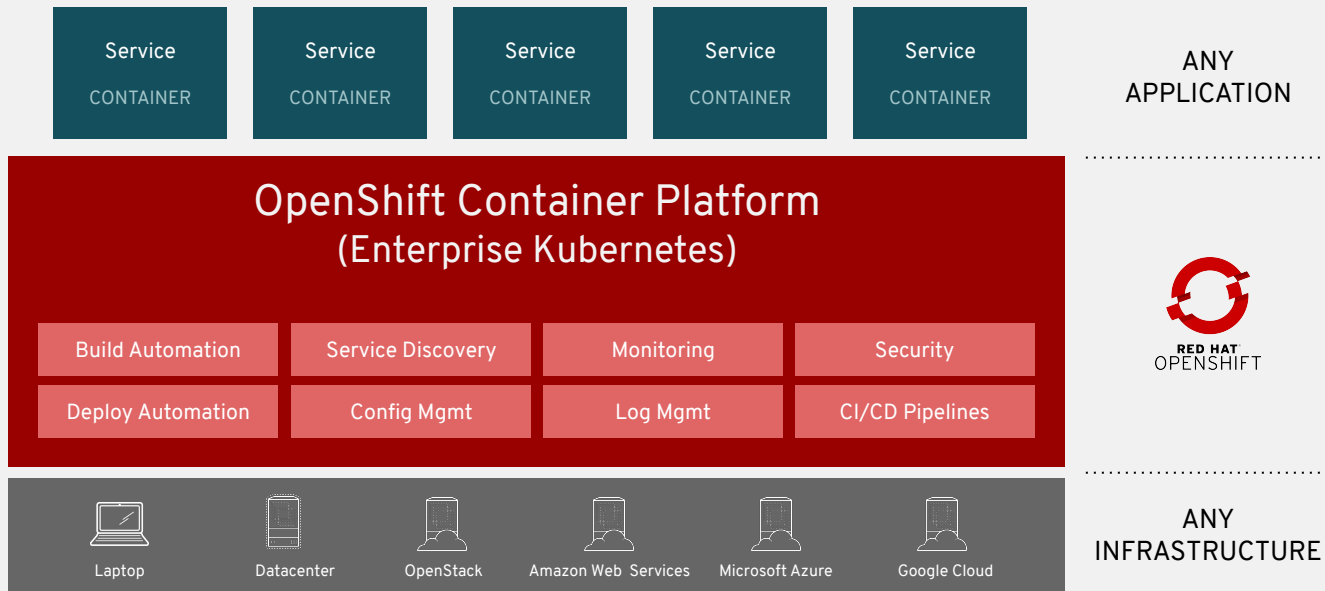




RED HAT OPENSIFT SERVICE MESH INTRODUCTION & OVERVIEW

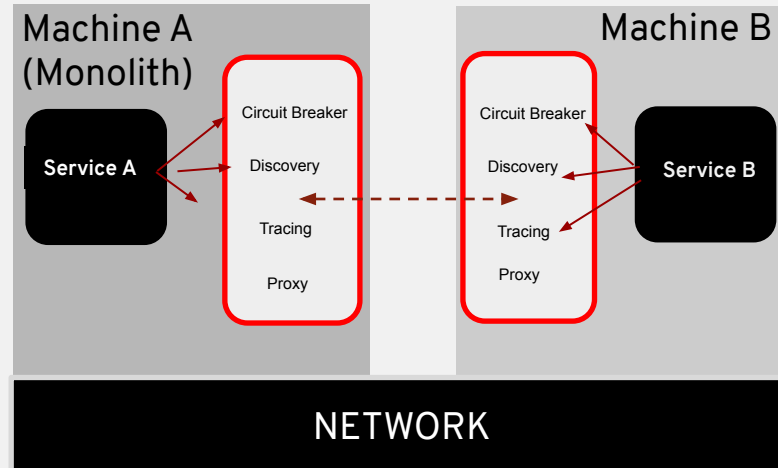
Adam Young
Cloud Solution Architect
19 Sep 2019

BUILD AND DEPLOY CLOUD-NATIVE APPS WITH RED HAT OPENS SHIFT

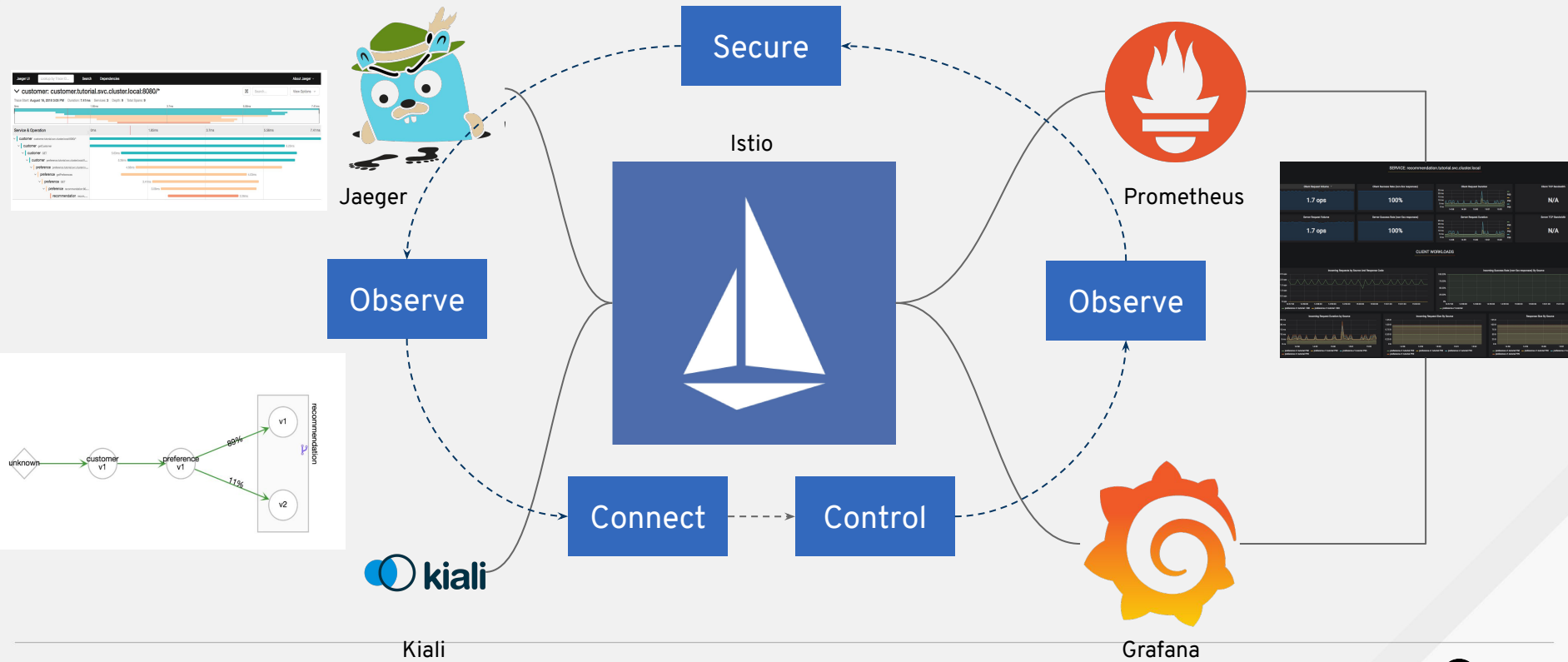


OVERVIEW

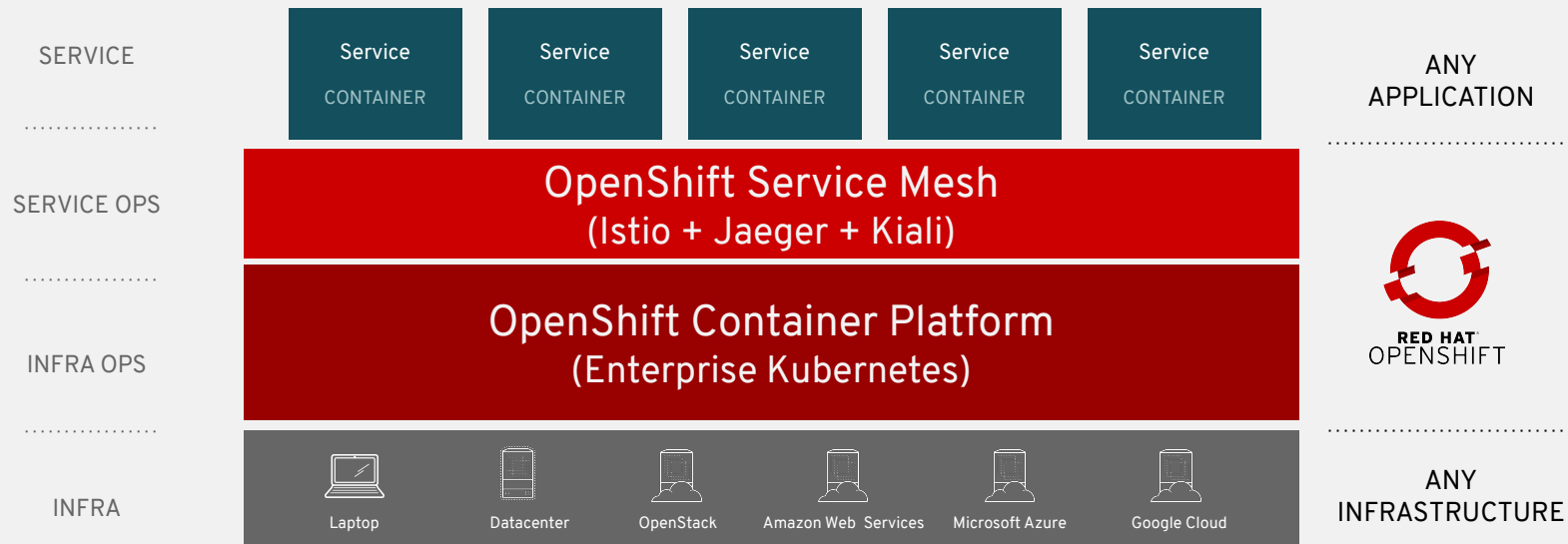
WHAT IS A SERVICEMESH ?



SERVICE MESH ECOSYSTEM

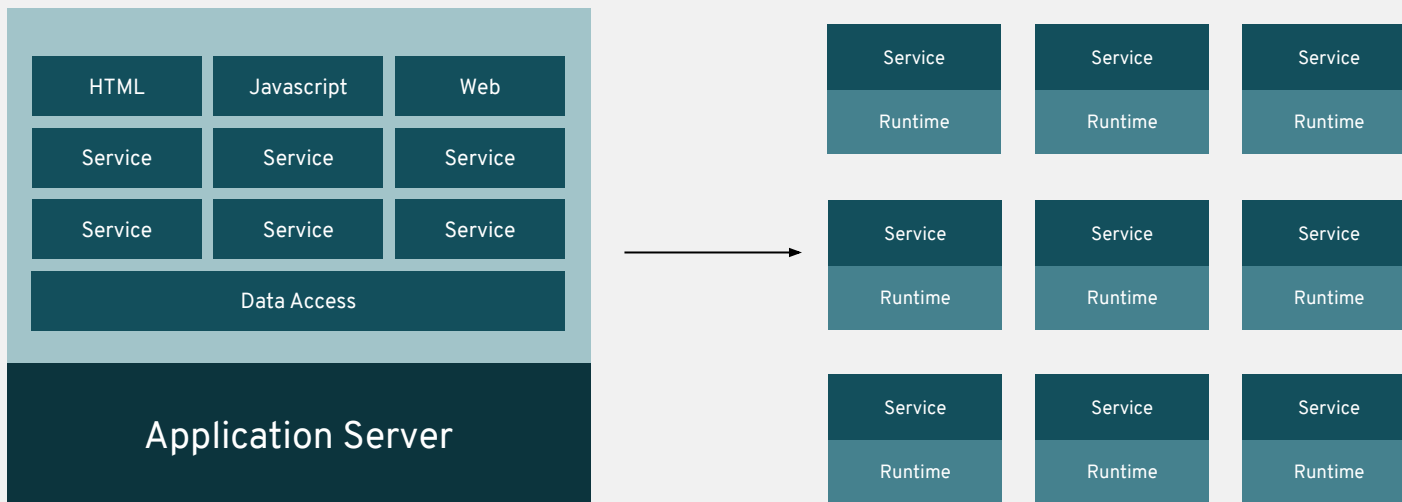


DISTRIBUTED SERVICES WITH RED HAT OPENSIFT SERVICE MESH



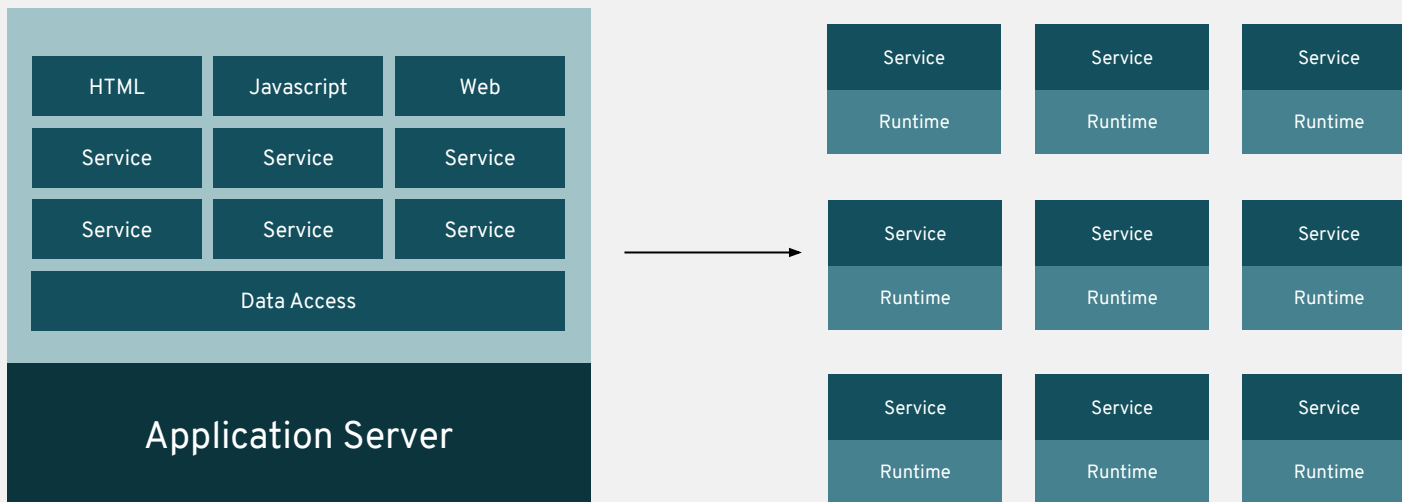
UNDER THE HOOD

MICROSERVICES ARCHITECTURE

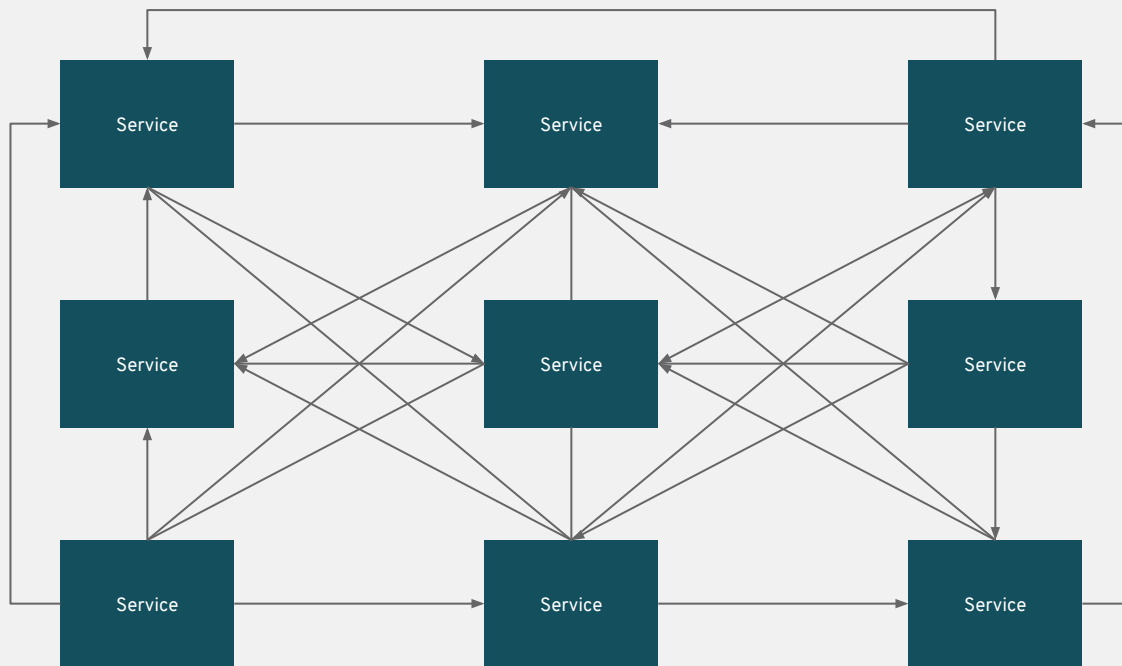


~~MICROSERVICES~~ ARCHITECTURE

DISTRIBUTED



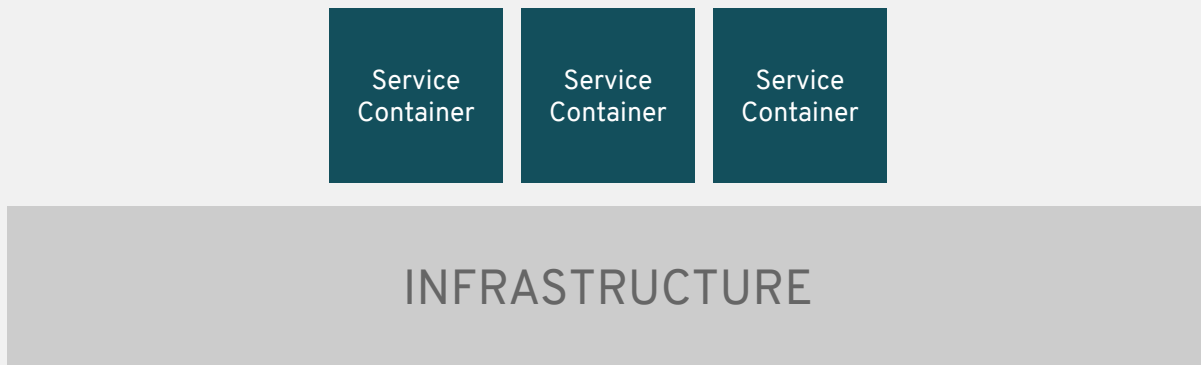
DISTRIBUTED ARCHITECTURE



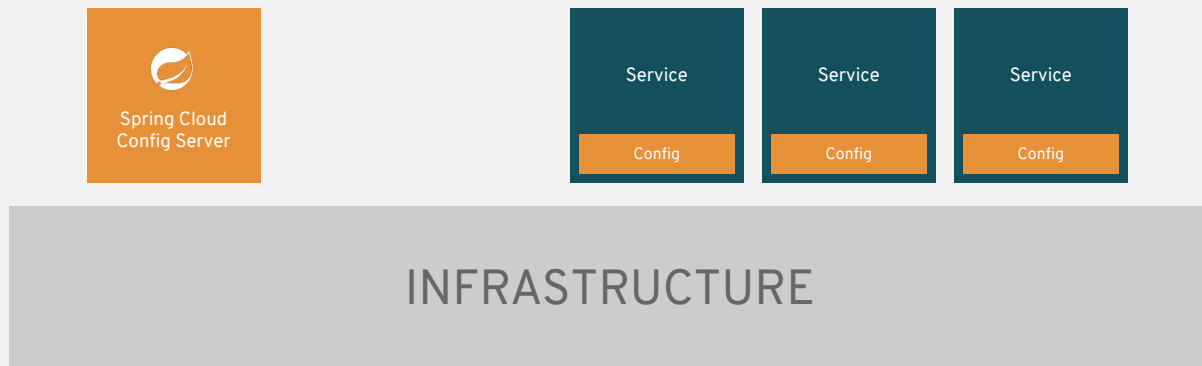


HOW TO DEAL WITH THE COMPLEXITY?

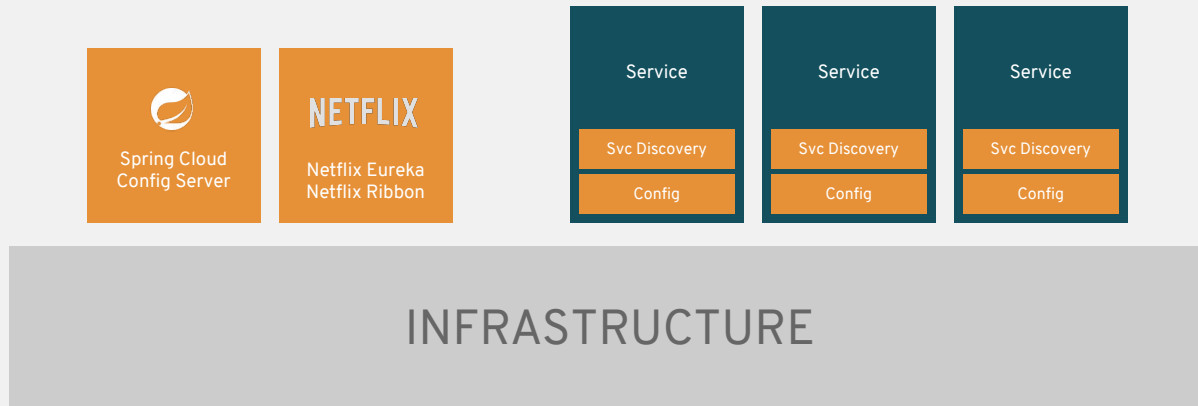
DEPLOYMENT



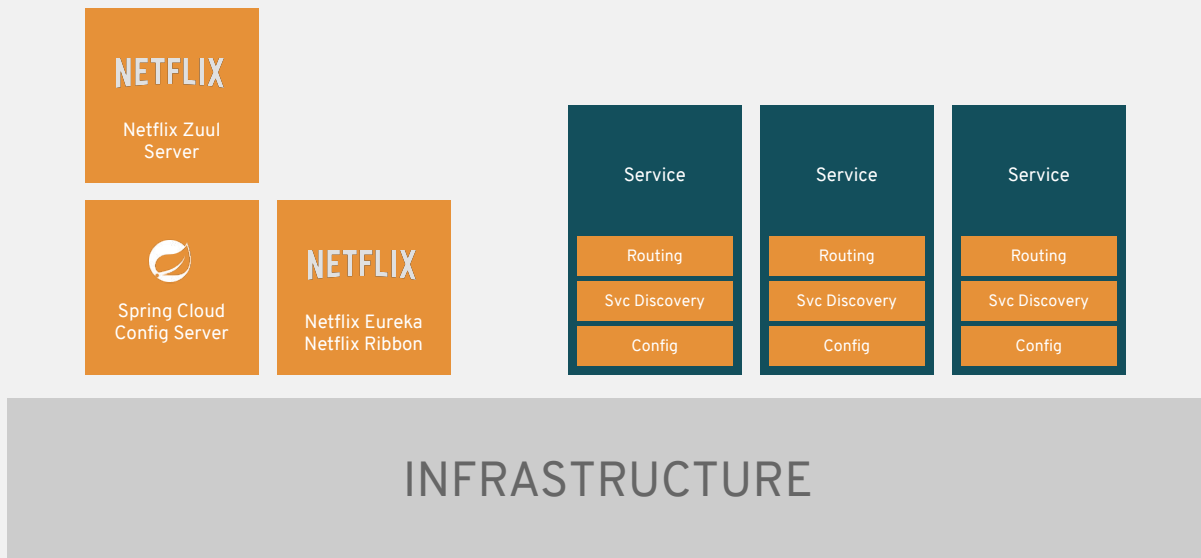
CONFIGURATION



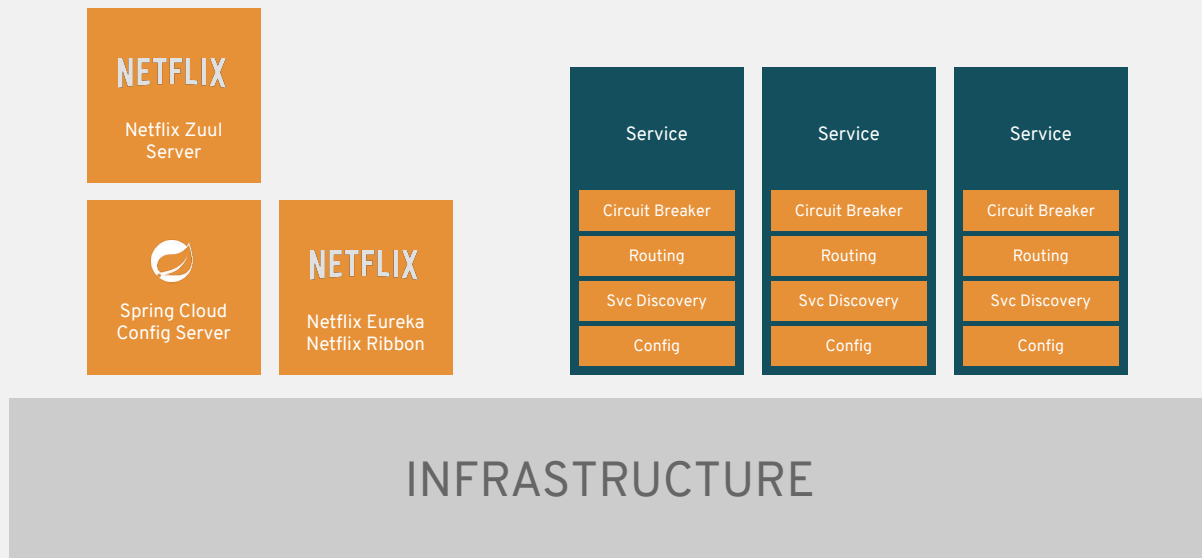
SERVICE DISCOVERY



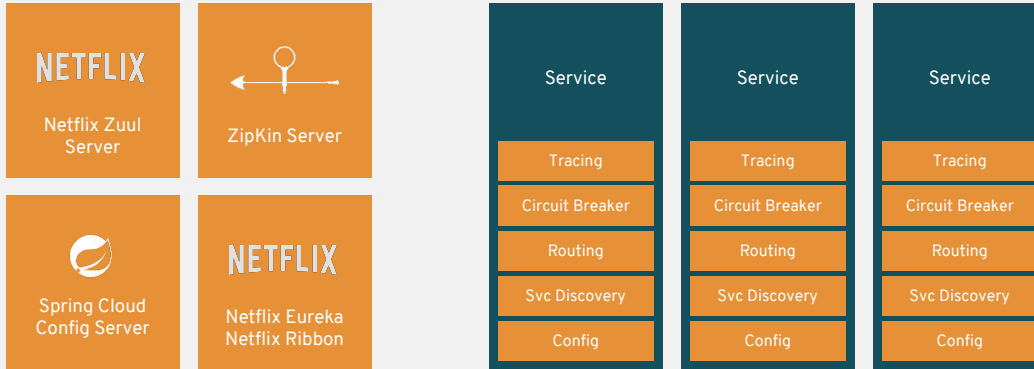
DYNAMIC ROUTING



FAULT TOLERANCE



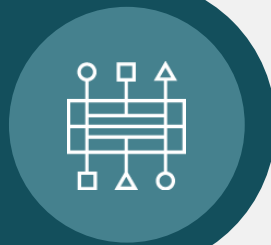
TRACING AND VISIBILITY



INFRASTRUCTURE

WHAT ABOUT...?

POLYGLOT
APPS



EXISTING
APPS

THERE SHOULD BE A
BETTER WAY

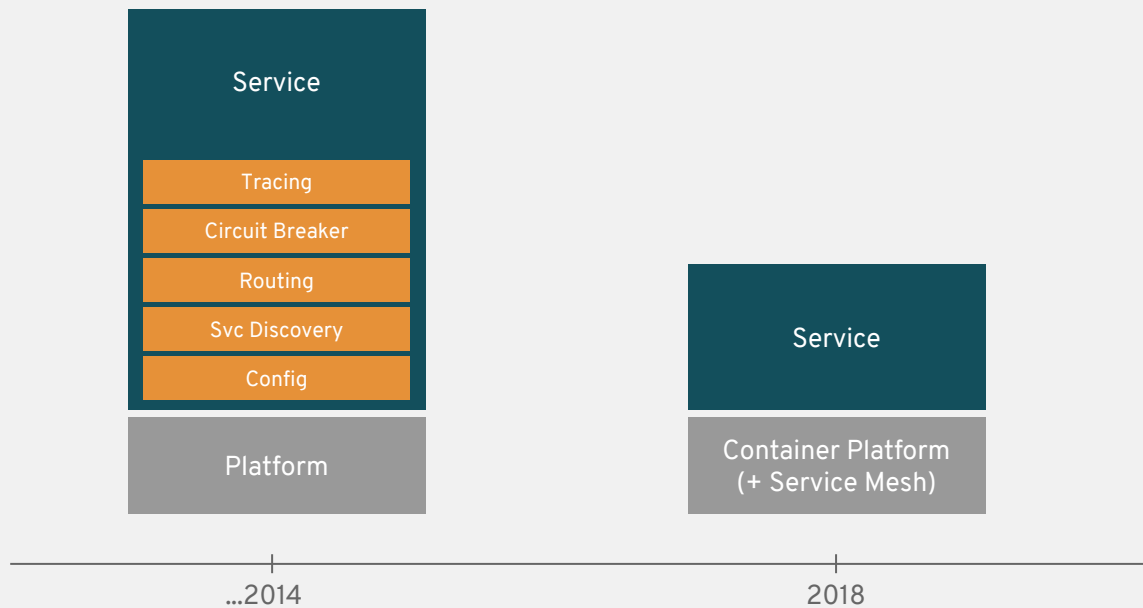
ADDRESS THE COMPLEXITY IN THE INFRASTRUCTURE



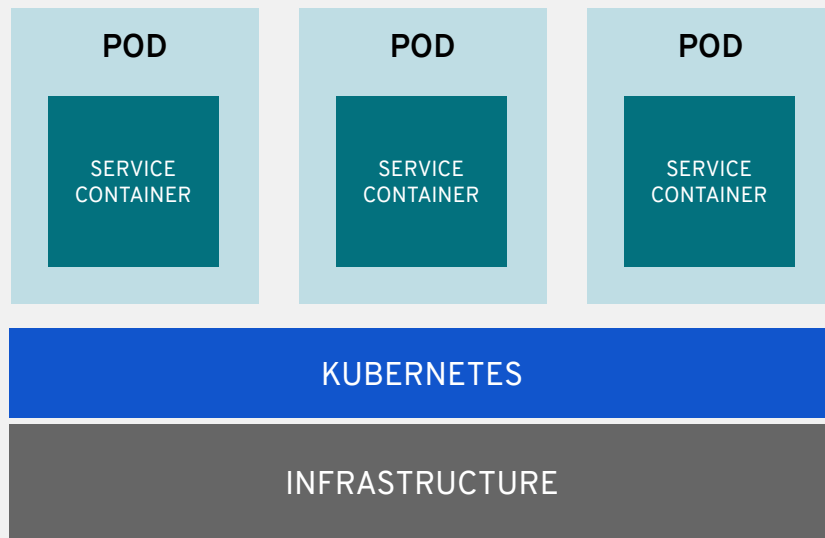
SERVICE MESH

A dedicated infrastructure layer for
service-to-service communications

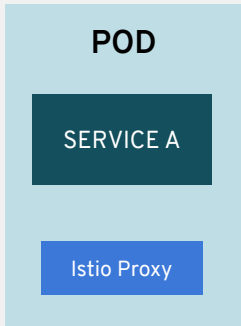
MICROSERVICES EVOLUTION



AUTOMATING CONTAINER DEPLOYMENT



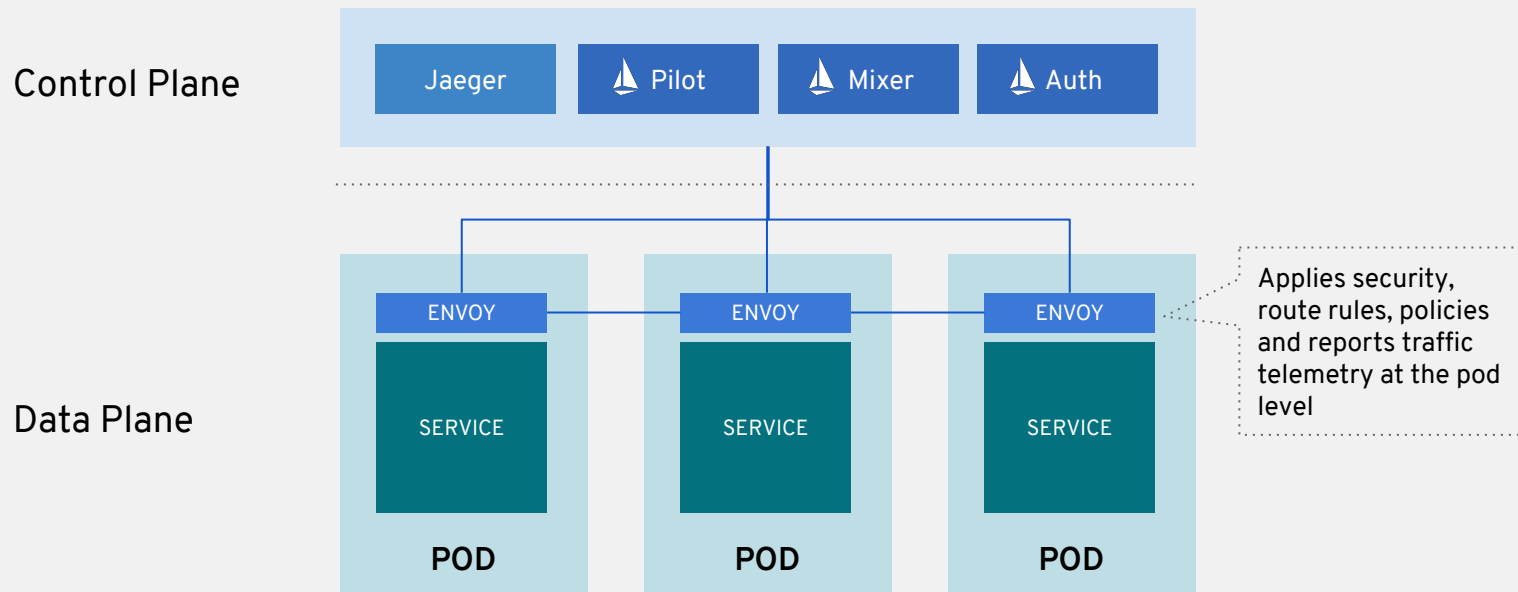
SIDECARS



- Two or more containers deployed to same pod
- Share
 - Same
 - Namespace
 - Pod IP
 - Shared lifecycle
- Used to enhance the co-located containers
- Istio Proxy (L7 Proxy)
 - Proxy all network traffic in and out of the app container

Source: <http://blog.kubernetes.io/2015/06/the-distributed-system-toolkit-patterns.html>

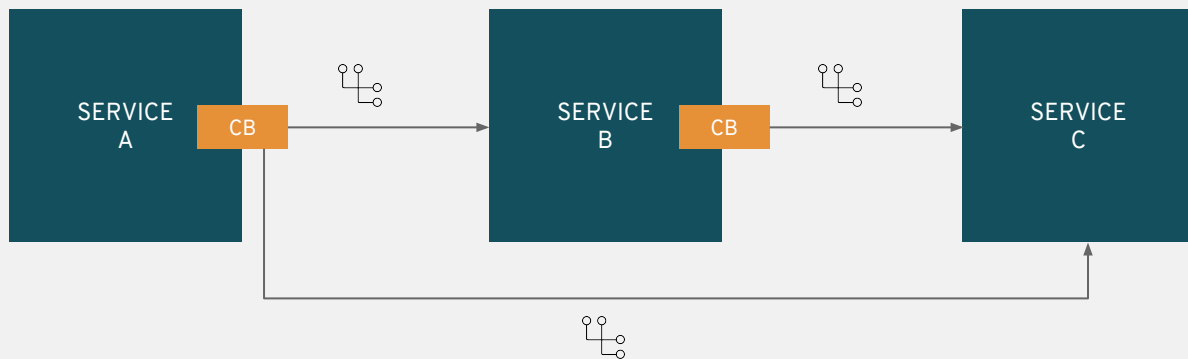
SERVICE MESH ARCHITECTURE



MAJOR FUNCTIONALITY

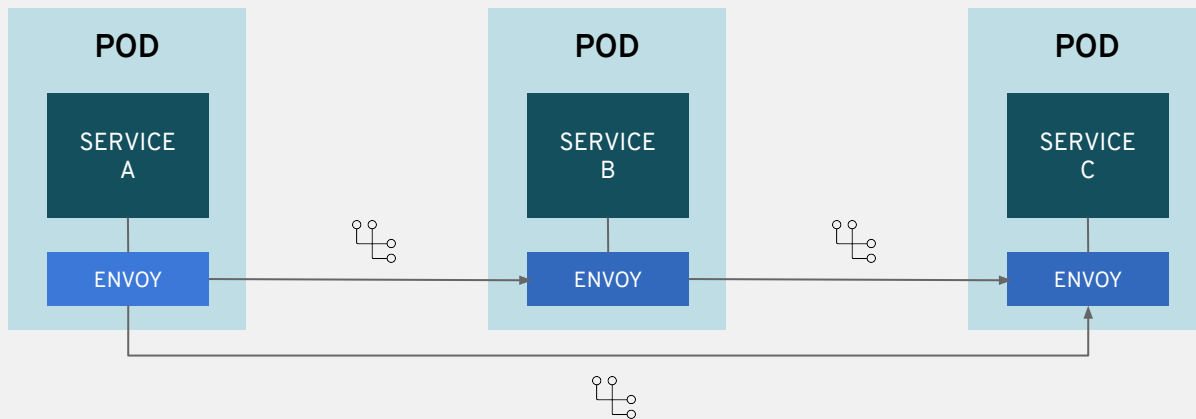
FAULT TOLERANCE

CIRCUIT BREAKERS **WITHOUT** ISTIO



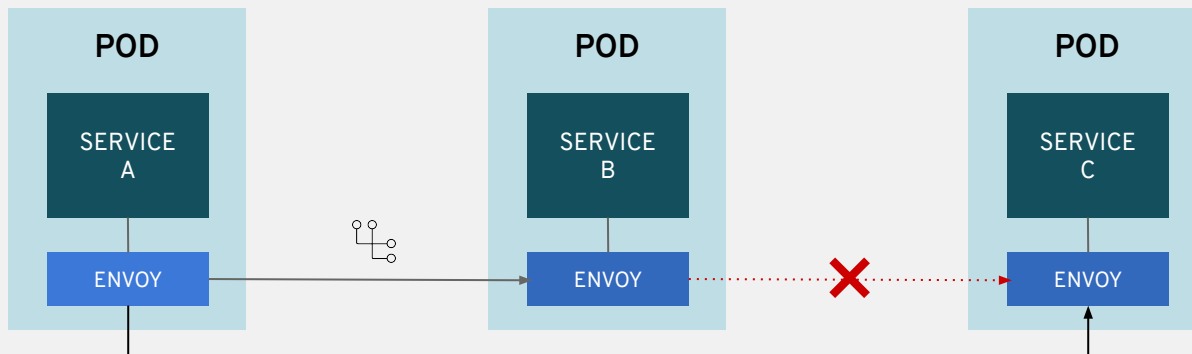
coupled to the service code

CIRCUIT BREAKERS WITH ISTIO



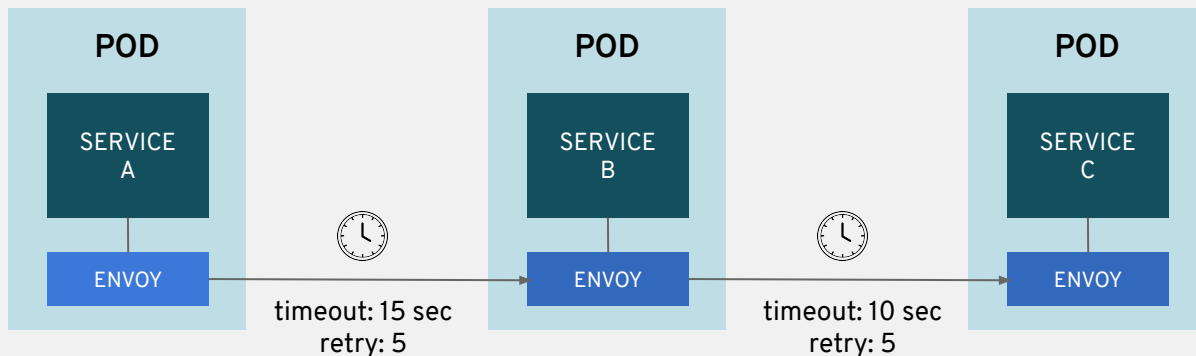
transparent to the services

CIRCUIT BREAKERS WITH ISTIO



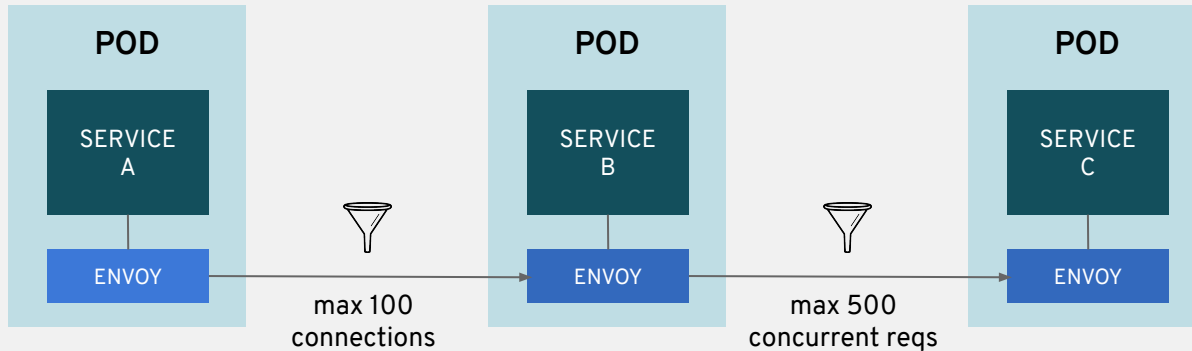
improved response time with global circuit status

TIMEOUTS AND RETRIES WITH ISTIO



configure timeouts and retries, transparent to the services

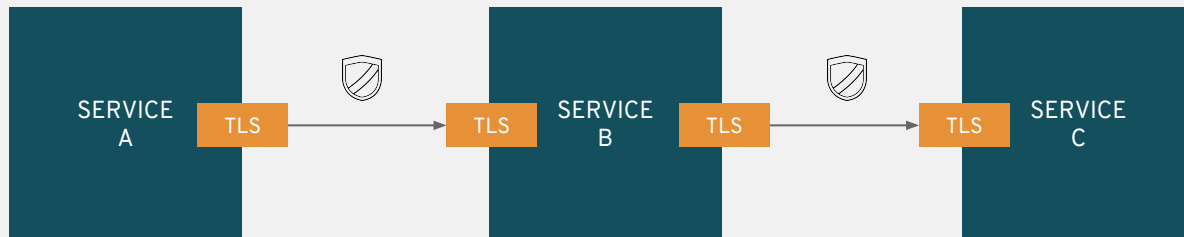
RATE LIMITING WITH ISTIO



limit invocation rates, transparent to the services

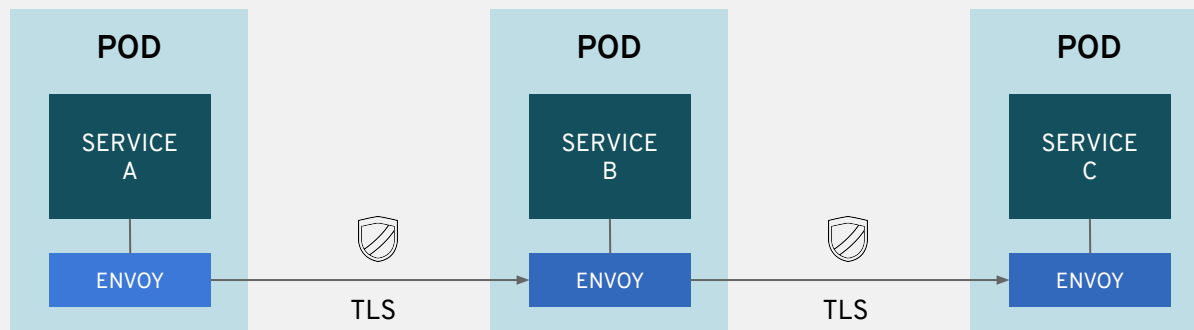
SERVICE SECURITY

SECURE COMMUNICATION **WITHOUT** ISTIO



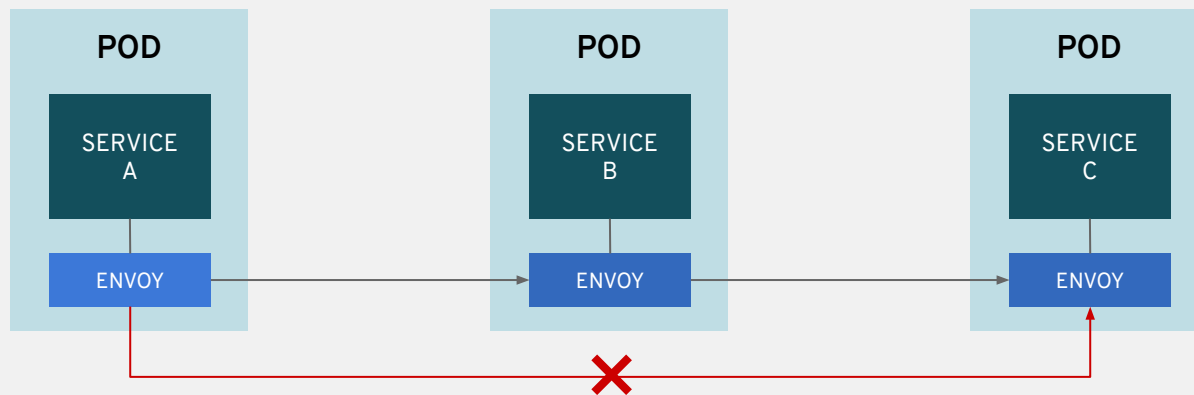
coupled to the service code

SECURE COMMUNICATION WITH ISTIO



mutual TLS authentication, transparent to the services

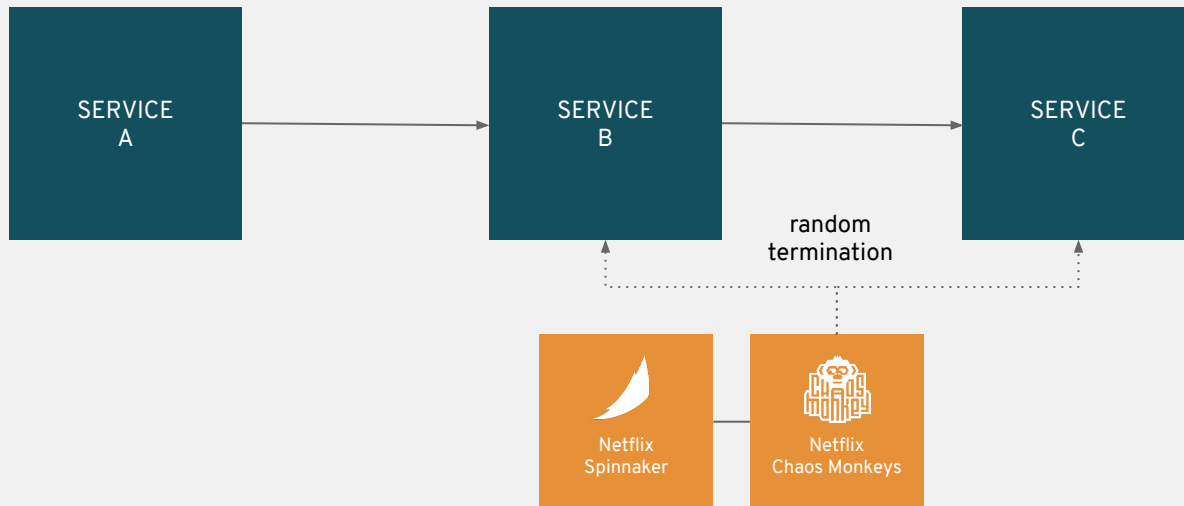
CONTROL SERVICE ACCESS WITH ISTIO



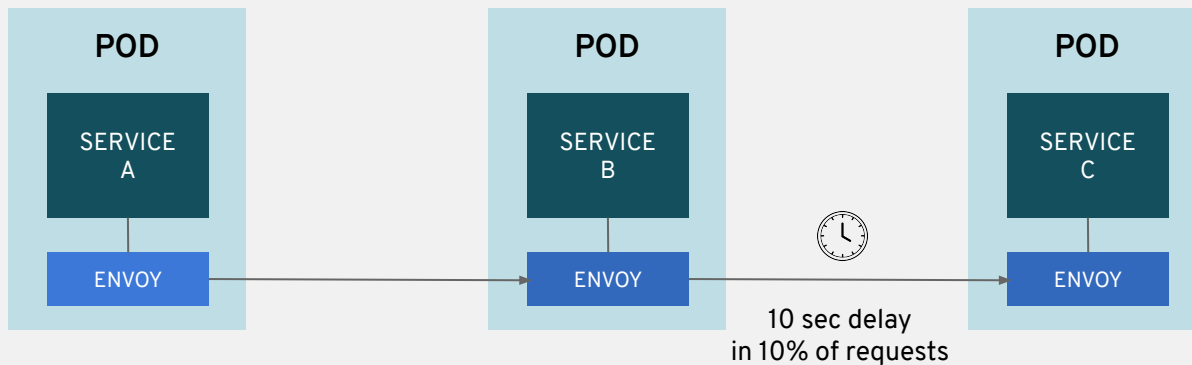
control the service access flow, transparent to the services

CHAOS ENGINEERING

CHAOS ENGINEERING WITHOUT ISTIO

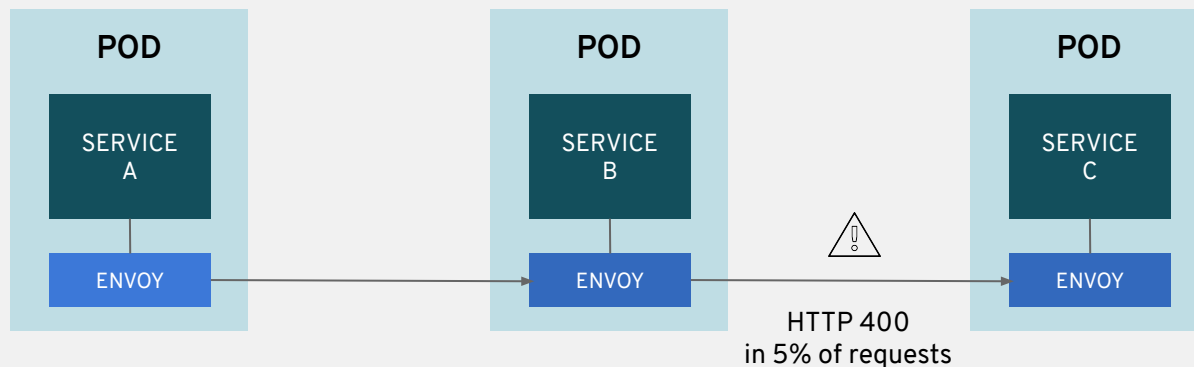


CHAOS ENGINEERING WITH ISTIO



inject delays, transparent to the services

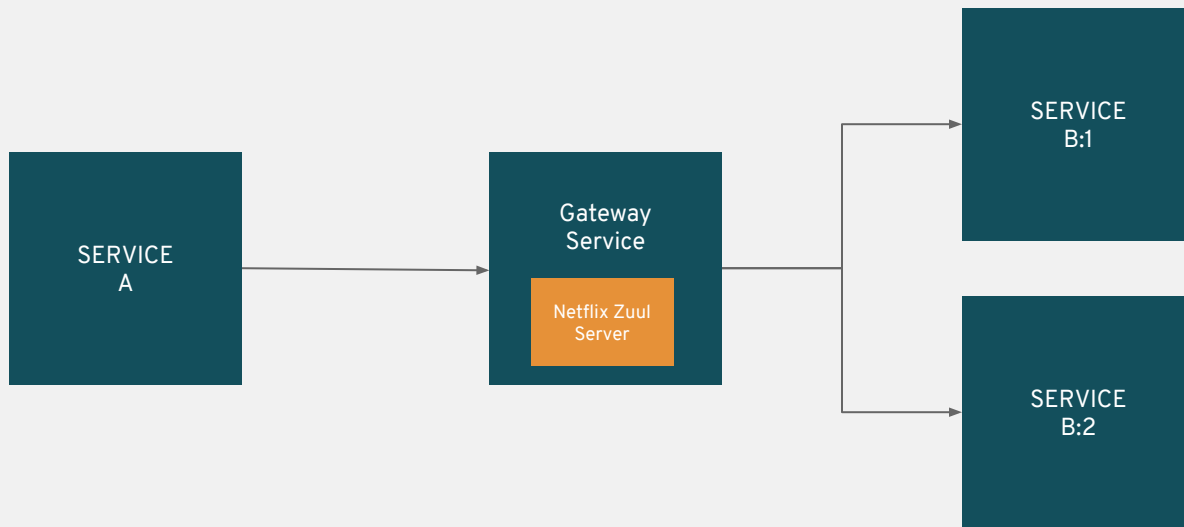
CHAOS ENGINEERING WITH ISTIO



inject protocol-specific errors, transparent to the services

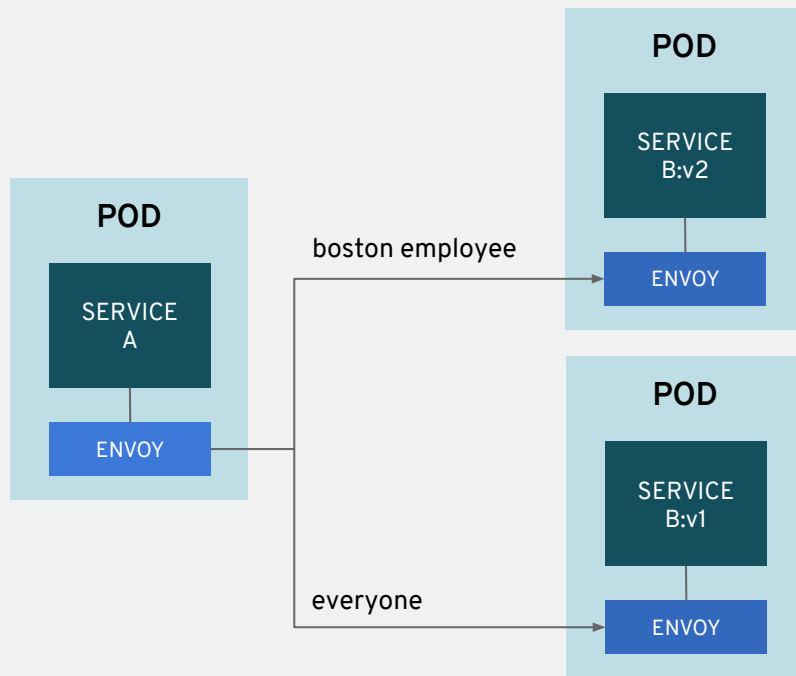
DYNAMIC ROUTING

DYNAMIC ROUTING **WITHOUT** ISTIO

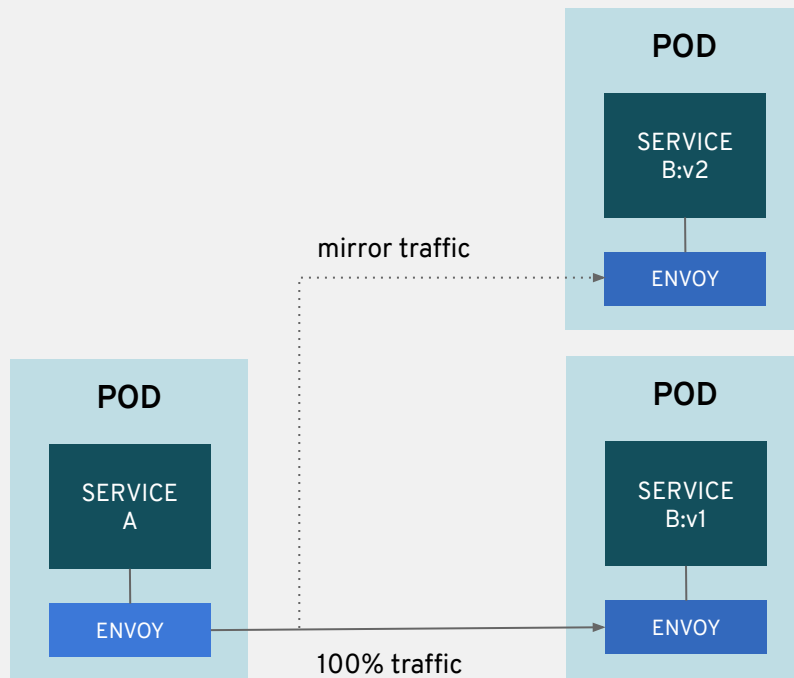


custom code to enable dynamic routing

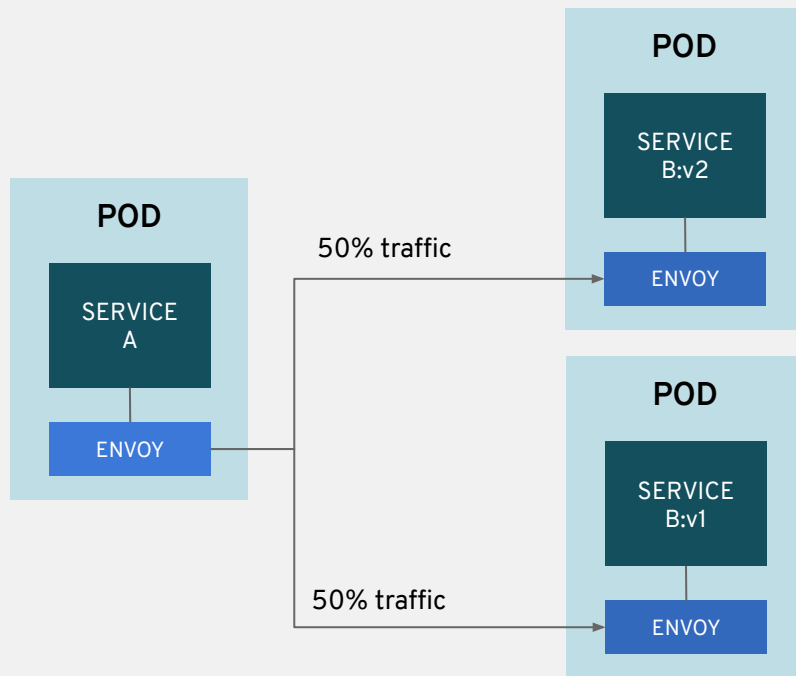
CANARY DEPLOYMENT WITH ISTIO



DARK LAUNCHES WITH ISTIO

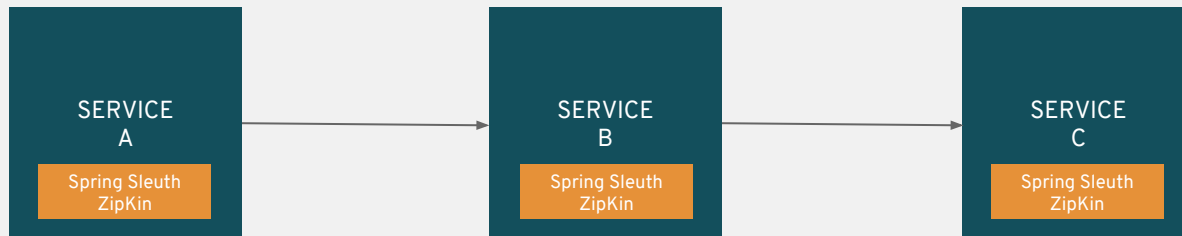


A/B DEPLOYMENT WITH ISTIO



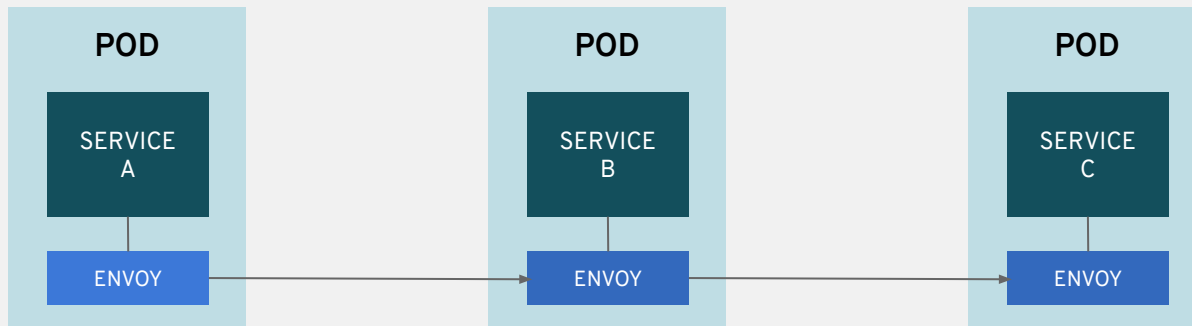
DISTRIBUTED TRACING (JAEGER)

DISTRIBUTED TRACING **WITHOUT** ISTIO



code to enable dynamic tracing

DISTRIBUTED TRACING WITH ISTIO & JAEGER



discovers service relationships and process times,
transparent to the services



SERVICE MESH OBSERVABILITY (KIALI)

- Overview
- Graph**
- Applications
- Workloads
- Services
- Istio Config
- Distributed Trac...

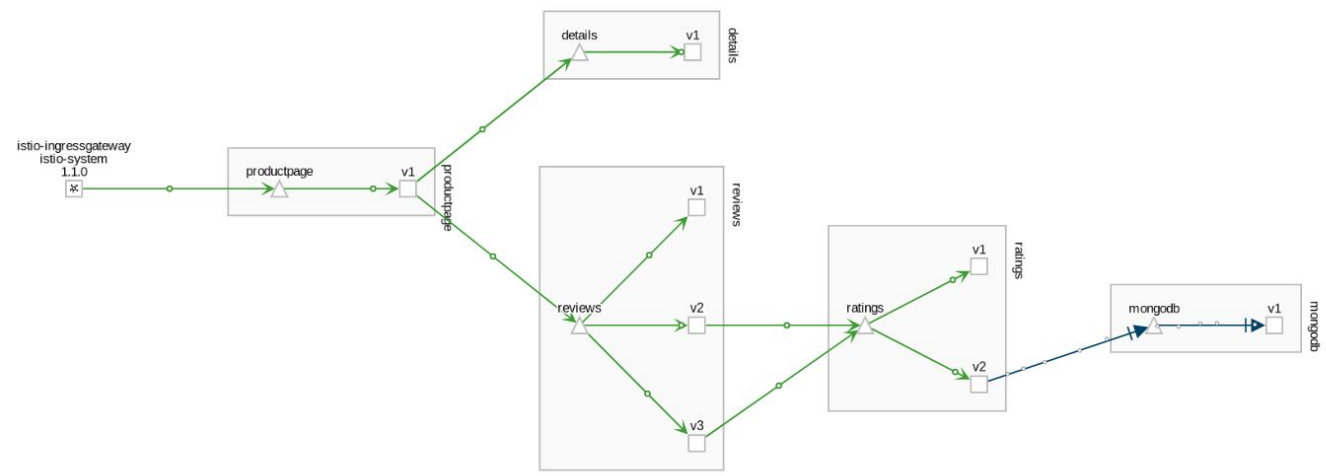
Namespace: bookinfo

Graph

Feb 18, 16:07:37 ... Feb 18, 16:08:37

Display ▾ Edge Labels ▾ Graph Type **Versioned app** ▾ Find... x Hide... x ?

Fetching Last min ▾ Every 15 sec ▾ ↻



+ - 🔍 1 2 Legend

Namespace: bookinfo
 applications, services, workloads

Current Graph:
 9 apps
 5 services
 14 edges

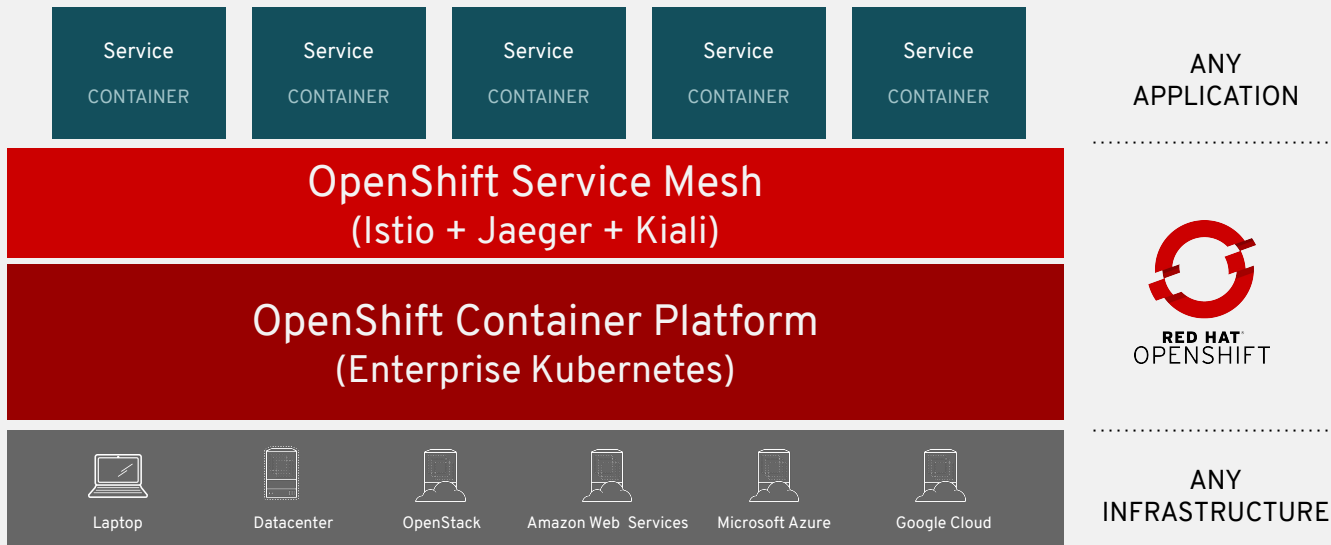
HTTP Traffic (requests per second):

Total	%Success	%Error
3.68	100.00	0.00

HTTP - Total Request Traffic min / max:
 RPS: 3.60 / 3.60 , %Error 0.00 / 0.00

TCP - Total Traffic - min / max:
 Sent: 143.00 / 143.00 B/s
 Received: 115.67 / 115.67 B/s

DISTRIBUTED SERVICES PLATFORM



QUESTIONS?



THANK YOU



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facebook.com/redhatinc



linkedin.com/company/red-hat



twitter.com/RedHat



youtube.com/user/RedHatVideos