The Power of the Mesh: Service Meshes to orchestrate Microservices

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About me

Cloud
Developer

Master Thesis
about
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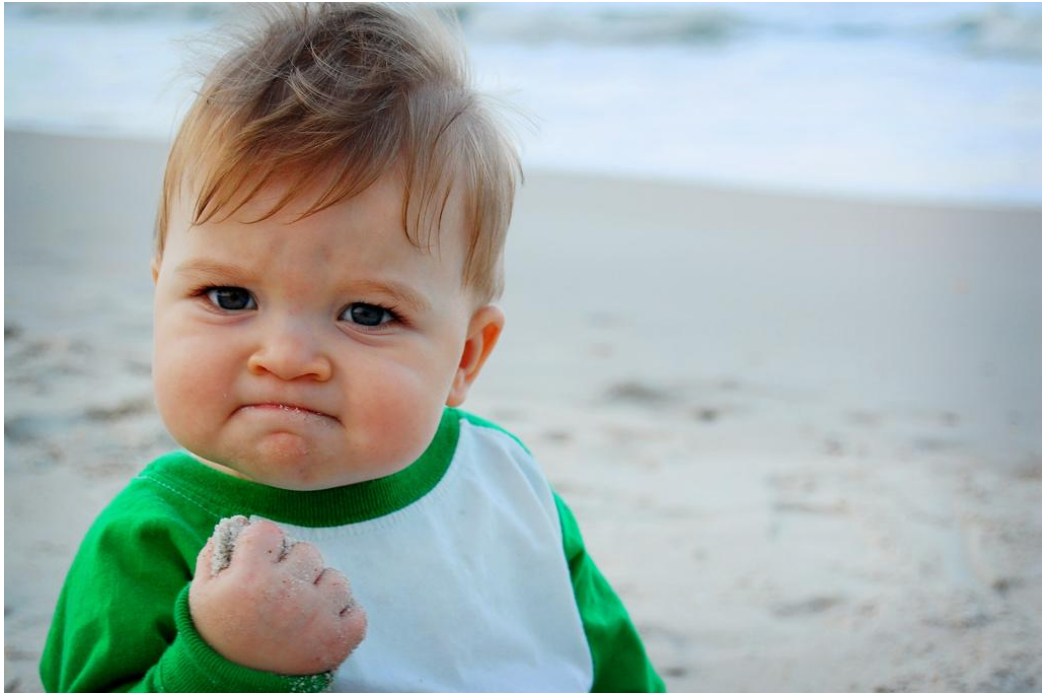
Cloud Native
Software Development
DARMSTADT
SINCE 2013
see

BOOKFLIX

First Prototype – A monolith

Source: Deviant Art – ReneAigner

Success!



Source: Flickr – SammyJammy

After some months…

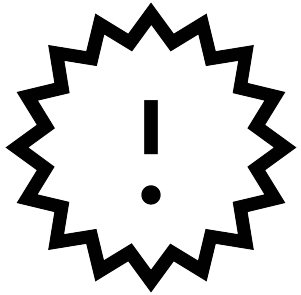
Source: Digitaljourney

Problems with Monoliths

Adding new features will be difficult over time

Only vertical scalability

Need to deploy the full application on every small change



Time for Microservices

Easier to scale

Parallel development

Faster deployments

Independent technology stacks

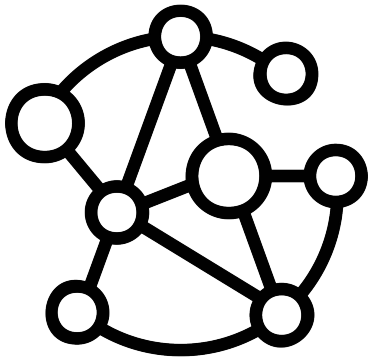
Did we solve all
the problems now?

New challenges

Communication between services

Debugging

Deployment



How do I integrate this into each service?

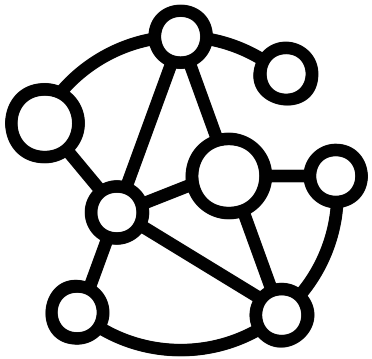
Why not use a service mesh?

Benefits of Istio

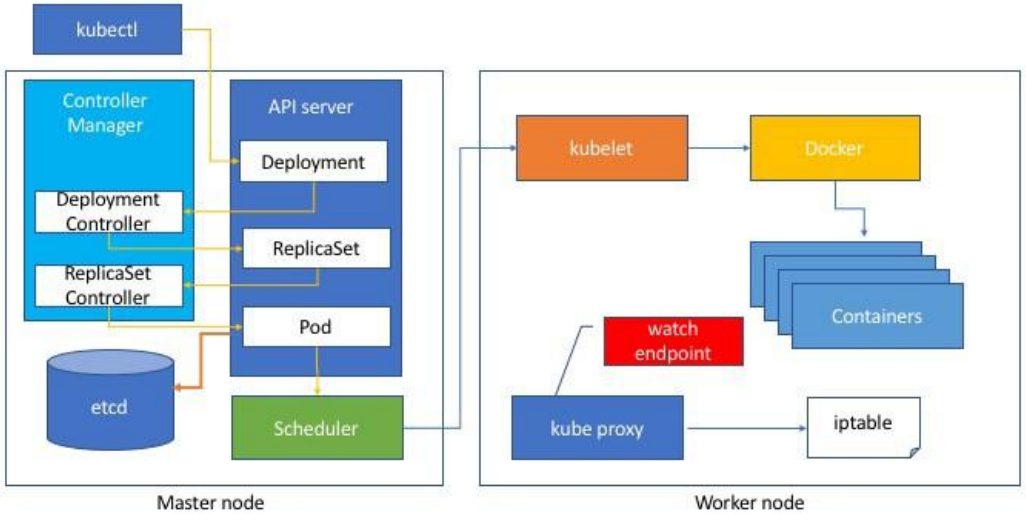
Communication between services

Debugging

Deployment

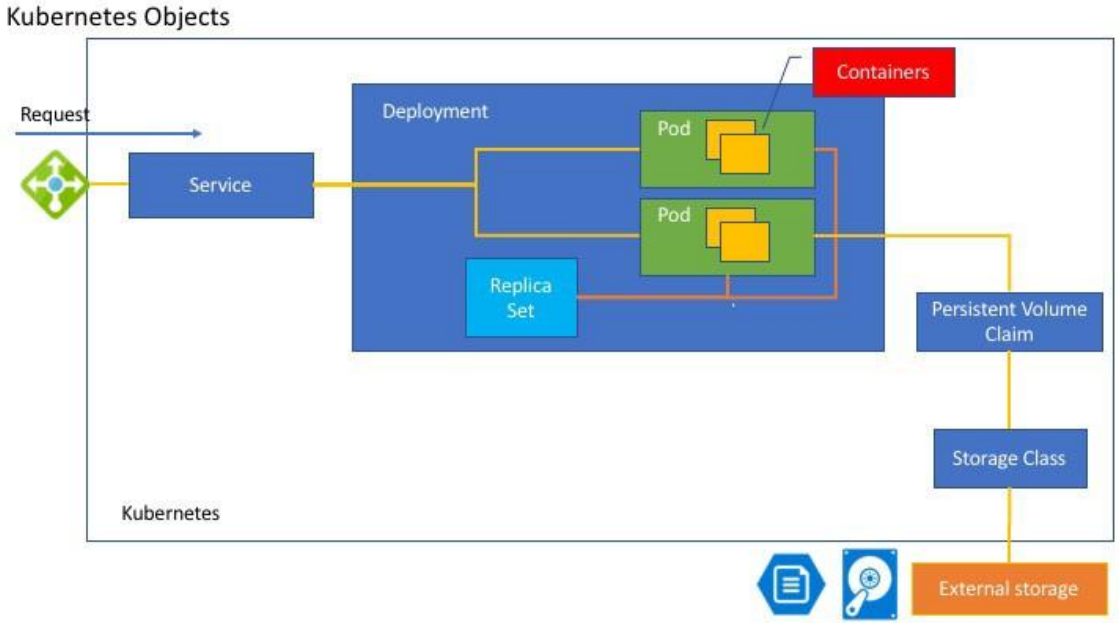


Kubernetes Refreshment



Source: Medium – @tsuyoshiushio

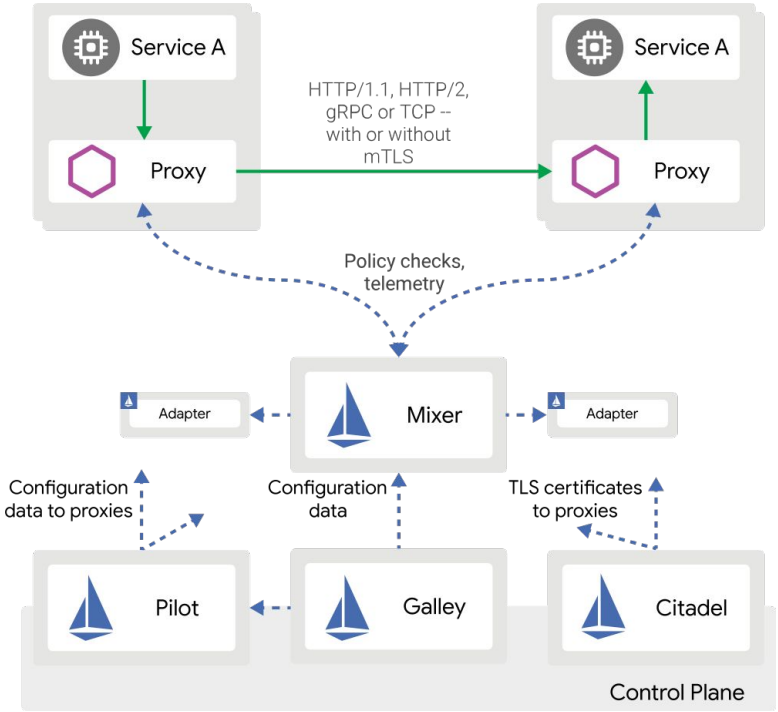
Kubernetes Refreshment



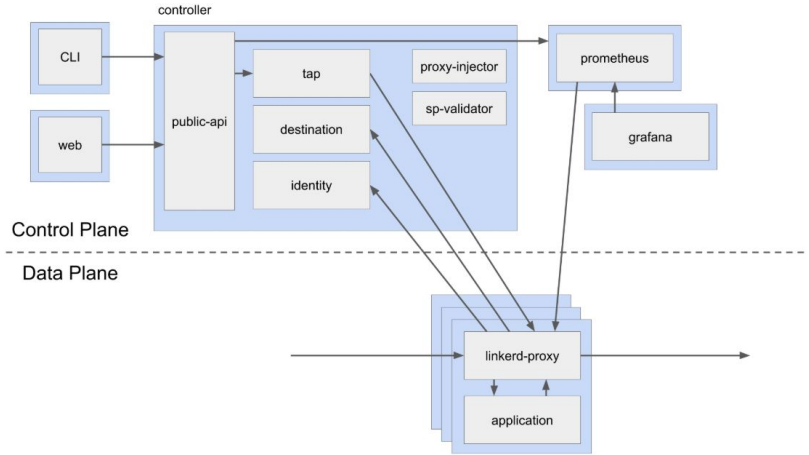
Source: Medium – @tsuyoshiushio

Architecture Comparison

Istio



Linkerd

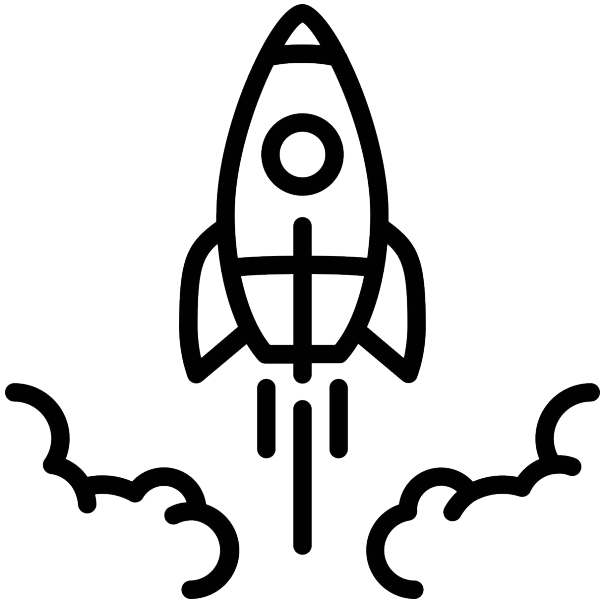


Architecture

Deployment

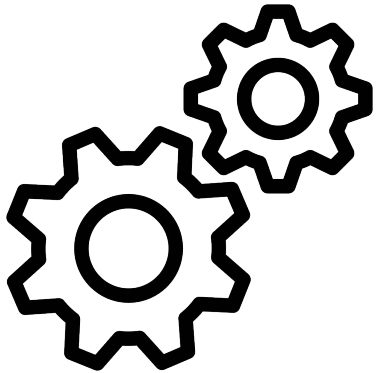
Kubernetes as basis

Istio	Linkerd
Helm	CLI

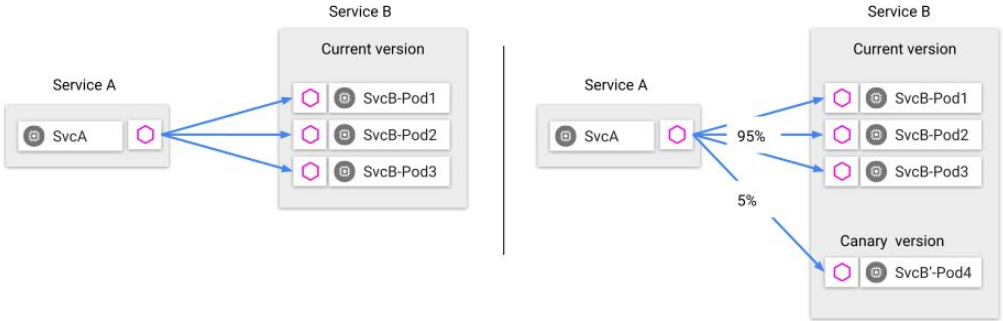


Configuration

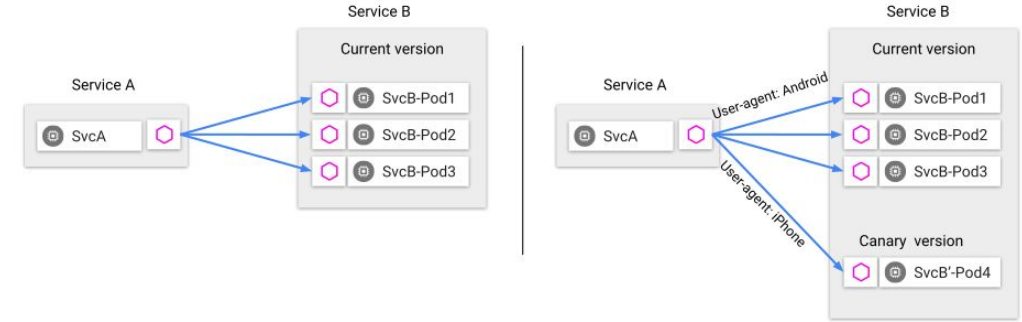
Istio	Linkerd
Custom Resource Definitions (CRDs)	Zero Configuration Annotations
Annotations	CRDs



Traffic Management – Canary Releases

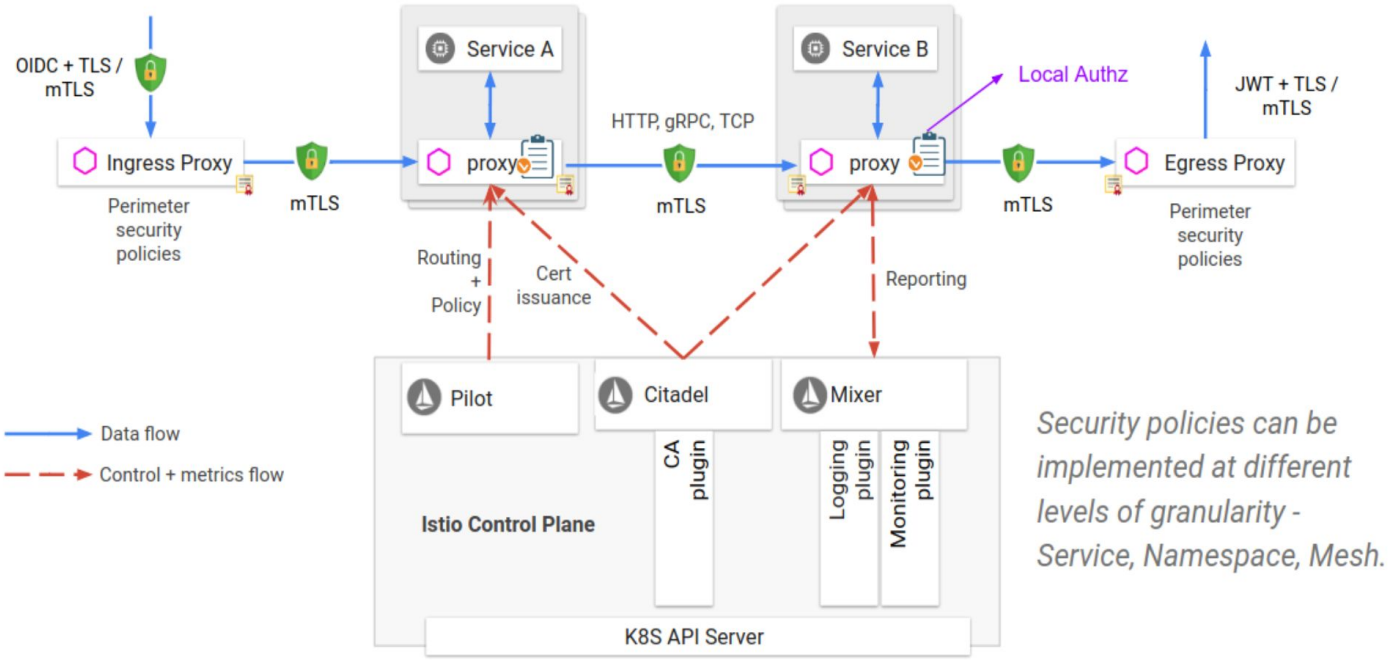


Traffic splitting decoupled from infrastructure scaling - proportion of traffic routed to a version is independent of number of instances supporting the version



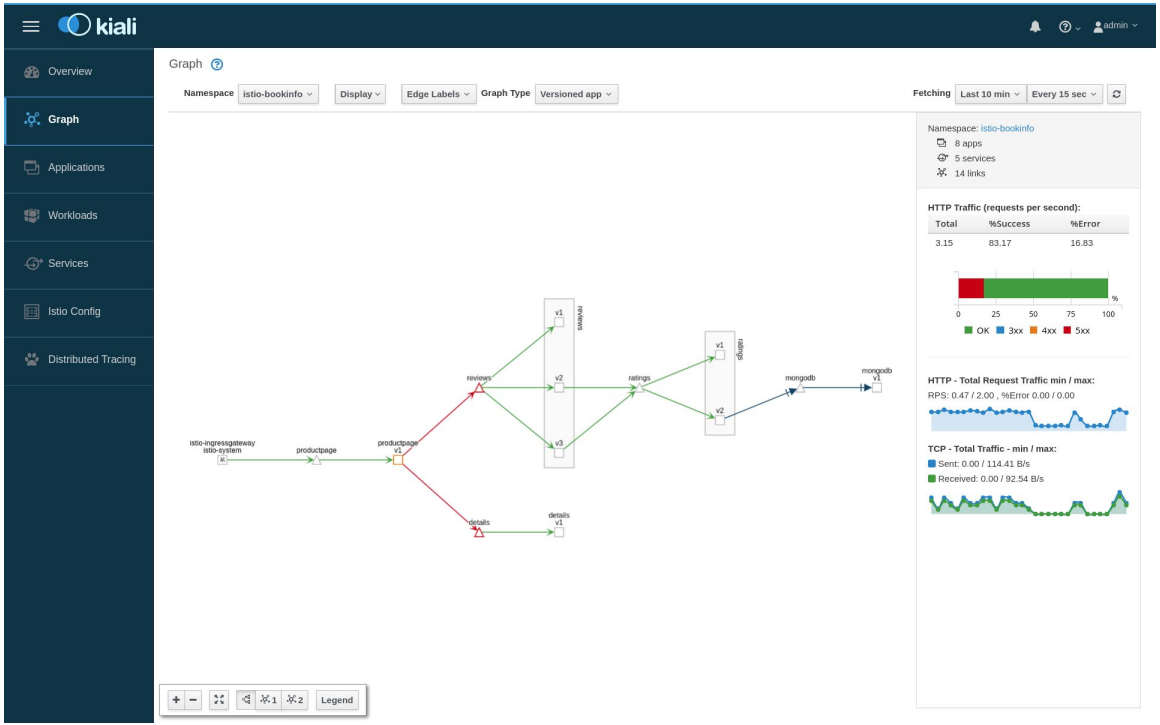
Content-based traffic steering - The content of a request can be used to determine the destination of a request

Mutual Authentication



Security policies can be implemented at different levels of granularity - Service, Namespace, Mesh.

Mesh Visualisation



Distributed Tracing

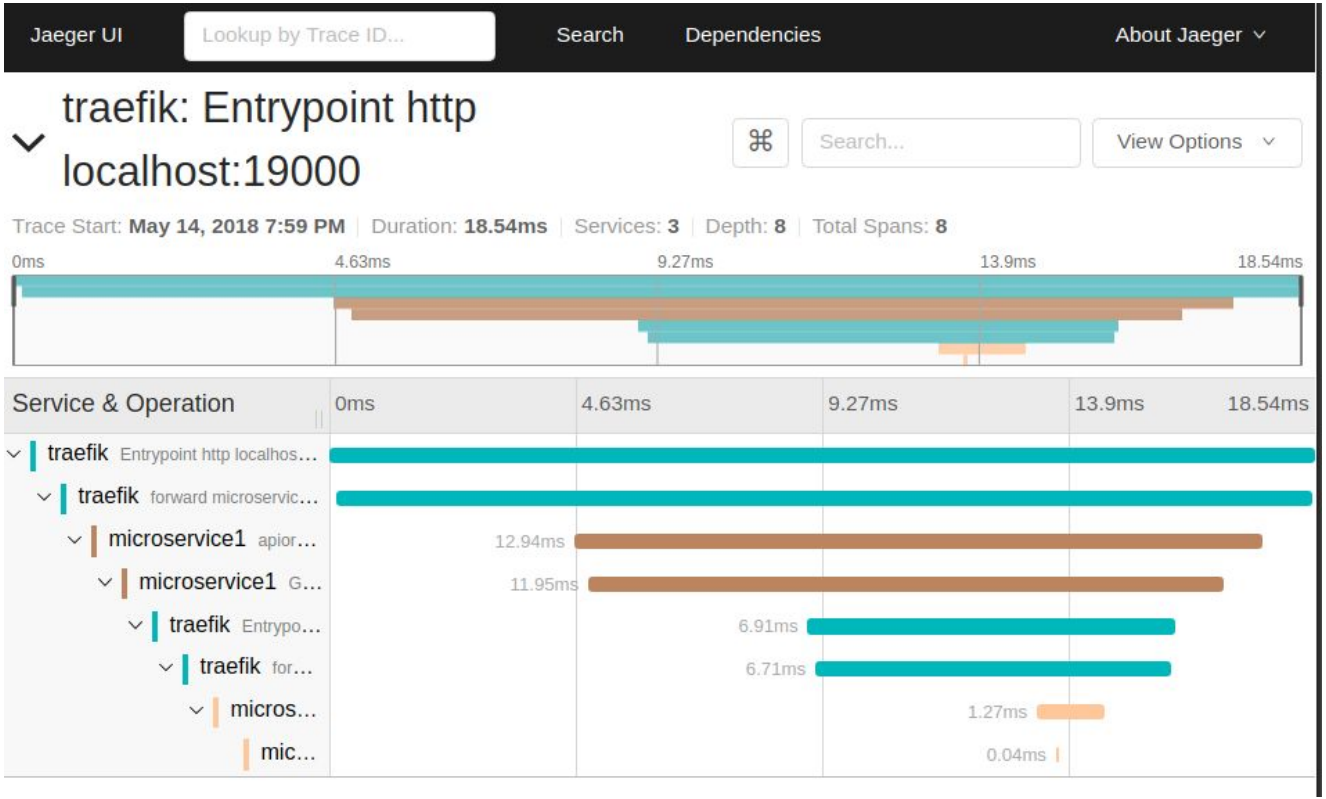
OpenTracing standard

Application must propagate HTTP Header e.g. x-request-id

Proxies build trace

JAEGER

Distributed Tracing



Are Service Meshes a must?

It depends…

Only really worth it with high number of microservices

If you need traffic management and monitoring features

Calculate high learning effort

Let’s talk about...

Kubernetes

Cloud Native Software Development

Software Engineering Jobs

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