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# **Service Mess to Service Mesh**

by Rob Richardson

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## About Me

Rob Richardson is a software craftsman building web properties in ASP.NET and Node, React and Vue. He's a frequent speaker at conferences, user groups, and community events, and a diligent teacher and student of high quality software development. You can find this and other talks on <https://robrich.org/presentations> and follow him on twitter at [@rob\\_rich](https://twitter.com/rob_rich).











# Let's talk about Service Mesh!

- What Is A Service Mesh
- From Monolithic to Microservices
- The Challenge with API Gateways
- Deep Dive into Service Mesh
- Demo
  - Istio
  - Linkerd
- Service Mesh Best Practices

## **A Service Mesh**

**manages 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

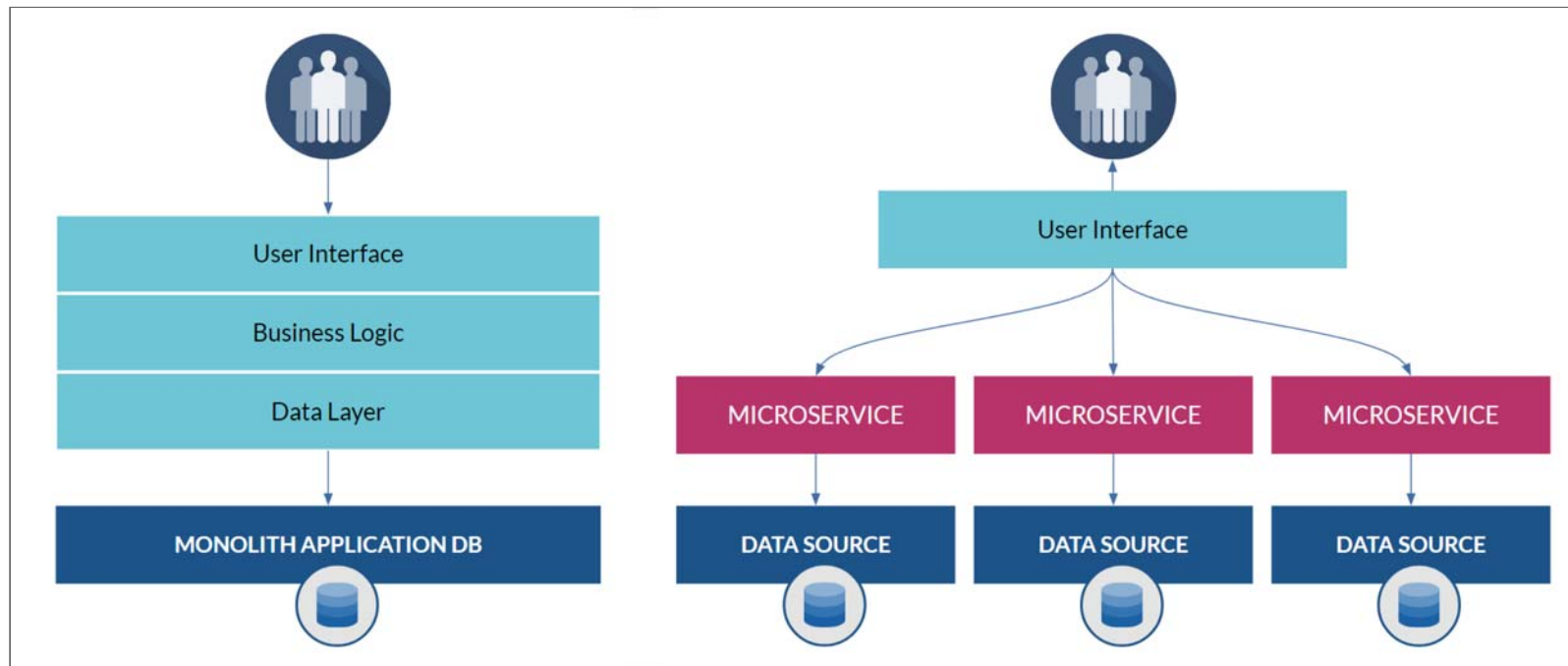


**CONTROL**  
access policies



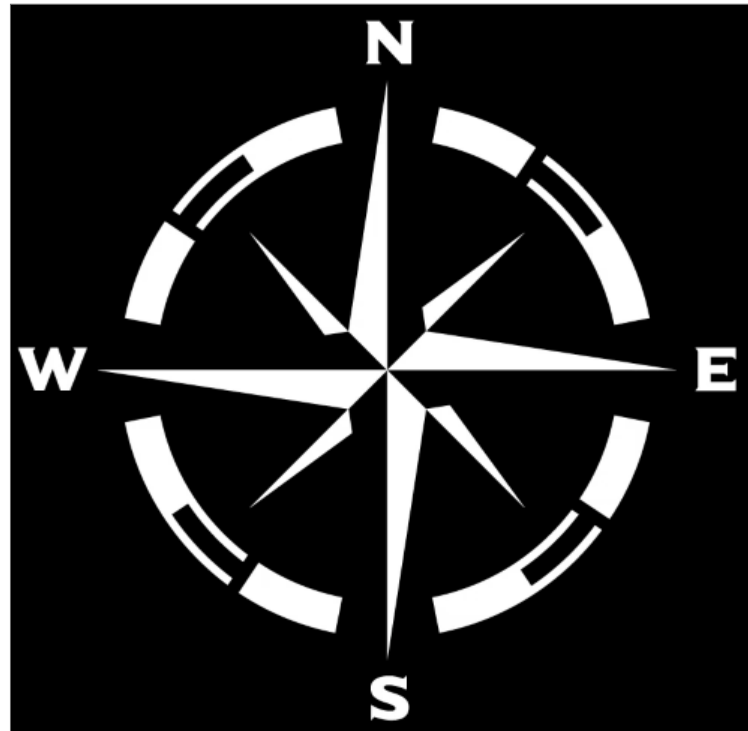
**SECURE**  
mutual TLS

# From Monolithic to Microservices

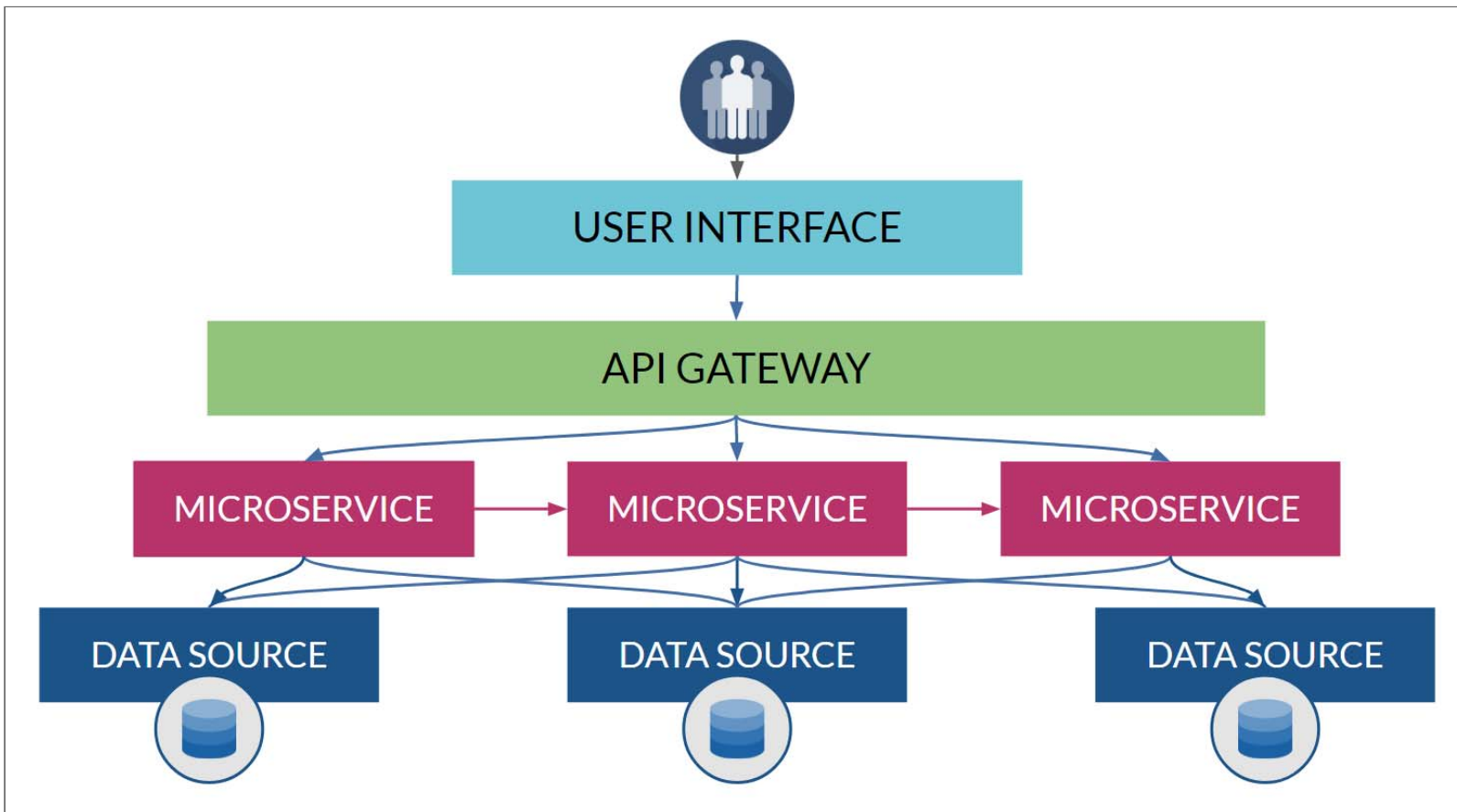


# From North-South to East-West

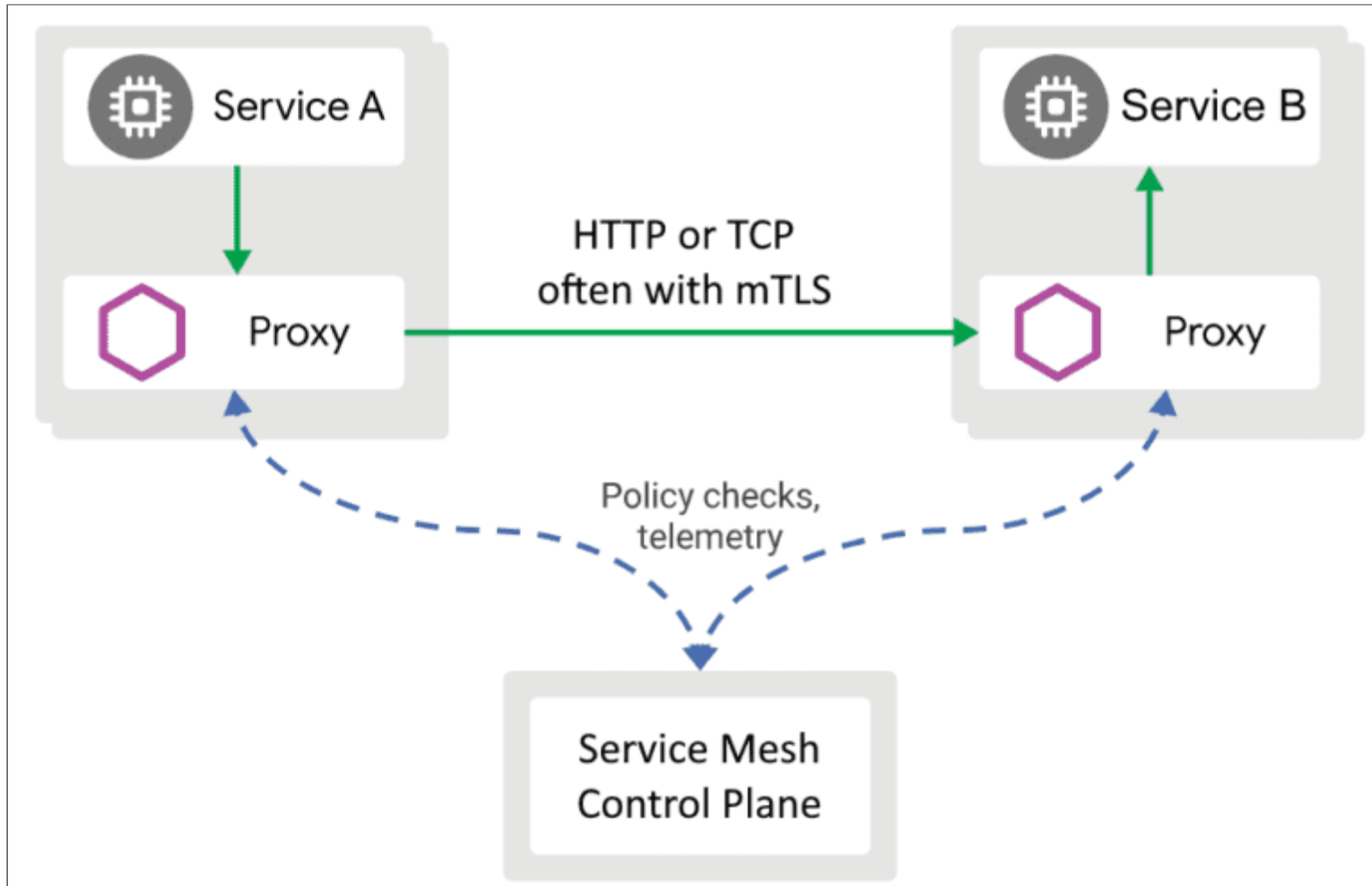
- North - South
  - Network to Container
  - Container to External Services
- East - West
  - Between Containers



# The Challenge with API Gateways



# Service Mesh: How Does it Work?



# Service Mesh



**OBSERVE**  
monitor network



**CONTROL**  
access policies

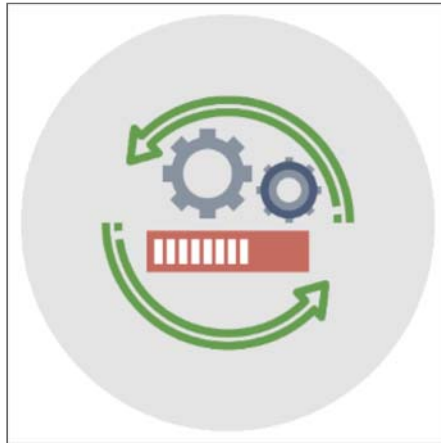


**SECURE**  
mutual TLS

# More Than Just a Proxy



Network Topology



Service Health



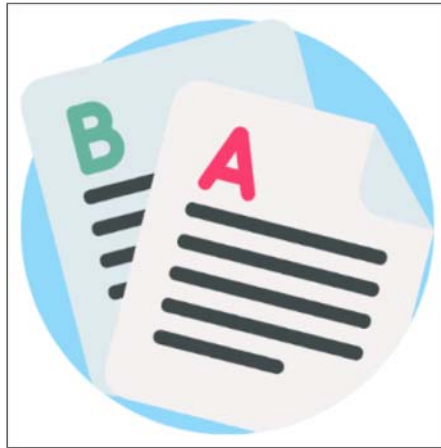
Logging



# More Than Just a Proxy



Circuit Breaker

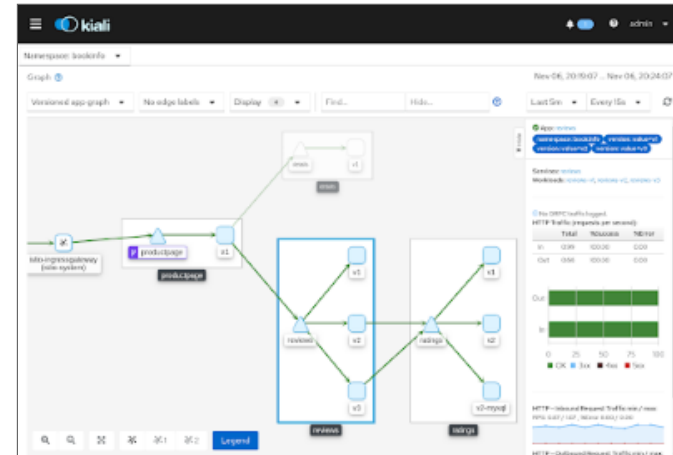
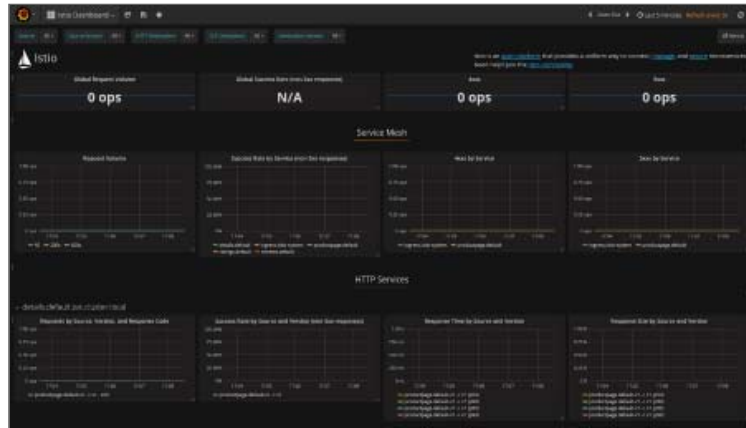


A / B Testing

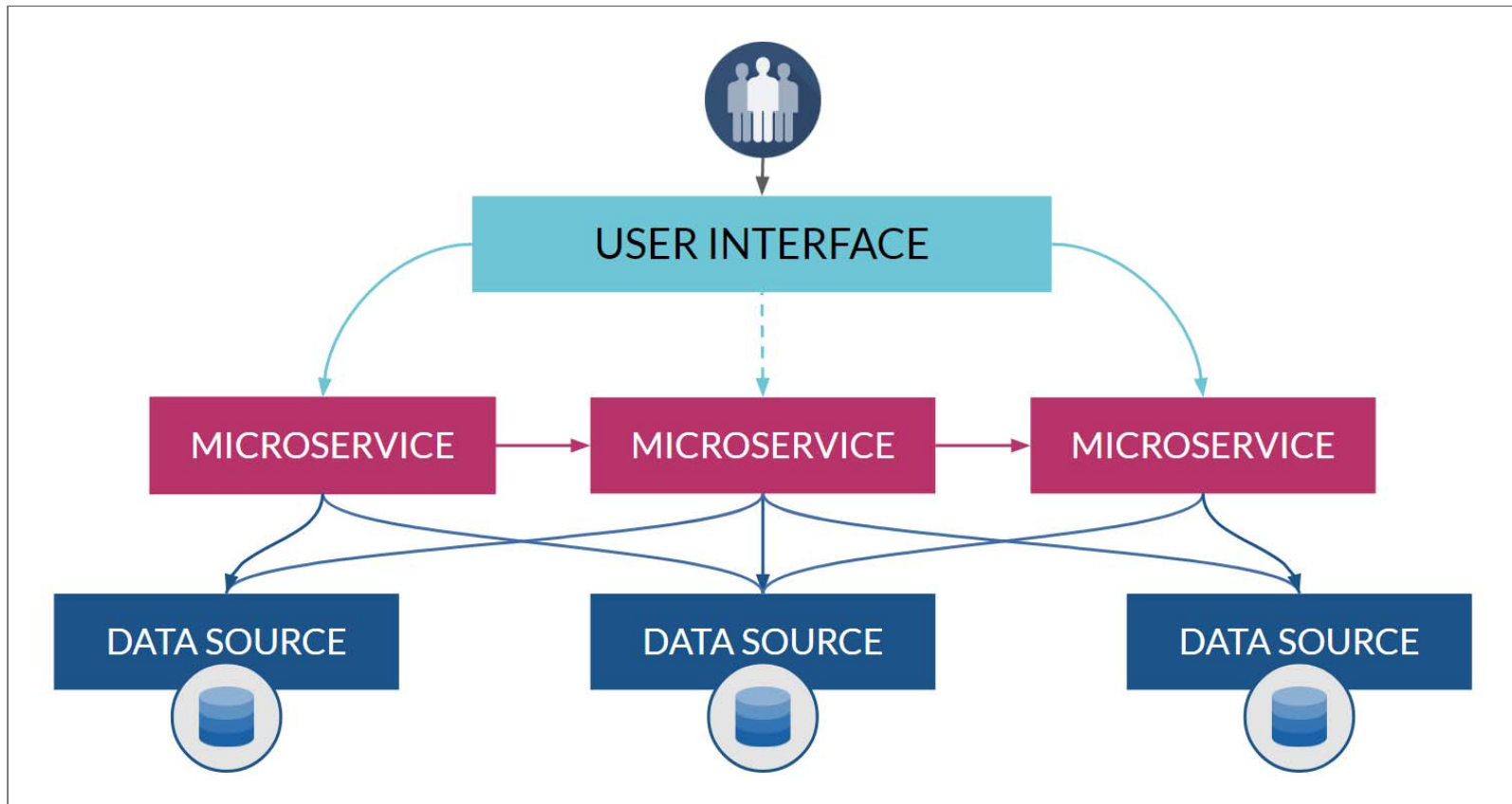


Beta Channel

# Dashboards



# Prevent Unexpected Traffic Patterns



# Service Meshes

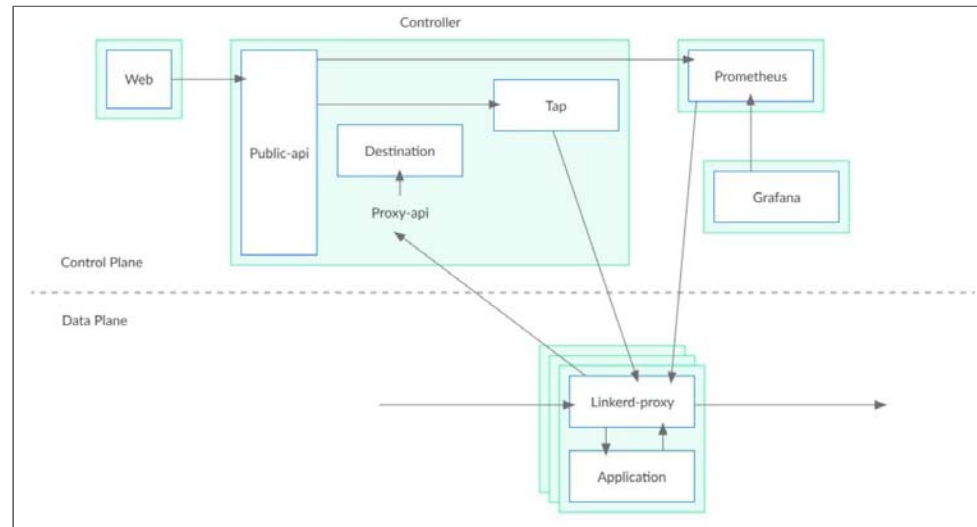
- Istio
- Linkerd
- Consul
- Open Service Mesh

# 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
- Prometheus events sink
- Grafana 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**

- **Linkerd**
- **Istio**

# In a Nutshell



Monitoring,  
Logging,  
Service Health



Intelligent Routing



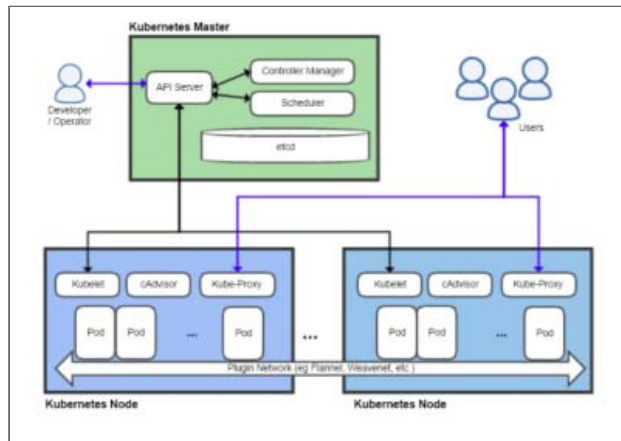
Network Topology  
Diagram



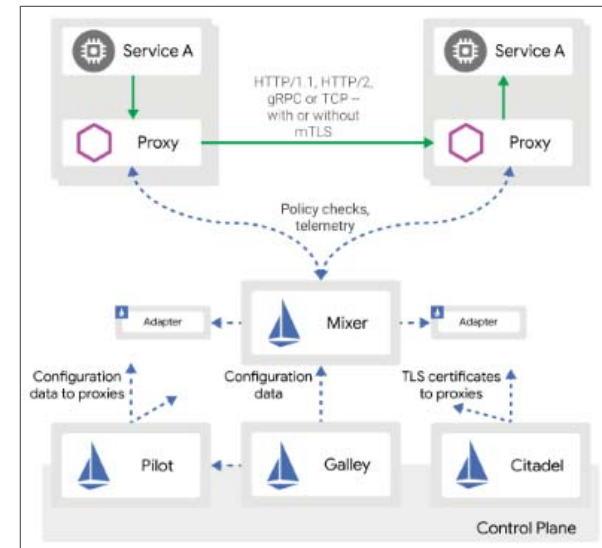
**"If it doesn't have a control plane,  
It ain't a Service Mesh."**

**-Zach Butcher**

# Service Mesh Implementation Cost



+



# Benefits of Service Mesh



**OBSERVE**  
transparency of  
communication



**CONTROL**  
enhanced resilience to  
network disruption



**SECURE**  
abstraction  
without code  
changes

## **Use a Service Mesh if:**

- Running highly sensitive workloads (PKI, PCI)
- Running untrusted workloads
- Running multi-tenant workloads
- Need security in depth
- Need A/B routing or a beta channel

**Questions?**

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