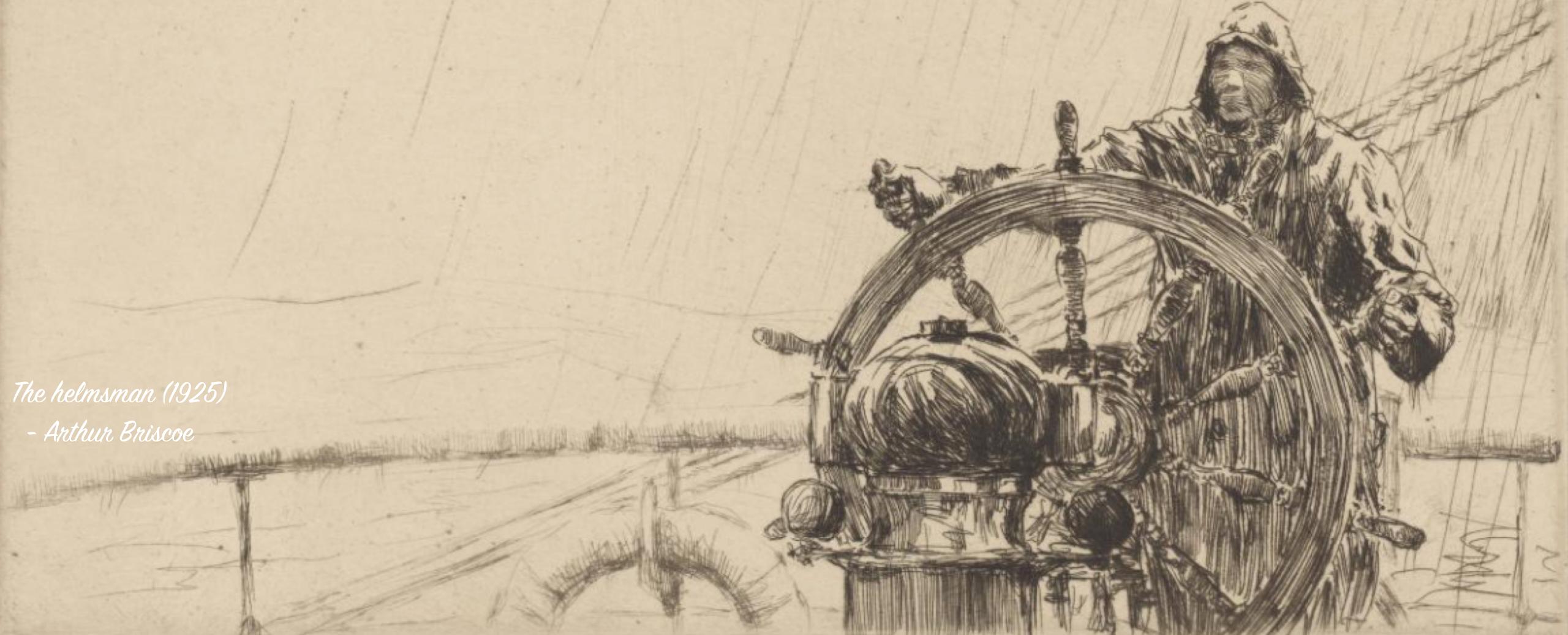


# Azure Kubernetes Service - AKS

*The helmsman (1925)*  
- Arthur Briscoe

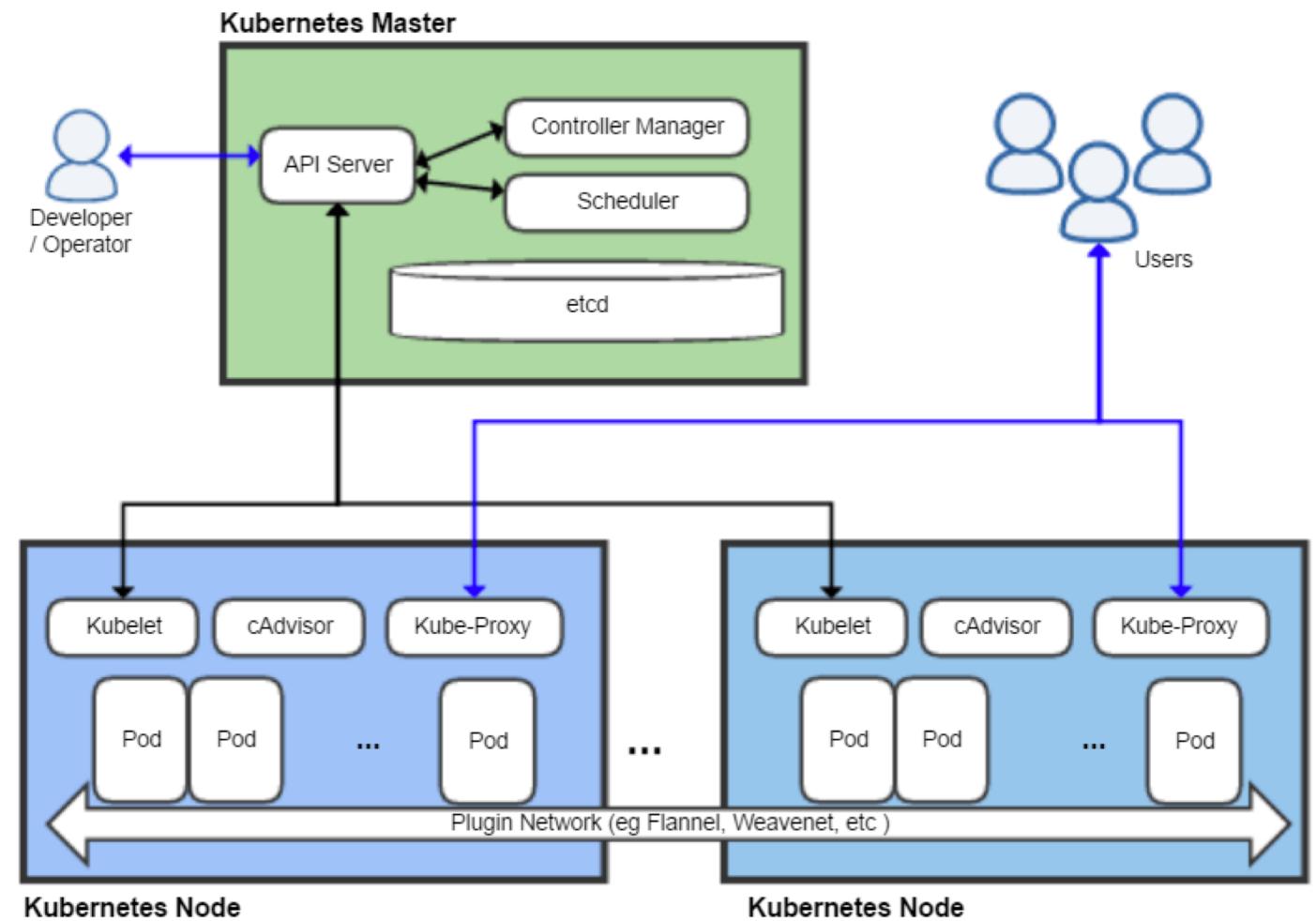


# Kubernetes Basics

- Greek for helmsmen, steersman, pilot
- Container Orchestrator and Scheduler
- Open-source
- Horizontal and Vertical Scaling
- Flexible Container Platform
- Declarative - Desired State

# Kubernetes Architecture

- Containers Only
- API Driven
- Masters: Control Plane
- Nodes: Workers
- Extensible
  - DNS
  - Web UI
  - Monitoring
  - Cluster Logging
  - Operators

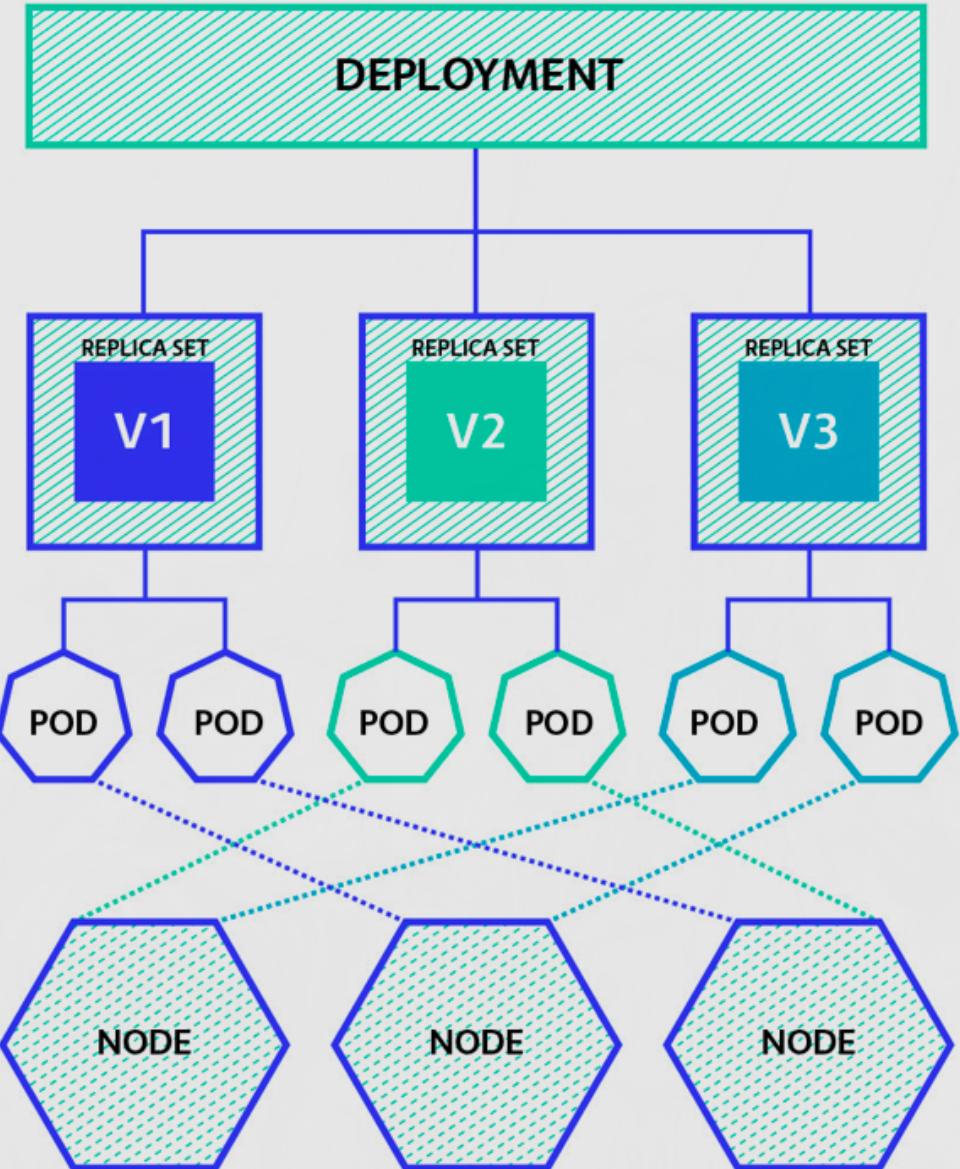


# Management

- API – OpenAPI & Versioning
- Kubectl
- Labels and Selectors
- Annotations
- Namespaces
- Secrets

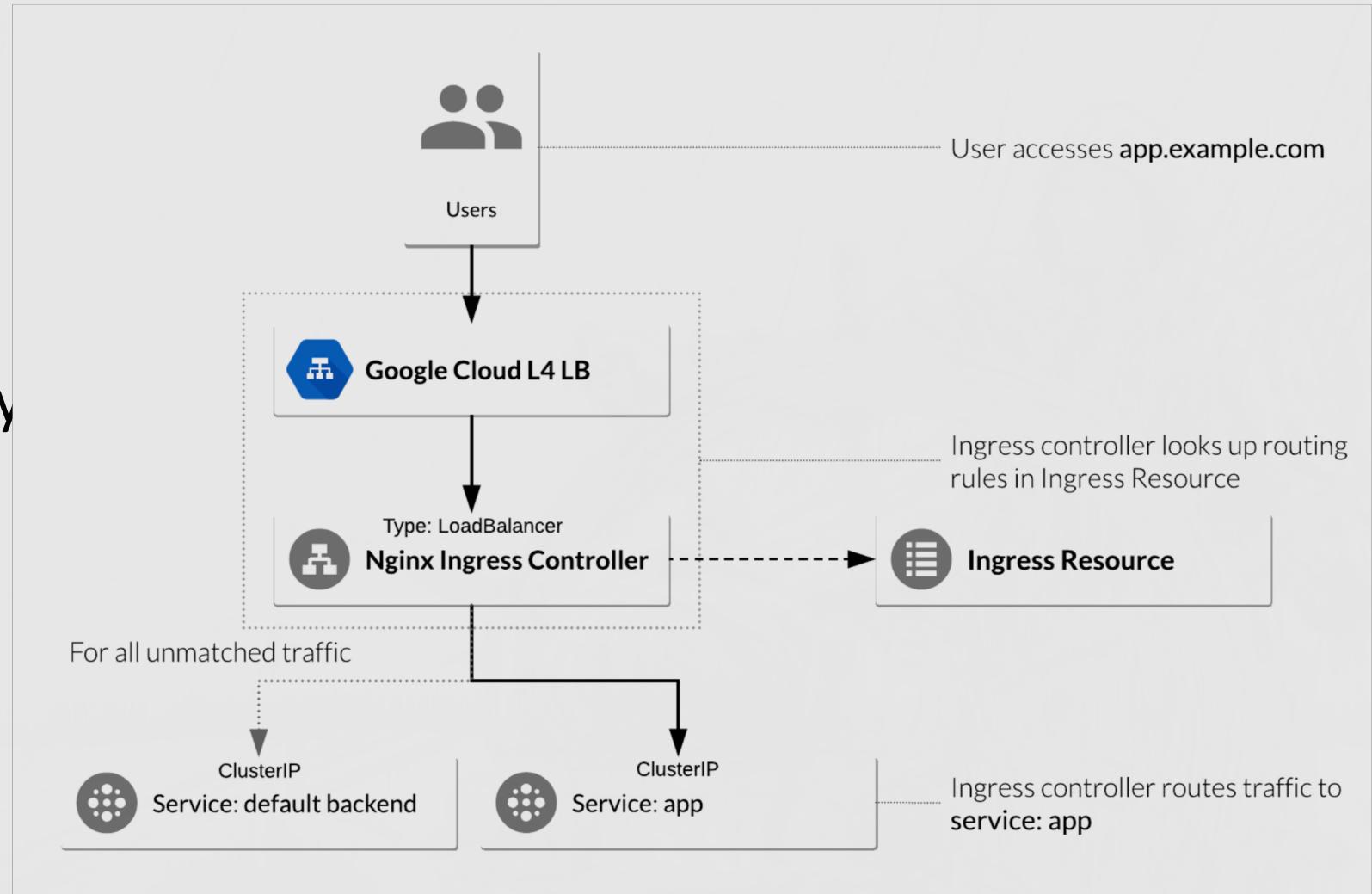
# Pods and Components

- Pod
- Deployments
- ReplicaSet
- StatefulSets
- DaemonSet
- Jobs (cronjob)
- Garbage Collection



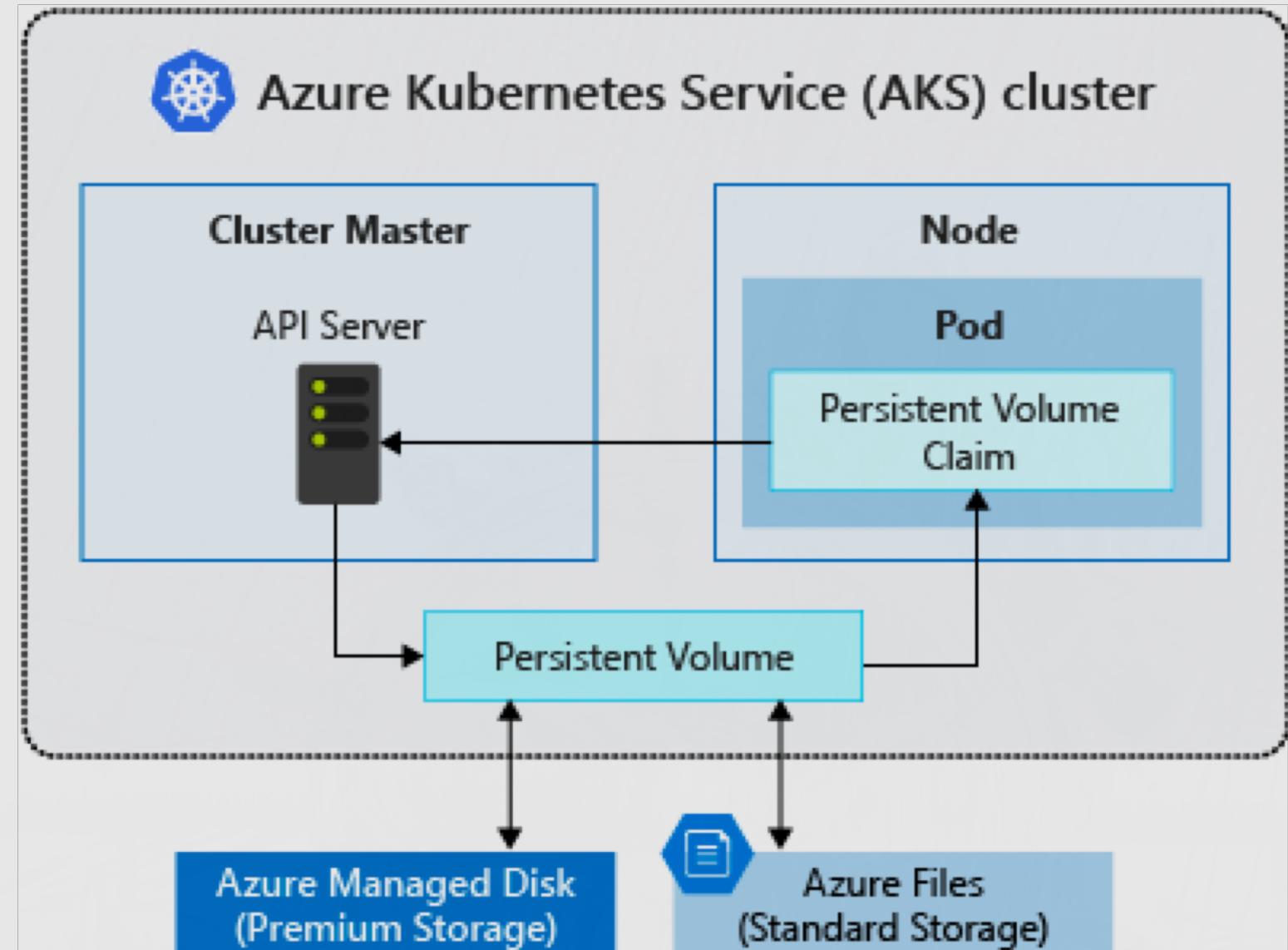
# Services and Networking

- Services
- Ingress
- DNS
- Service Discovery



# Storage Components

- Volumes
  - Azure file/disk
  - emptyDir
  - Secret
  - configMap
  - Local
  - scaleIO
  - storageOS
  - EBS, FC, iSCSI, NFS, gluster ...
- Storage Classes
- PV Claims



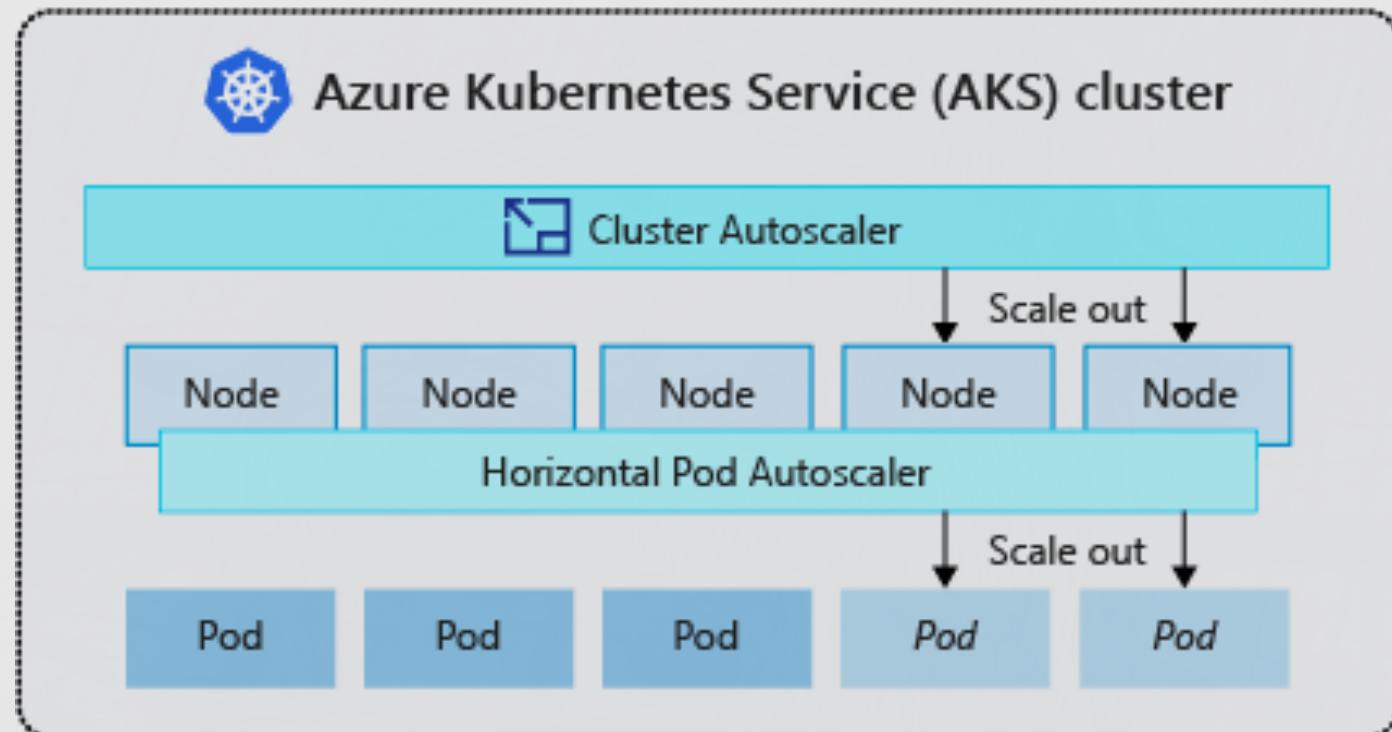
```
$ kubectl apply -f deployment.yaml
```

### application/deployment.yaml

```
apiVersion: apps/v1 # for versions before 1.9.0 use apps/v1beta2
kind: Deployment
metadata:
  name: nginx-deployment
spec:
  selector:
    matchLabels:
      app: nginx
  replicas: 2 # tells deployment to run 2 pods matching the template
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:1.7.9
          ports:
            - containerPort: 80
```

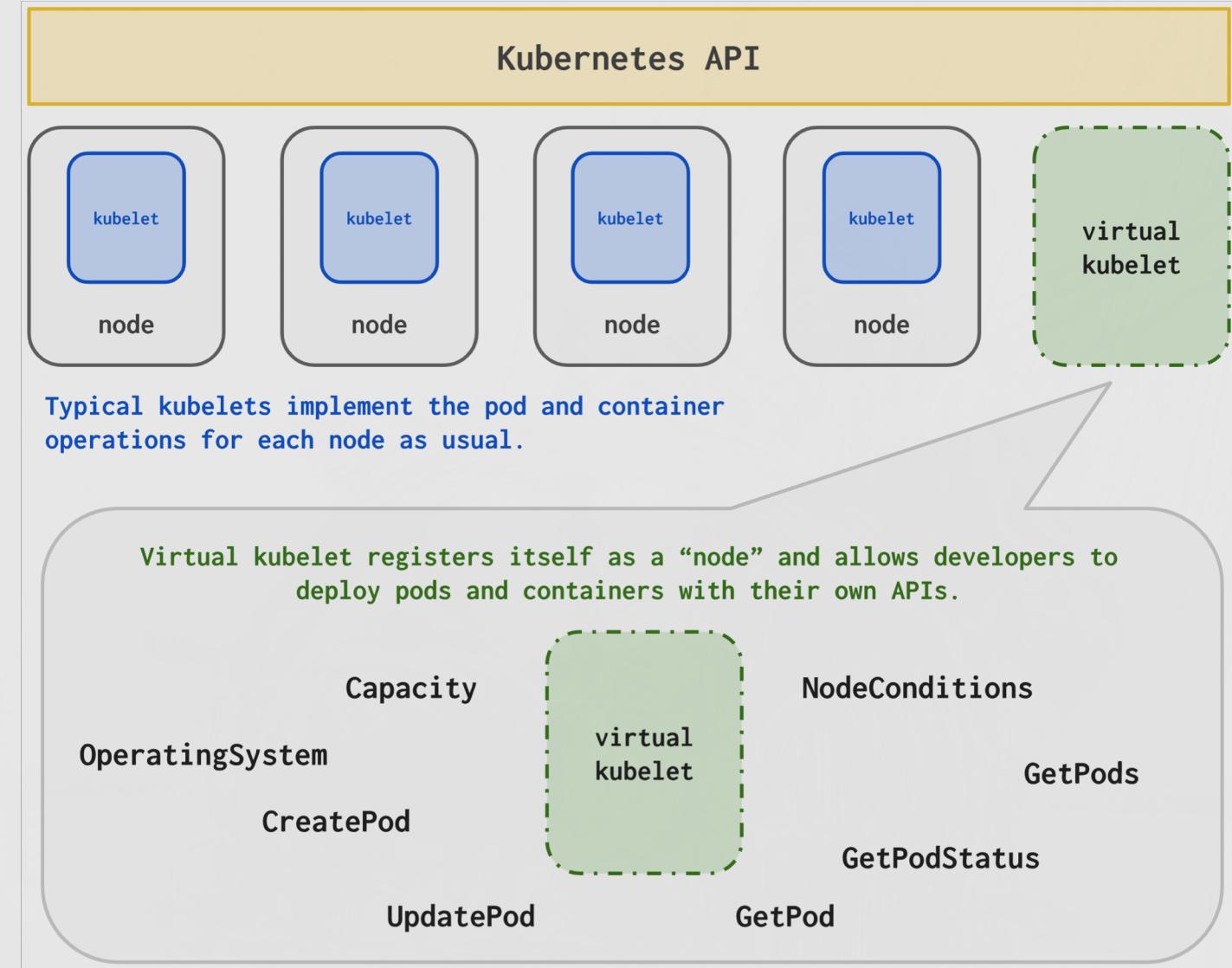
# Azure Kubernetes Service (AKS)

- Upstream k8s
- Abstracted master control plane
- Cloud Integrations
  - Authentication
  - Networking
  - Logging
  - Autoscaler (preview)
  - Azure Policy (private Preview)
- Ready for Production?



# Virtual Kubelet

- Masquerades Kubelet (node agent)
- Wires up k8s to other APIs
- Provider model
  - Azure Container Instances
  - Azure Batch
  - AWS Fargate
  - IoT Edge
  - Nomad



# AKS in Production

---



# Production Ready

- Robust Observability
- Scale Set Support
- Multiple Node Pools
- Cross-region Federation
- Node Abstraction?

# Questions and Labs

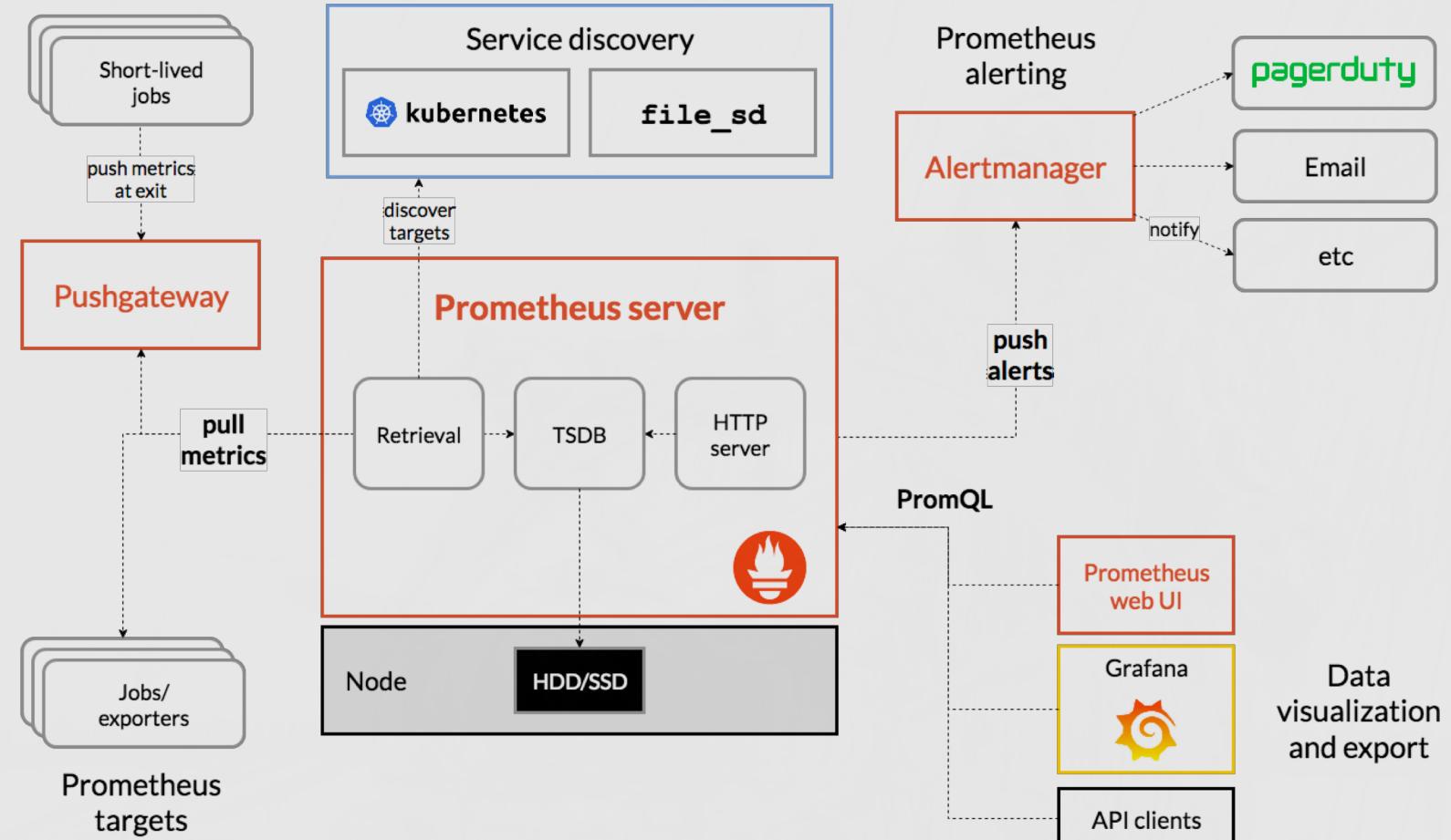
- Questions?
- Checkout Lab Repo:  
<https://github.com/elliottnichols/az-bootcamp2019>
- Break into Groups of 2-3

# Section 0-Pre-reqs

- <https://github.com/elliottnichols/az-bootcamp2019>
- Setup local environment
- Azure CLI
- Kubectl
- Helm
- istioctl

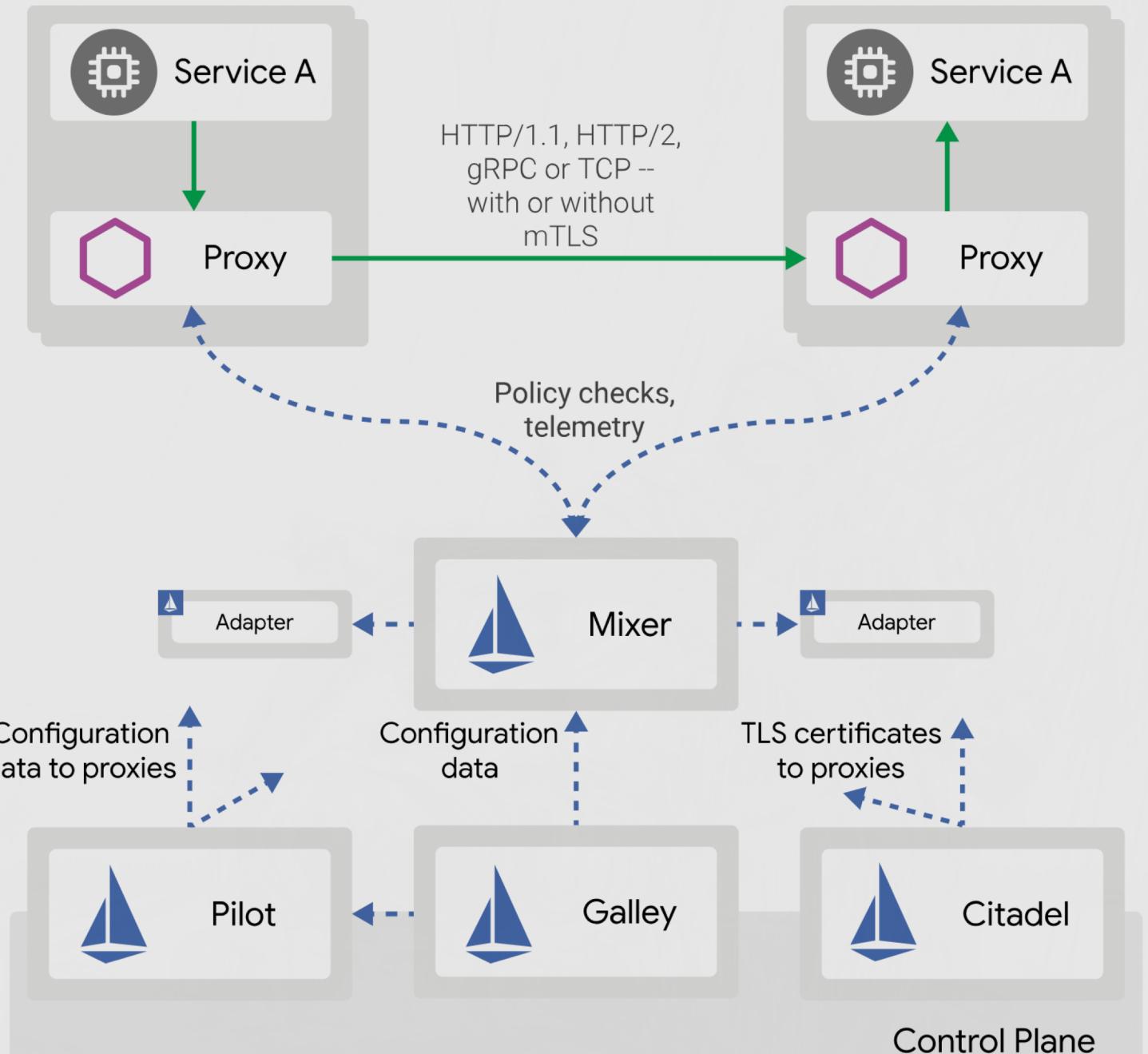
# Section 2-Prometheus and Grafana

- Prom: Time-series metrics, monitoring
- Grafana: Visualize from many data sources



# Section 3 - Istio

- Istio: Connect, Control, Observe & Secure traffic between services.



Istio Architecture

# Thank you

Elliott Nichols: [enichols@insight.com](mailto:enichols@insight.com)