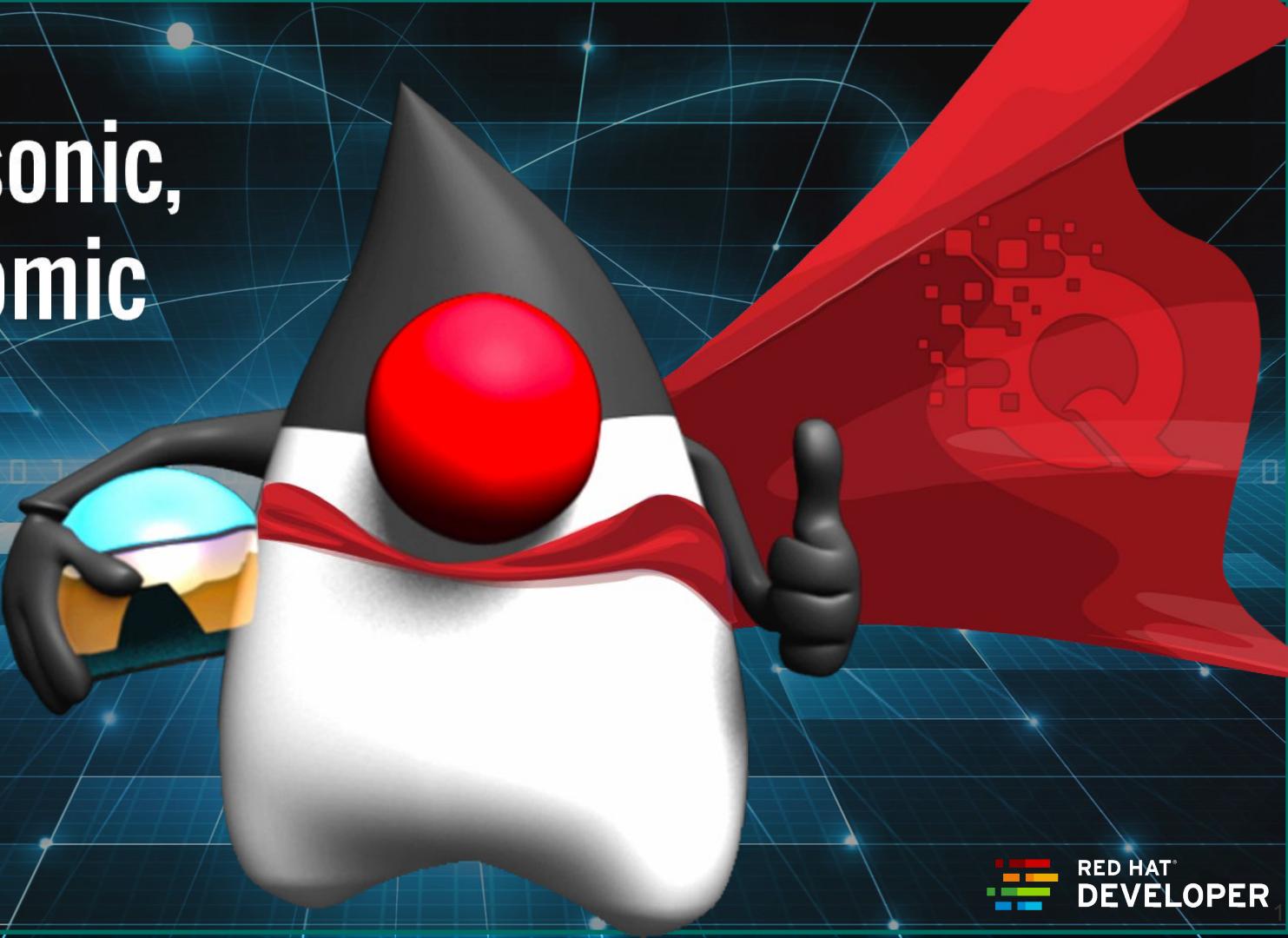


Supersonic, Subatomic Java

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."

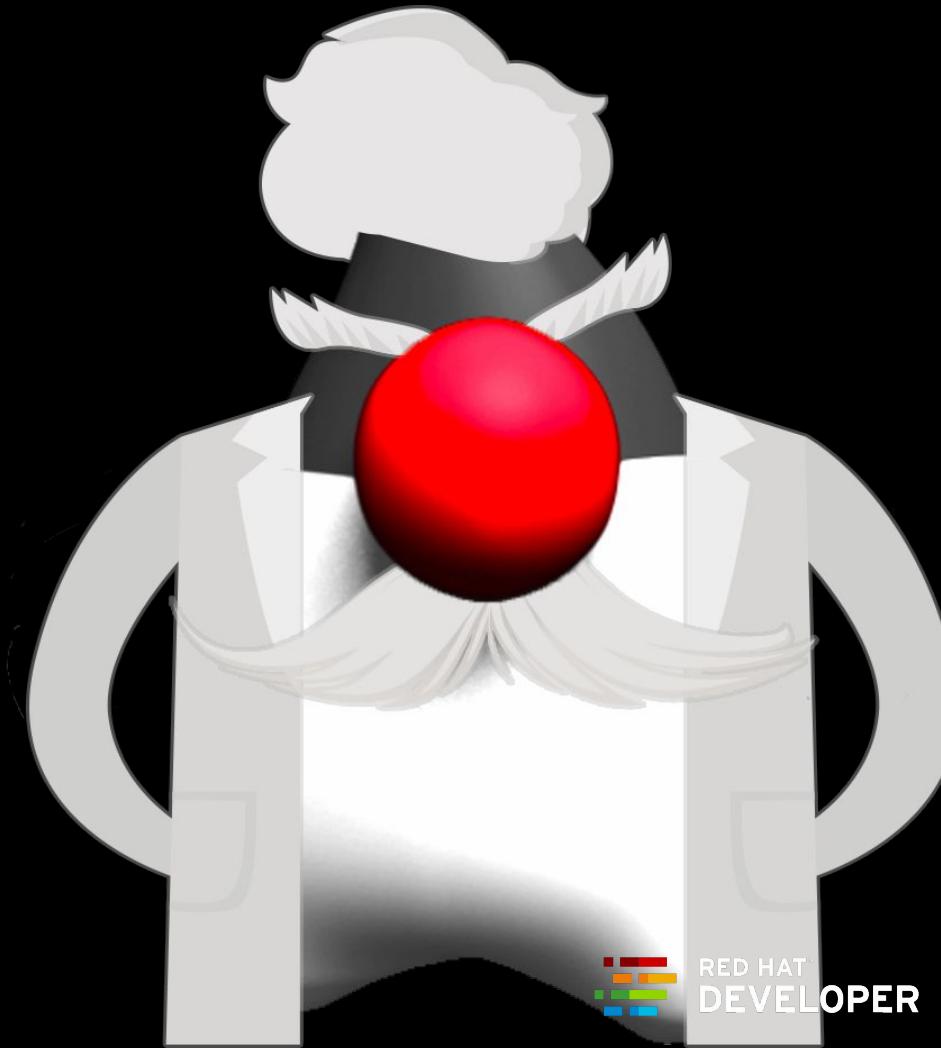
Computer World, May 22, 2006

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.

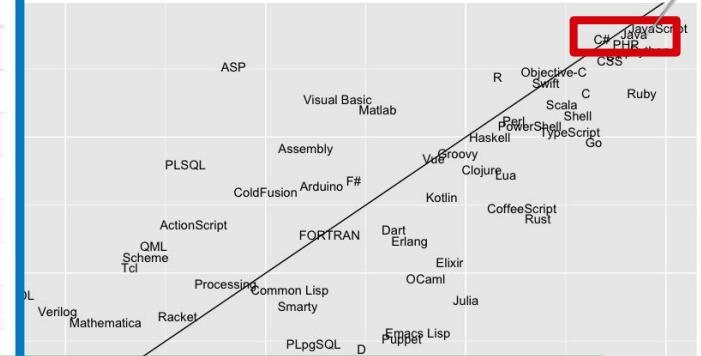
@xstefank

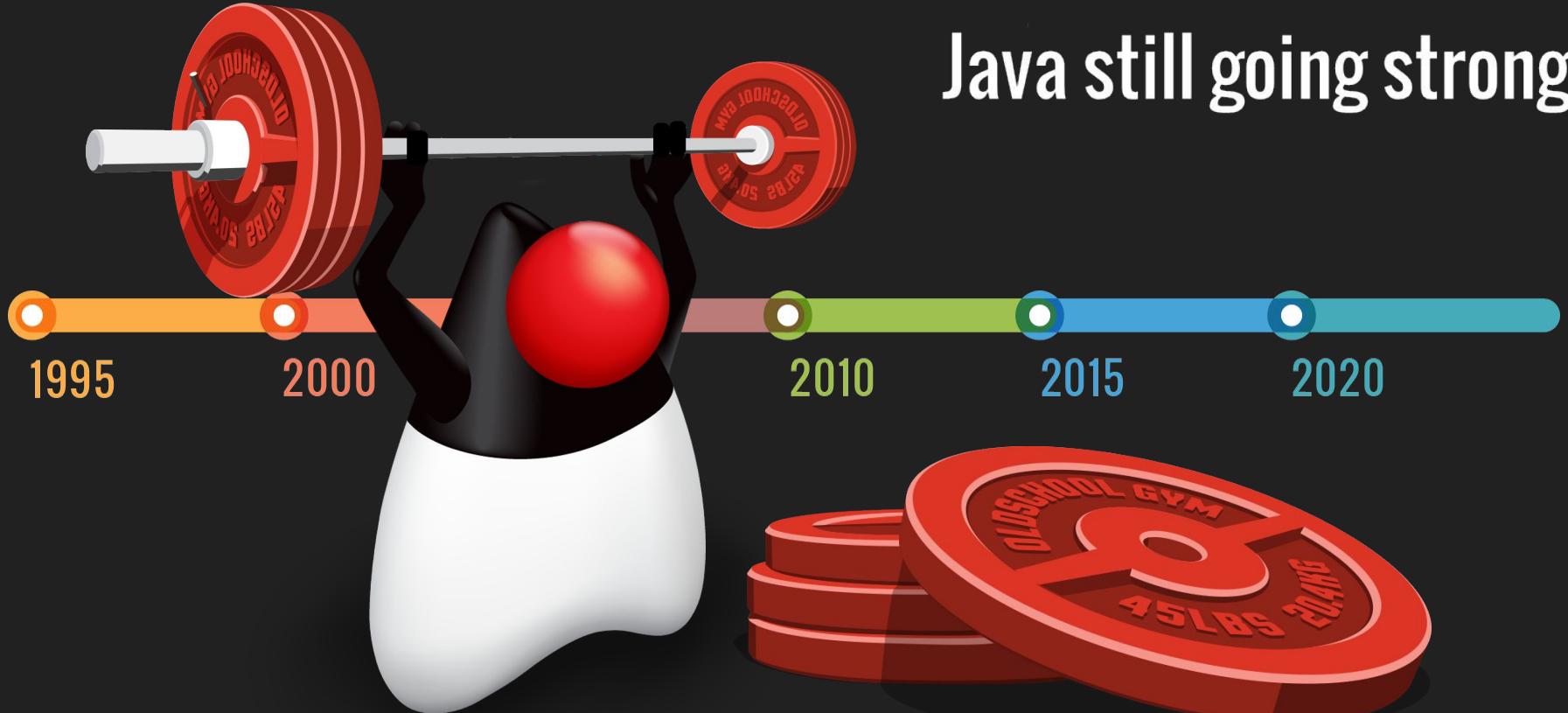


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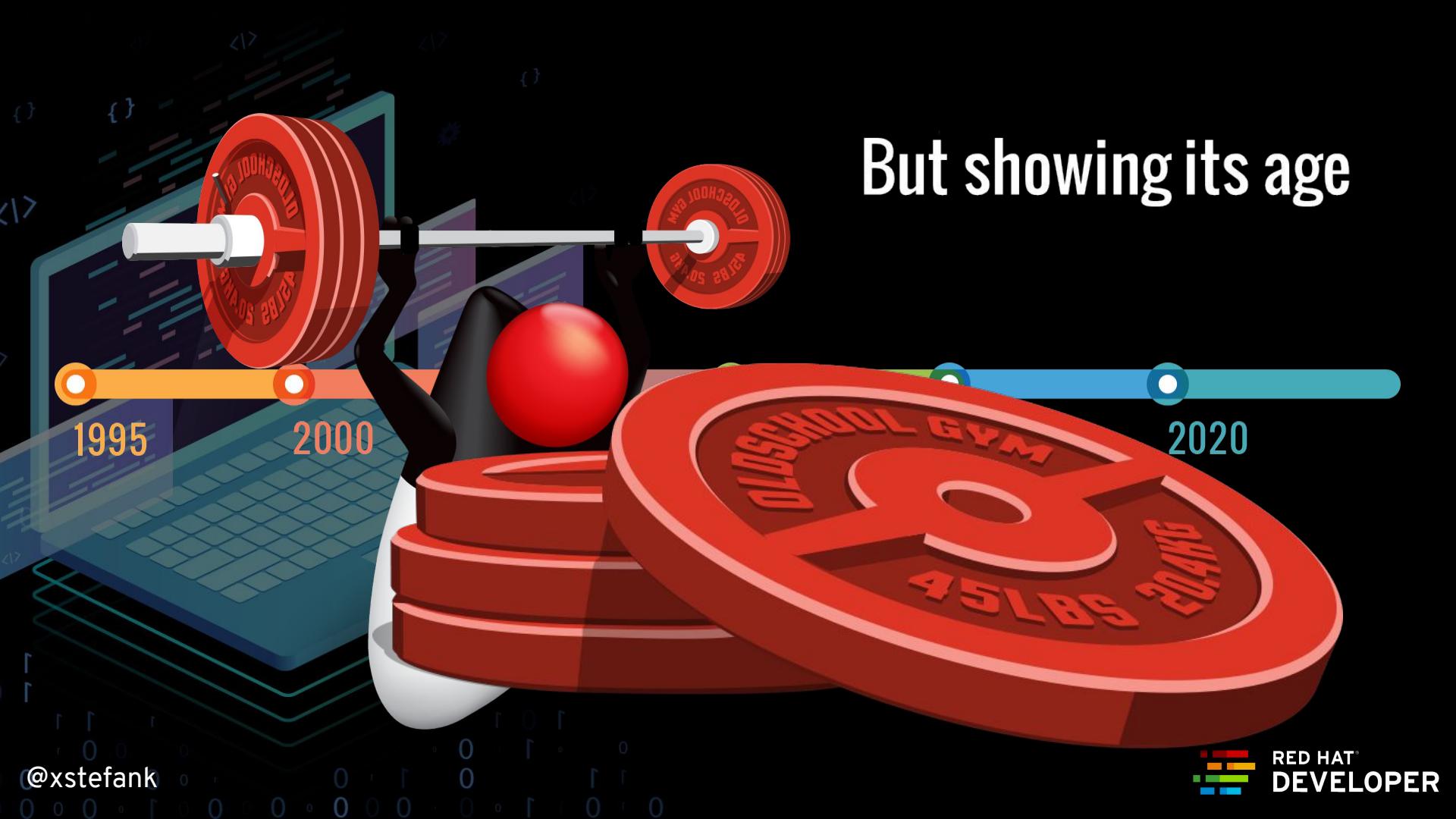
Feb 2019	Feb 2018	Change	Programming Language	Ratings	Change
1	1		Java	15.876%	+0.89%
2	2		C	12.424%	+0.57%
3	4	▲	Python	7.574%	+2.41%
4	3	▼	C++	7.444%	+1.72%
5	6	▲	Visual Basic .NET	7.095%	+3.02%
6	8	▲	JavaScript	2.848%	-0.32%
7	5	▼	C#	2.346%	-1.61%
8	7	▼	PHP	2.271%	-1.15%

RedMonk Q318 Programming Language Rankings





Java still going strong



But showing its age

1995

2000

2020

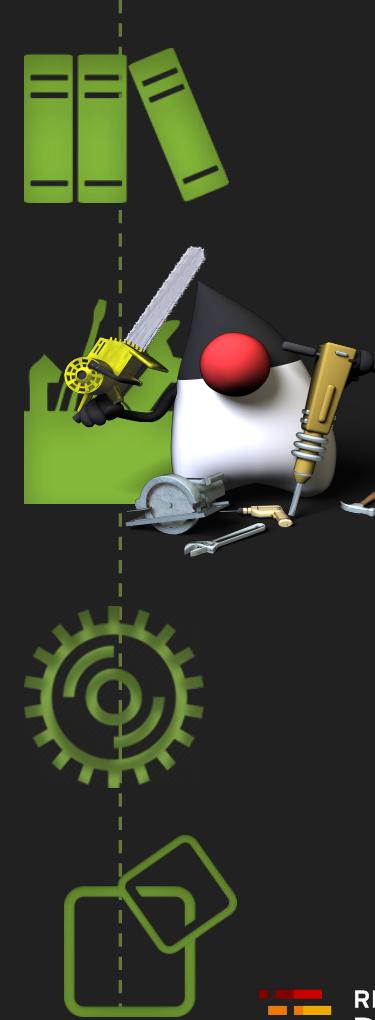


Still, so much goodness ...



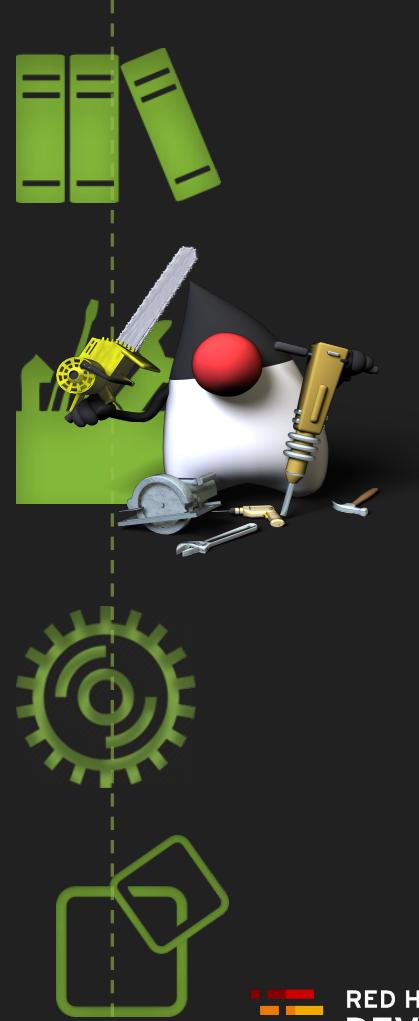


@xstefank



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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 dark purple scoop with blue and green sprinkles is also being held by a hand in a black glove. To the right, a waffle cone holds four scoops of ice cream in brown, white, pink, and green. The background is filled with various other scoops in shades of brown, tan, and grey, some with wavy patterns or small brown spots. Colorful, elongated sprinkles in shades of yellow, red, green, and blue are scattered throughout the scene.

So so many flavors ...



@xstefank



@xstefank



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“

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

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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



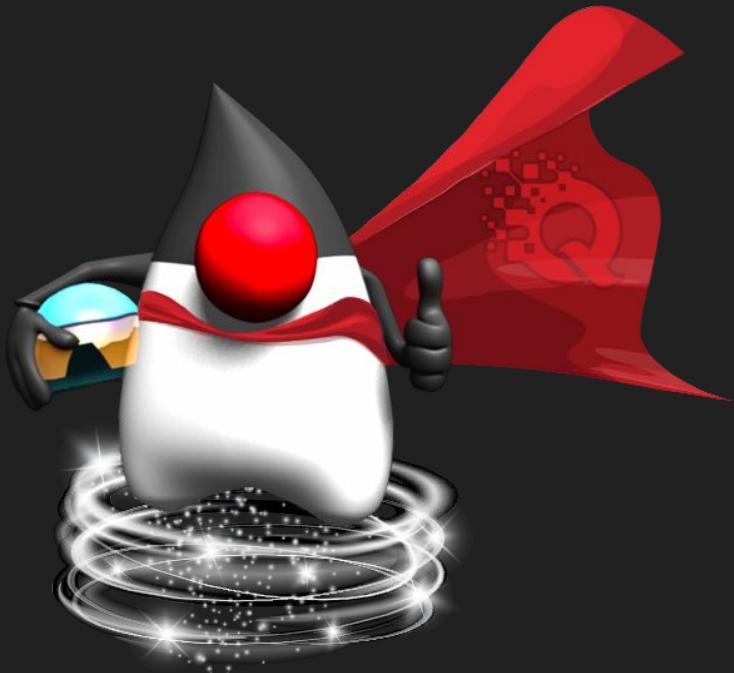
Optimized for
short-lived processes



Kubernetes
Native



developer
Enough \wedge love to go around.



Live reload



Imperative and
reactive



Serverless



Microservices



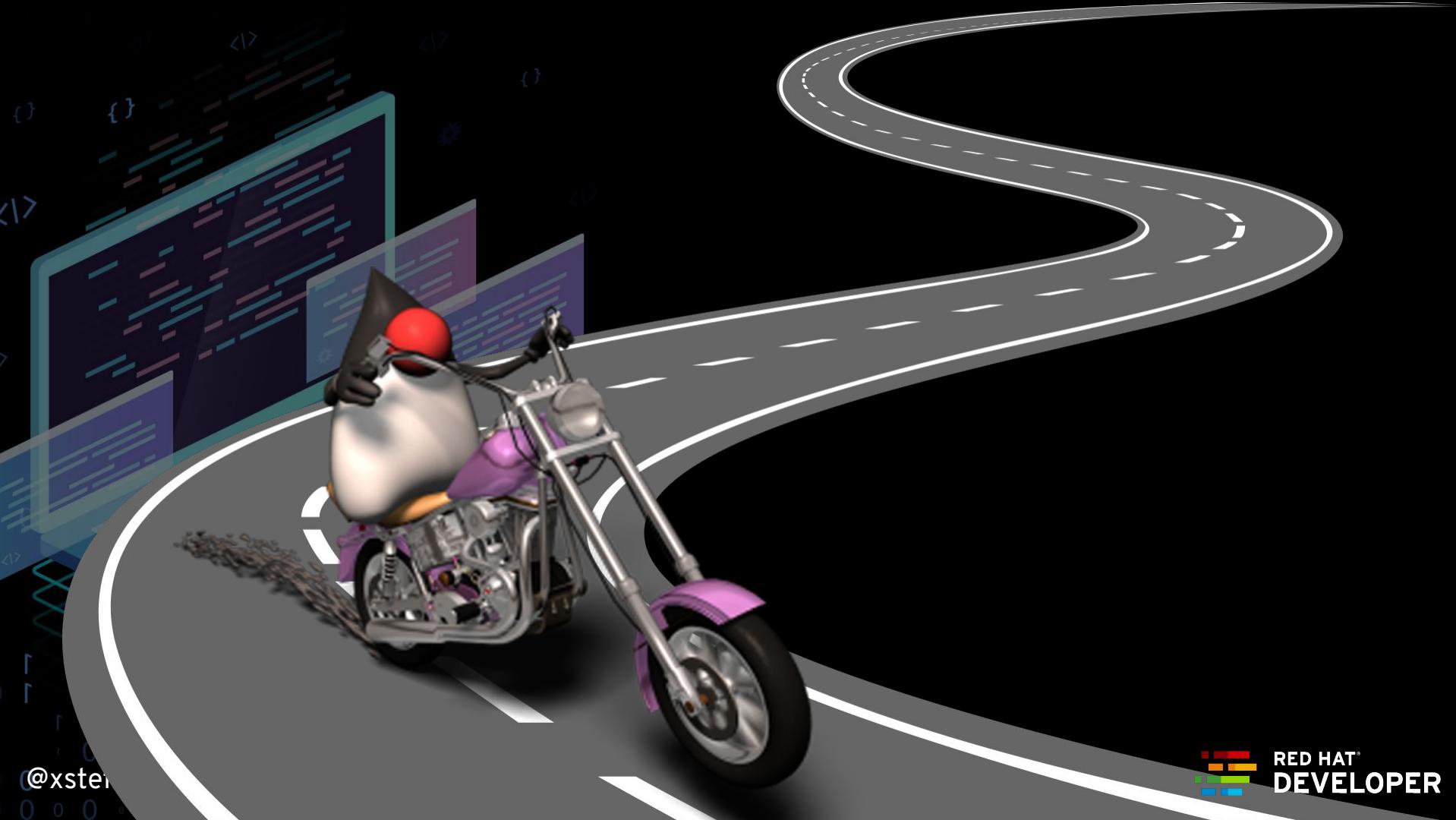
Fat jars
and native
executables



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

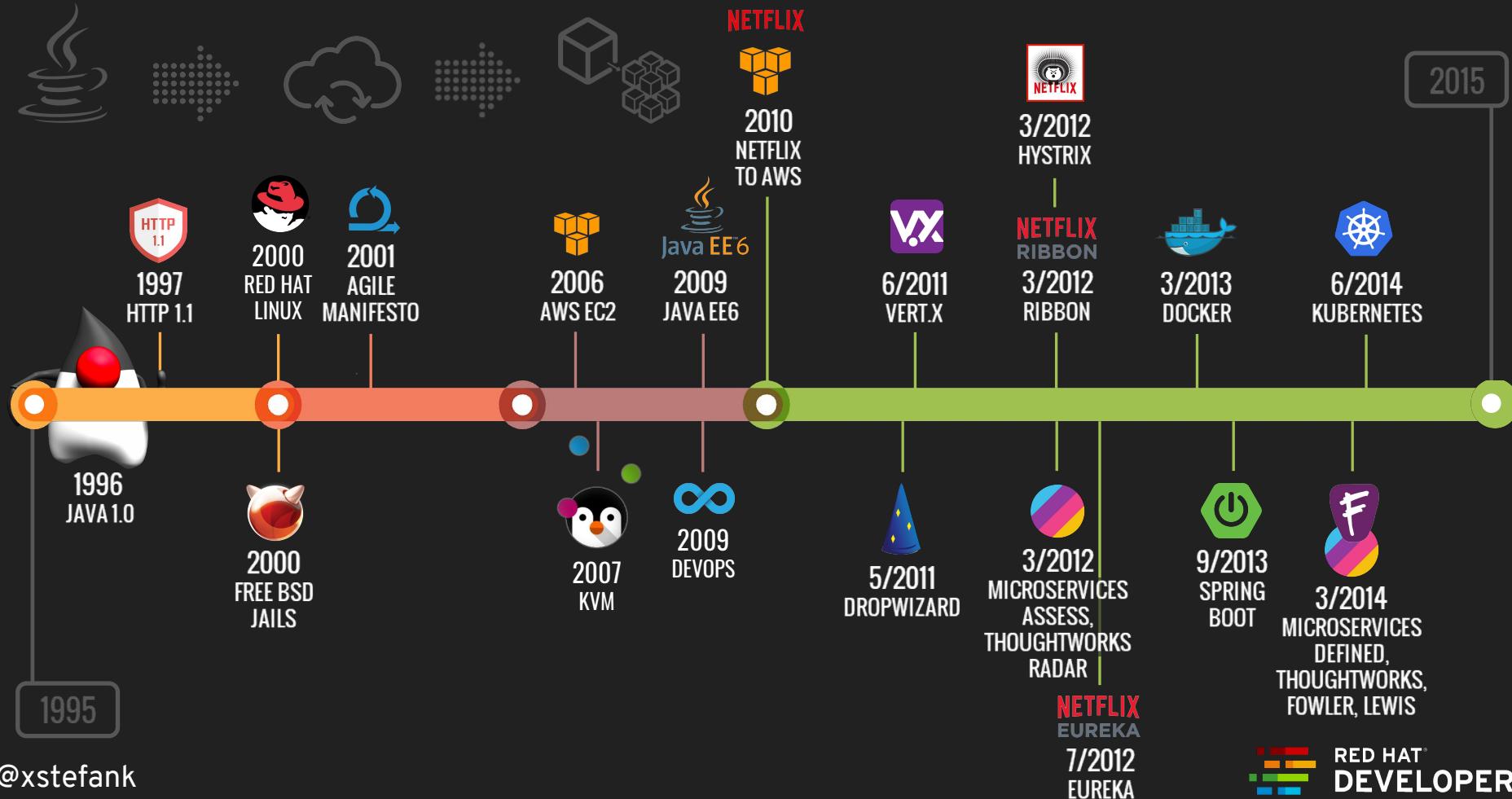


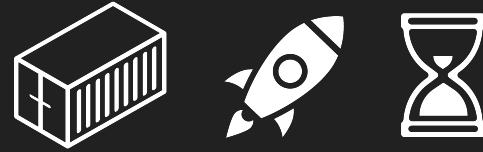
Kubernetes Native



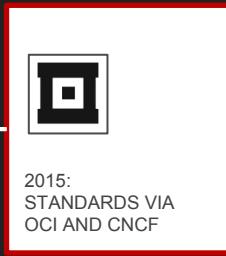
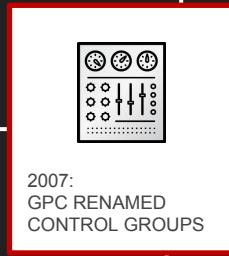
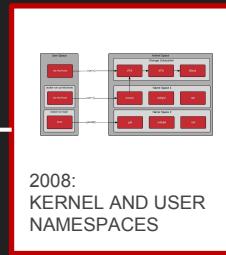
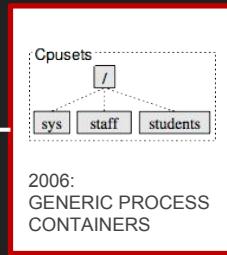


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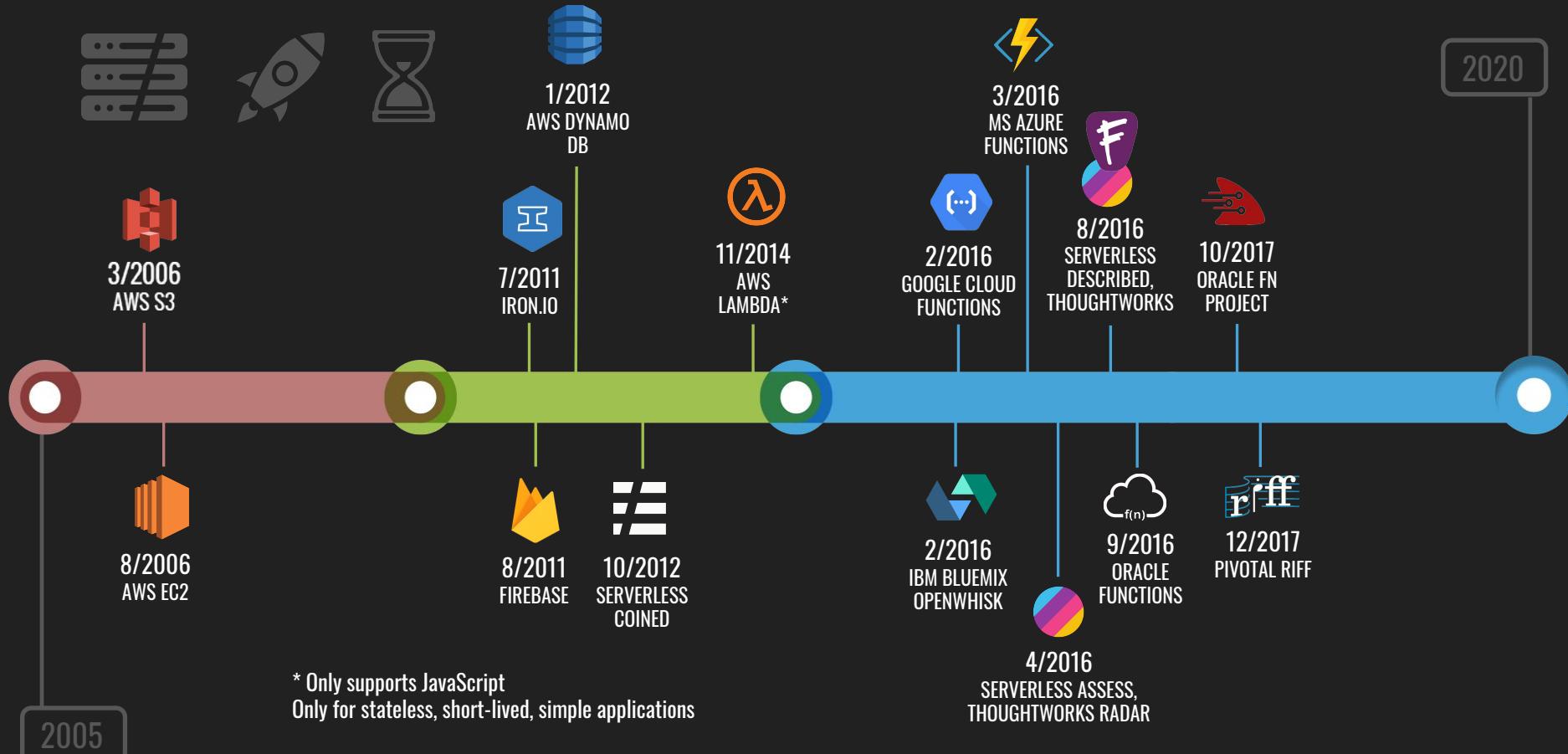


@xstefank



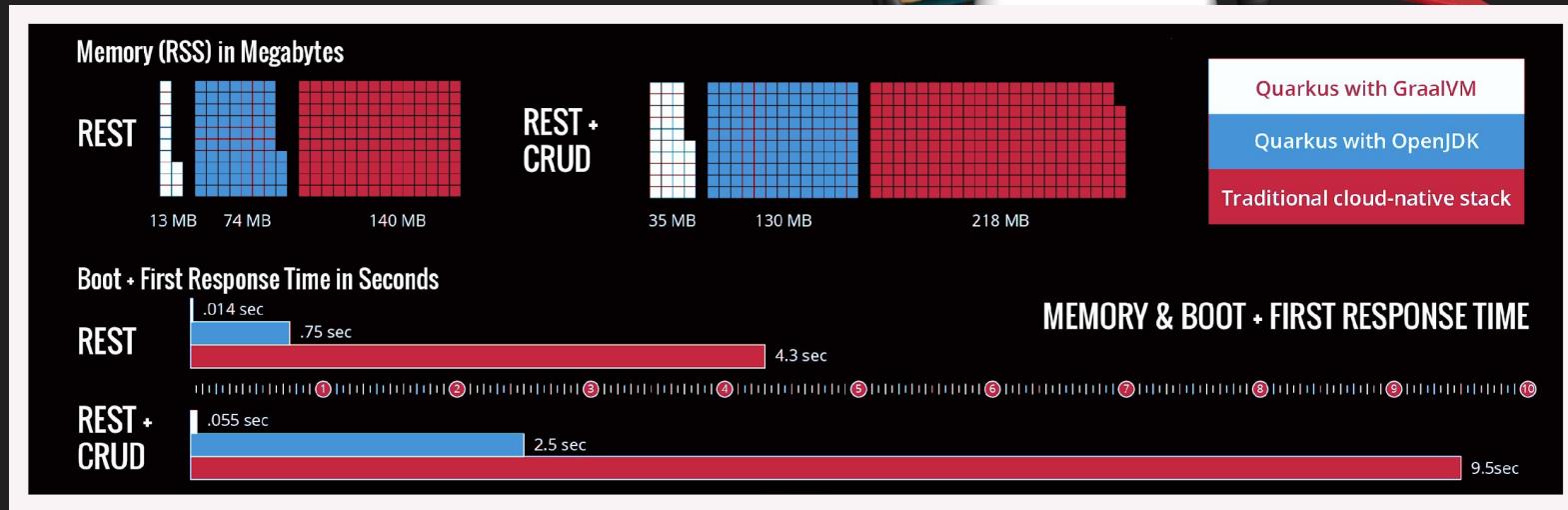
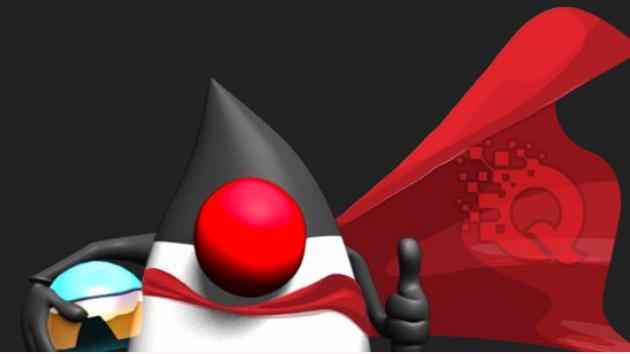


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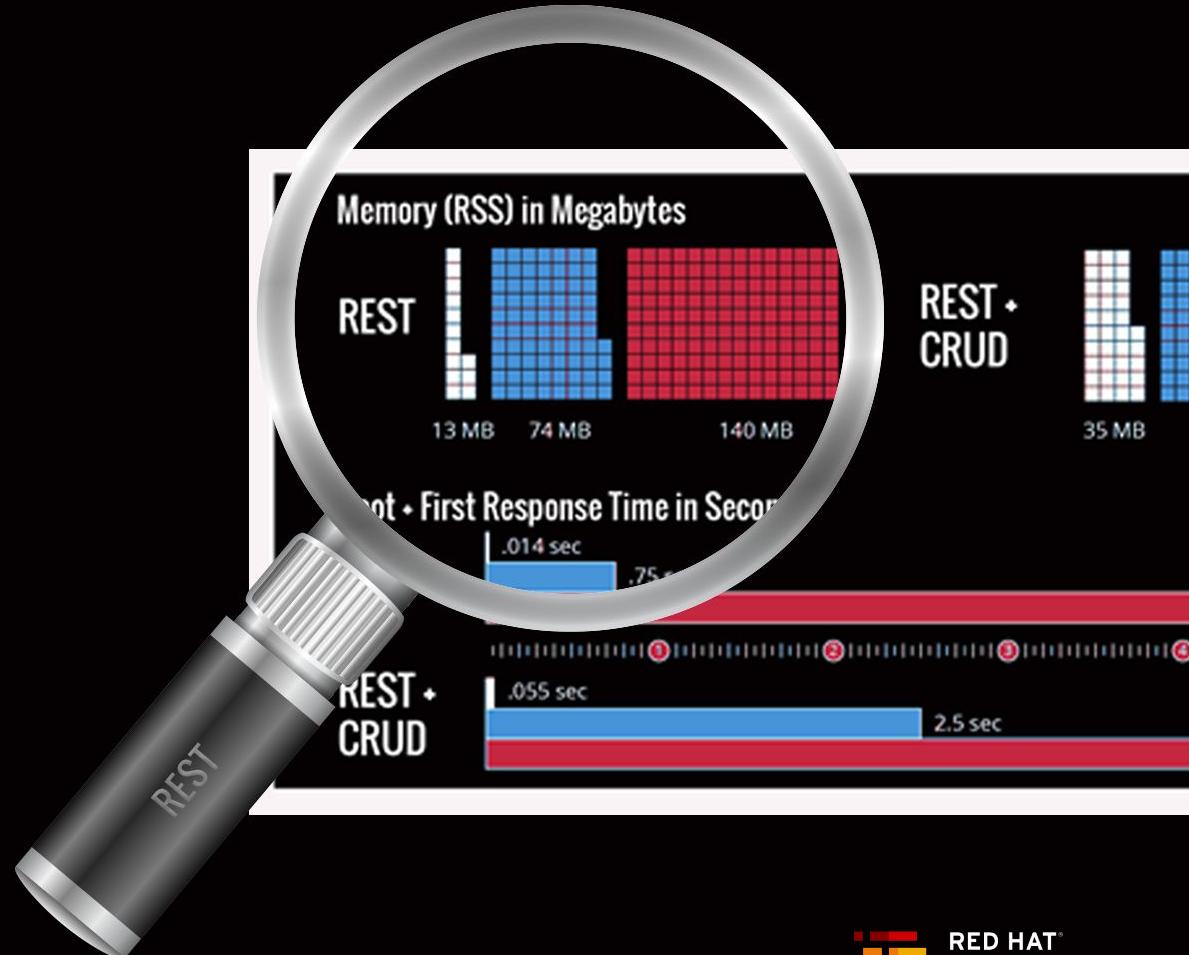


@xstefank



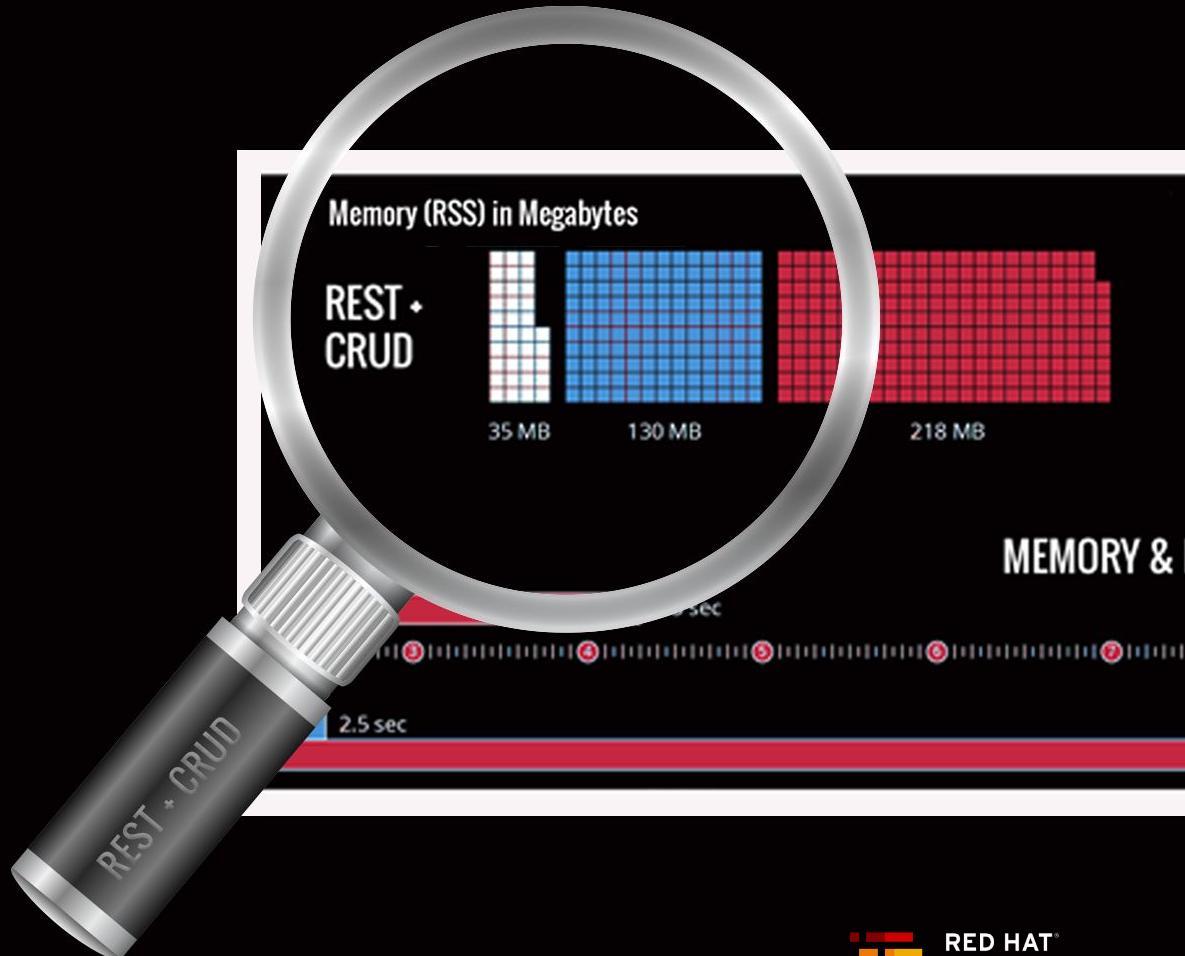
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Memory (RSS) in Megabytes





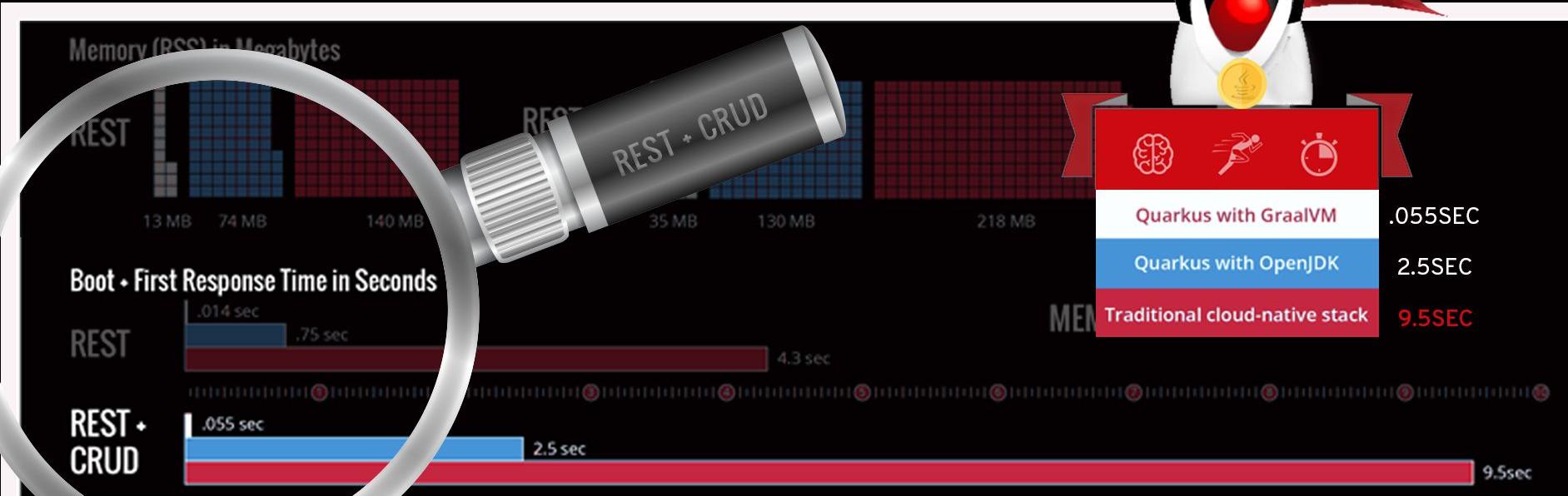
Boot + First Response Time in Seconds



@xstefank



Boot + First Response Time in Seconds



@xstefank

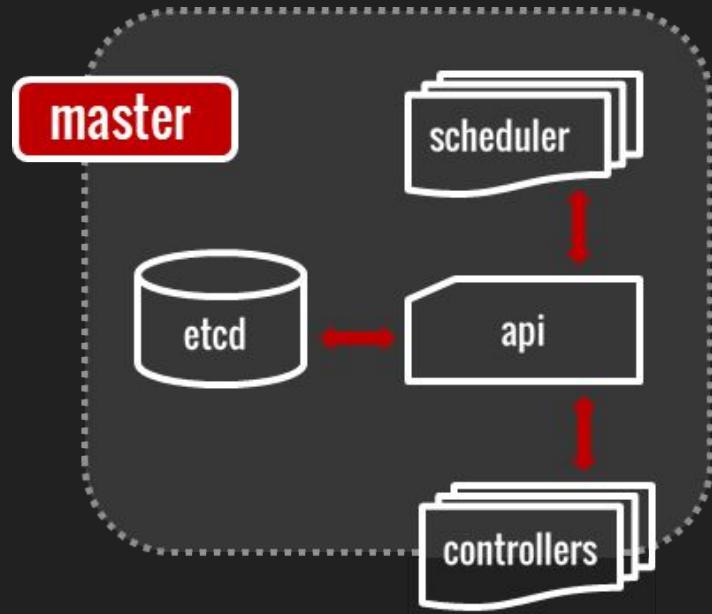
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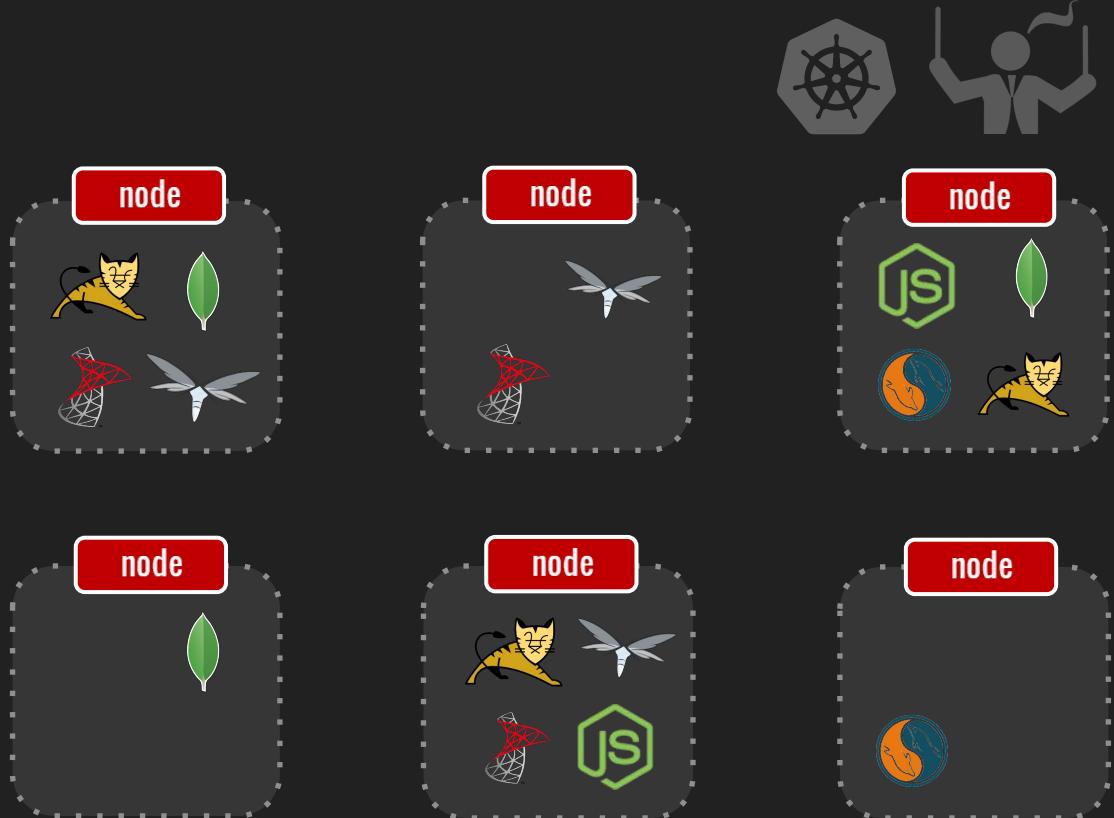
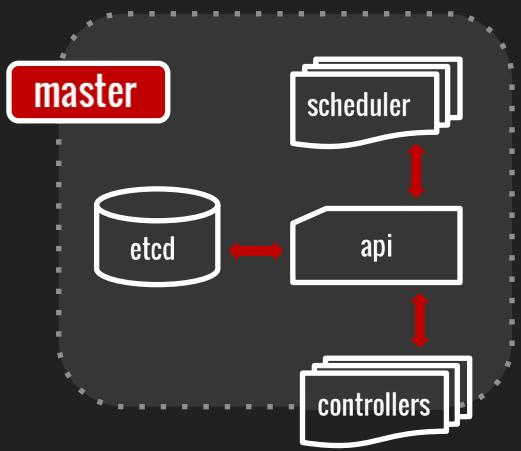
GraalVM™

Polyglot, Native or JVM, Embeddable

Kubernetes Orchestration







Declarative

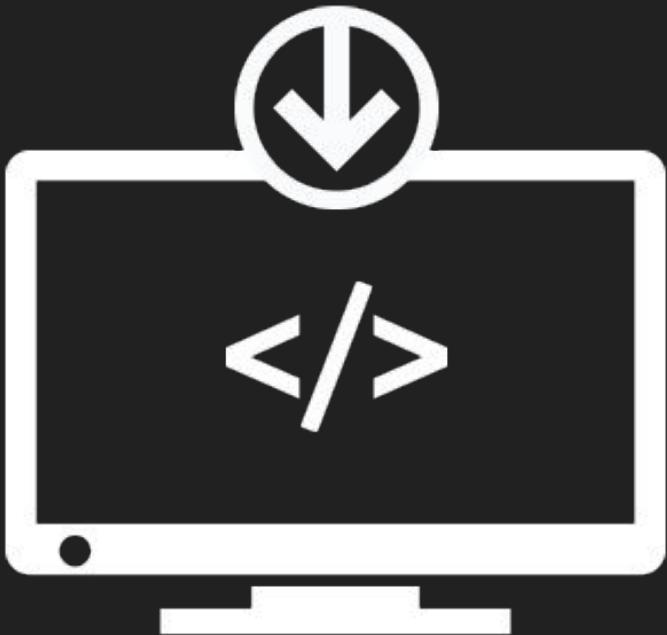


Image:

quay.io/images/custservice:1.1.0

Replicas:

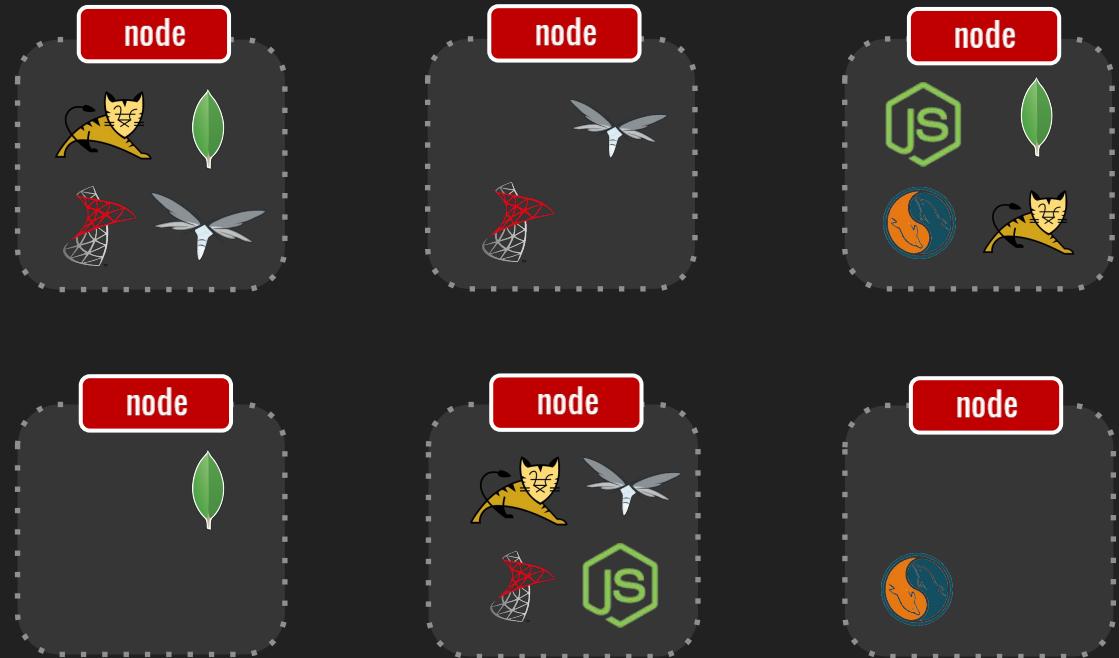
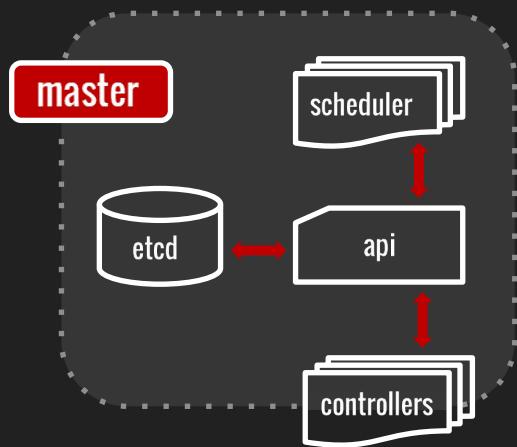
2

Labels:

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ConfigMap:

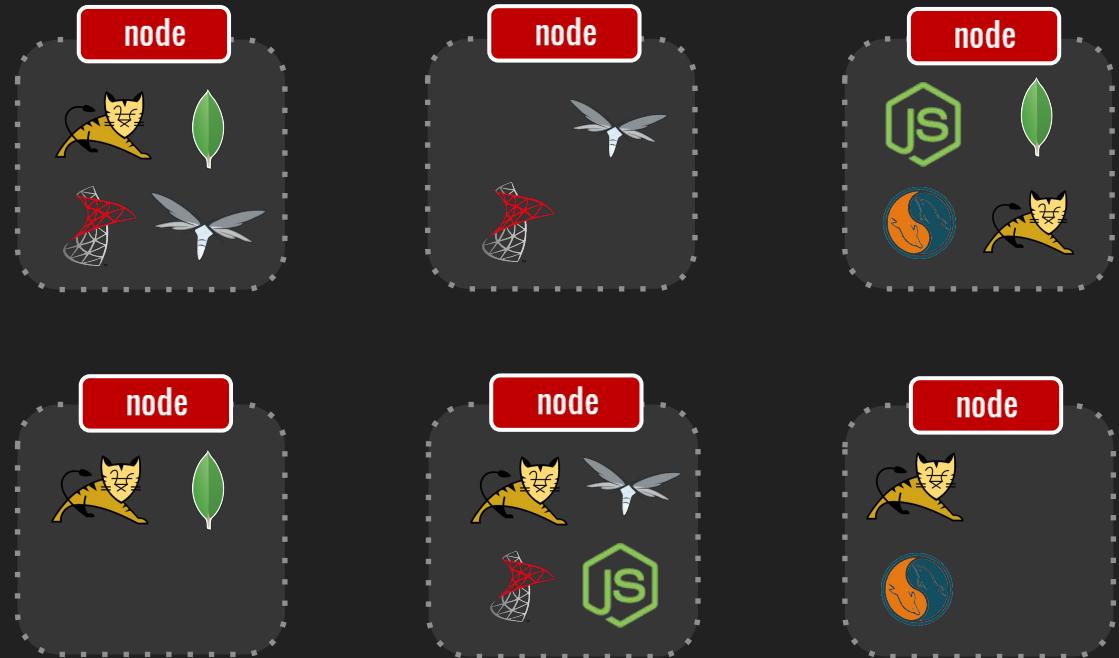
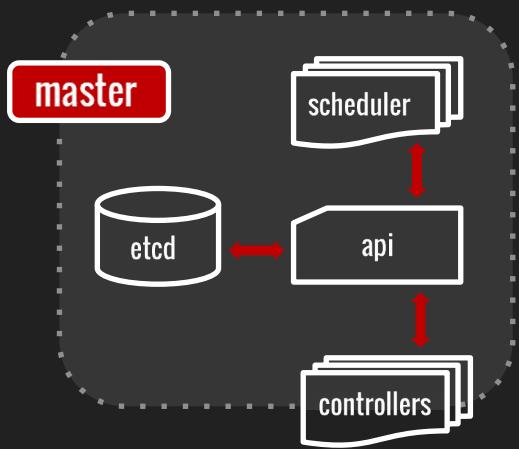
cust_config



Scheduled/Started



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



Always Watching

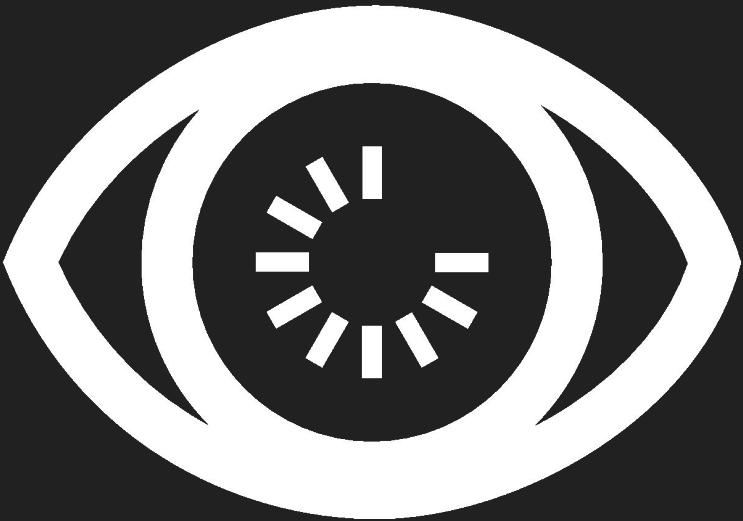


Image:

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Replicas:

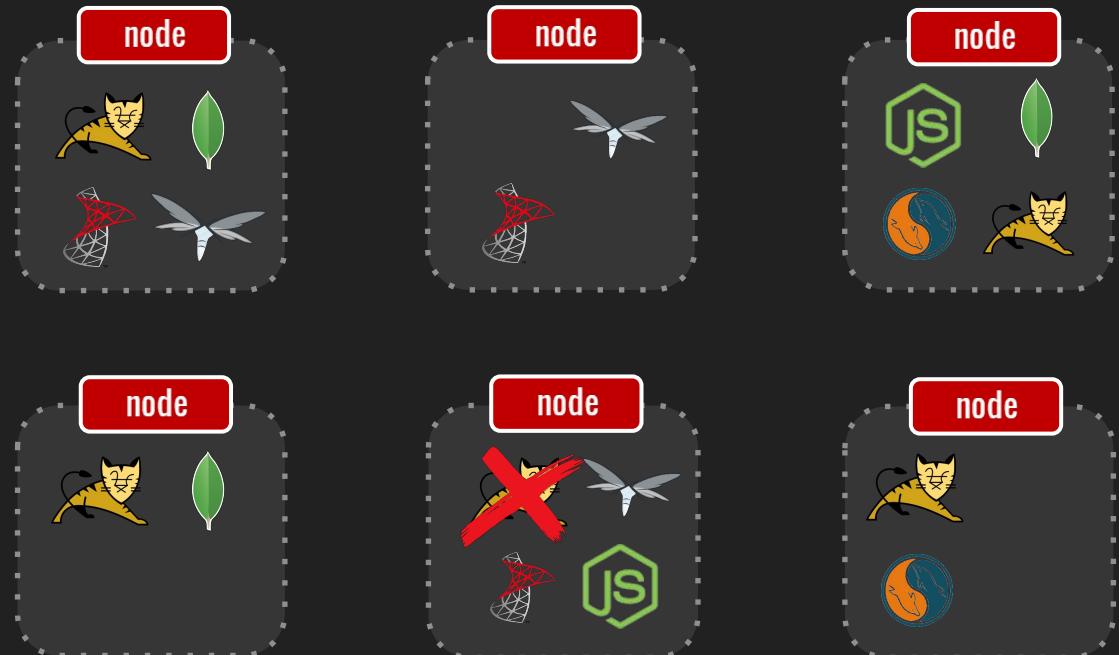
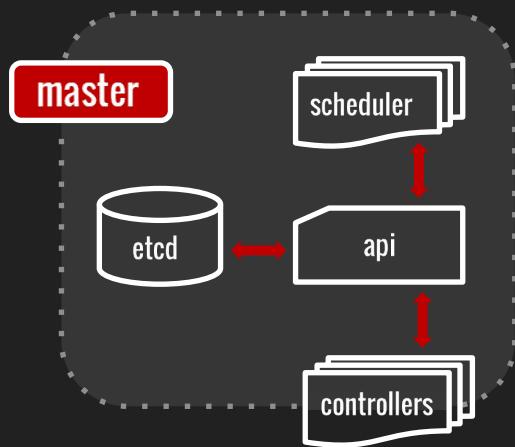
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Labels:

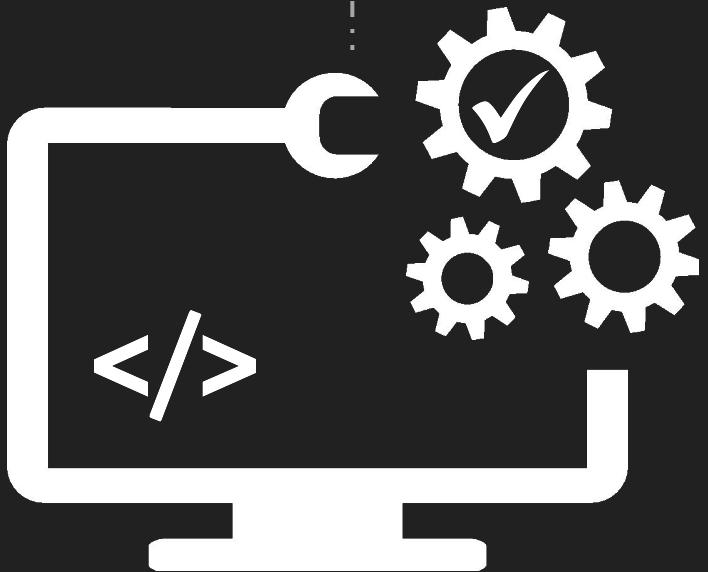
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ConfigMap:

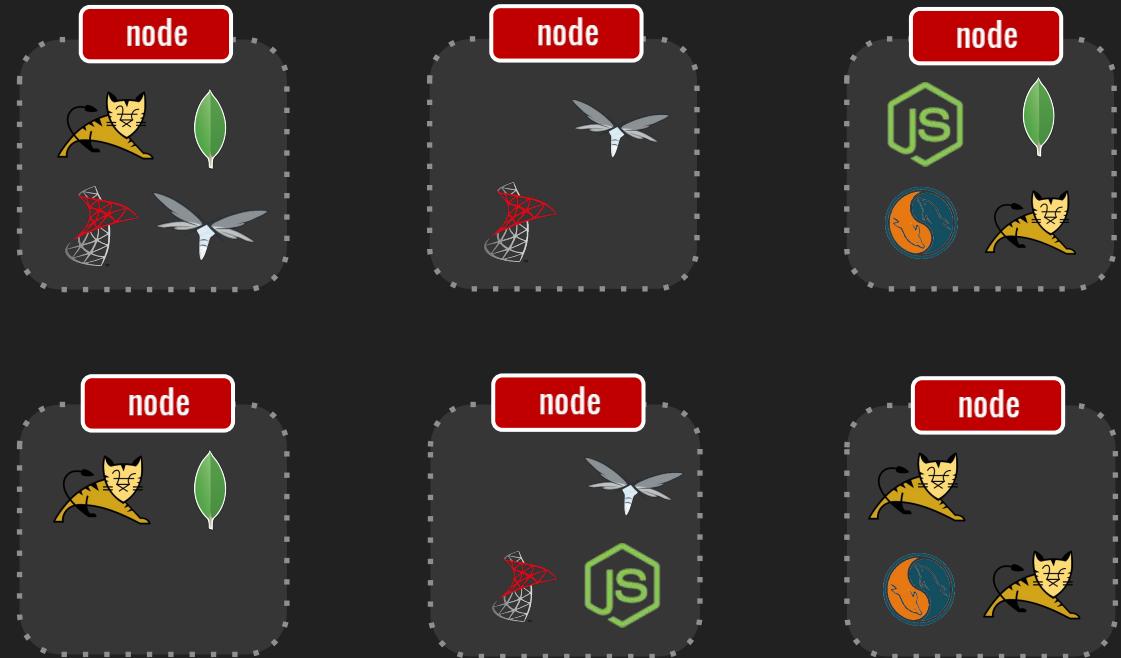
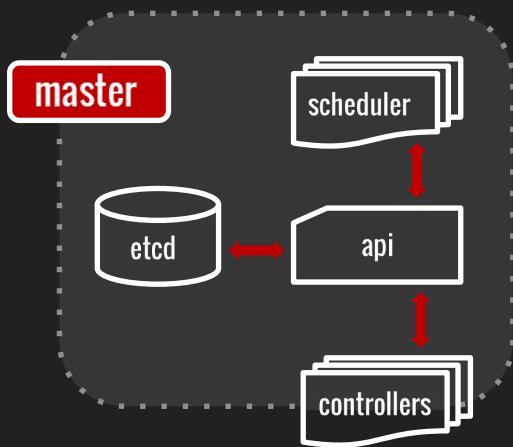
cust_config



Always Correcting



```
Image:  
quay.io/images/custservice:1.1.0  
Replicas:  
2  
Labels:  
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ConfigMap:  
cust_config
```



Size and Speed Matter

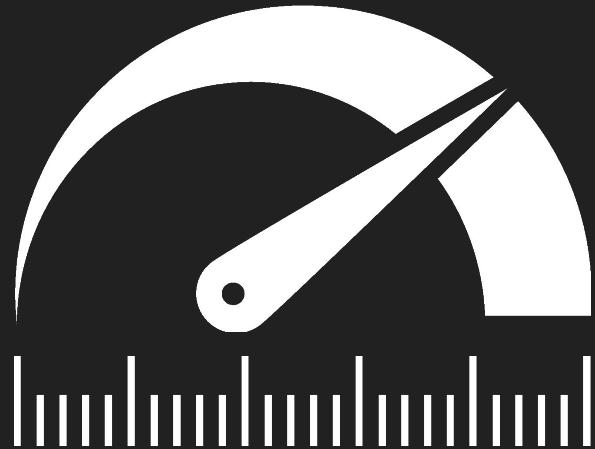


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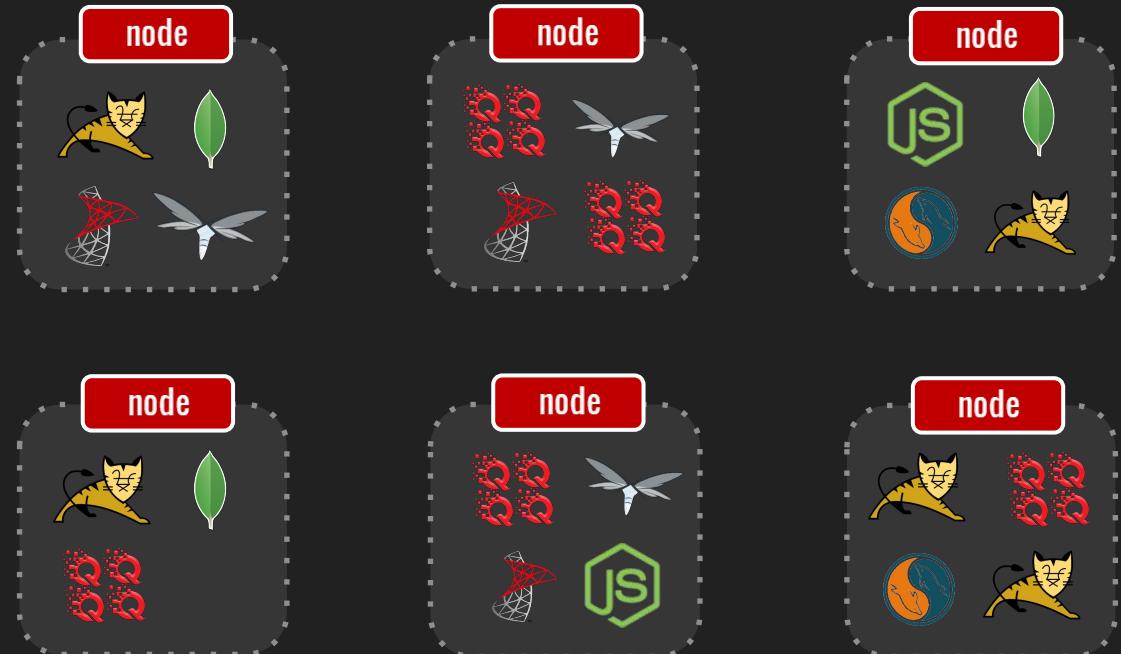
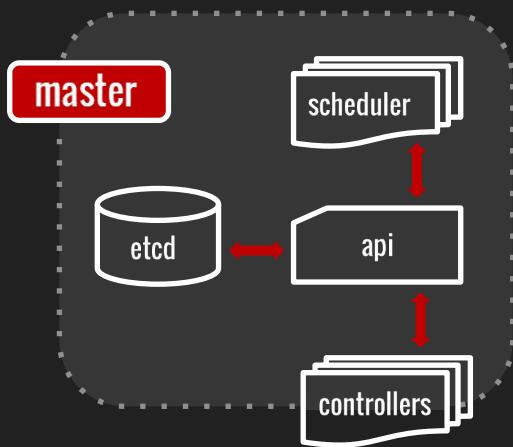
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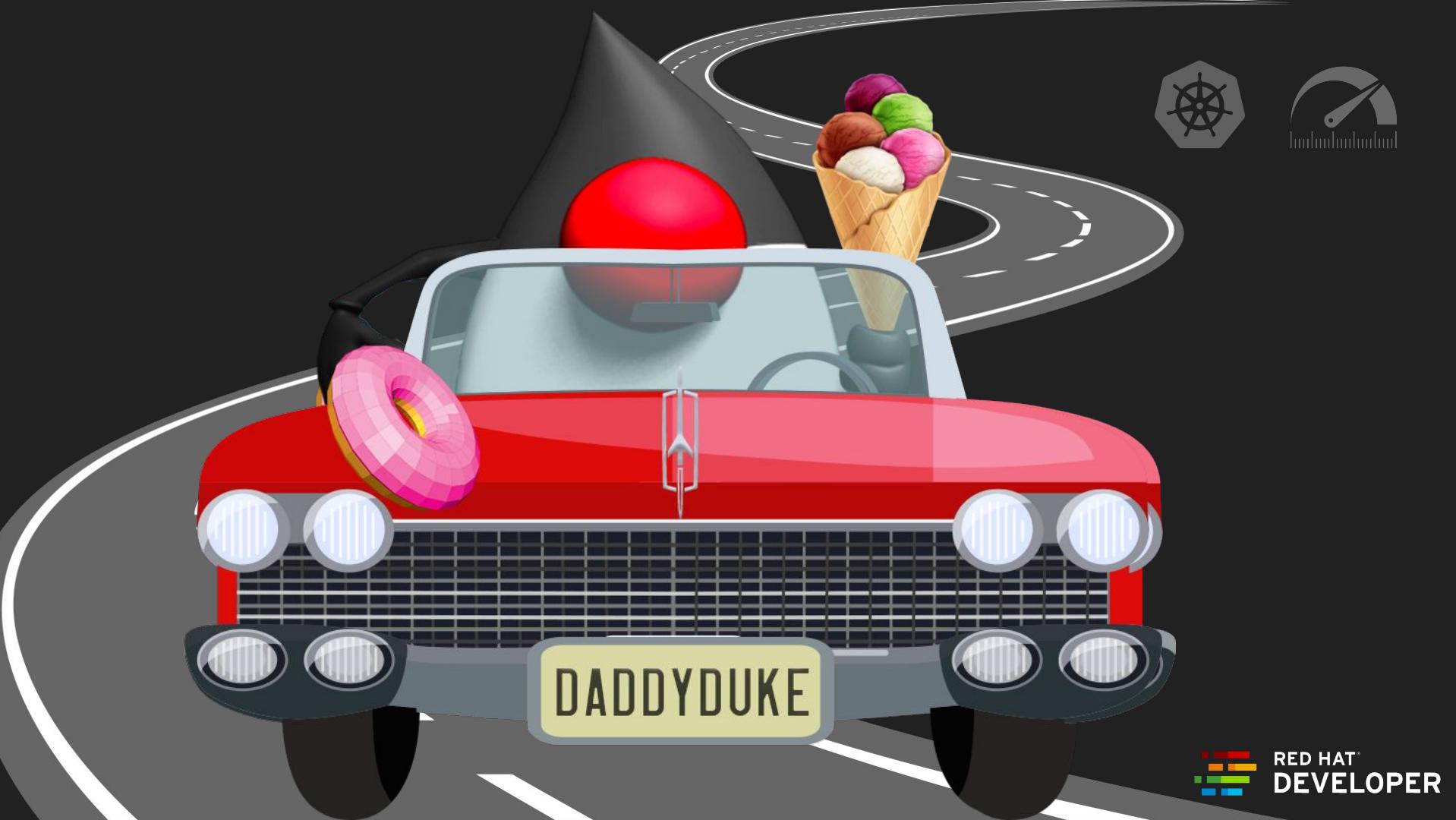
cust_config



Size and Speed Specs



@xstefank





10x smaller.

Up to 100x faster.

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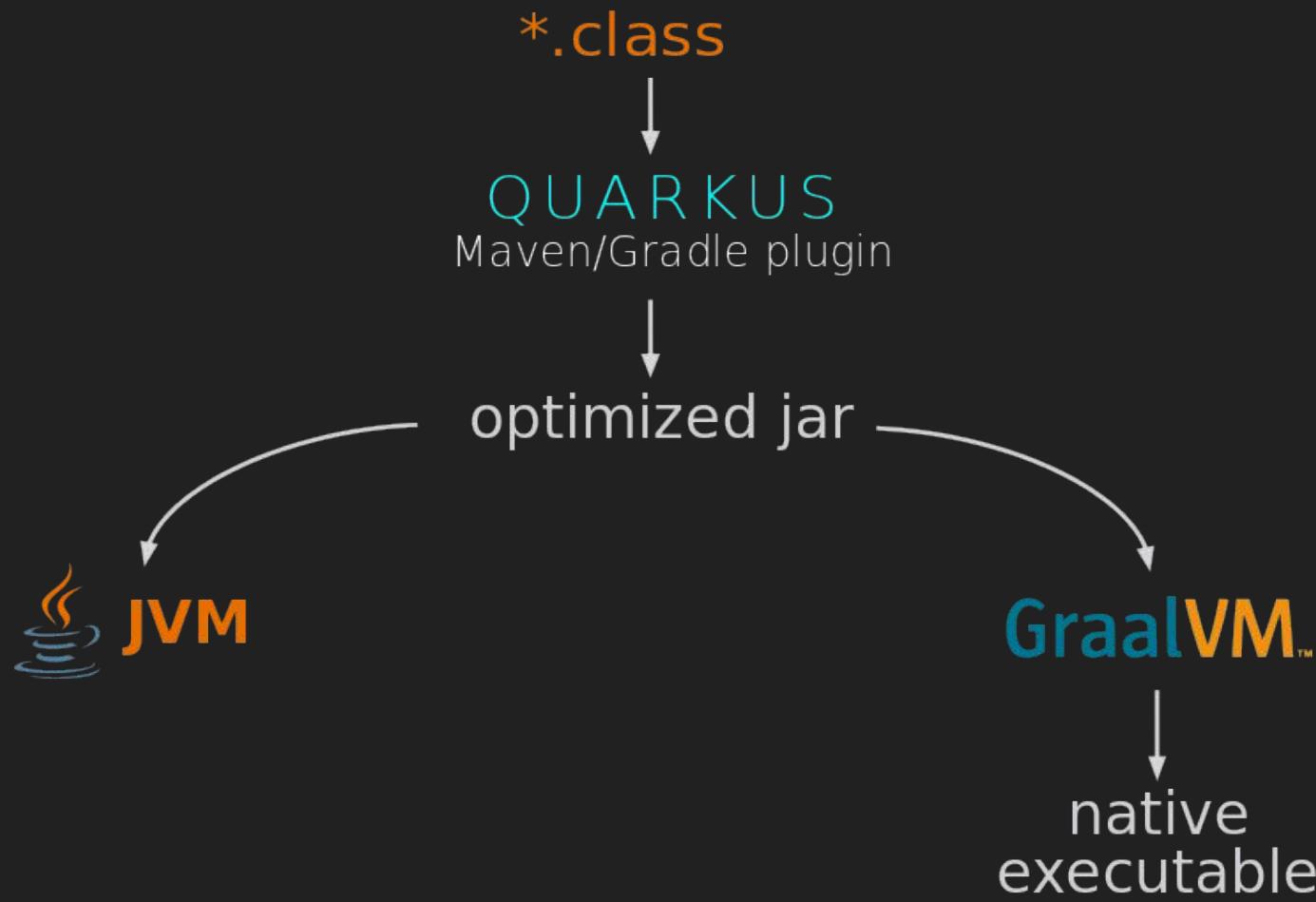


It's just the
beginning ...

The End

@xstefank

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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



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INFINISPAN