Service Mesh in microservice world

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PUBLIC

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Who am I

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Introduction

What is it really about ?

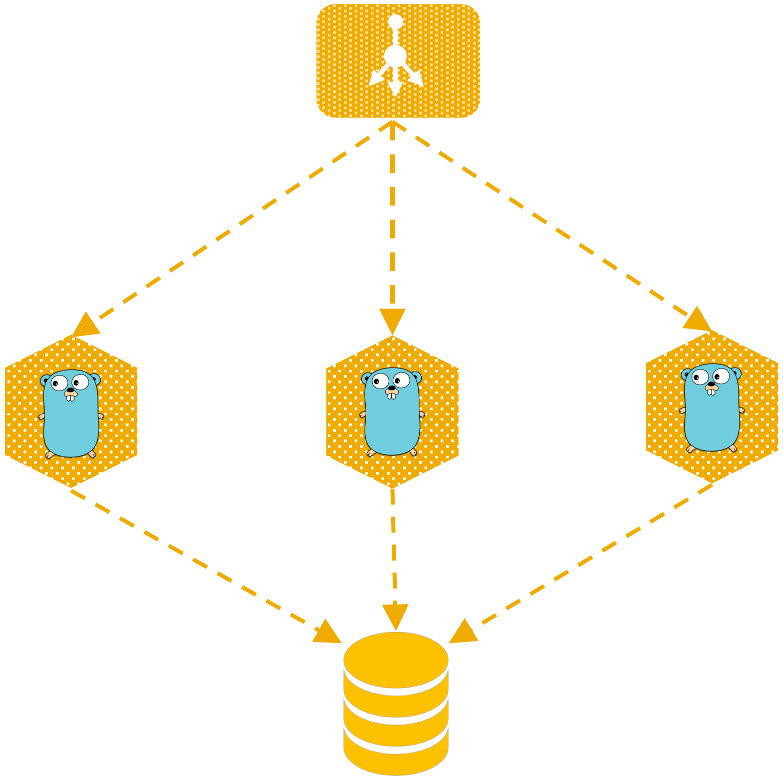
Agenda

- ❑ Cloud Native
- ❑ New problems
- ❑ Service Mesh for rescue
- ❑ Istio on board
- ❑ Demo
- ❑ Q&A

Cloud Native

Call me Cloud Native

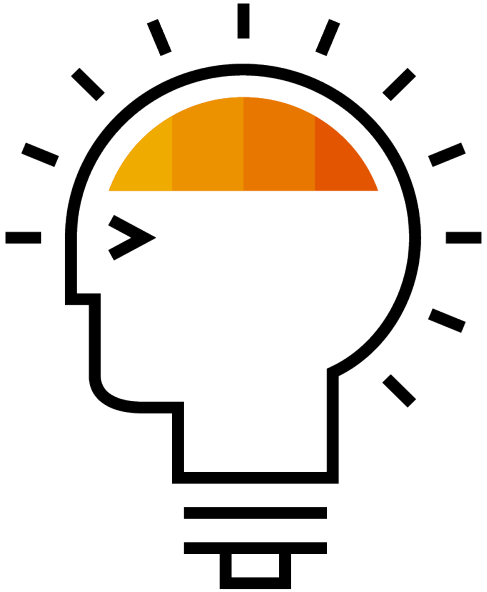
- **Microservices architecture**: *individual components are small and decoupled.*
- **Containerize**: *package processes making them easy to test, move and deploy.*
- **Orchestrate**: *containers are actively scheduled and managed to optimize resource utilization.*



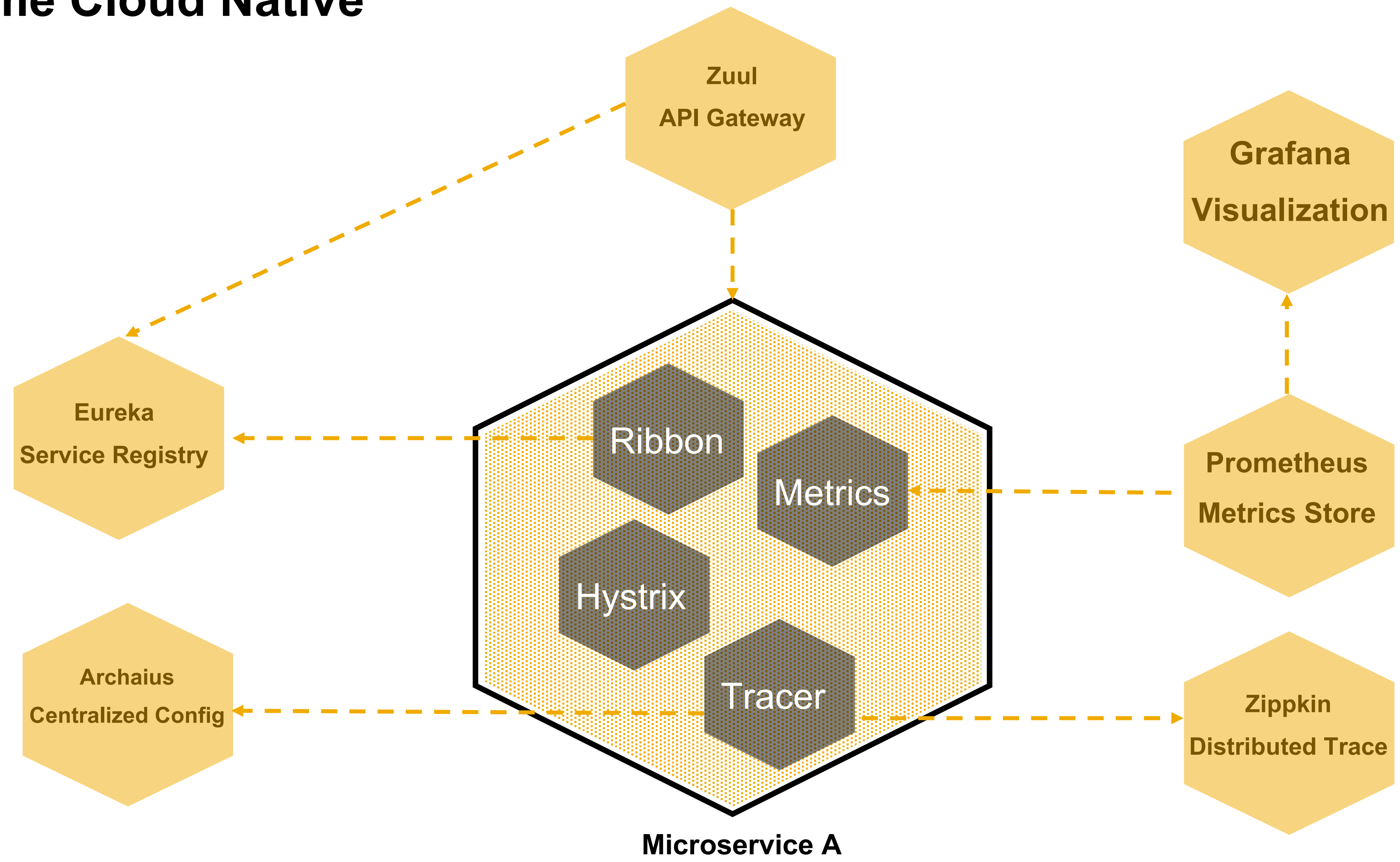
Call me Cloud Native

But wait…

- ❑ Request retires
- ❑ Authentication
- ❑ Failure Management
- ❑ Fault Injection
- ❑ Circuit Breaker
- ❑ Logging
- ❑ Metrics



Call me Cloud Native



This is easy when…

Single stack

This become more difficult…

Multiple stack
Multiple frameworks
Polyglot
Legacy

👎

Call me Cloud Native

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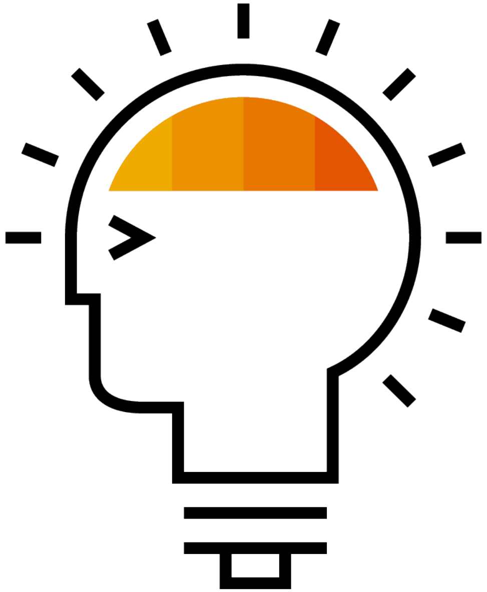
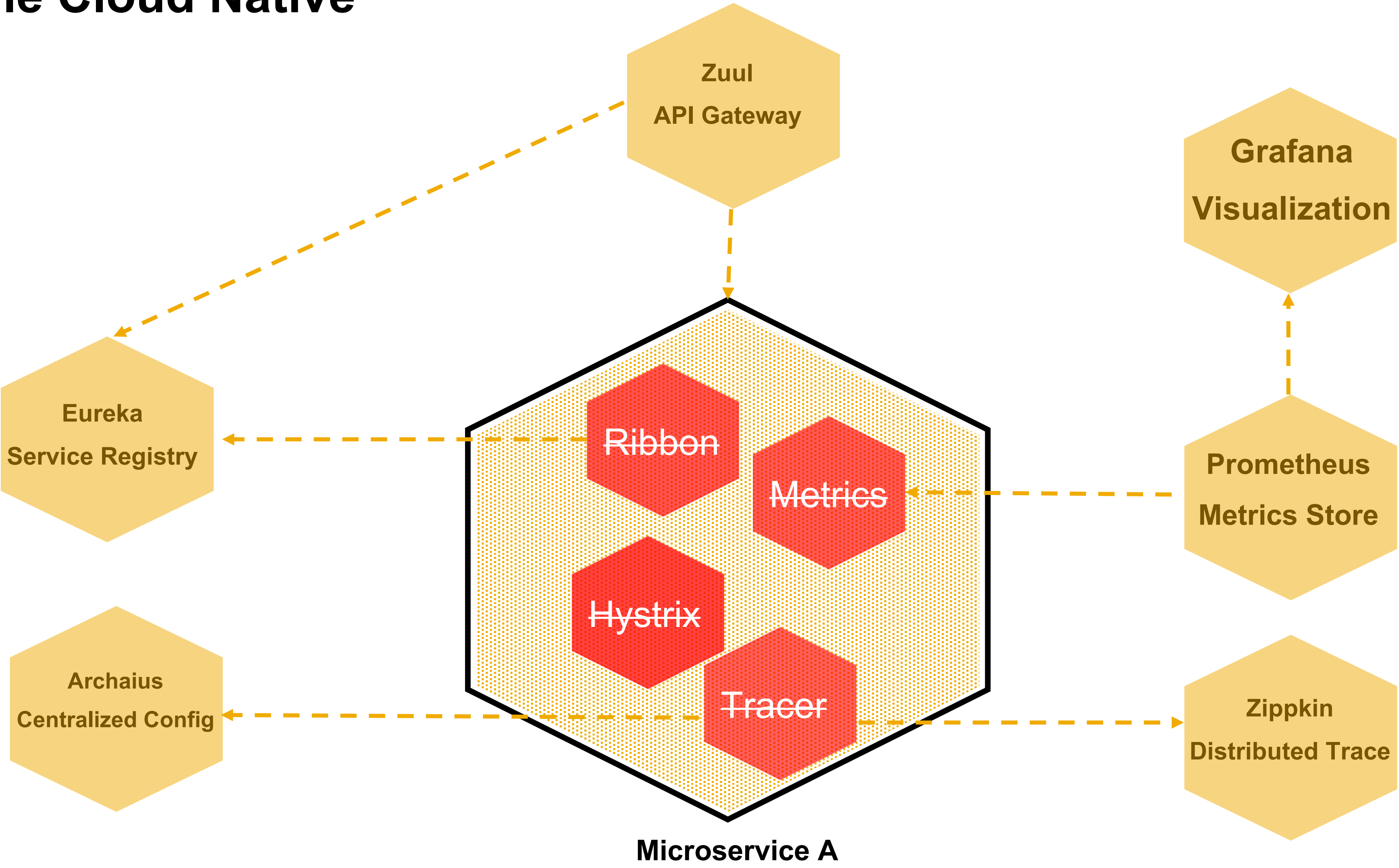


Call me Cloud Native

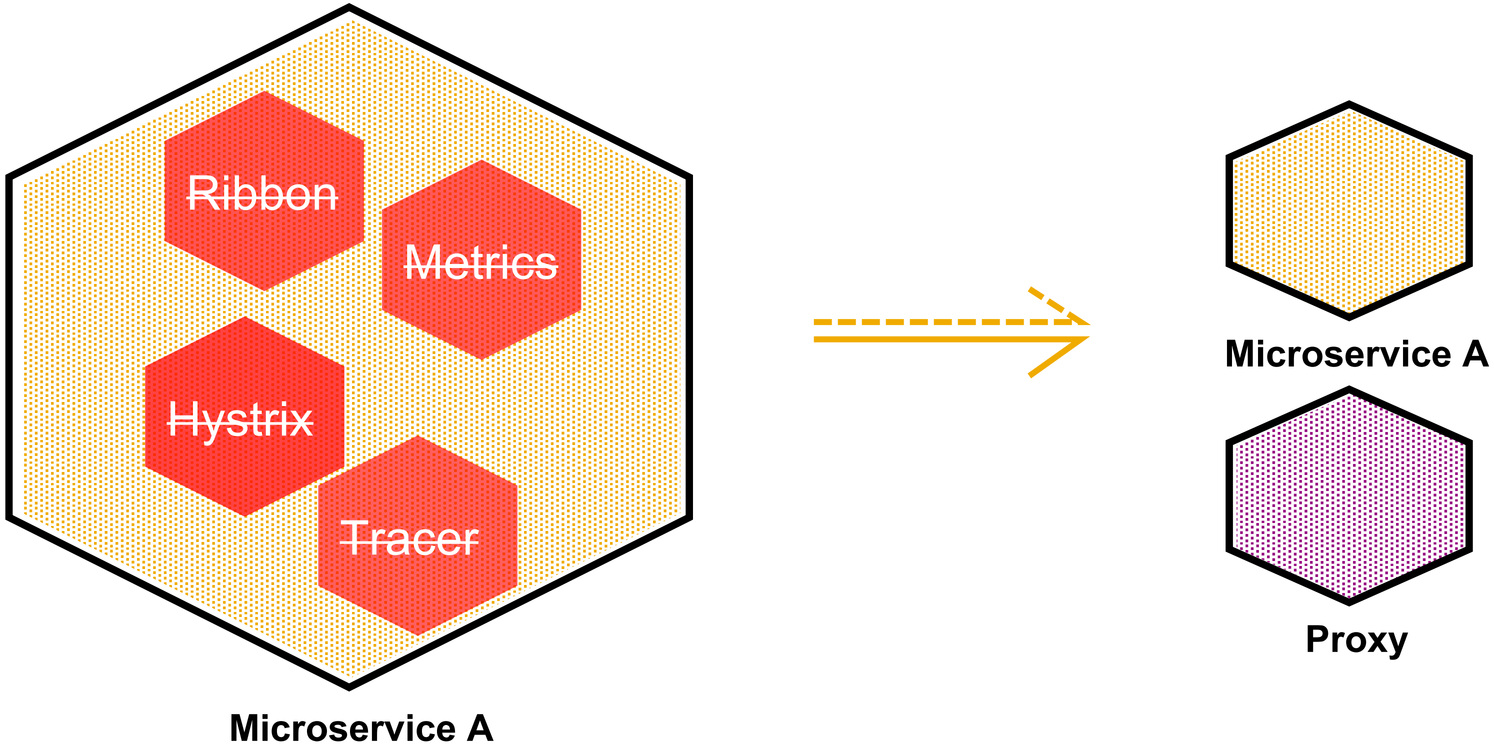
As simple as…

Making a HTTP request?

Call me Cloud Native



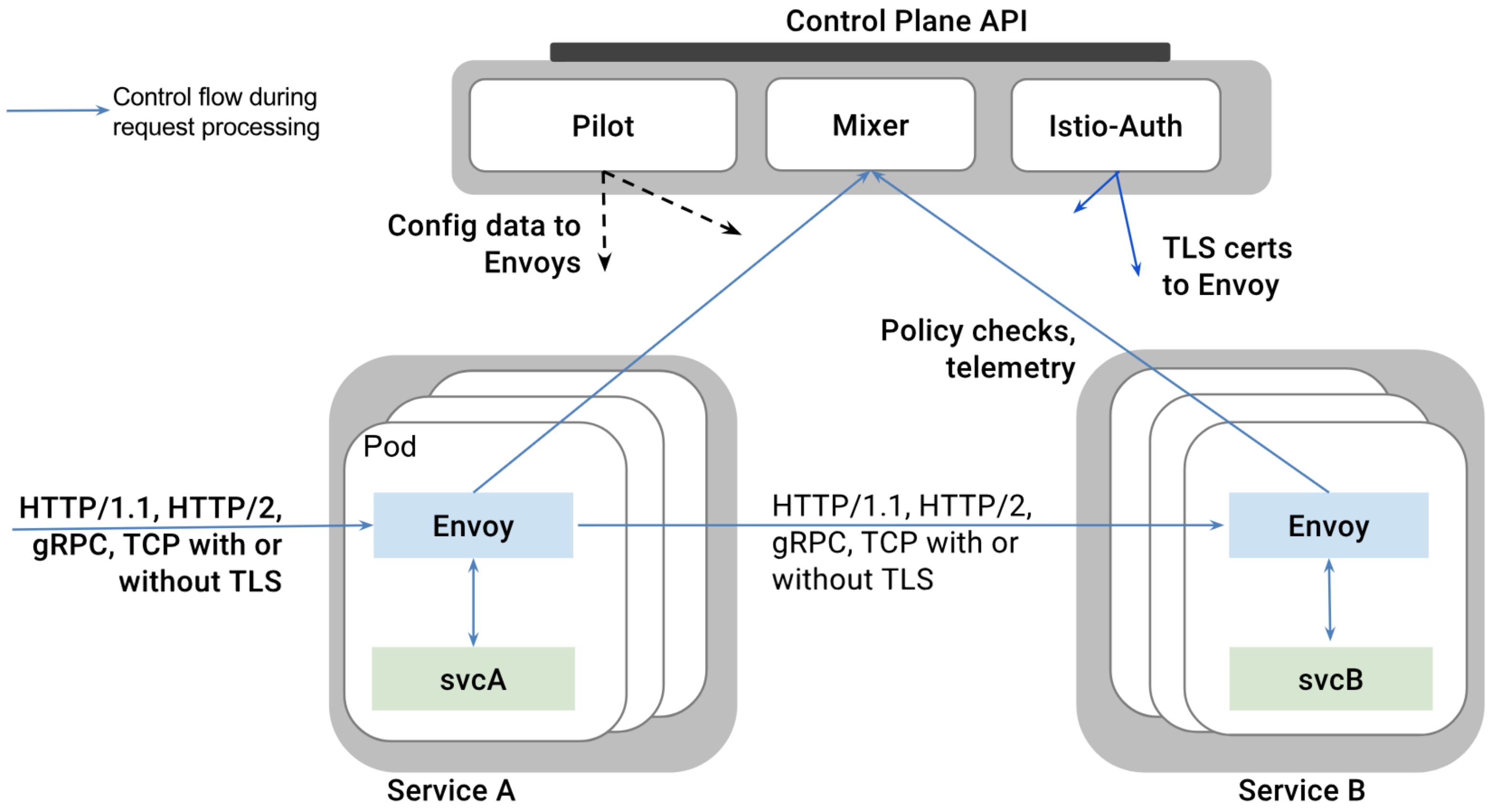
Making Microservices Micro again!



Istio

An open platform to connect, manage, and secure microservices.

Istio Architecture



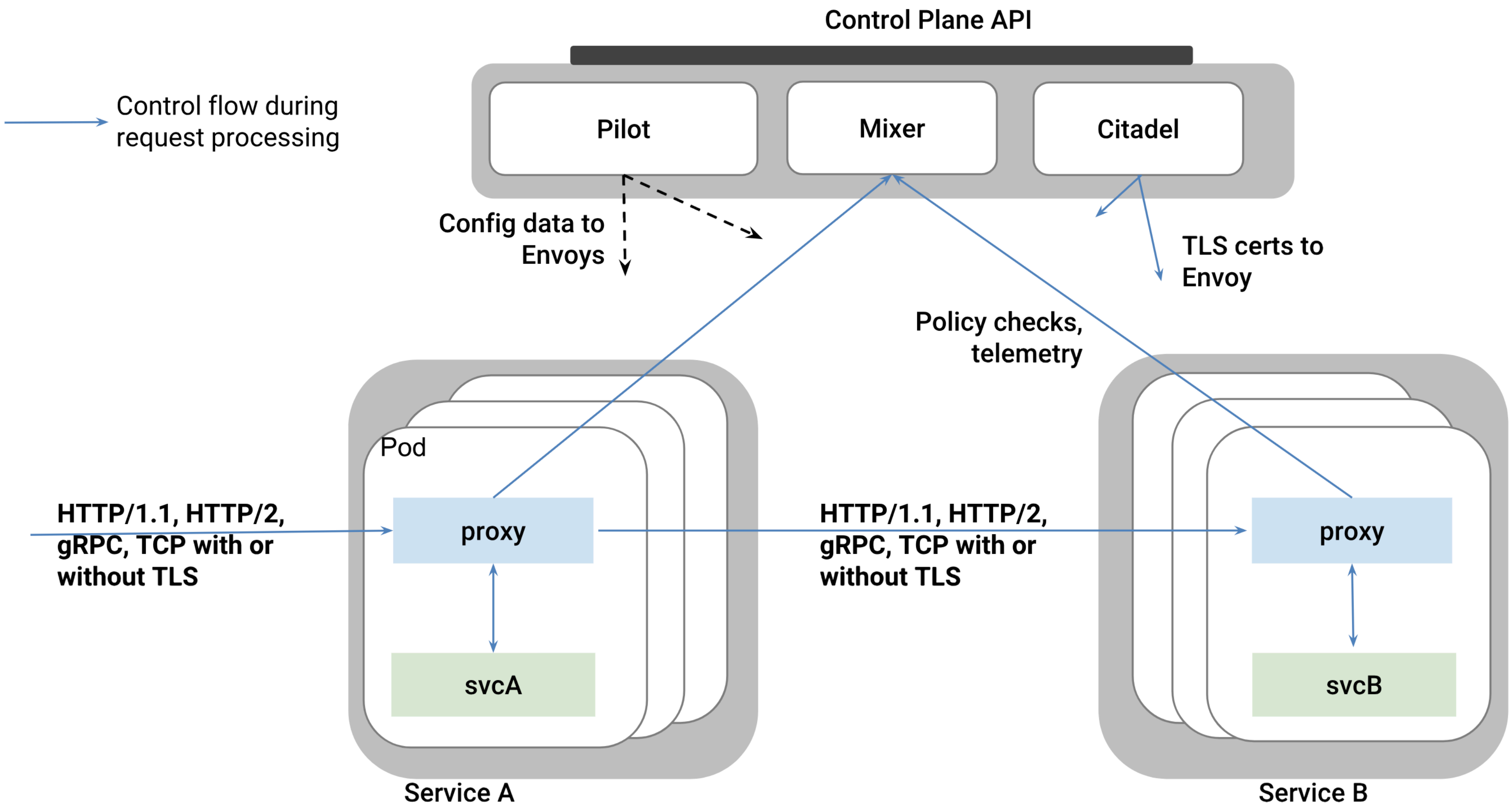
Istio Architecture

Source https://istio.io/docs/concepts/what-is-istio/img/overview/arch.svg

Envoy

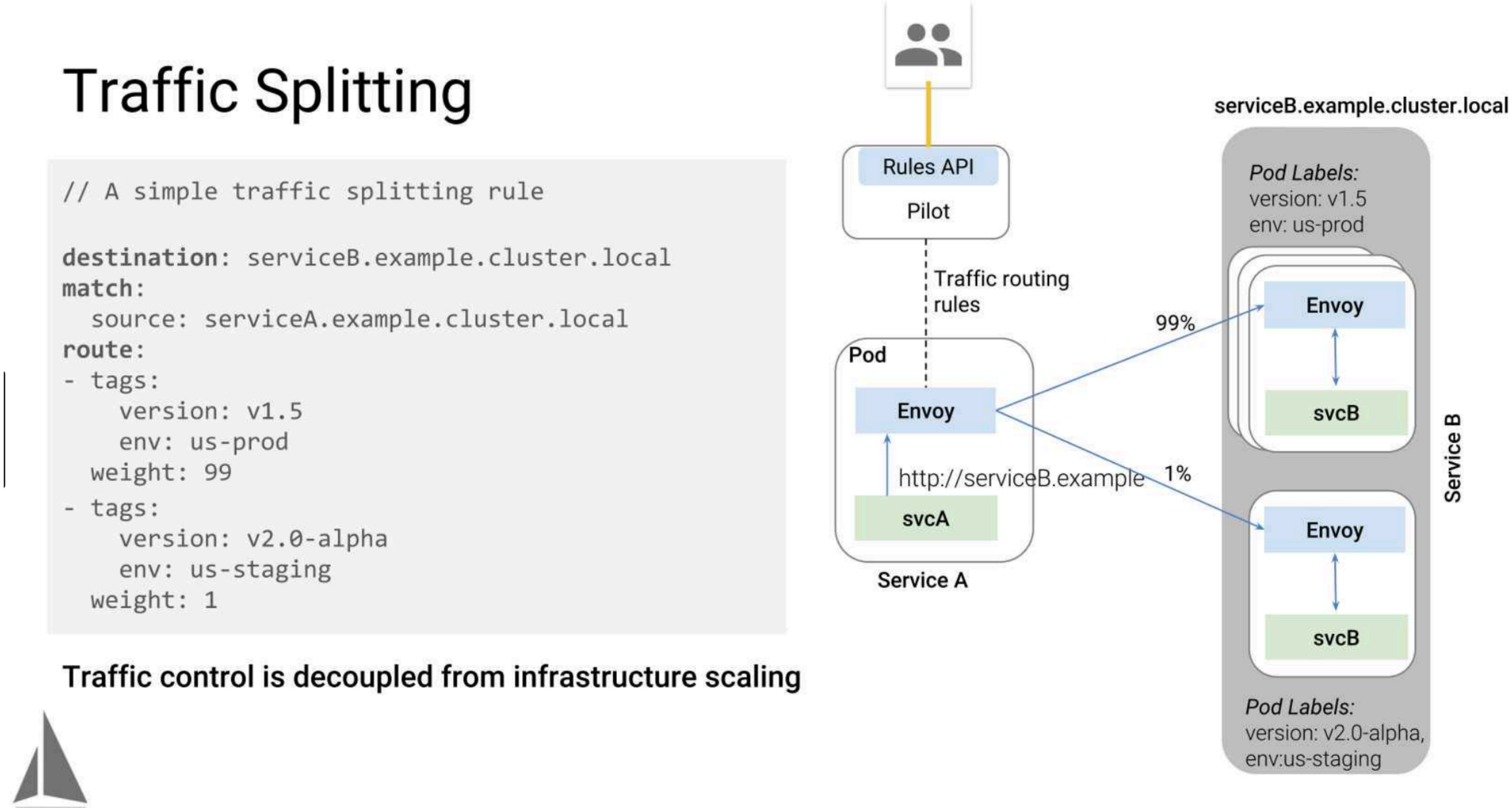
- Dynamic service discovery
- Load balancing
- TLS termination
- HTTP/2
- gRPC proxying
- Circuit breakers
- Health checks
- Traffic split
- Fault injection

Istio Architecture



Source https://istio.io/docs/concepts/what-is-istio/img/overview/arch.svg

Istio Canary Deployment



Traffic Splitting

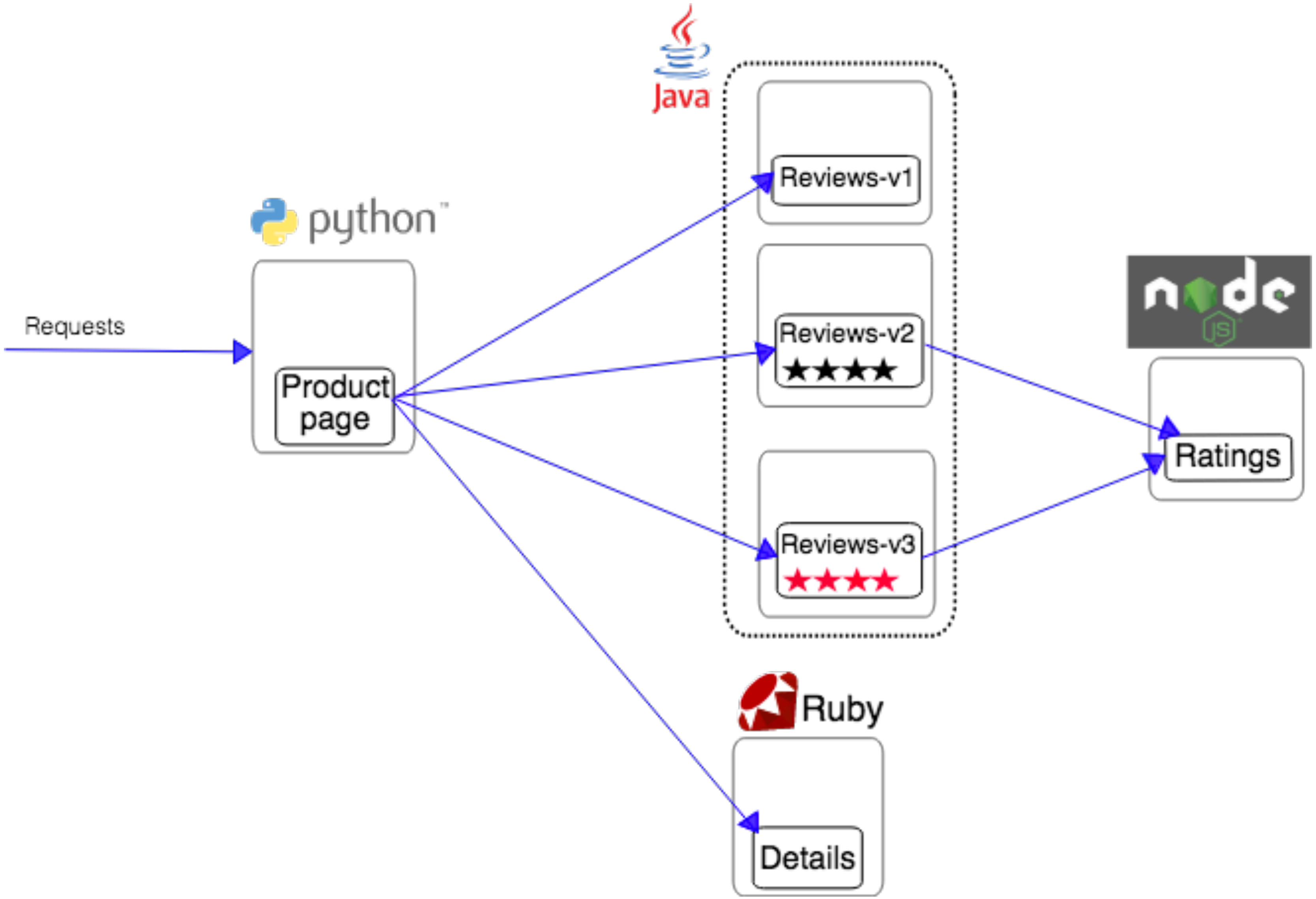
```
// A simple traffic splitting rule

destination: serviceB.example.cluster.local
match:
  source: serviceA.example.cluster.local
route:
- tags:
    version: v1.5
    env: us-prod
  weight: 99
- tags:
    version: v2.0-alpha
    env: us-staging
  weight: 1
```

Traffic control is decoupled from infrastructure scaling

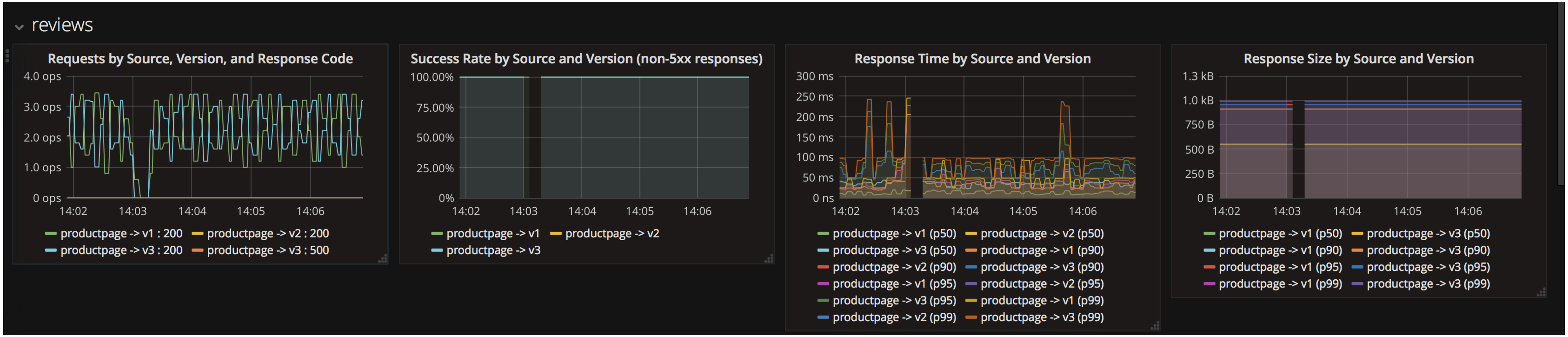
Source https://istio.io/docs/concepts/traffic-management/img/pilot/ServiceModel_Versions.svg

Demo time



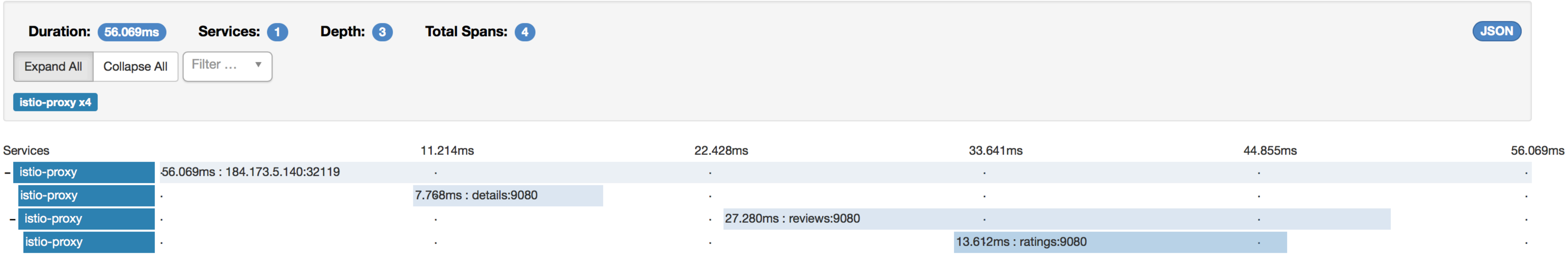
Source https://istio.io/docs/guides/img/bookinfo/noistio.svg

Service Mesh



Source https://raw.githubusercontent.com/IBM/microservices-traffic-management-using-istio/master/images/grafana-new-metric.png

Service Mesh



56.069ms : 184.173.5.140:32119

7.768ms : details:9080

27.280ms : reviews:9080

13.612ms : ratings:9080

Source https://raw.githubusercontent.com/IBM/microservices-traffic-management-using-istio/master/images/zipkin-details.png

Q&A

Thank you.

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Links

- Microservices: https://www.martinfowler.com/articles/microservices.html
- Docker: https://www.docker.com/what-docker
- Kubernetes: https://kubernetes.io/
- CNCF: https://www.cncf.io/

- Open Service Broker API Spec: https://www.openservicebrokerapi.org/
- Service Catalog: https://github.com/kubernetes-incubator/service-catalog
- Azure Broker: https://osba.sh/
- OSB Starter Pack: https://github.com/pmorie/osb-starter-pack

- Grafana: https://grafana.com/
- Prometheus: https://prometheus.io/
- Jaeger: https://www.jaegertracing.io/

- Istio: https://istio.io/
- Kubeless: https://kubeless.io/
- Nats: https://nats.io/