CLOUD NATIVE
COMPUTING FOUNDATION

Service Mess to Service Mesh

Observe. Control. Secure.

Rob Richardson

Technical Evangelist, MemSQL

Kavya Pearlman

Cybersecurity Strategist, Wallarm

Service Mesh - An Analogy

Service Mesh - An Analogy

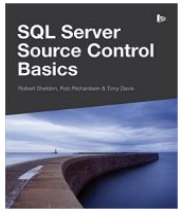
Introducing Rob...

Rob Richardson

- Tech Evangelist for MemSQL
- Microsoft MVP
- Leads the Southeast Valley .NET User Group
- AZGiveCamp Organizer

Personal interests

Coding, Teaching, and Travel



Introducing Kavya...

Kavya Pearlman

- Well known as the “Cyber Guardian”
- Cybersecurity Strategist at Wallarm
- An Award-winning Cybersecurity Professional
- Founder and CEO of XR Safety Initiative
- Former Information Security Director Linden Lab
- Former Facebook Third Party Security Risk Advisor

Personal interests

Travel, Gaming, Virtual Worlds

XRSI

SANSAR

SECOND LIFE

Agenda

Let's Talk about Service Mesh!

- The Service Mesh
- From Monolithic to Microservices
- The Challenge with API Gateways
- Deep Dive into Service Mesh
  a. Istio
  b. Linkerd
- Demo
- Service Mesh Best Practices

Service Mesh

A **Service Mesh** manages the network traffic between services in a graceful and scalable way.

Service Mesh IS the answer to:

> *"How do I observe, control, or secure communication between microservices?"*

Service Mesh

OBSERVE

monitor network

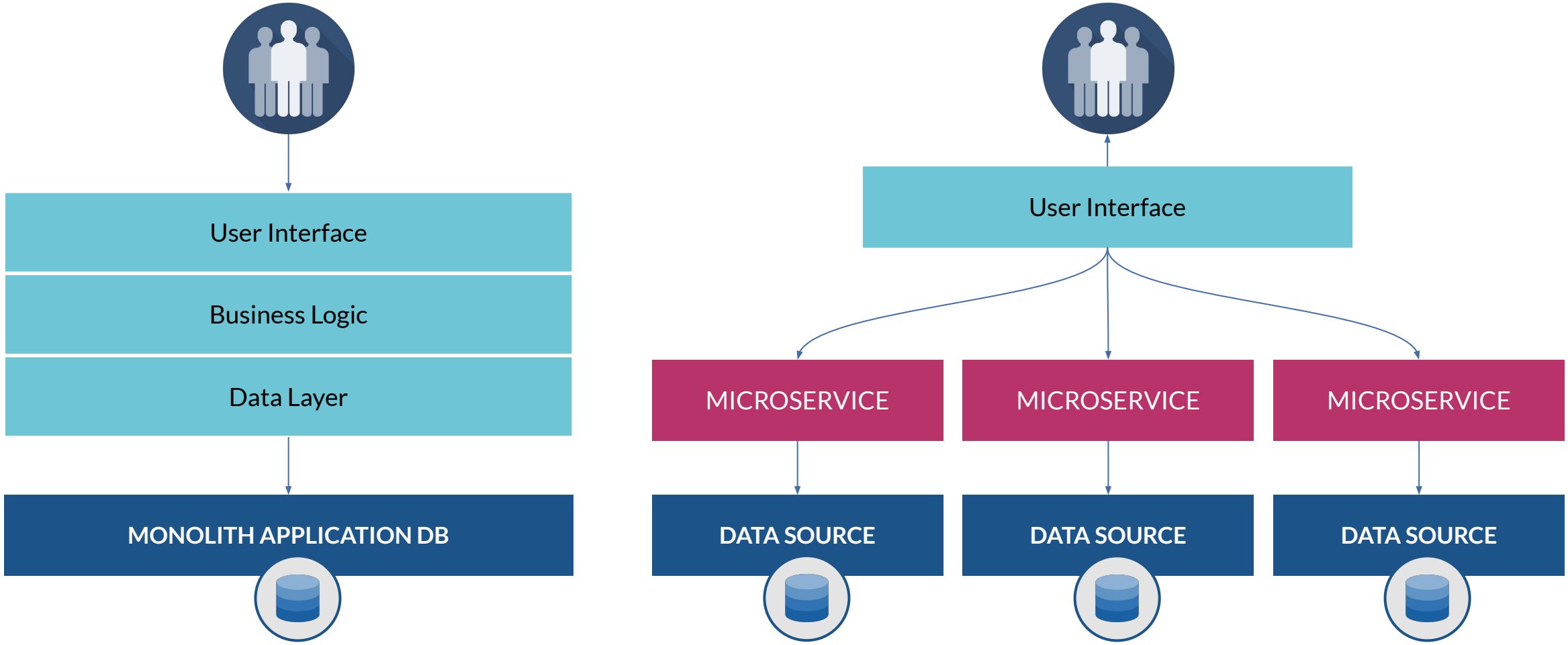
CONTROL

access policies

SECURE

mutual TLS

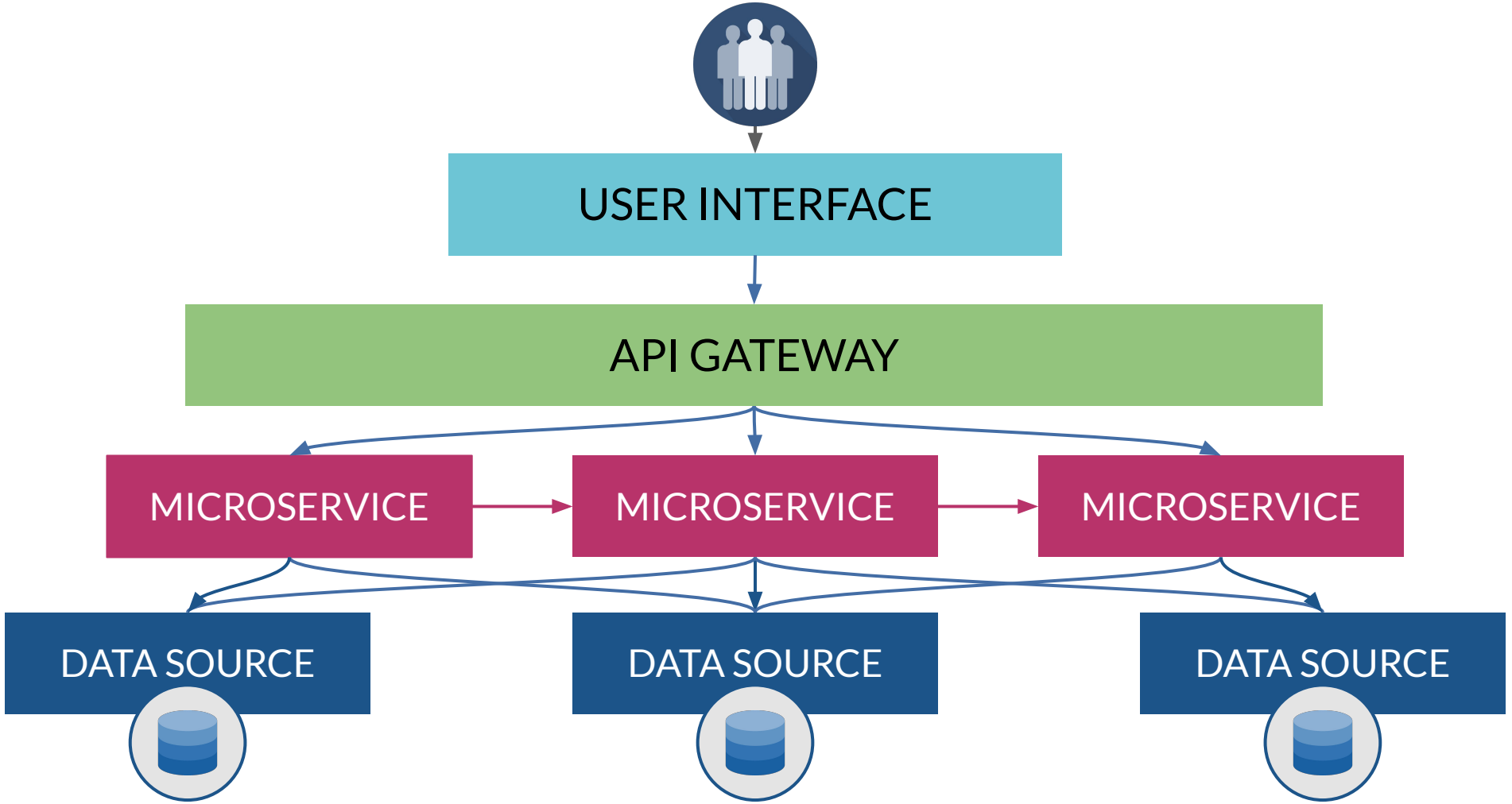
From Monolithic to Microservices



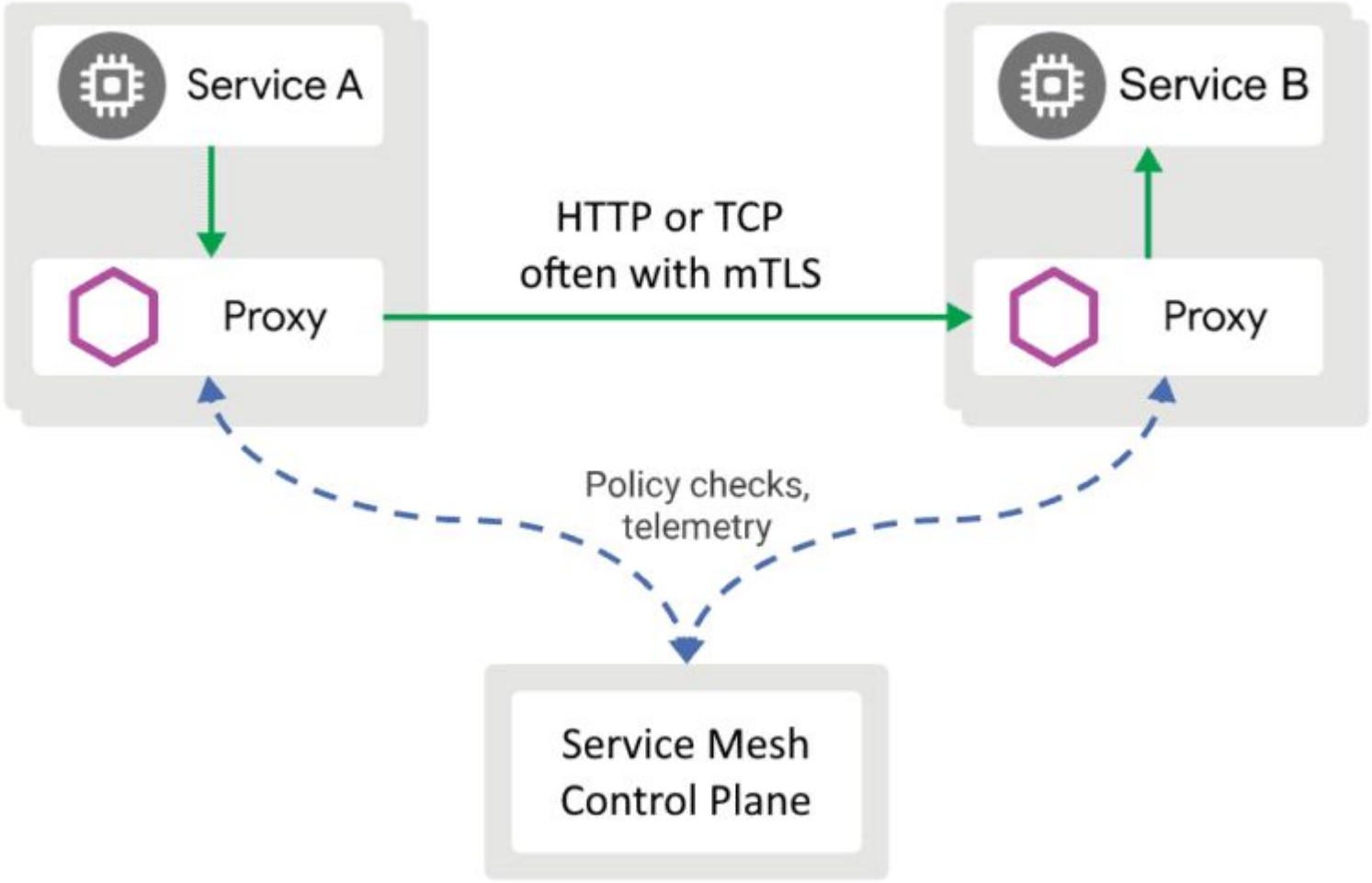
From North-South to East-West

- North-South
  - Container to Clients
- East-West
  - Between Containers

The Challenge with API Gateways



Service Mesh: How does it work?



Service Mesh

OBSERVE

monitor network

CONTROL

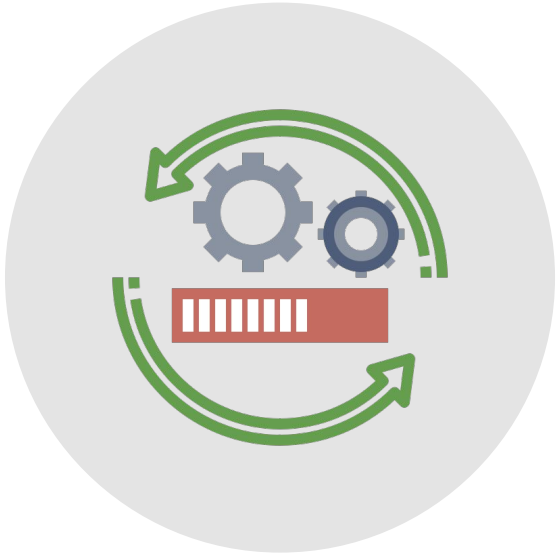
access policies

SECURE

mutual TLS

More than just a proxy

NETWORK TOPOLOGY



SERVICE HEALTH

LOGGING

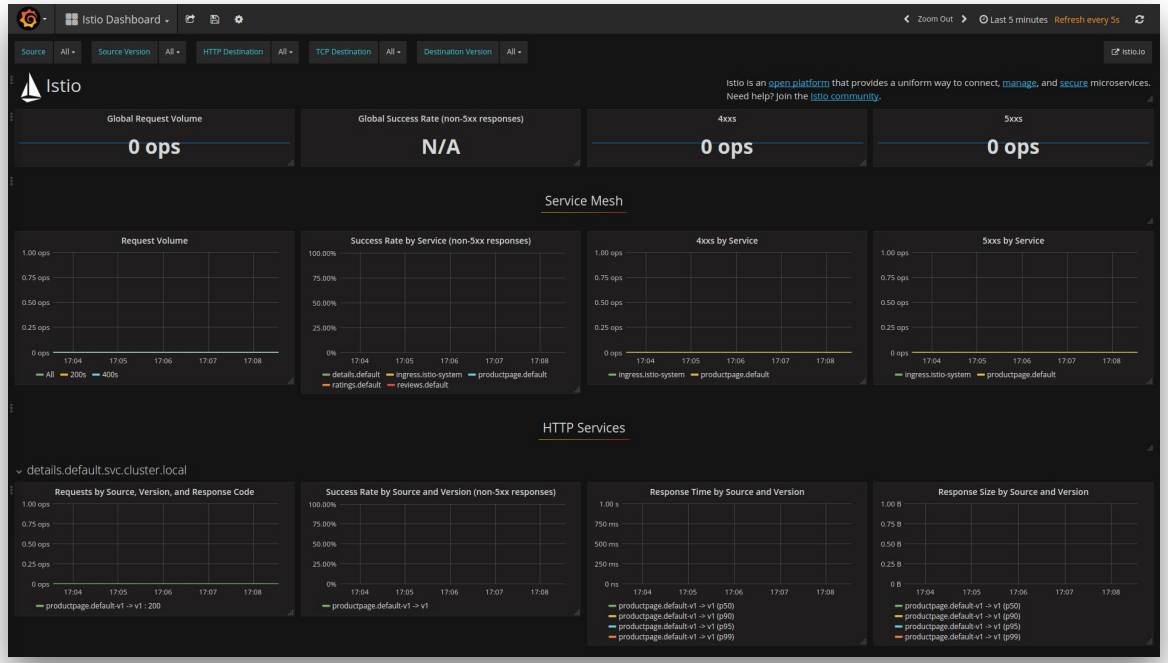
More than just a proxy

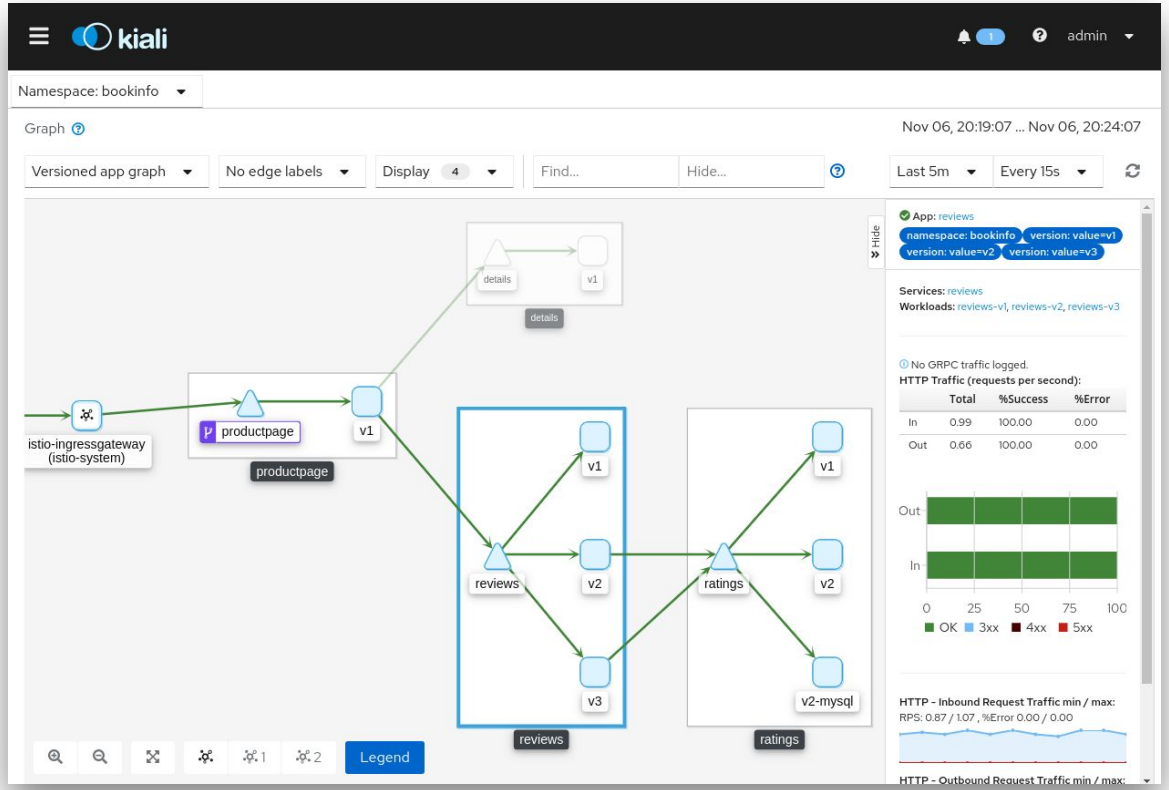
CIRCUIT BREAKER

A/B TESTING

BETA CHANNEL

More than just a proxy





wallarm memSQL

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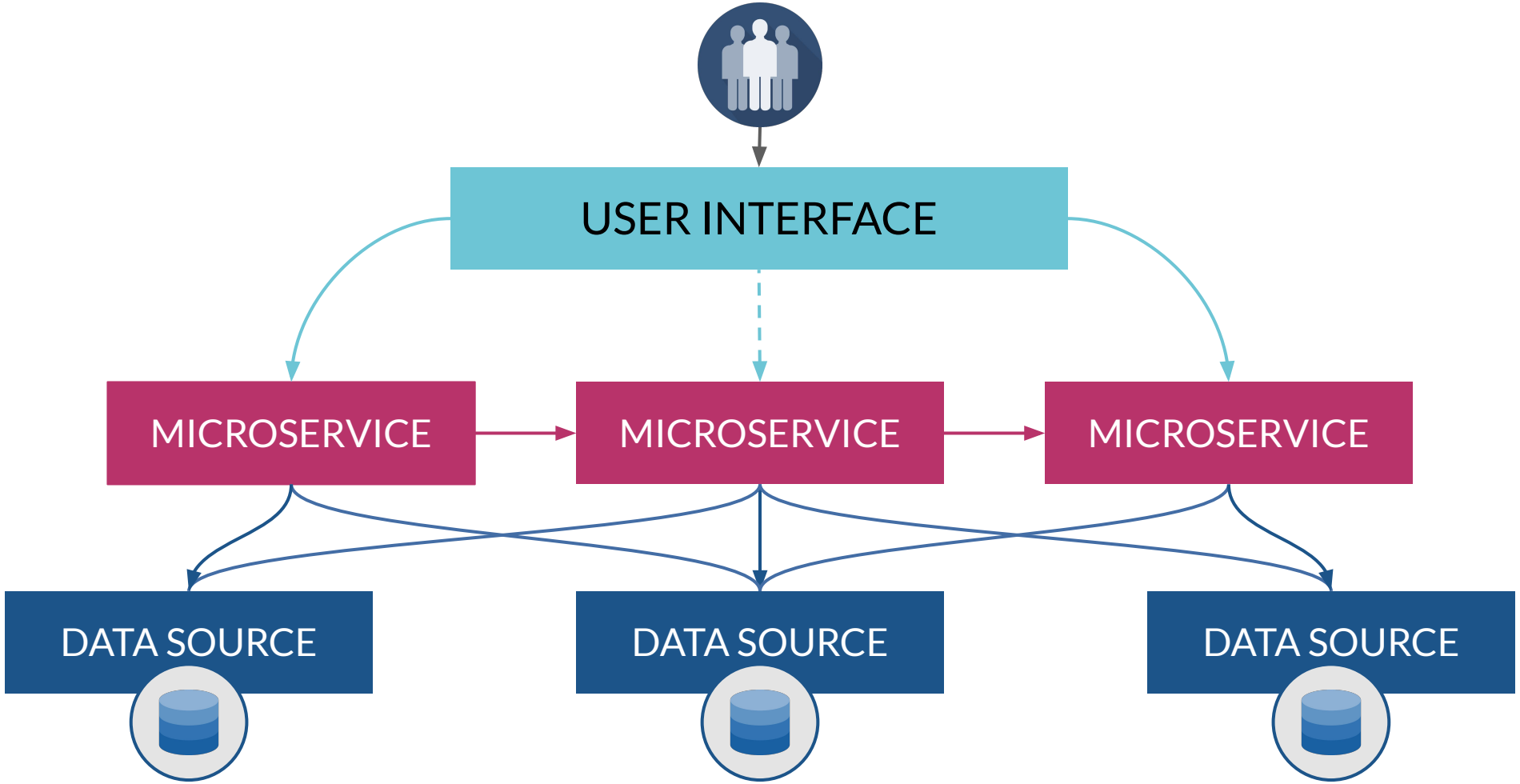
Prevent Unexpected Traffic Patterns

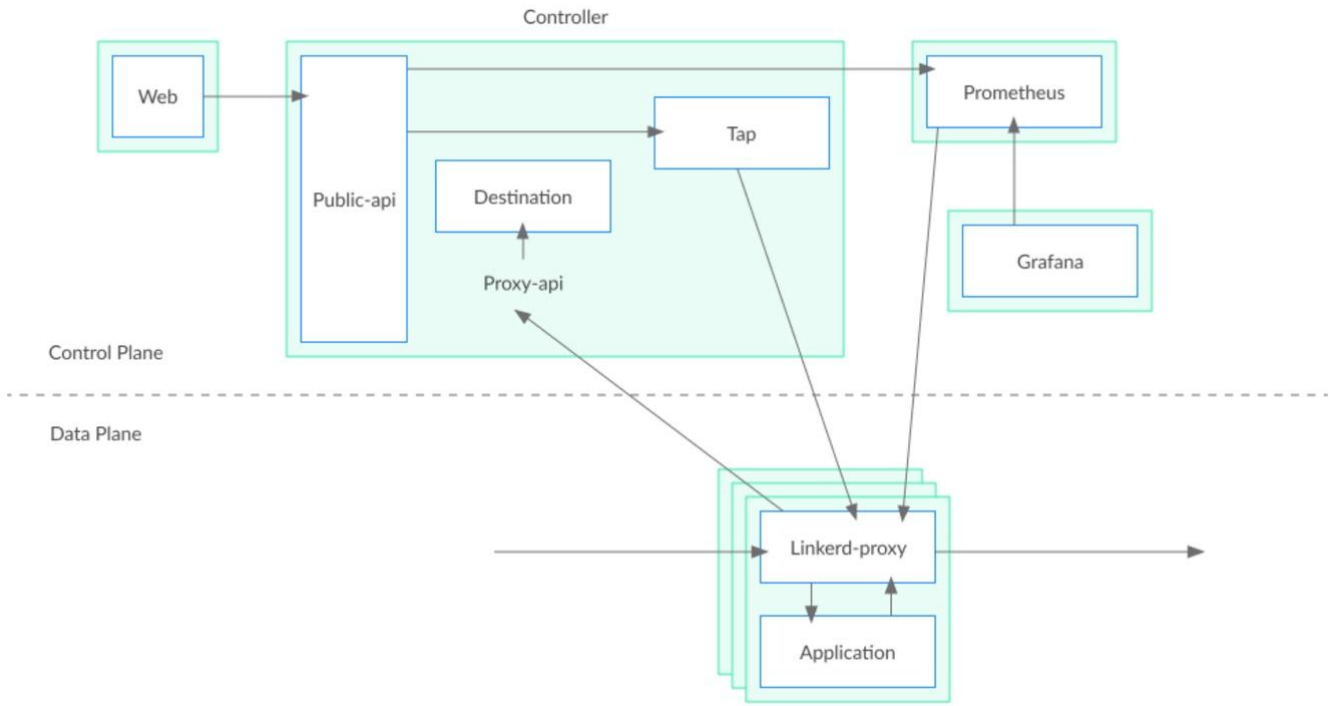


Linkerd

Methodology:

Linkerd focuses on
simple setup and critical features

Add 3rd party components
to get additional features



Istio

Methodology:

A kitchen sink of features to enable / disable

Istio combines third-party components

- Envoy Proxy
- Metrics to Grafana
- Prometheus dashboard
- Jaeger tracing dashboard

```
apiVersion: networking.istio.io/v1alpha3
kind: VirtualService
metadata:
  name: bookinfo
spec:
  hosts:
  - reviews
  http:
  - route:
    - destination:
        host: reviews
        subset: v1
      weight: 75
    - destination:
        host: reviews
        subset: v2
      weight: 25
```

Demo

Service Mesh

In a Nutshell

MONITORING, LOGGING, SERVICE HEALTH

INTELLIGENT ROUTING

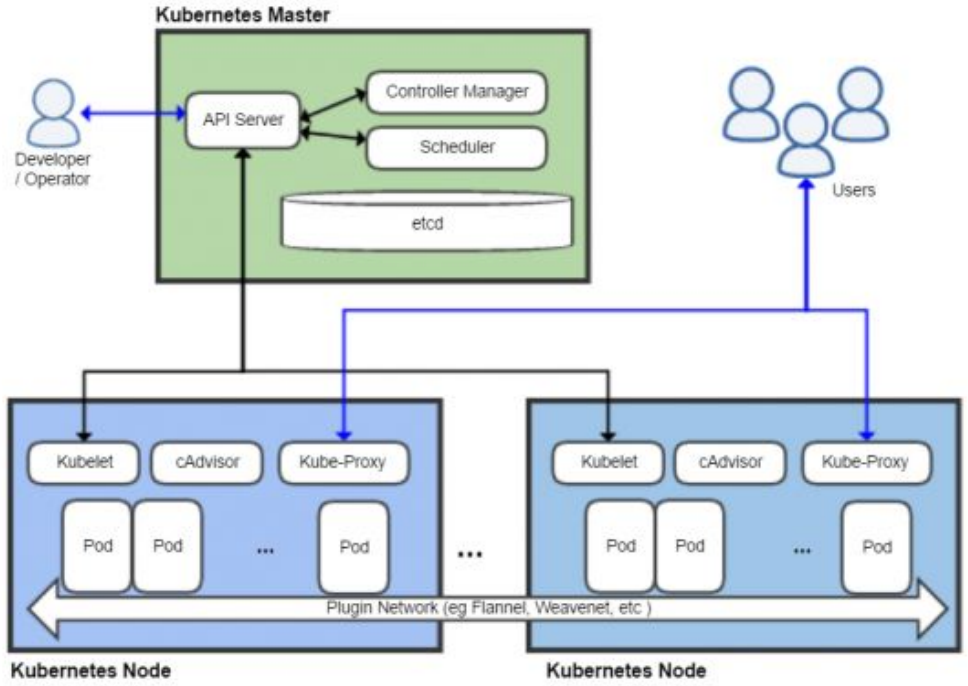
NETWORK TOPOLOGY DIAGRAM

Service Mesh

“If it doesn’t have a control plane, it ain’t a Service Mesh.”

- Zach Butcher

Service Mesh Implementation Cost



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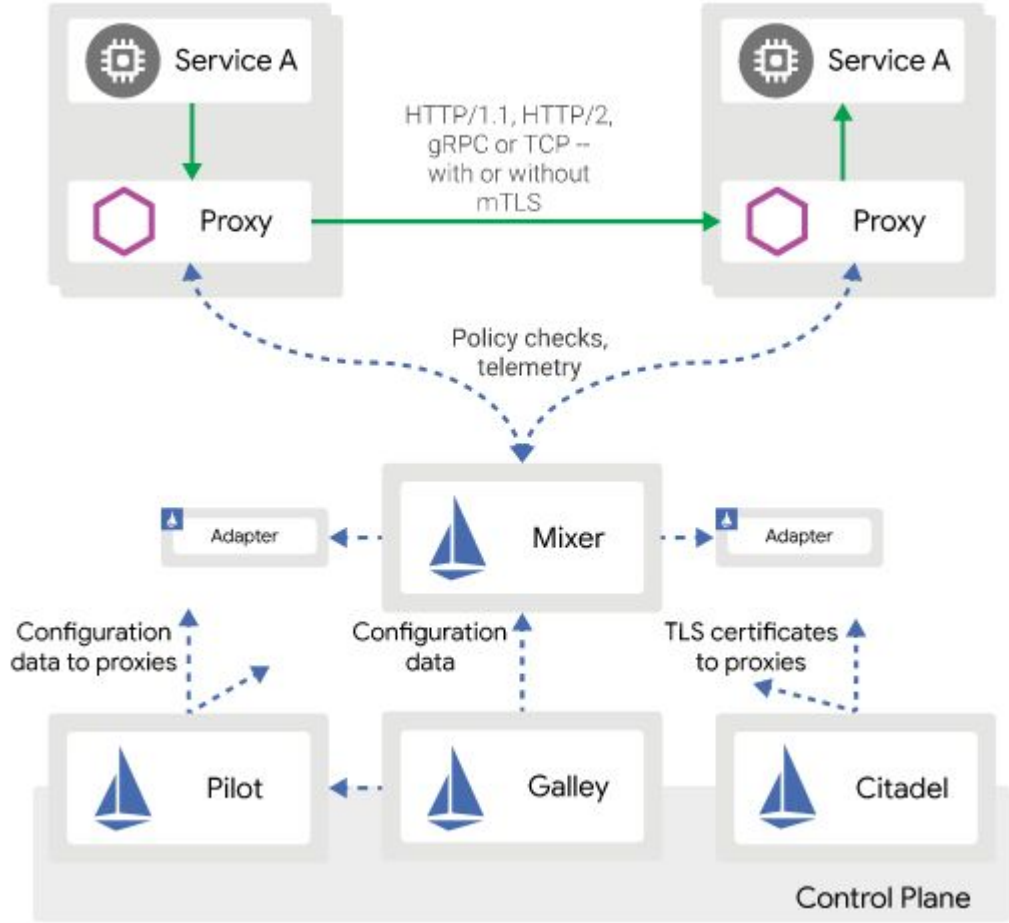

Benefits of Service Mesh

Observe

transparency
of communication

Control

enhanced resilience
to network disruption

Secure

abstraction without
code changes

Use Service Mesh if:

Running highly sensitive workloads (PKI, PCI)

Need security in depth

Running untrusted workloads

Need A/B routing or beta channel

Running multi-tenant workloads

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