SAI VENNAM - DEVELOPER ADVOCATE | IBM CLOUD

STRATEGIES TO “KUBERNETIFY” LEGACY APPLICATIONS

@birdsaiview

Cloud journey for apps

Build

Modernize

Extend

Secure

Accelerate

Containers reduced app downtime & associated costs

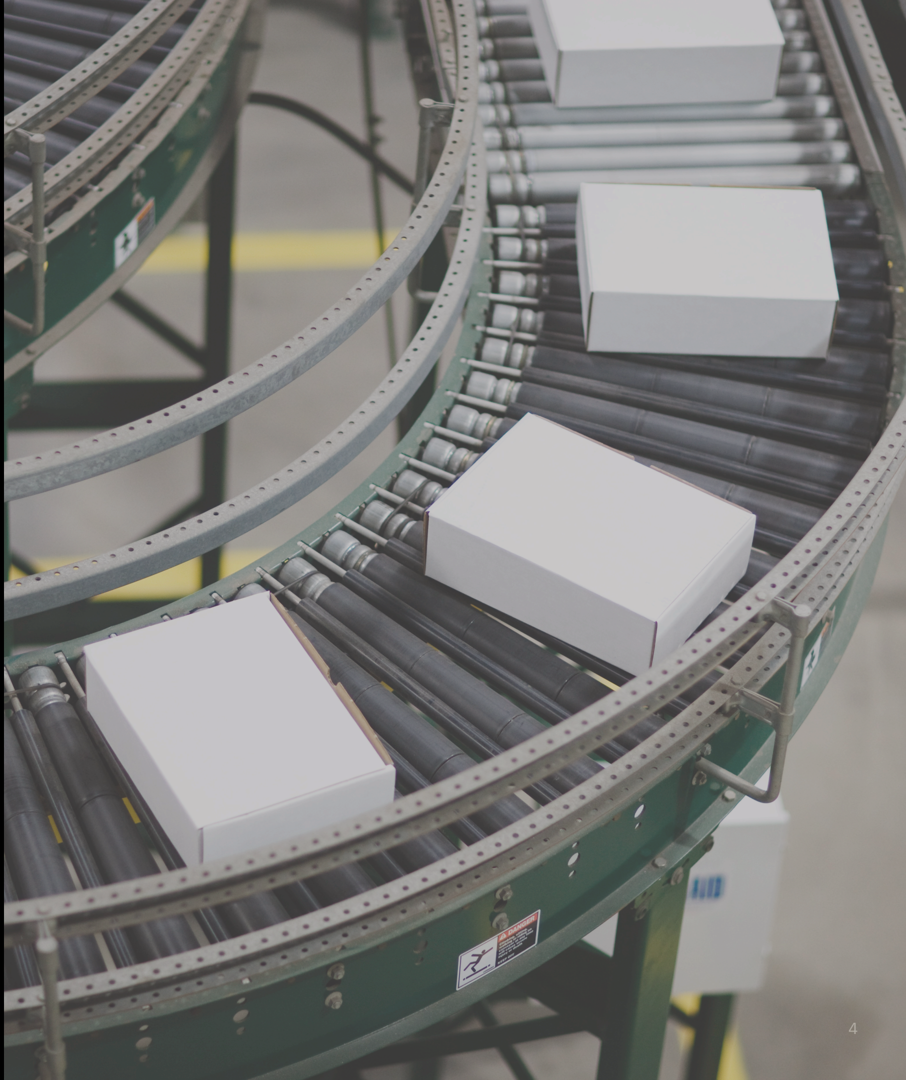
↓57%

Report: *State of Container-based Application Development*

Containers improved app quality & reduced defects

↑59%

Report: *State of Container-based Application Development*



Transformation with **Kubernetes**

Start with cloud native

- Microservices
- Containers
- DevOps

Service mesh

App-centric security

Elasticity & horizontal scaling

Tolerance for changes & outages

Continuous delivery & integration pipeline

Automated everything

Setting up Success

An intelligent service mesh for microservices

Observability

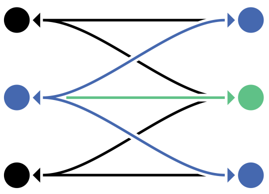
Resiliency

Traffic control

Security & policy enforcement

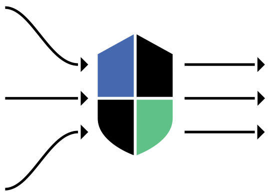
Language of
your choice

Istio.io

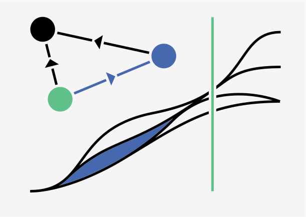


Intelligent routing & load balancing

Resilience across languages & platforms



Fleet-wide policy enforcement



In-depth telemetry & reporting

Istio founding members

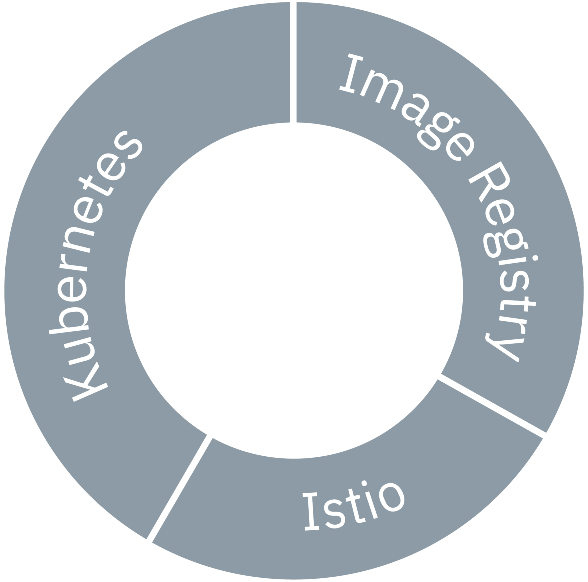
IBM Google lyft

Istio community partners

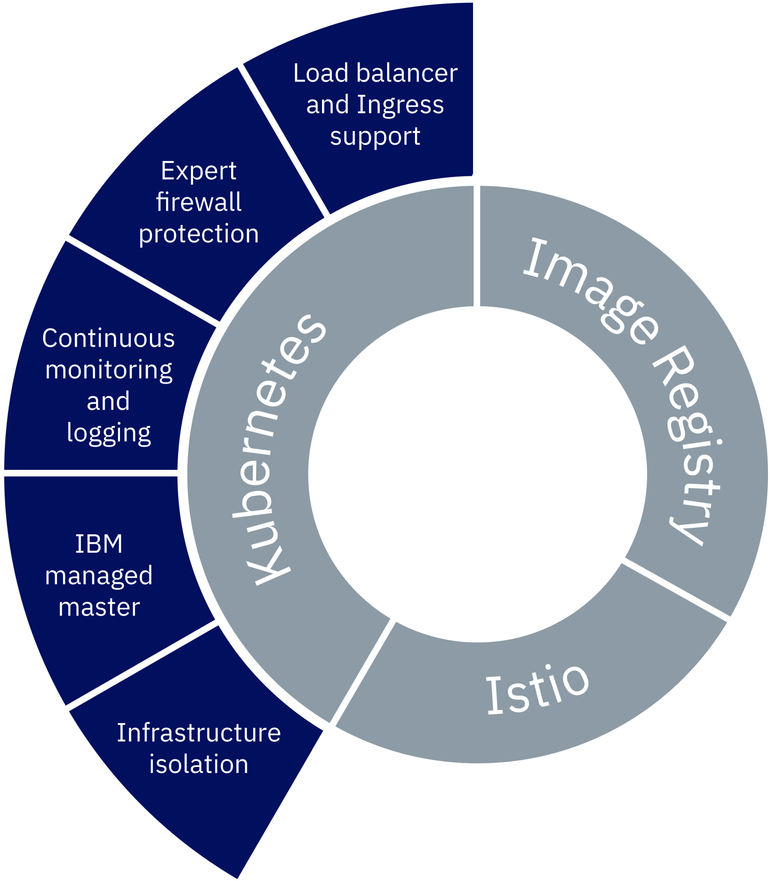
Pivotal Microsoft

Think 2018 / 4588 / March 2018 / ©2018 IBM Corporation

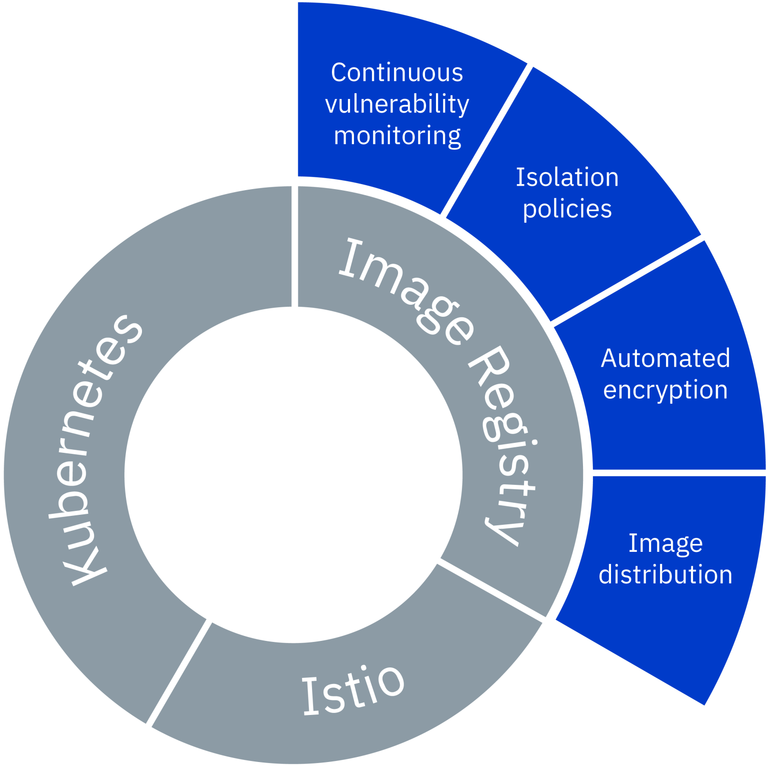
Secure to the core



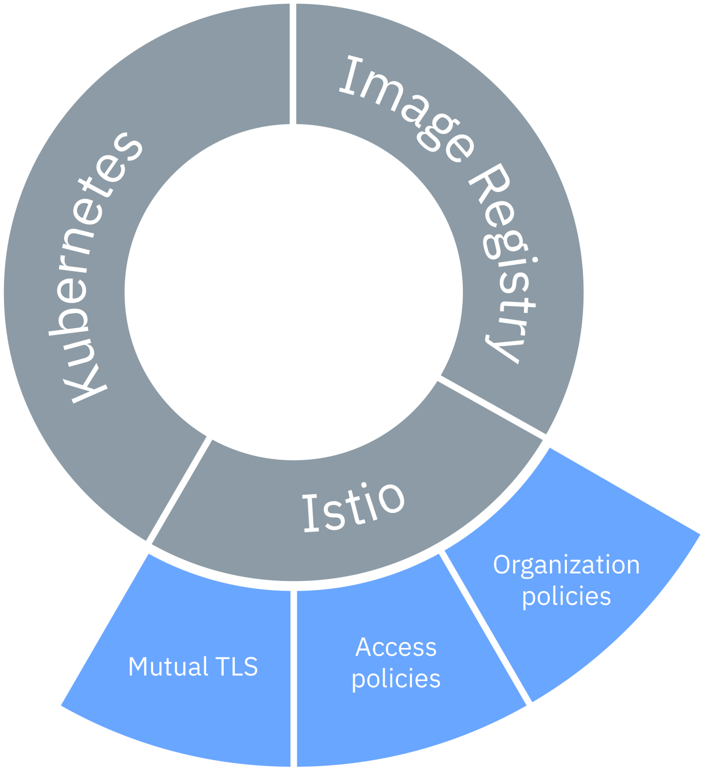
Secure to the core


Load balancer and Ingress support
Expert firewall protection
Continuous monitoring and logging
IBM managed master
Infrastructure isolation
Kubernetes
Image Registry
Istio

Secure to the core



Secure
to the core

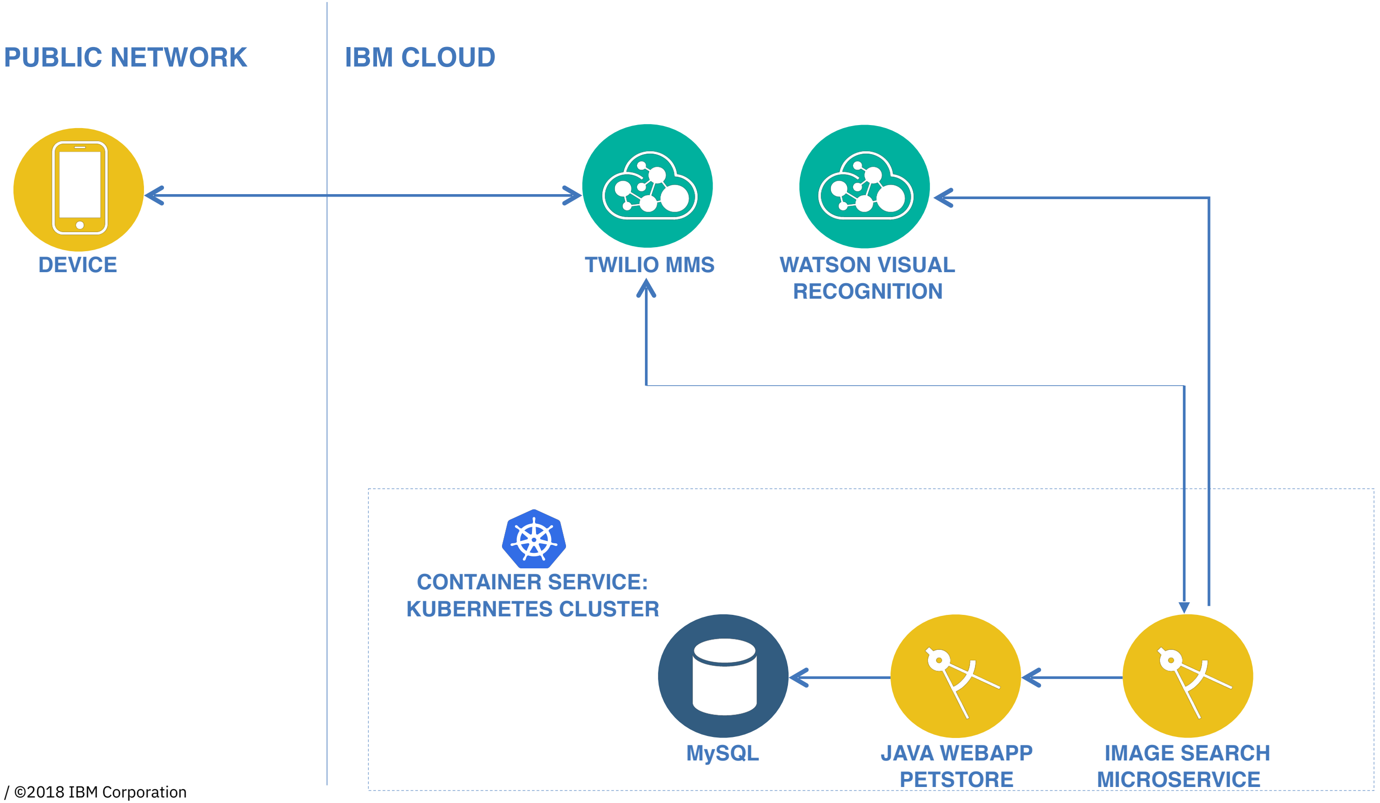


Recipe for modernization

- Extract app
- Containerize app & deploy
- Extend with AI services
- Manage app with DevOps
- Expand with new capabilities

Demo: modernizing a Java app

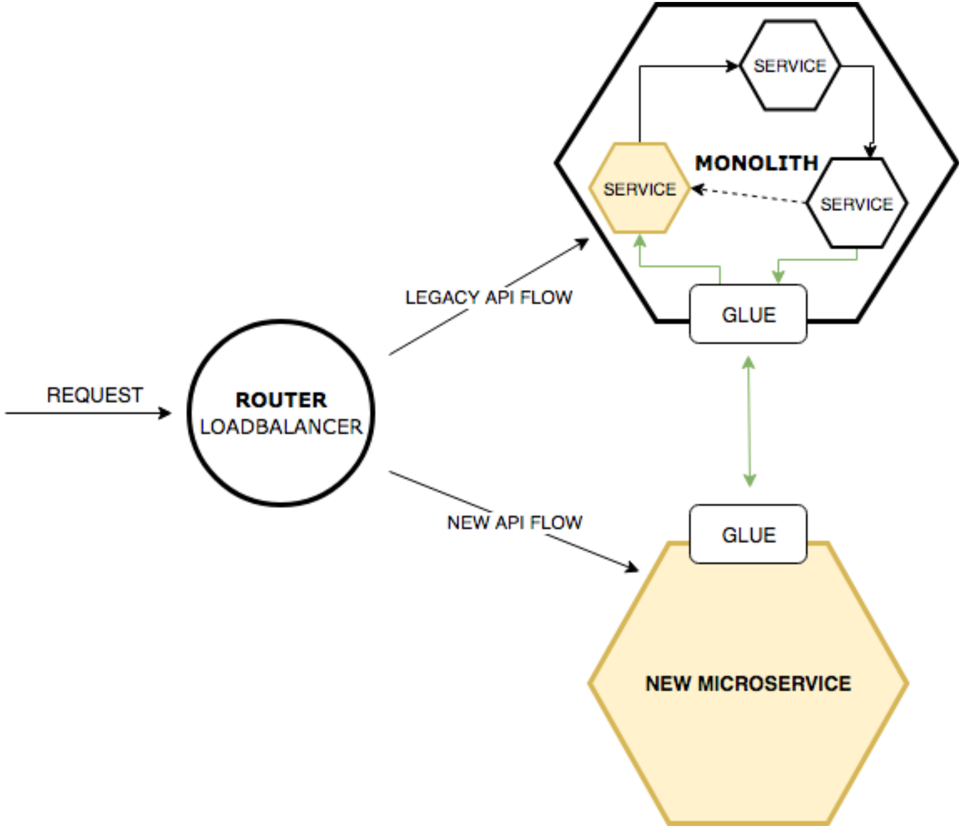
New Architecture


PUBLIC NETWORK
IBM CLOUD
DEVICE
TWILIO MMS
WATSON VISUAL RECOGNITION
CONTAINER SERVICE: KUBERNETES CLUSTER
MySQL
JAVA WEBAPP PETSTORE
IMAGE SEARCH MICROSERVICE

1. Deconstruct
2. Lift and Shift
3. Innovate + Improve

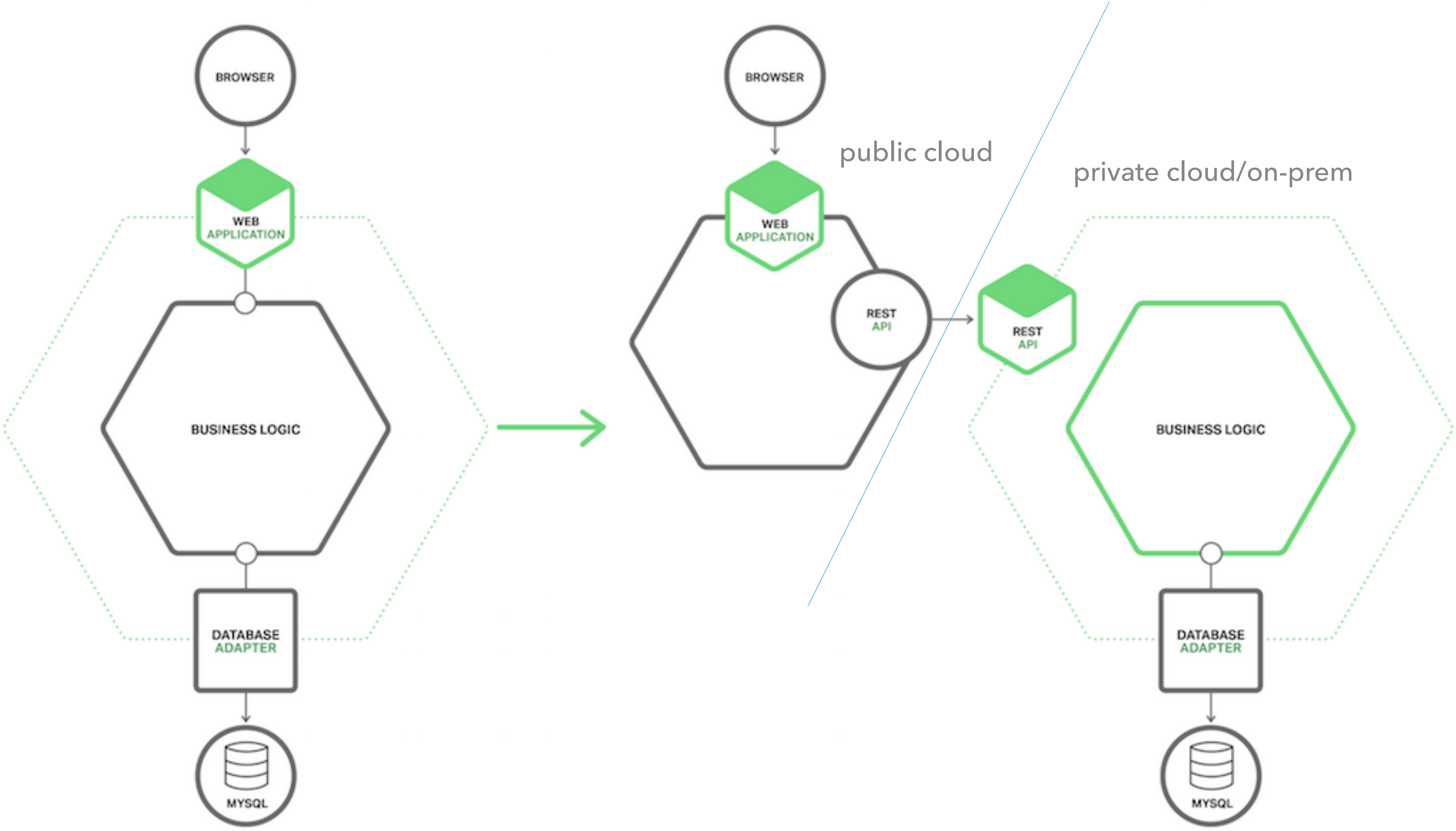
Strategies for Breaking Apart Monoliths

BREAKING OUT A SINGLE SERVICE



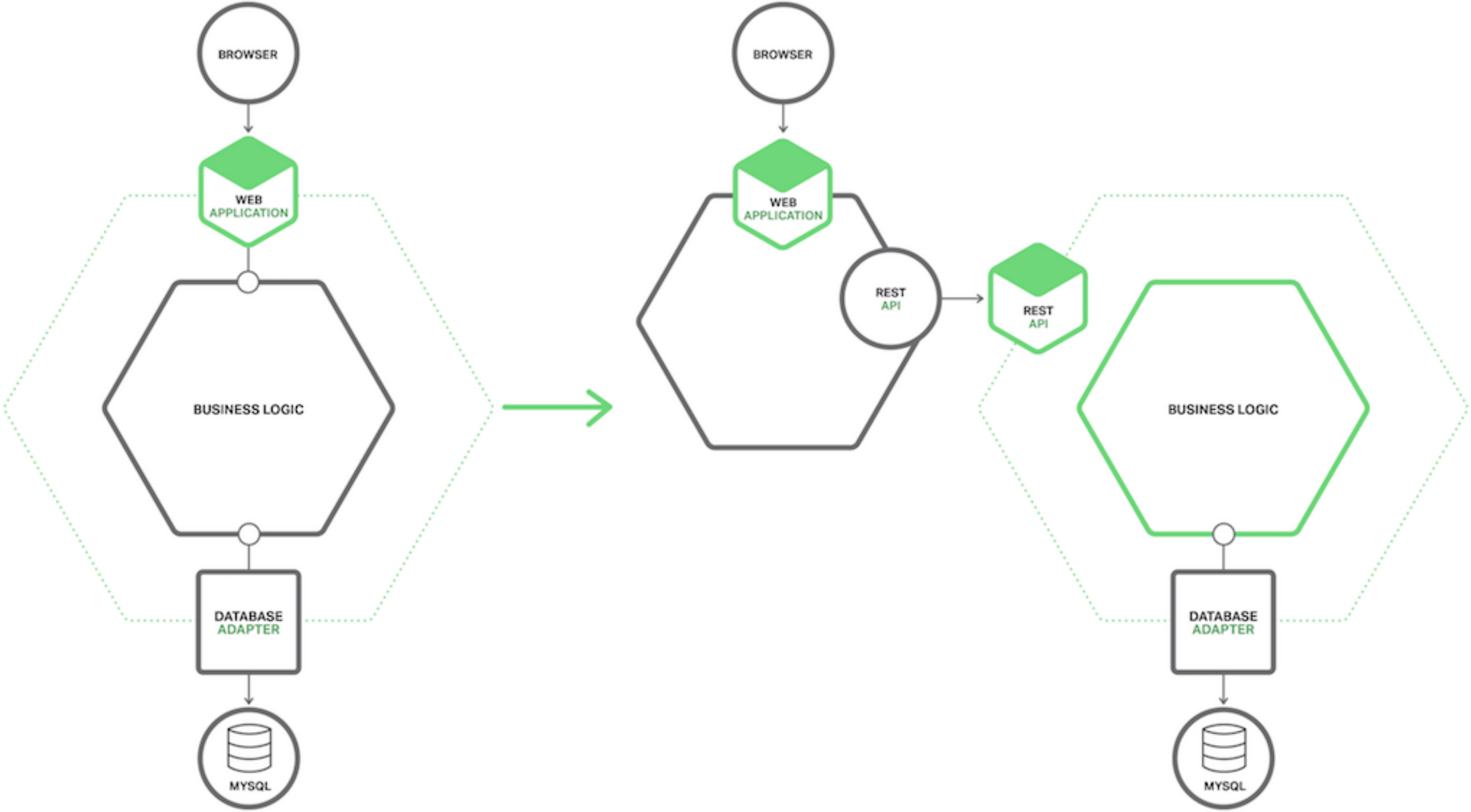
START SMALL

IDENTIFY PIECES THAT ARE EASY TO REFACTOR



https://www.nginx.com/blog/refactoring-a-monolith-into-microservices/

REDUNDANCY IS OK



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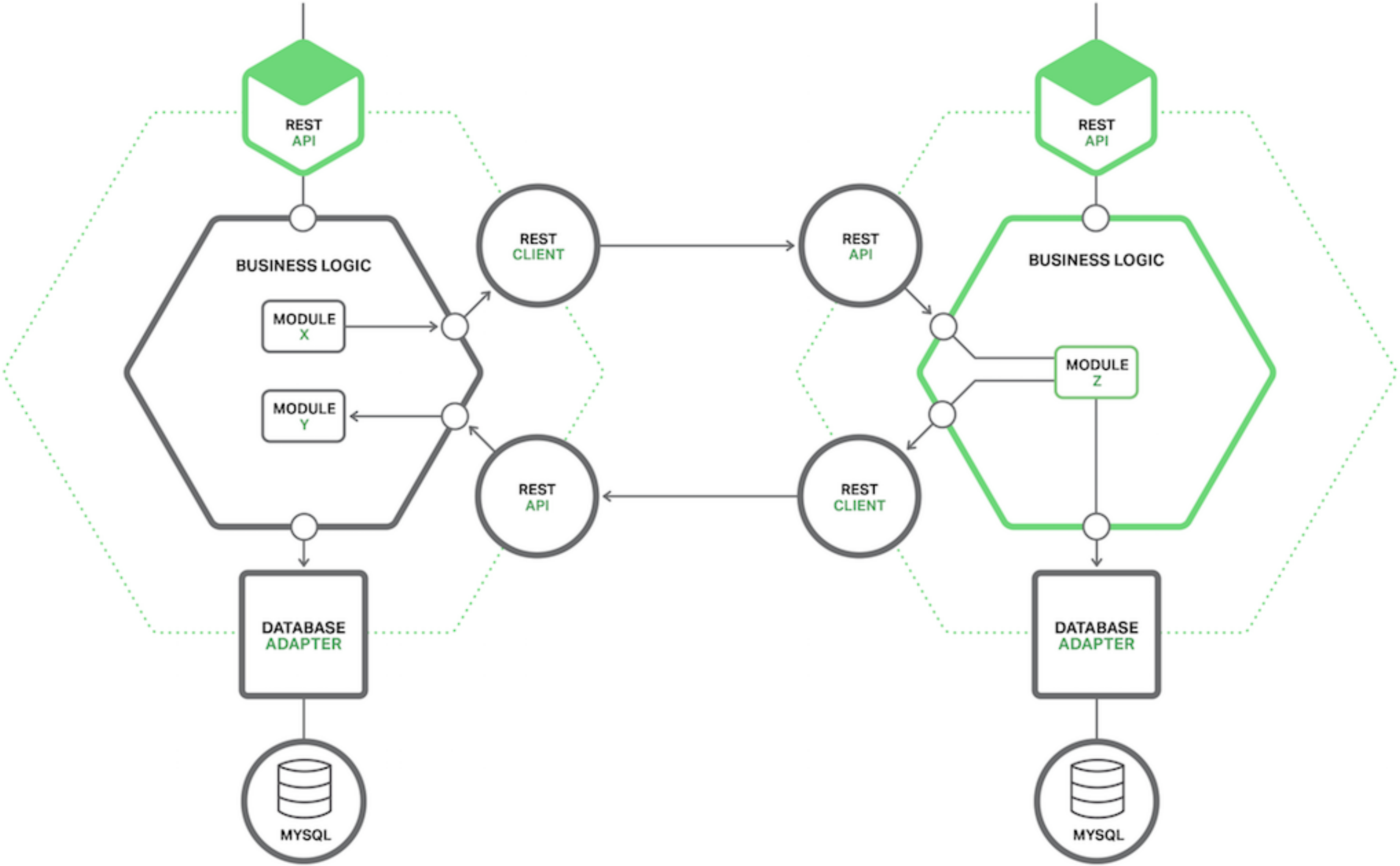


https://www.nginx.com/blog/refactoring-a-monolith-into-microservices/

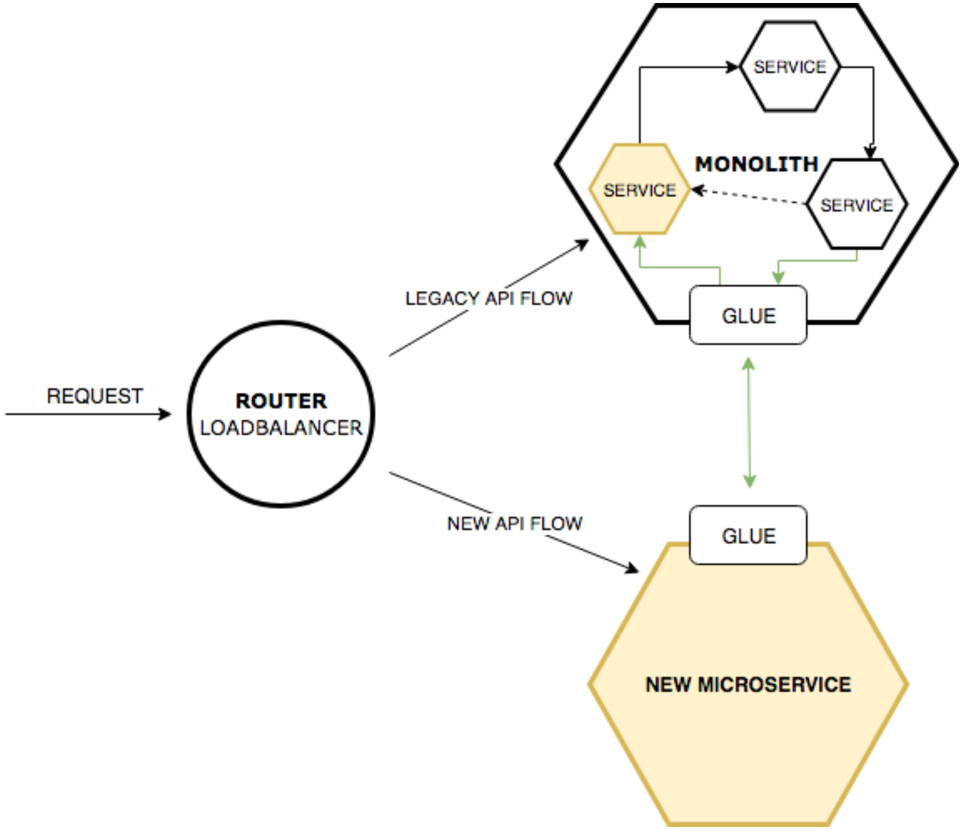
Considerations

- Don’t dig yourself deeper
  - Develop new applications/services outside the monolith
- Migrating data is not always an option
- Always identify opportunities for refactoring according to client/consumer requirements
- Even when breaking apart into microservices, retain old code in production until 100% verified
  - A/B testing

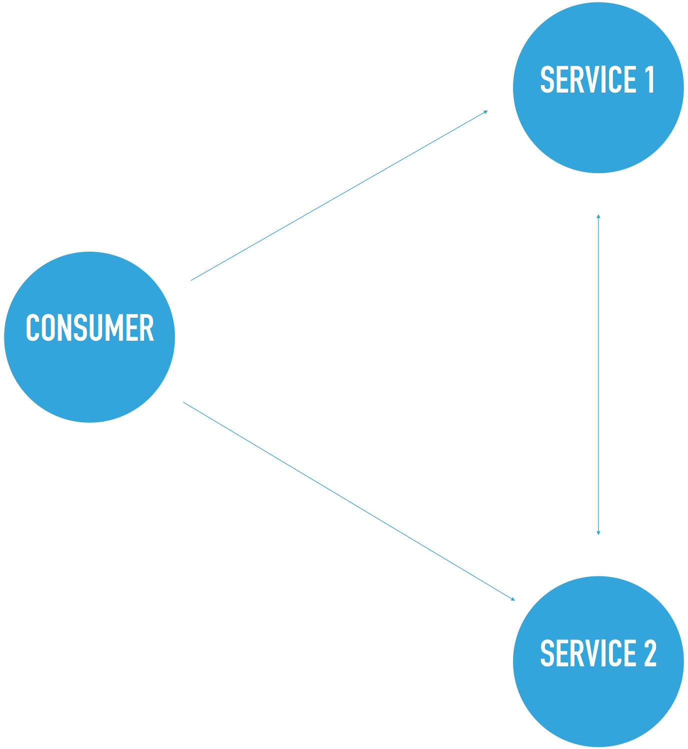
1. Refactor with GLUE
2. Create New Services
3. Test Old and New
4. Phase Old Service
5. Repeat!

ISTIO?

Remember this?

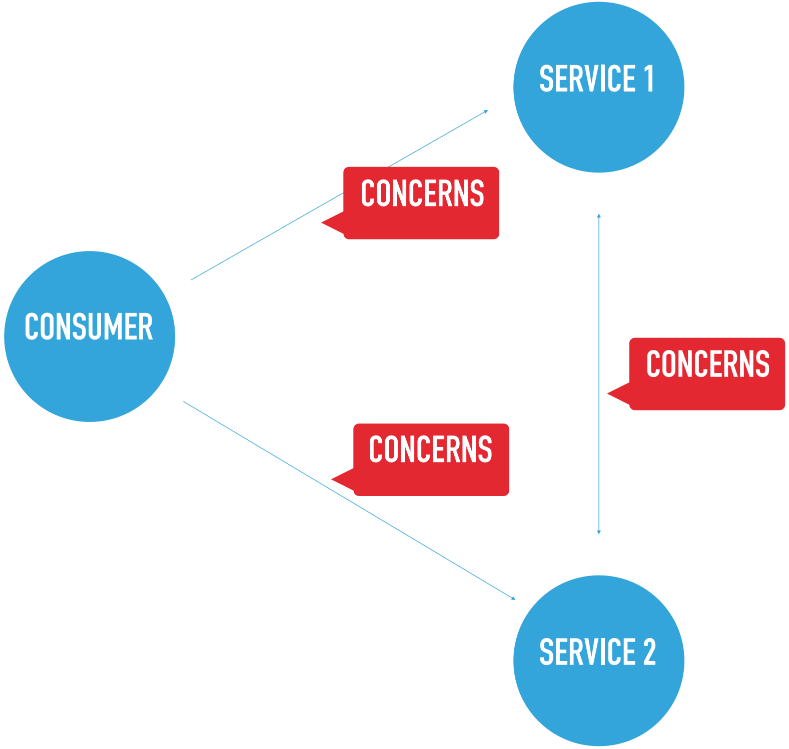


Simplified!

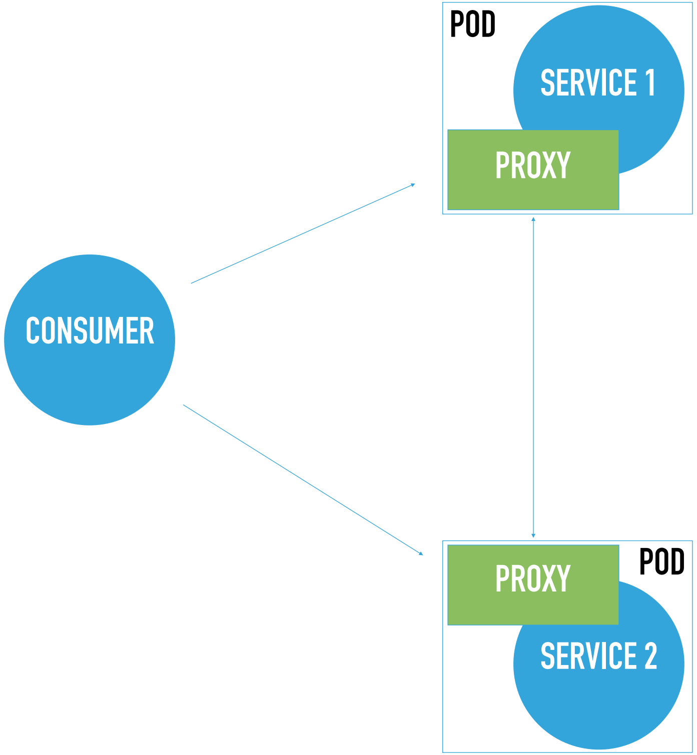


Concerns the App Doesn’t Care About

- Telemetry - visibility into containers
- Service Discovery
- Security
- Distributed workloads
- Retries and timeouts
- External services (API keys)

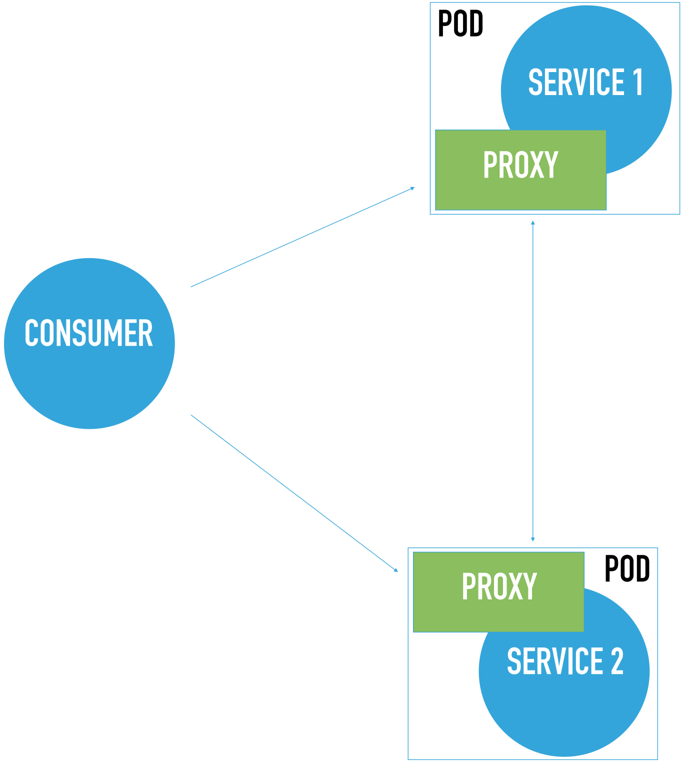


Isolate Concerns to a Proxy Component



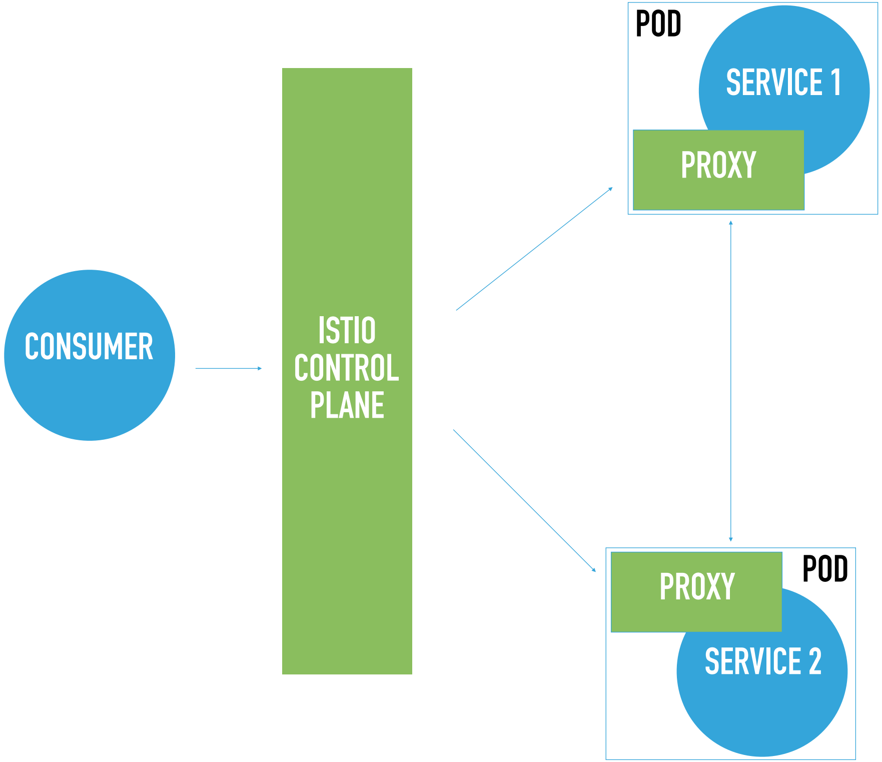
Isolate Concerns to a Proxy Component

ENVOY IS AN OPEN SOURCE EDGE AND SERVICE PROXY, DESIGNED FOR CLOUD-NATIVE APPLICATIONS



What it really looks like

Istio



Istio

DEMO

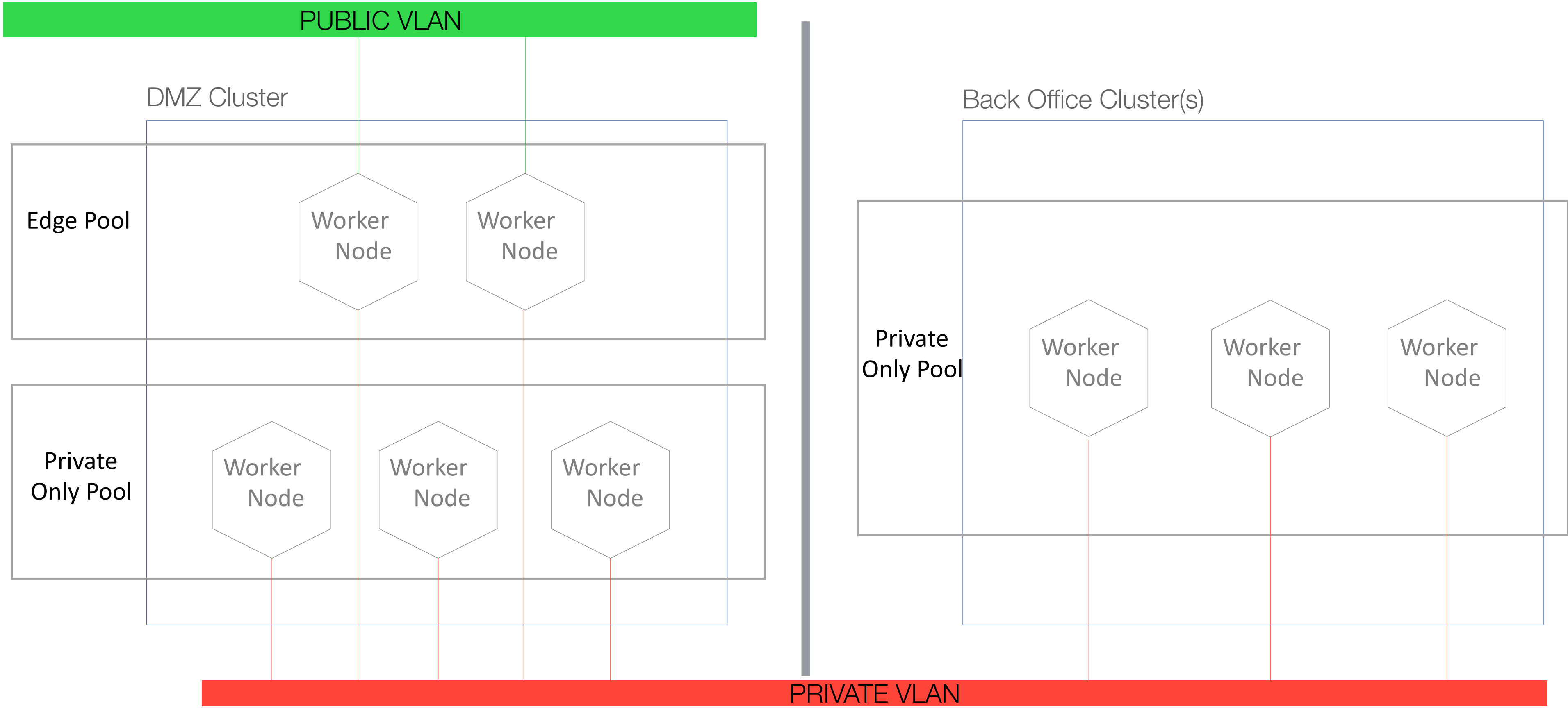
Bridge the Gap

Public + Private

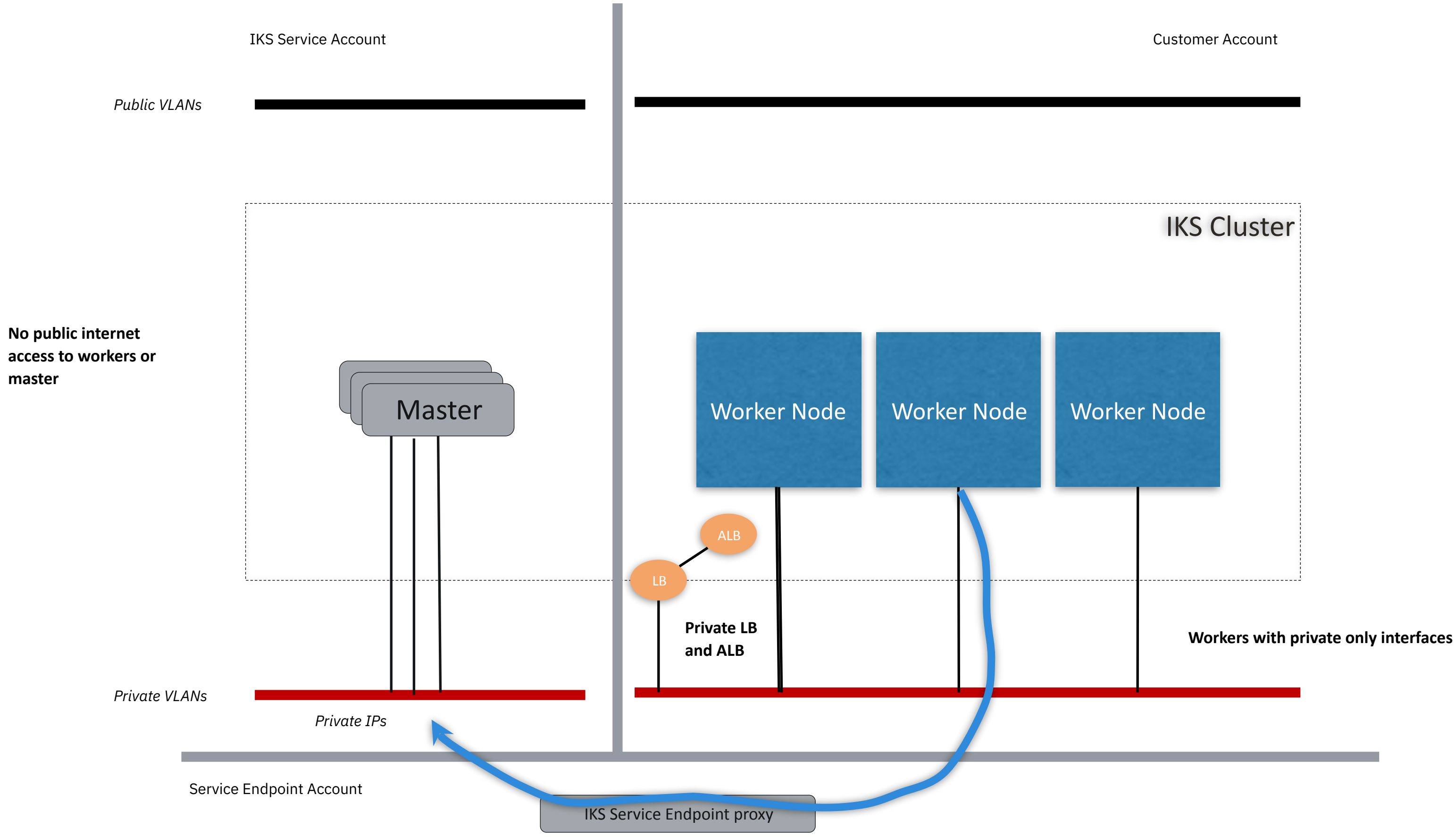
Private Service Endpoints

- One cluster with worker nodes in both public and private VLANs
- Private traffic between master and worker nodes
- Complete control over isolation of your virtualized hardware

Cluster configuration



Private Clusters



Private Service Endpoints

DEMO

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Thank you

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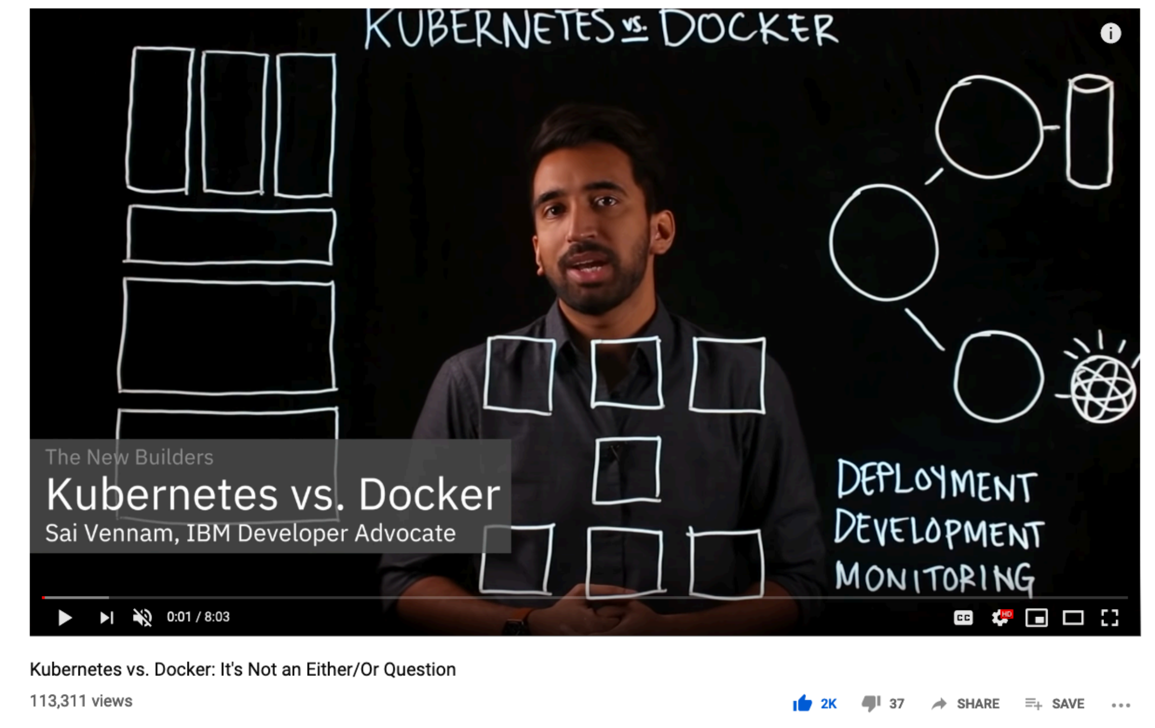

Kubernetes vs. Docker: It's Not an Either/Or Question

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