RED HAT° DEVELOPER PROGRAM

Service Mesh and Sidecars: Istio





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bit.ly/istio-intro bit.ly/istio-tutorial

bit.ly/javamicroservicesbook



A Hands-On Introduction to Frameworks & Containers



Christian Posta

Free eBooks from developers.redhat.com

Microservices Introductory Materials

Demo: <u>bit.ly/msa-instructions</u> Slides: <u>bit.ly/microservicesdeepdive</u> Video Training: <u>bit.ly/microservicesvideo</u> <u>Kubernetes for Java Developers</u> bit.ly/reactivemicroservicesbook

O'REILLY'



Asynchronous and Event-Based Application Design



Clement Escoffier

Microservices Advanced Materials

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bit.ly/mono2microdb

http://bit.ly/istio-intro





Monolith

























Network of Services





Demo

mvn package, docker build, kubectl apply -f deploy.yml

Microservices == Distributed Computing





Fallacies of Distributed Computing

- The Network is Reliable
- Latency is zero
- Bandwidth is infinite
- Topology does not change
- There is one administrator
- Transport cost is zero
- The network is homogeneous

https://en.wikipedia.org/wiki/Fallacies_of_distributed_computing



Failure of a Service



DEVELOPER PROGRAM

Cascading Failure





Microservices'ilities





Short History of Microservices









What's Wrong with Netflix OSS?

Java Only

Adds a lot of libraries to YOUR code





Microservices embedding Capabilities



Microservices'ilities









OPENSHIFT



Microservices'ilities + Kubernetes





Microservices'ilities + OpenShift







Istio - Sail (Kubernetes - Helmsman or ship's pilot)



Service Mesh Defined

A service mesh is a dedicated infrastructure layer for handling service-to-service communication. It's responsible for the reliable delivery of requests through the complex topology of services that comprise a modern, cloud native application. In practice, the service mesh is typically implemented as an array of lightweight network proxies that are deployed alongside application code, without the application needing to be aware

https://buoyant.io/2017/04/25/whats-a-service-mesh-and-why-do-i-need-one/



Microservices'ilities + Istio





Microservices embedding Capabilities



Microservices externalizing Capabilities



Microservices externalizing Capabilities



Envoy is the current sidecar



Next Generation Microservices - Service Mesh

Code Independent (Polyglot)

- Intelligent Routing and Load-Balancing
 - A/B Tests
 - Smarter Canary Releases
- Chaos: Fault Injection
- Resilience: Circuit Breakers
- Observability: Metrics and Tracing
- Fleet wide policy enforcement





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Istio Data Plane vs Control Plane

































































Canaries with Kubernetes





Canaries with Istio







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