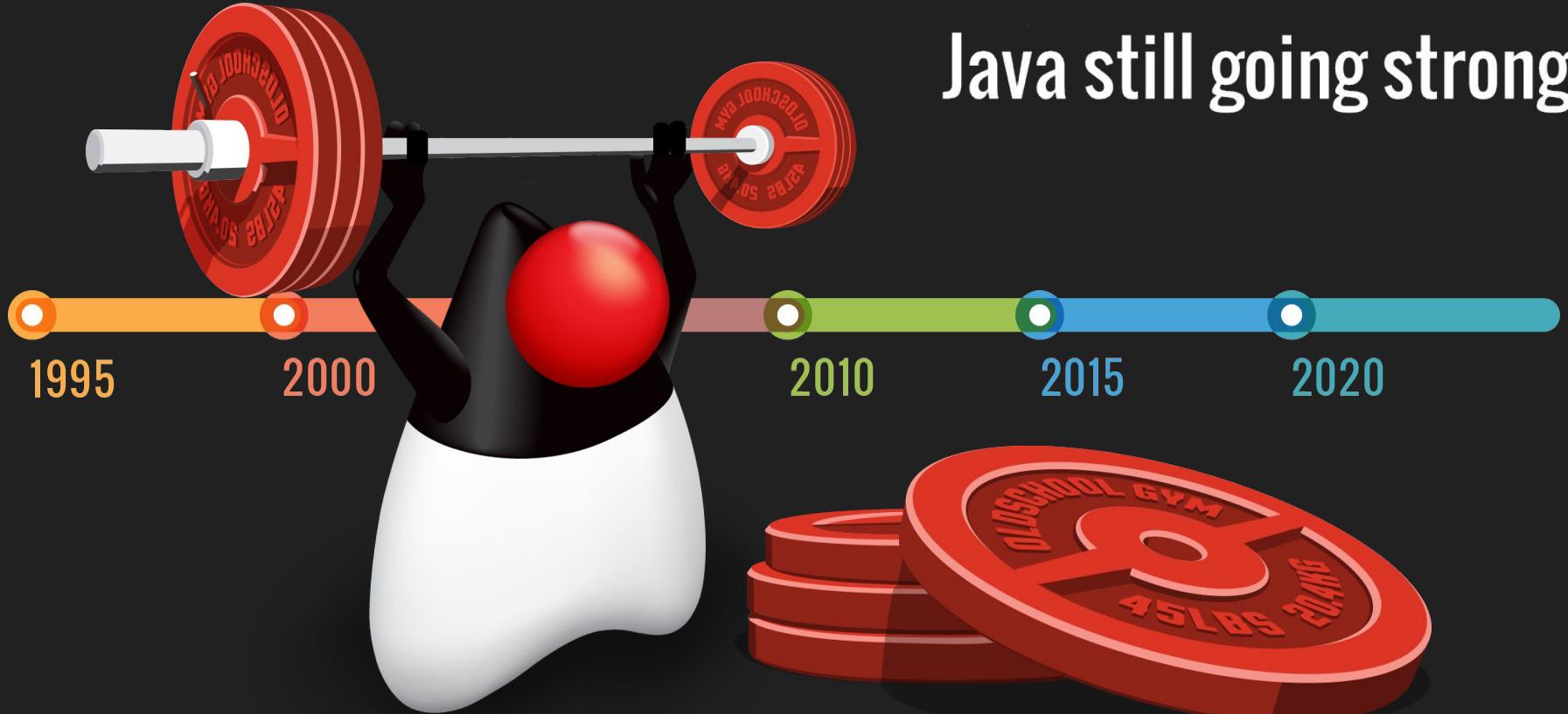
Languages Known 2017 vs. 2018

2017

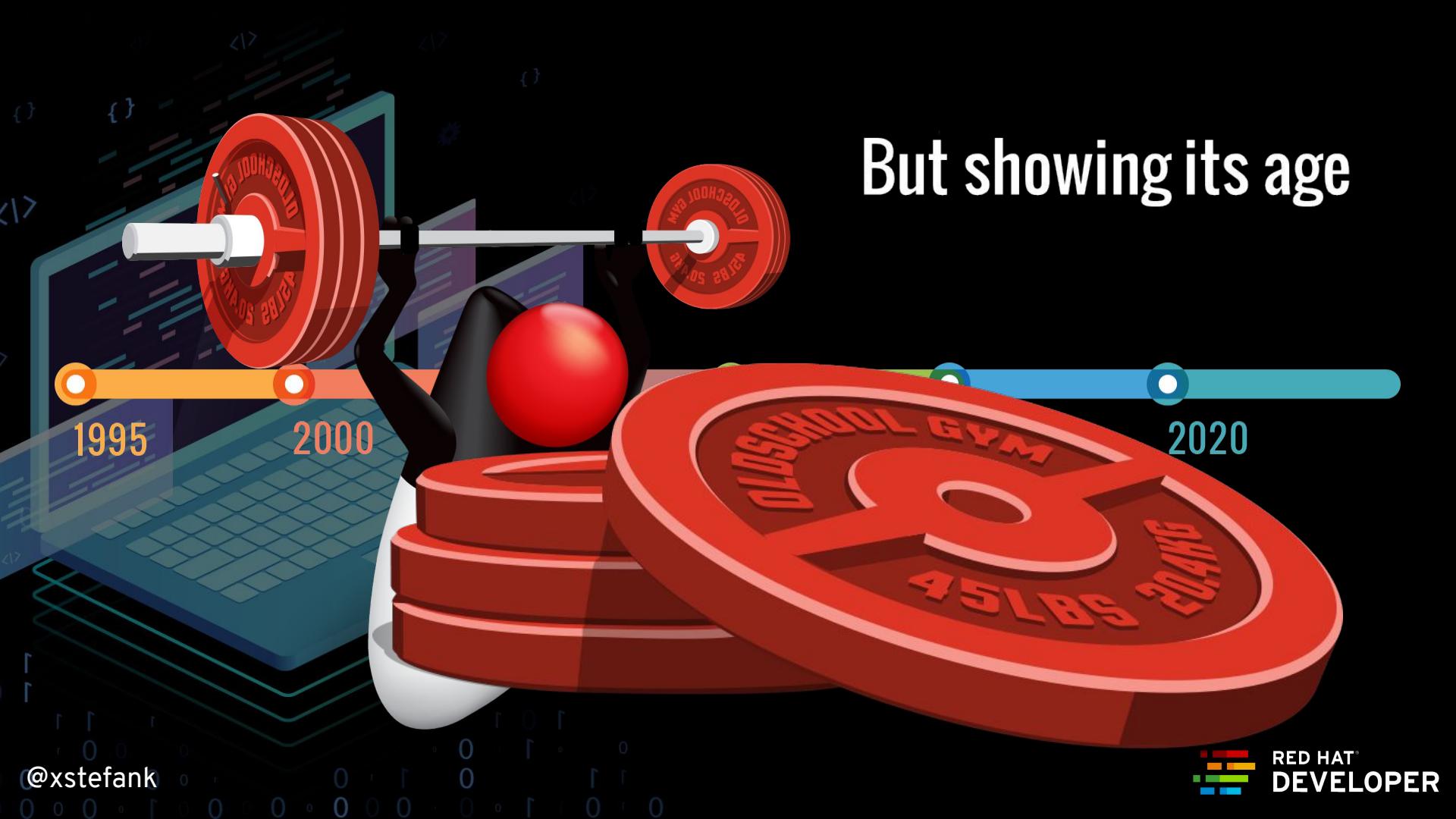


2018





Java still going strong



But showing its age

1995

2000

2020

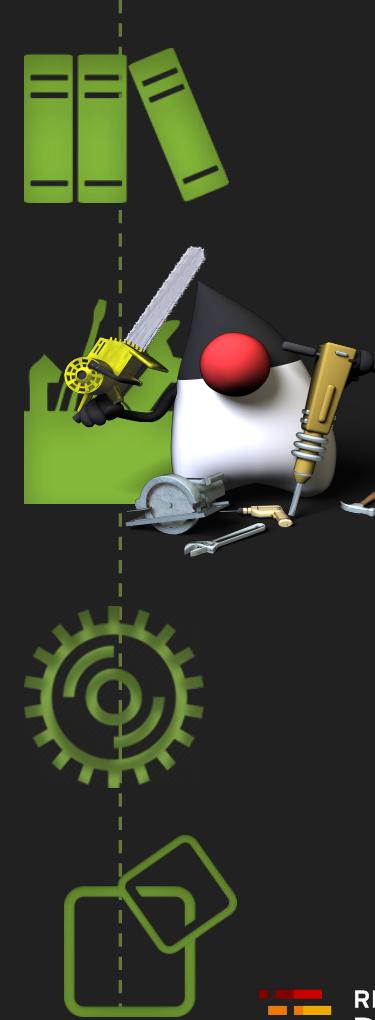


Still, so much goodness ...



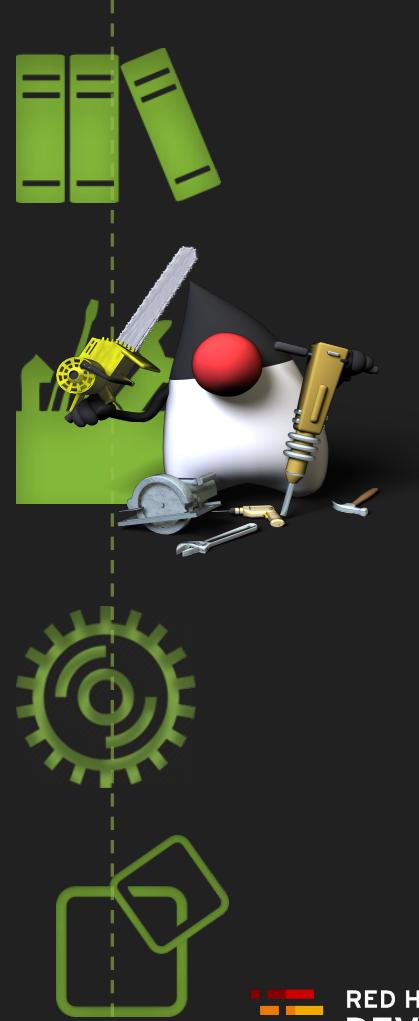


@xstefank



RED HAT®
DEVELOPER

But with so much to consume ...





In so many flavors ...

A vibrant, abstract illustration featuring several scoops of ice cream in different flavors and toppings. In the foreground, a large white scoop with red and green sprinkles is being held by a hand wearing a black glove. Behind it, a waffle cone holds four colorful scoops (brown, green, pink, and white). The background is filled with various other scoops in shades of brown, tan, and purple, some with wavy patterns or small green dots. Colorful, elongated sprinkles are scattered throughout the scene.

So so many flavors ...



@xstefank



@xstefank

 RED HAT
DEVELOPER



@xstefank

RED HAT®
DEVELOPER

“

IMHO you really should not be using Spring Boot for Lambdas ...
Spring is **designed for long running services**. Lambda's are literally functions that get called and then are gone. Different paradigm. Lambda's should be extremely tiny and simple too, if you want long running more complex microservices you're better off using ECS/EKS.

— nutrecht July
2018

“

The bigger problem with using spring (and java in general) is that lambda execution costs rise with memory usage. A lot of modern java frameworks assume that **memory is abundant** and cheap which isn't the case on lambda.

- davewritescode July 2018

“

The problem with java etc in a lambda is the **start up time**.

- moremattymattmatt July 2018

https://www.reddit.com/r/java/comments/8xv3ha/does_anybody_use_spring_boot_with_aws_lambda_do/

Meet Quarkus

Supersonic java



@xstefc

RED HAT®
DEVELOPER

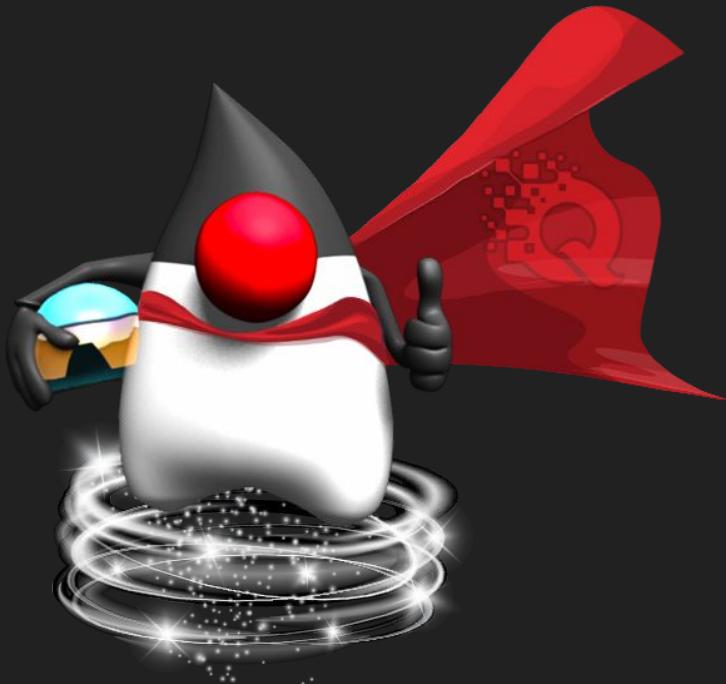
So who is this Quarkus— and what's all the fuss?



Up to 10x smaller, 100x faster
Seriously.



But wait, there's more!



Lower memory
usage



Faster startup



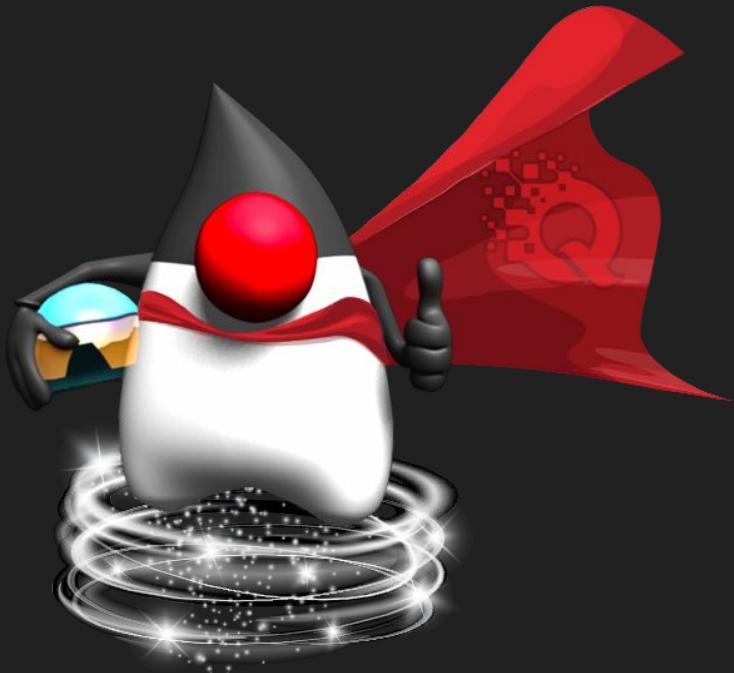
Optimized for
short-lived processes



Kubernetes
Native



developer
Enough \wedge love to go around.



Live reload



Imperative and
reactive



Serverless



Microservices



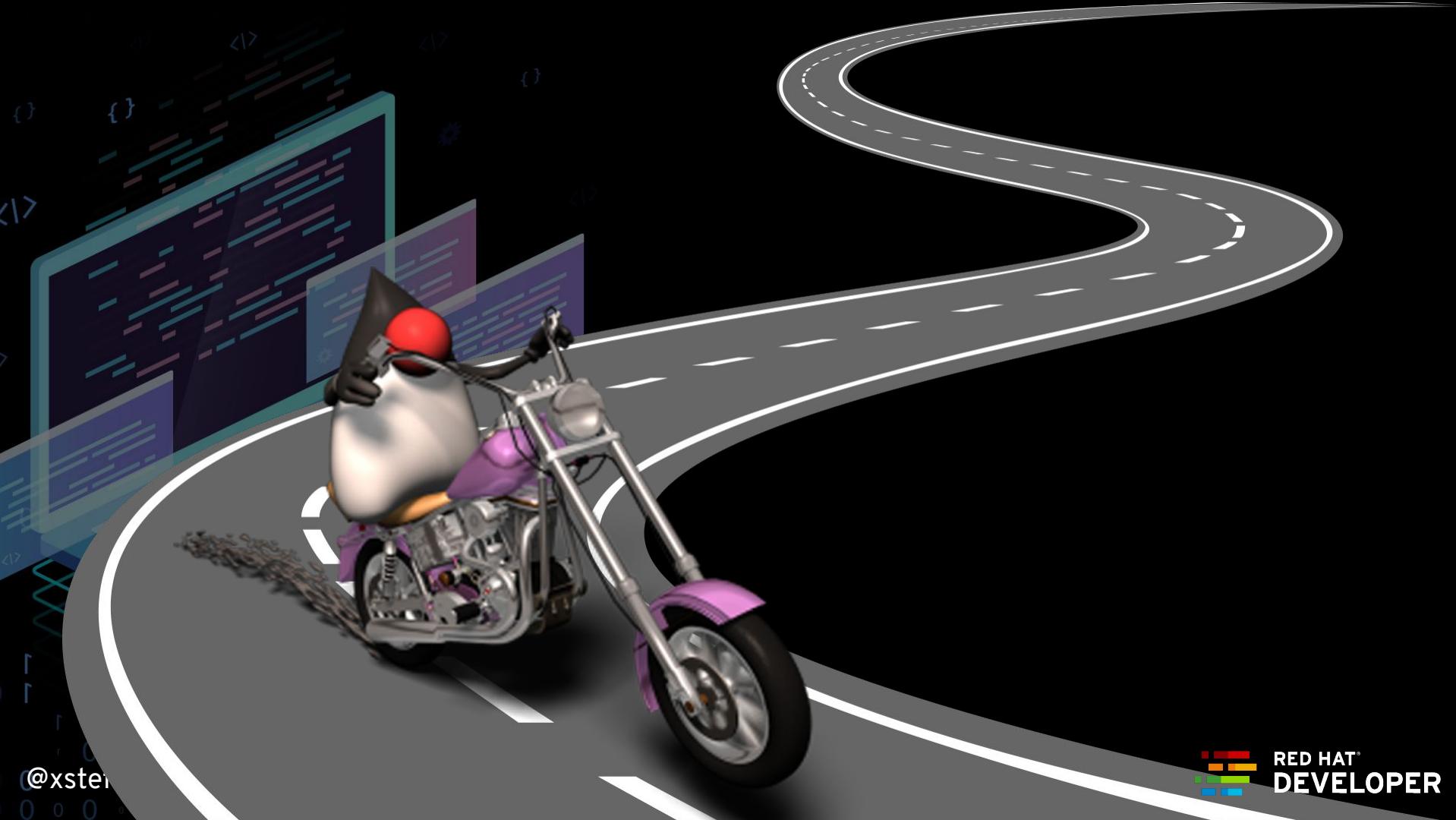
Fat jars
and native
executables



Optimized for
JAX-RS & JPA
(Hibernate) ...

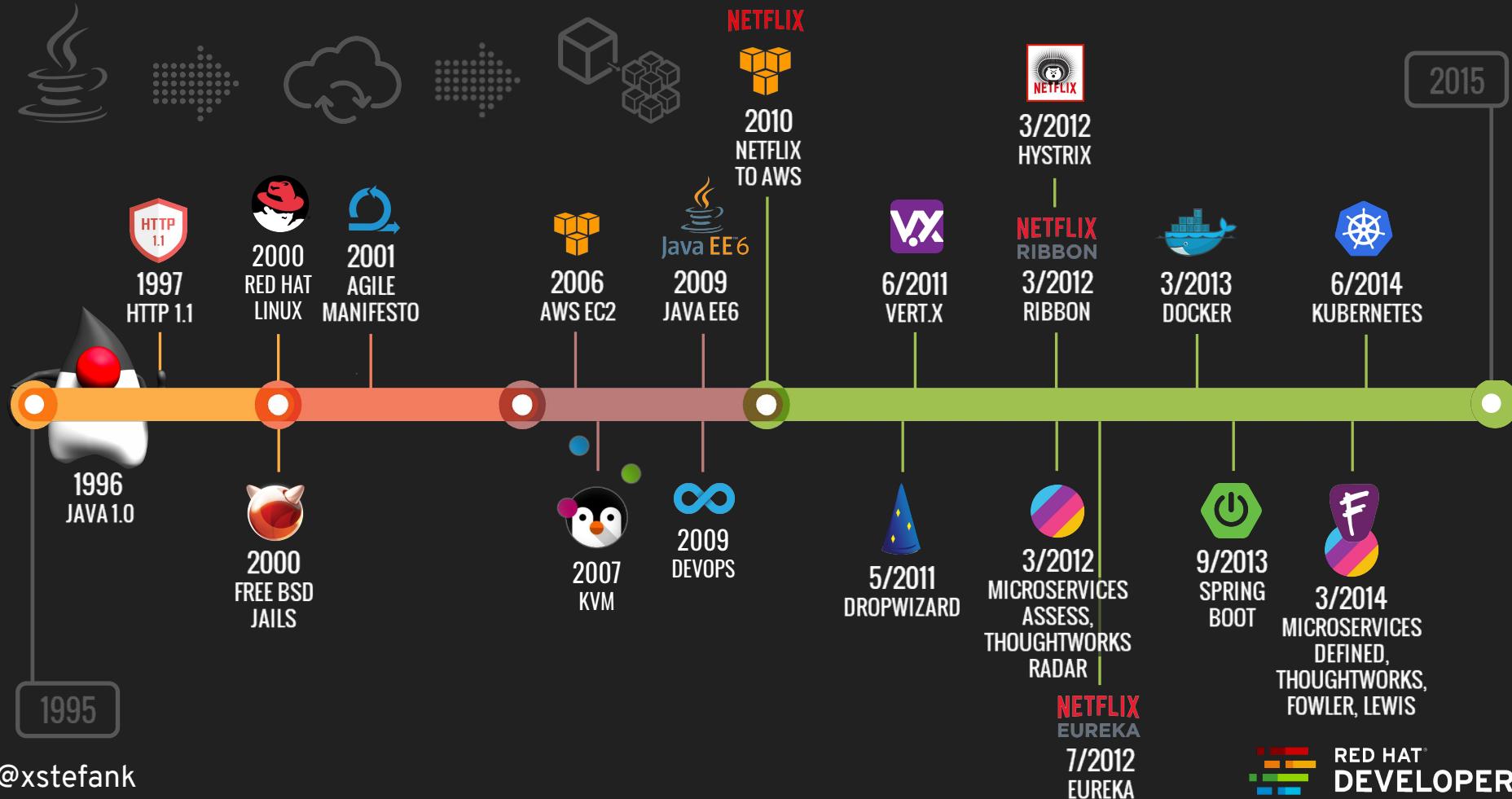


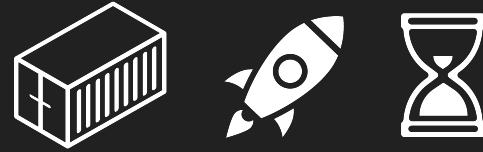
Kubernetes Native



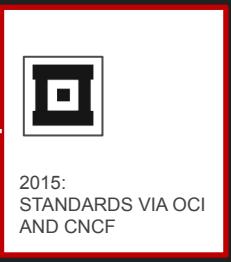
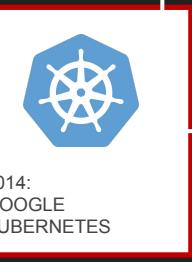
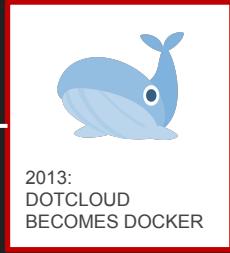
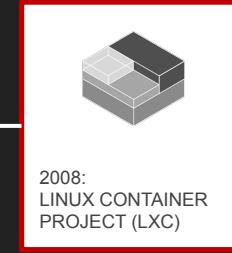
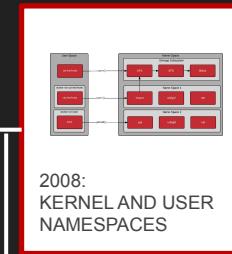
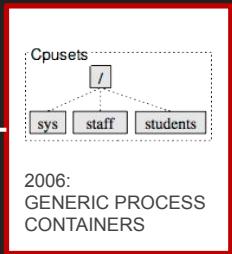
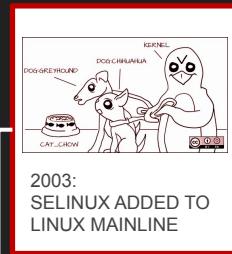


@xstefank



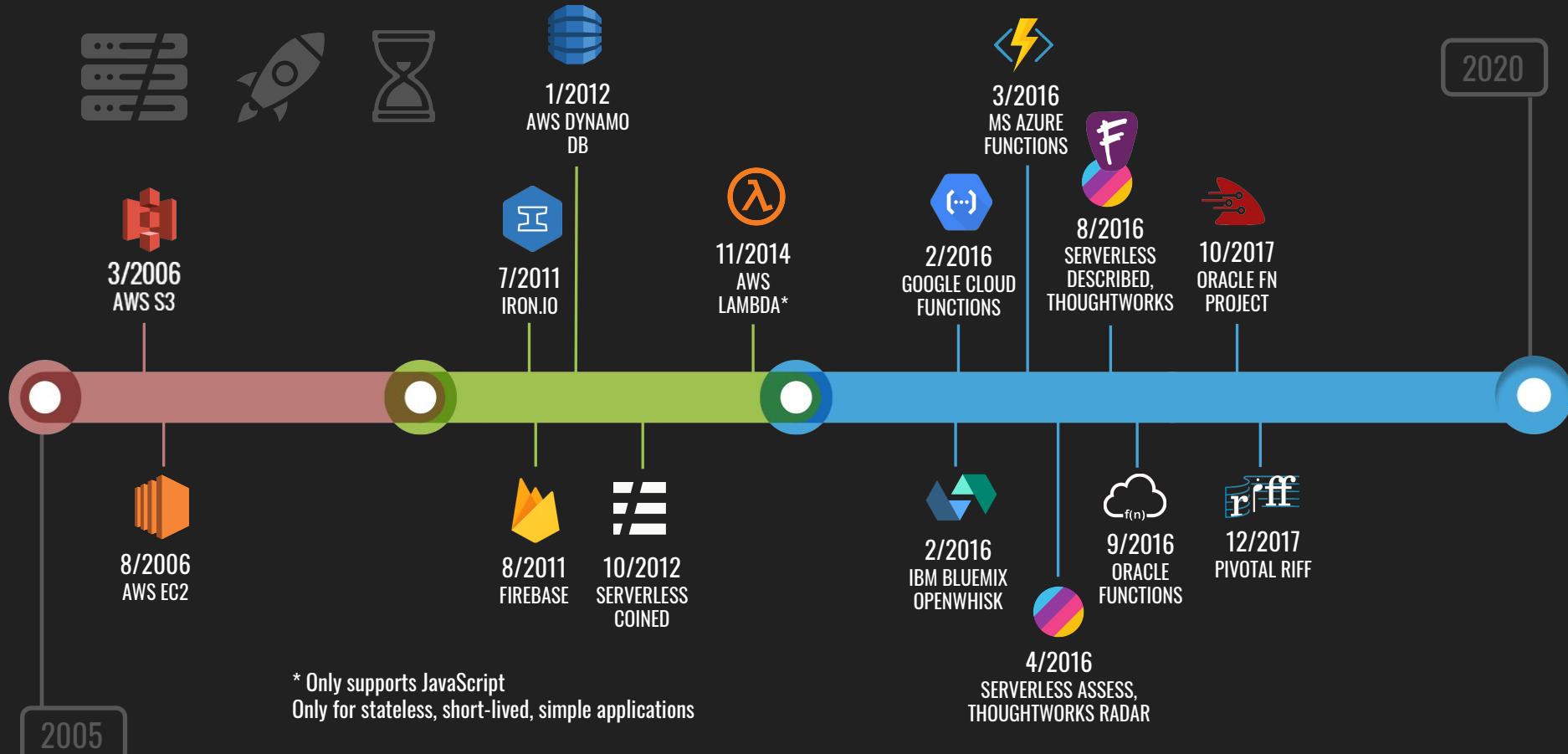


@xstefank



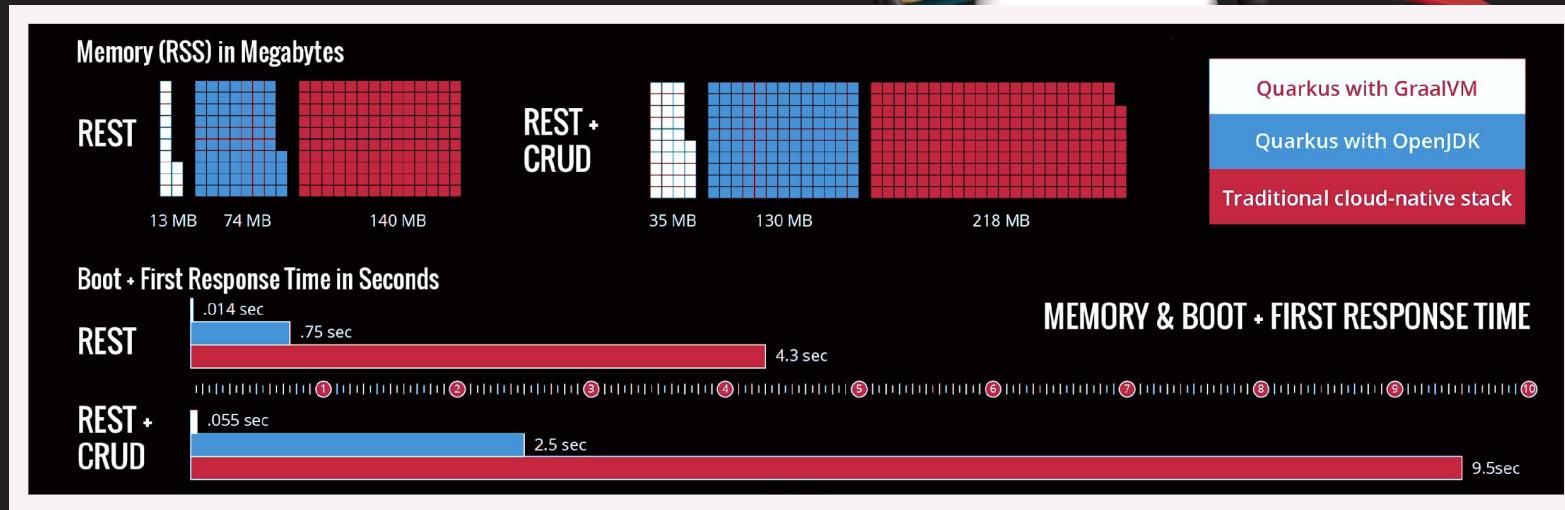
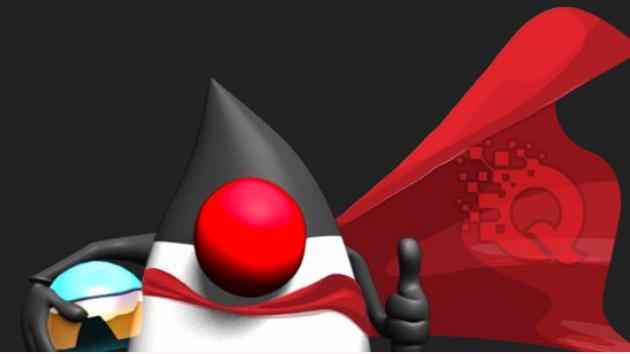


@xstefank



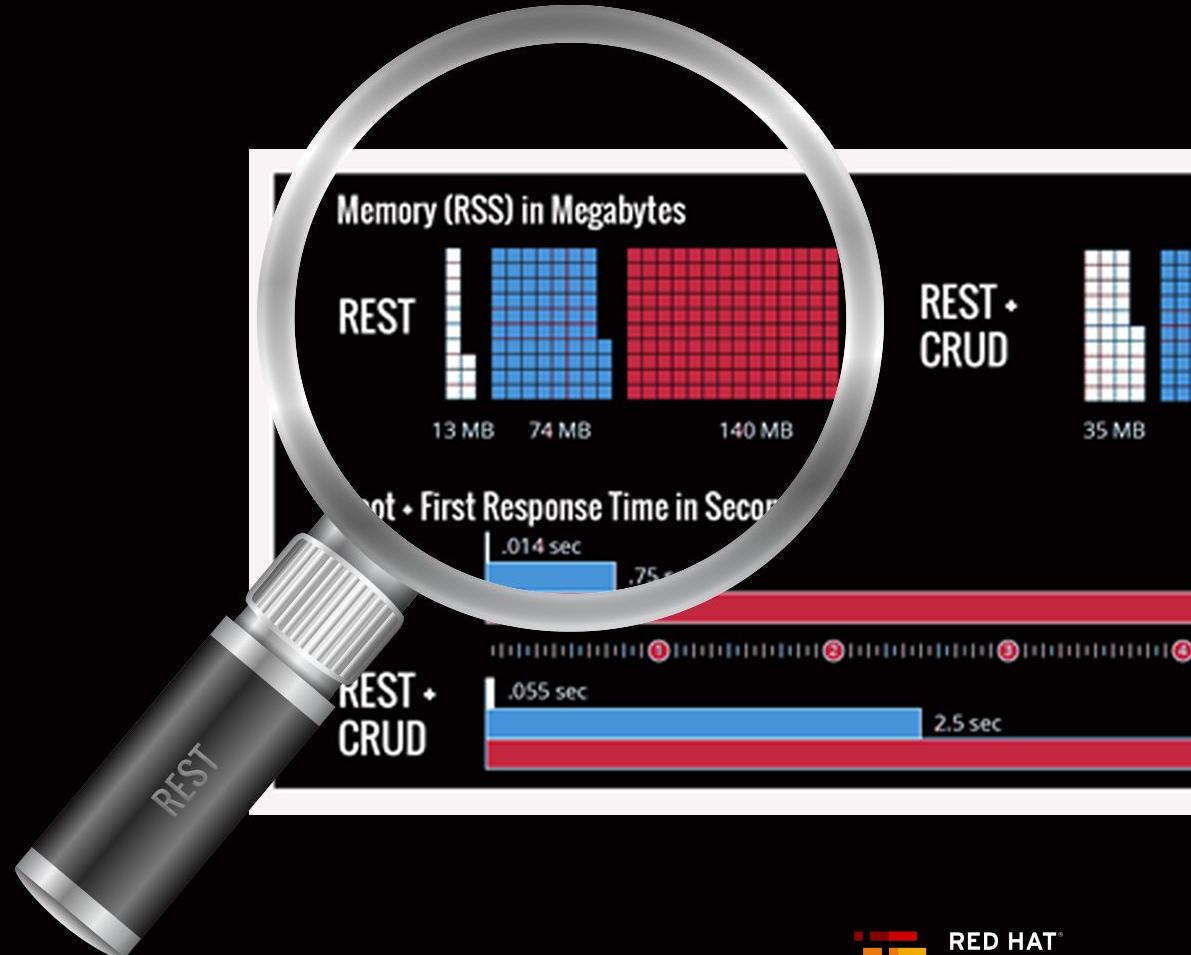


@xstefank



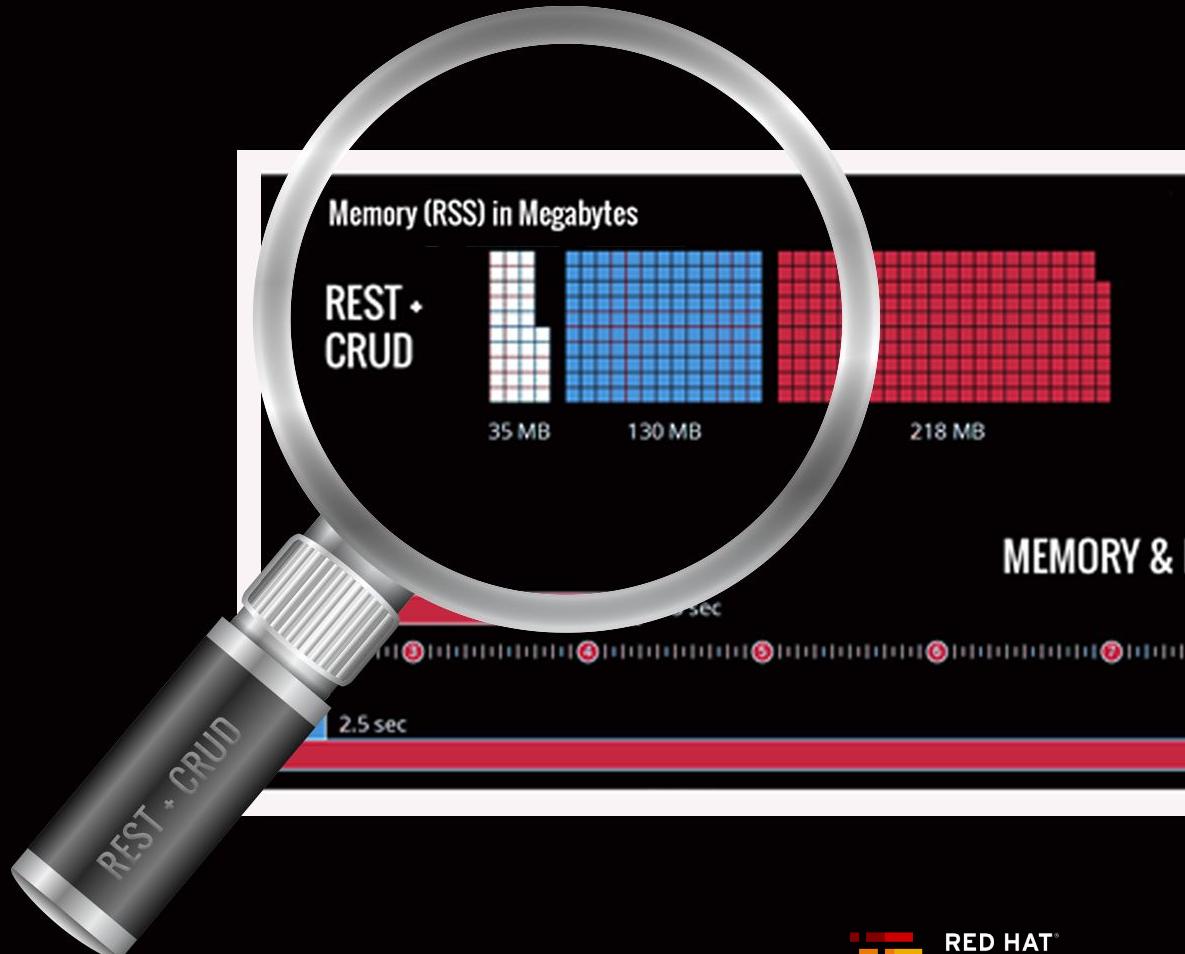
@xstefank

RED HAT®
DEVELOPER



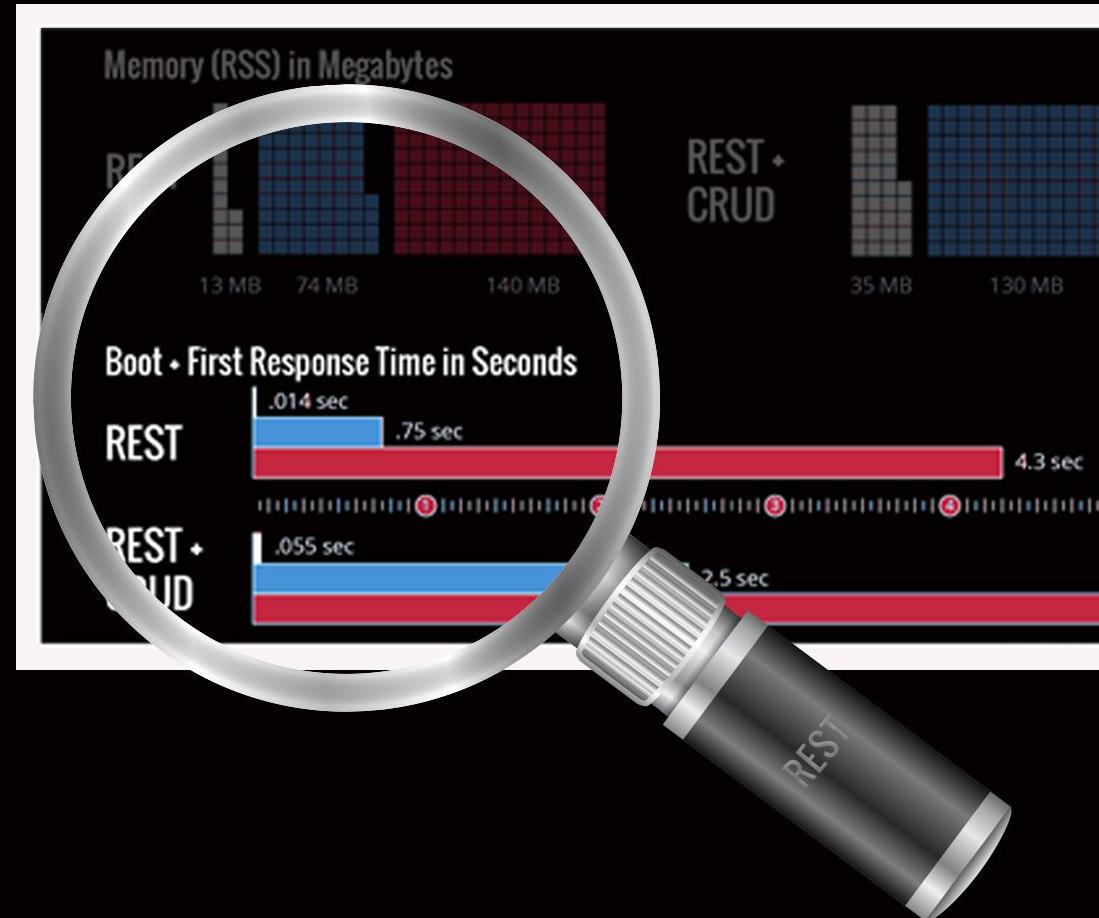


Memory (RSS) in Megabytes



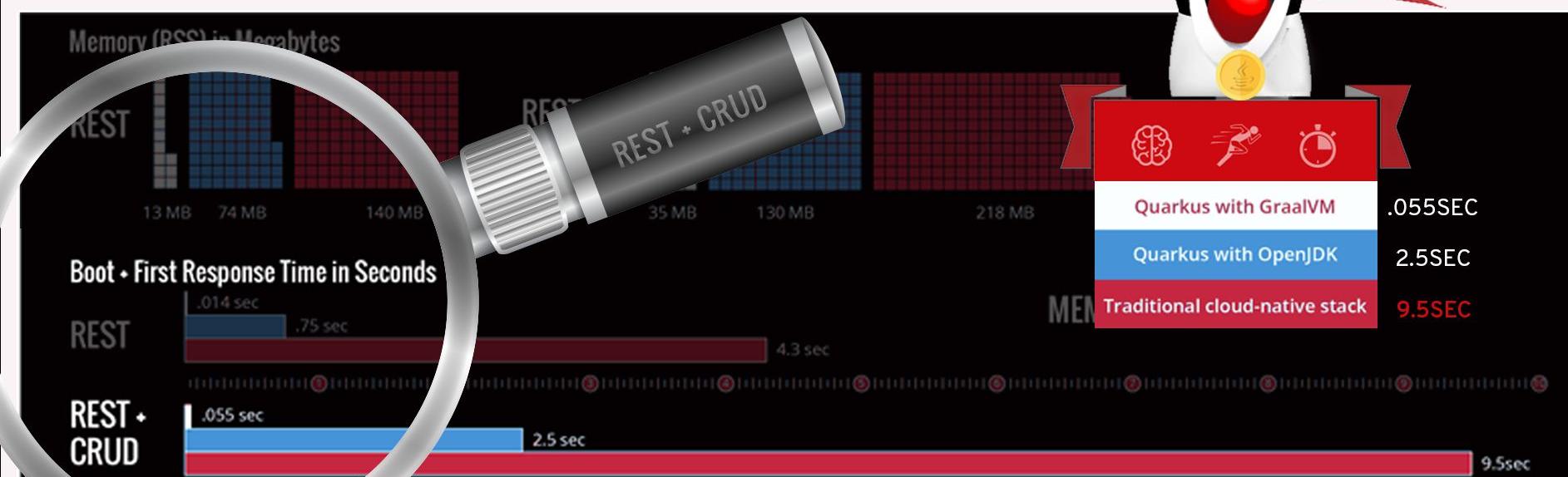


Boot + First Response Time in Seconds



@xstefank

Boot + First Response Time in Seconds



@xstefank

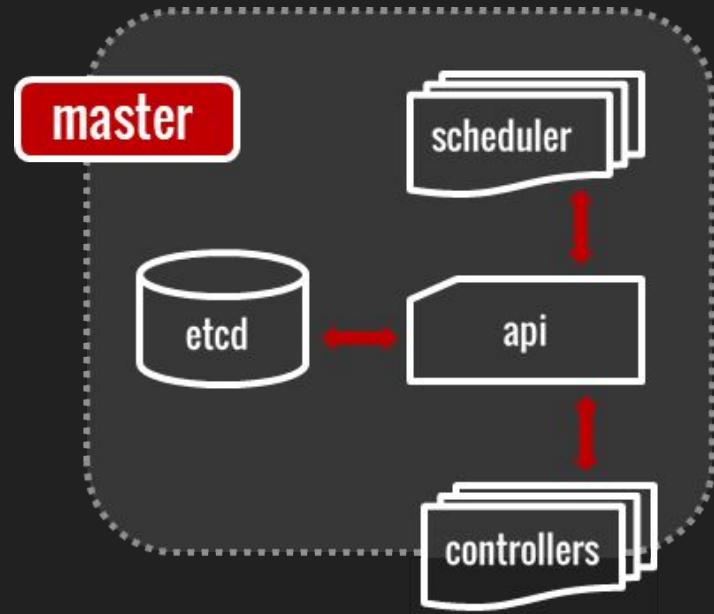
RED HAT[®]
DEVELOPER

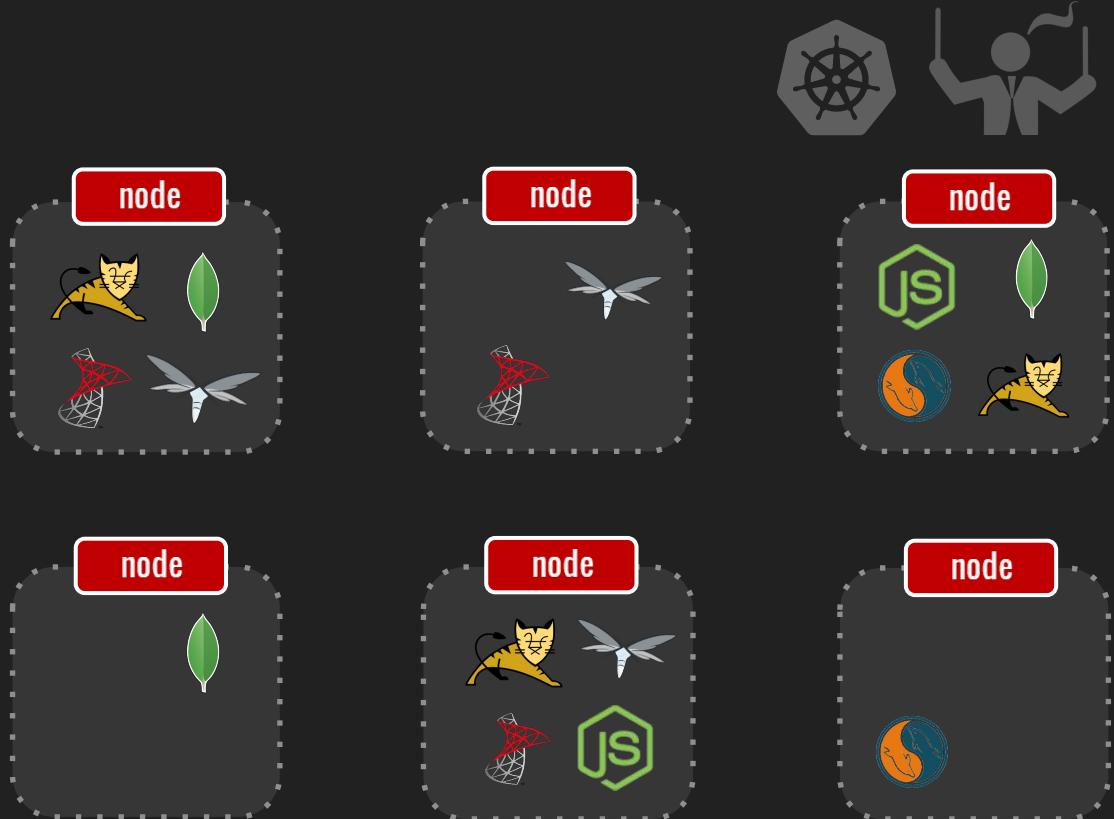
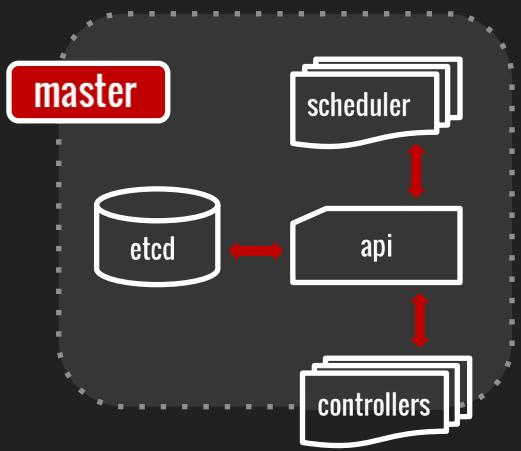
GraalVM™

Polyglot, Native or JVM, Embeddable

Kubernetes Orchestration







Declarative

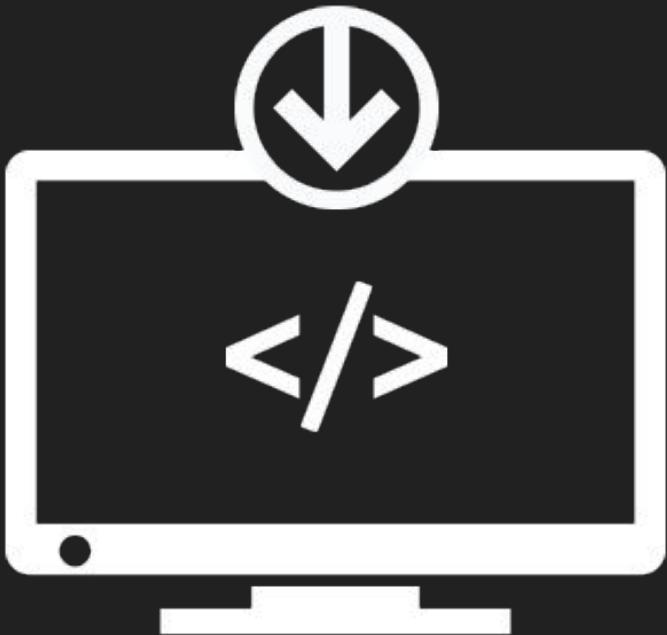


Image:

quay.io/images/custservice:1.1.0

Replicas:

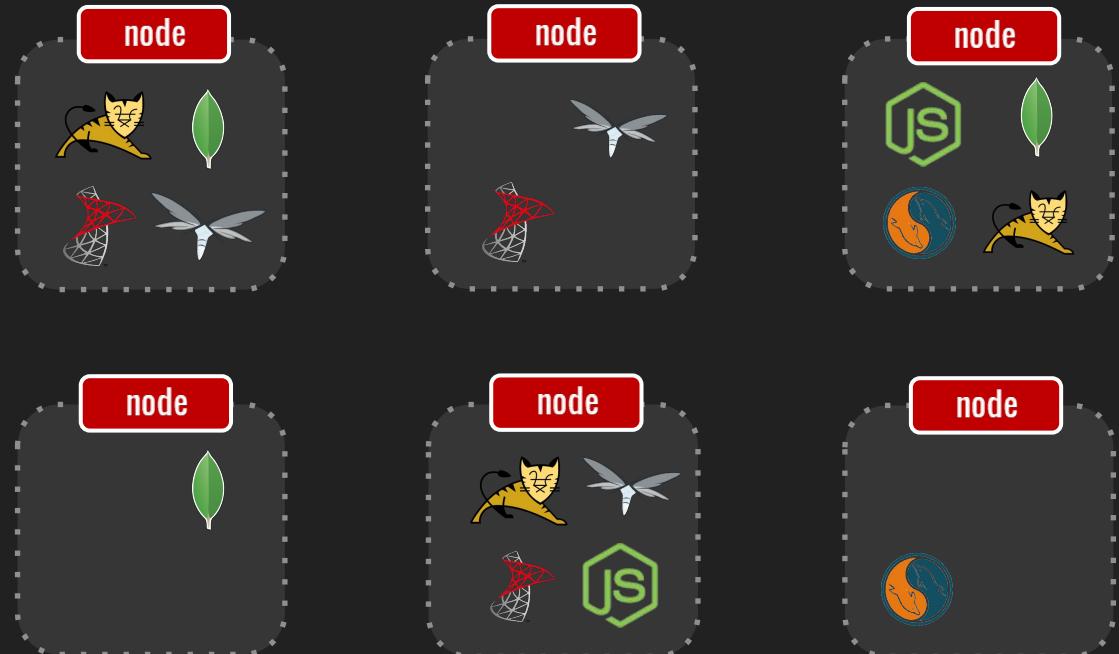
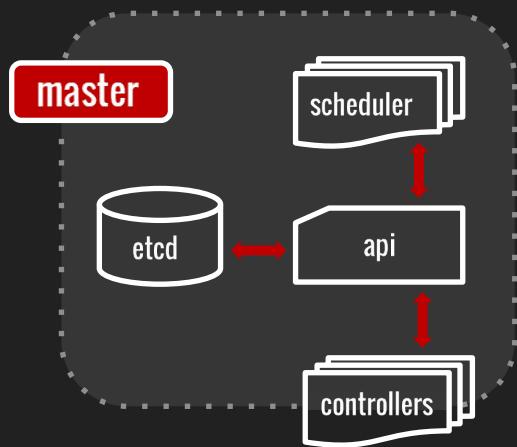
2

Labels:

customerservice=prod, ci_build=1213

ConfigMap:

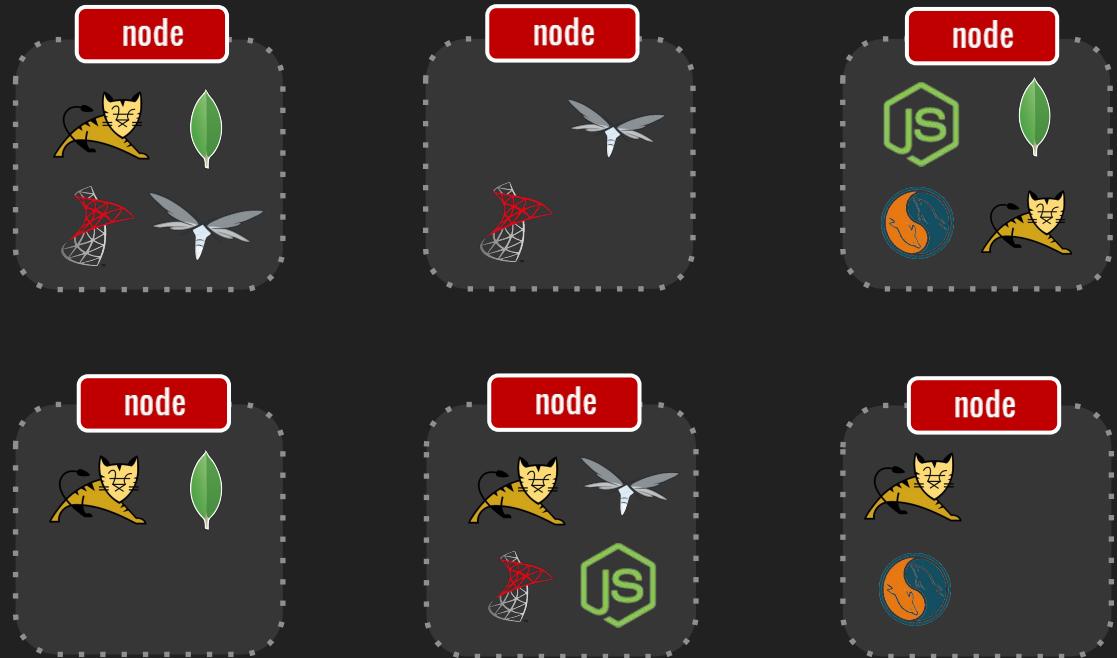
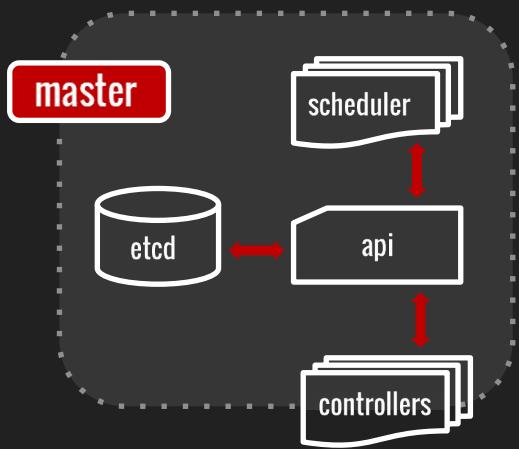
cust_config



Scheduled/Started



Image:
quay.io/images/custservice:1.1.0
Replicas:
2
Labels:
customerservice=prod, ci_build=1213
ConfigMap:
cust_config



Always Watching

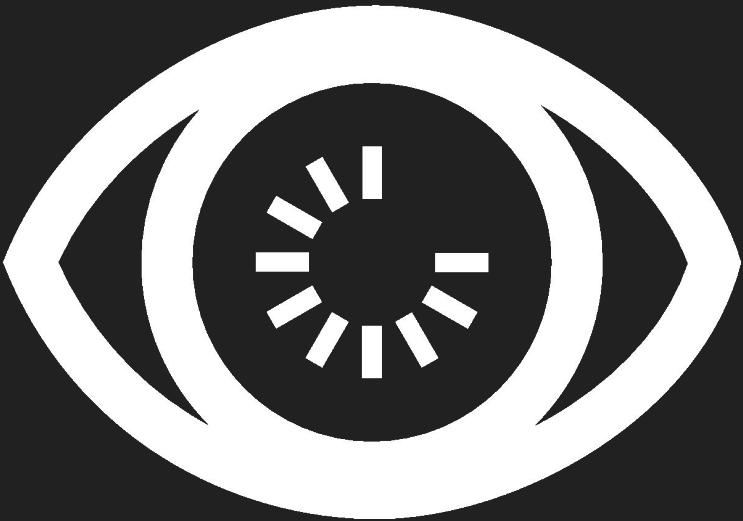


Image:

quay.io/images/custservice:1.1.0

Replicas:

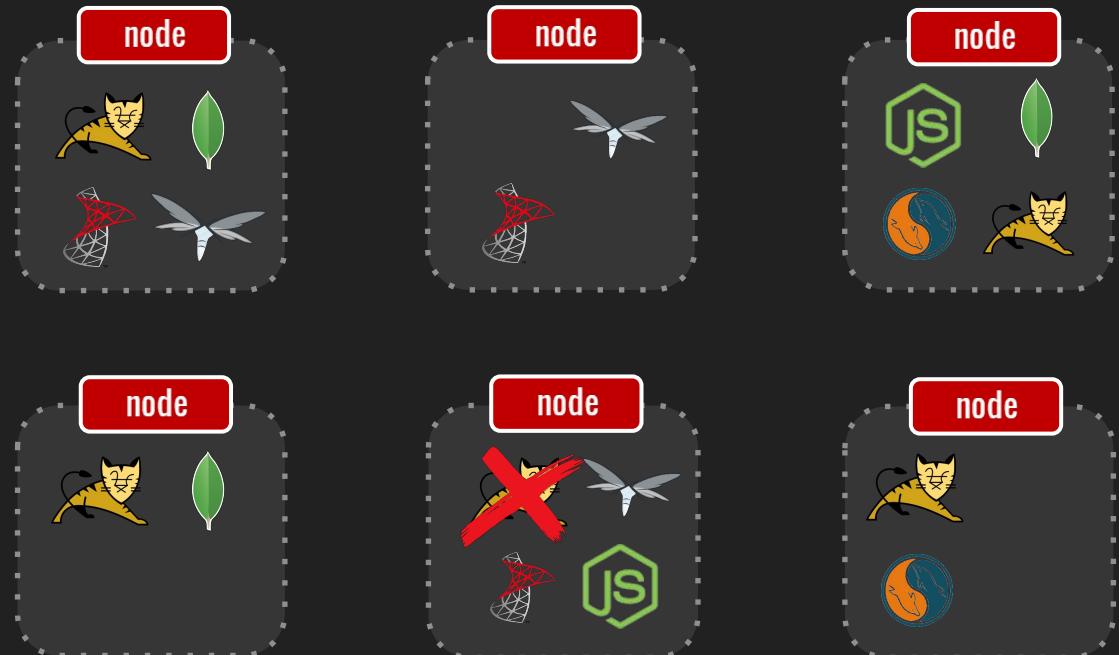
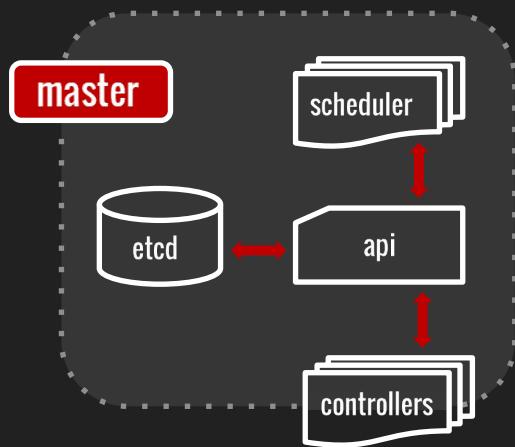
2

Labels:

customerservice=prod, ci_build=1213

ConfigMap:

cust_config



Always Correcting

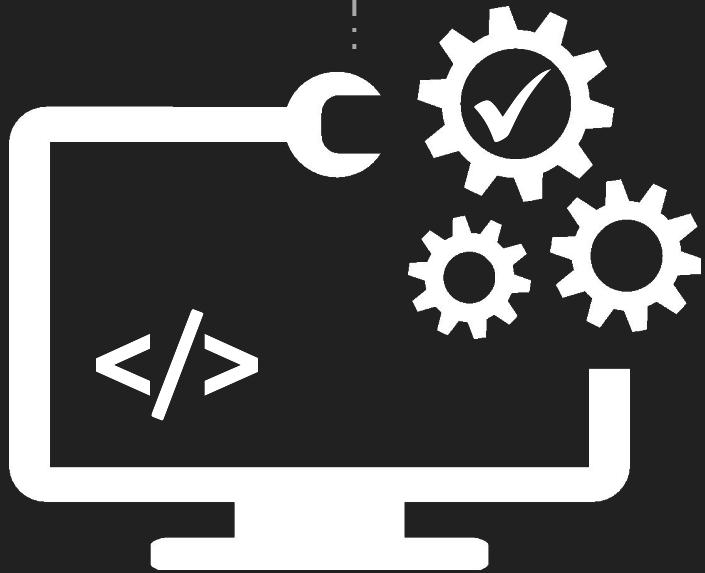
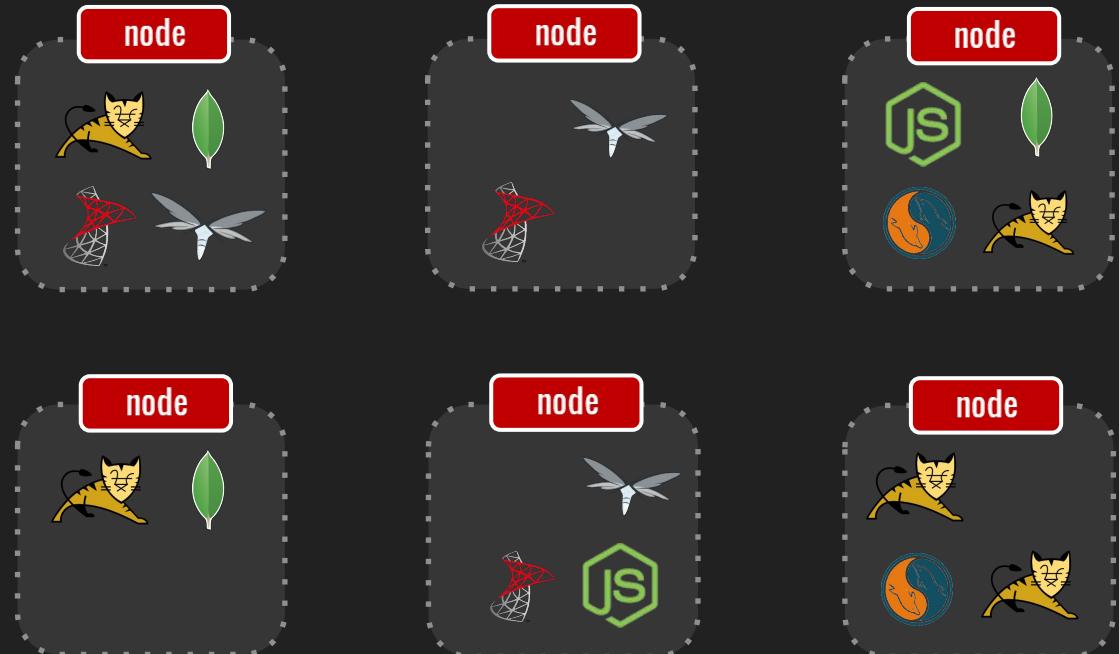
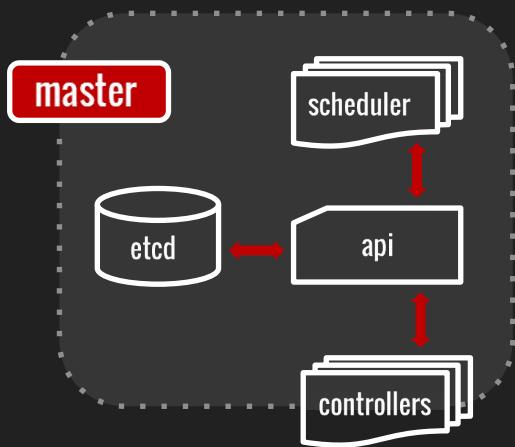


Image:
quay.io/images/custservice:1.1.0
Replicas:
2
Labels:
customerservice=prod, ci_build=1213
ConfigMap:
cust_config



Size and Speed Matter

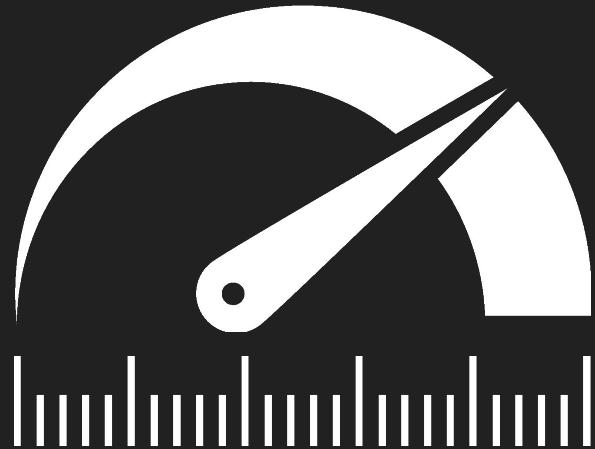


Image:

quay.io/images/custservice:1.1.0

Replicas:

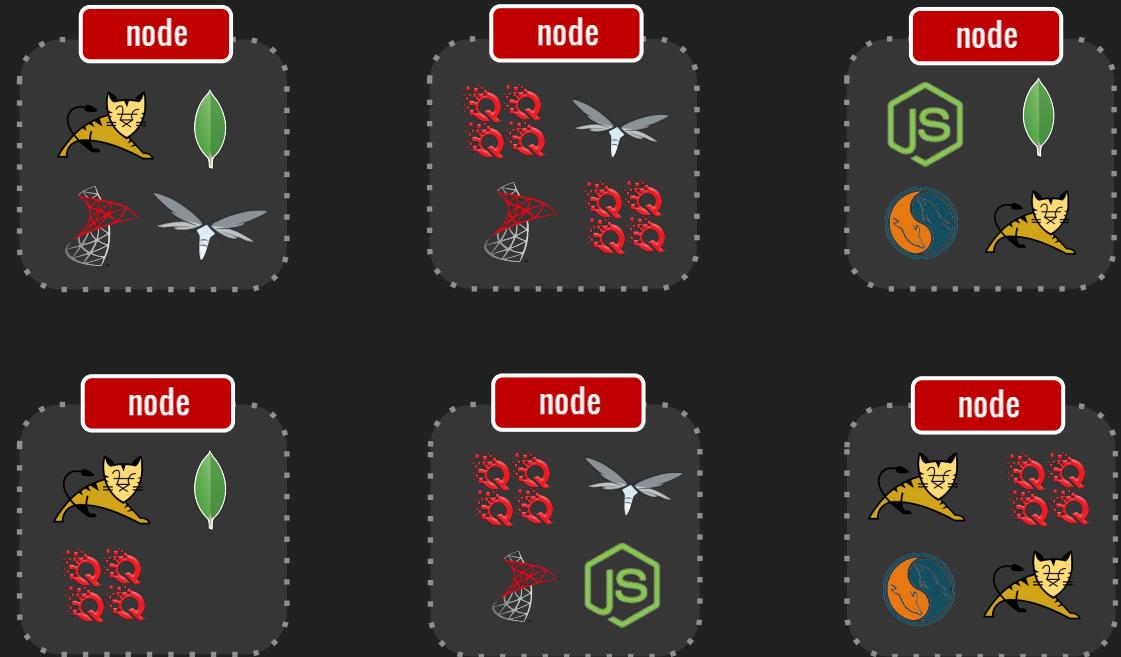
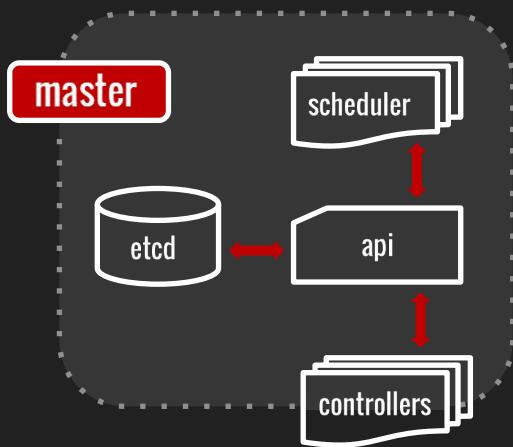
20

Labels:

customerservice=prod, ci_build=1213

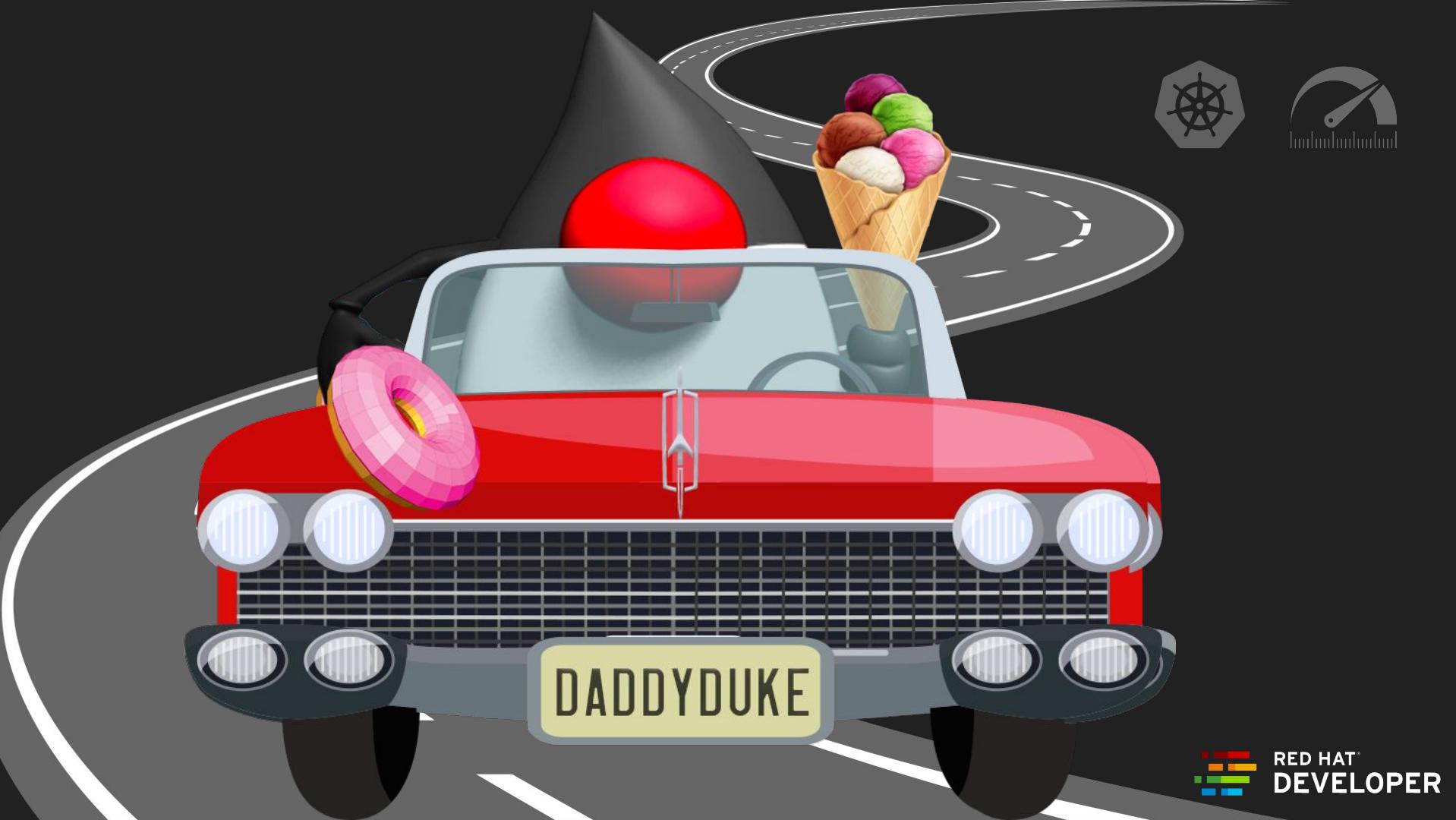
ConfigMap:

cust_config



Size and Speed Specs







10x smaller.

Up to 100x faster.

@xstefank

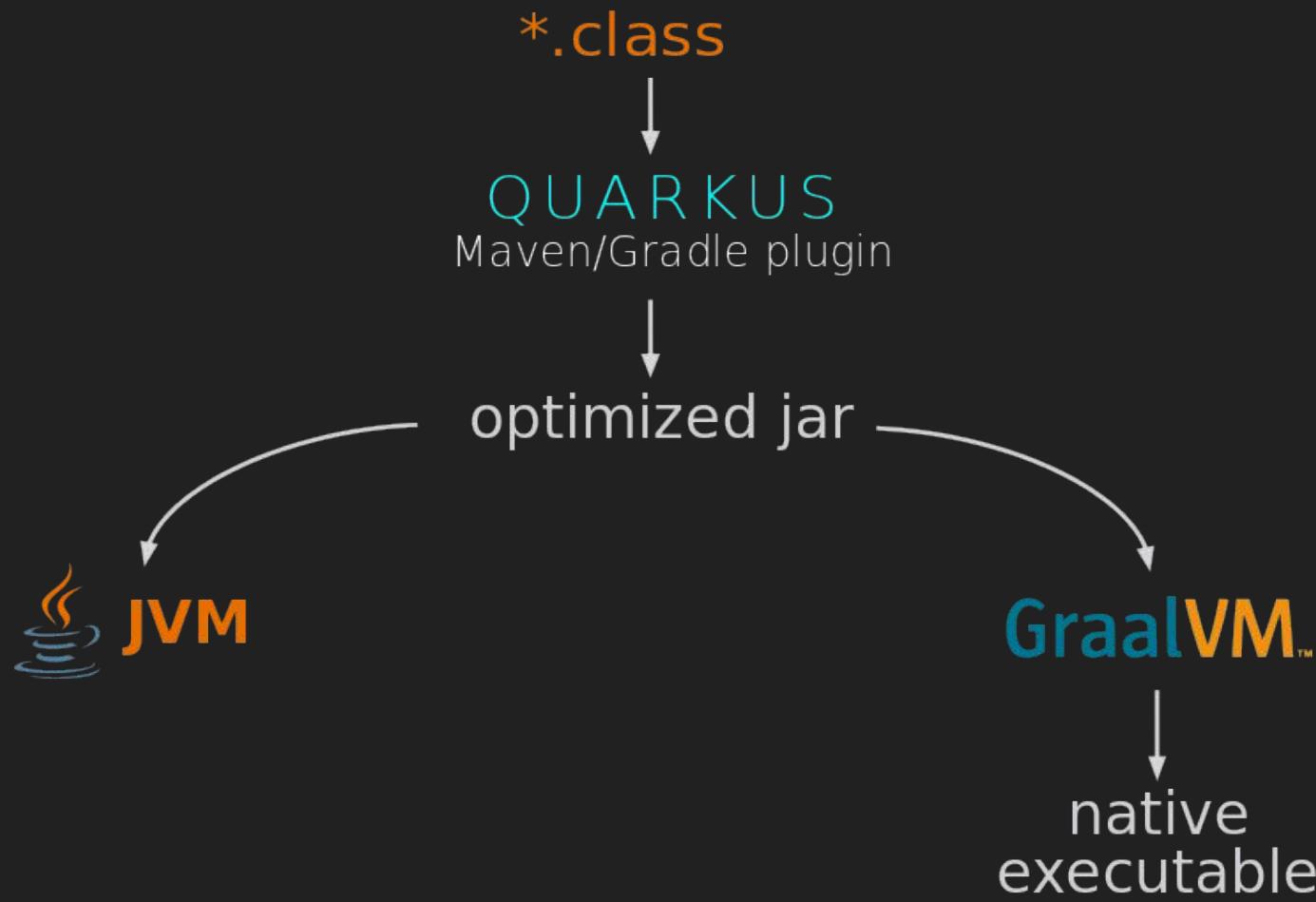


RED HAT
DEVELOPER



It's just the
beginning ...

~~The End~~



Jandex

Gizmo

Graal SDK

Deploy (Build)

Runtime

Maven

SmallRye Config

Weld Arc

RESTEasy

Undertow

Hibernate

Bean Validation

Narayana

Agroal

JBoss Logging

MP Health

MP Rest Client

Fault Tolerance

MP Metrics

MP Open API

OpenSSL

Extensions

Based on existing standards...

- Servlet
- JAX-RS
- CDI
- Bean Validation
- JTA
- Logging



MICROPROFILE™

- Config
- Health
- JWT
- Metrics
- JWT
- Fault Tolerance
- Rest client
- Reactive
- OpenTracing

...and libraries and frameworks

You love and use today



VERT.X



HIBERNATE



RESTEASY



APACHE CAMEL



NETTY



KUBERNETES



JAEGER



PROMETHEUS



APACHE KAFKA



Infinispan
INFINISPAN

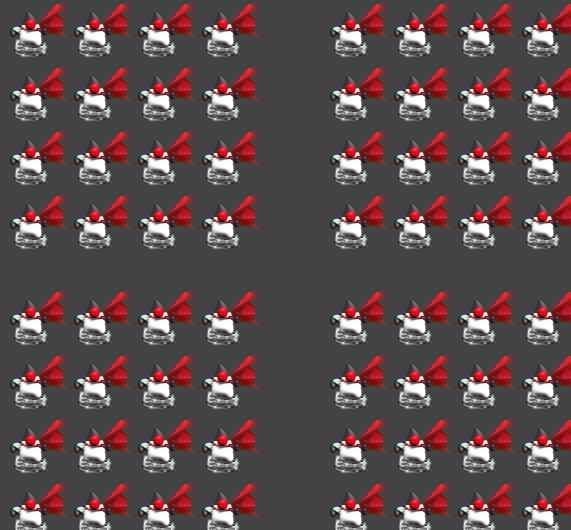
Traditional cloud stack

Quarkus

Node



Node





imgflip.com

@xstefank

Wrap up

- Good old Java
- Well-known standards and frameworks
- Efficiency around Go level

Makes Java choice #1 for cloud
and serverless

Thank you



quarkus.io

<https://github.com/quarkusio/quarkus>

@quarkusIO

<http://bit.ly/rest-compare>

<https://github.com/xstefank/avengers-assemble>

mstefank@redhat.com

@xstefank

Big thanks to @burrssutter, @jtgreen,
@yanaga for the original slides

<http://bit.ly/quarkus-april4>