



# Kubernetes as Infrastructure Abstraction

Cloud-Native Implementation Strategy in an Enterprise Environment

# Introductions



## Oleg Chunikhin CTO, Kublr

- ✓ 20+ years in software architecture & development
- ✓ Working w/ Kubernetes **since its release** in 2015
- ✓ **CTO at Kublr**—an enterprise ready container management platform
- ✓ Twitter **@olgch; @kublr**

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# Kubernetes & Cloud Native in Restrictive/Enterprise Environments

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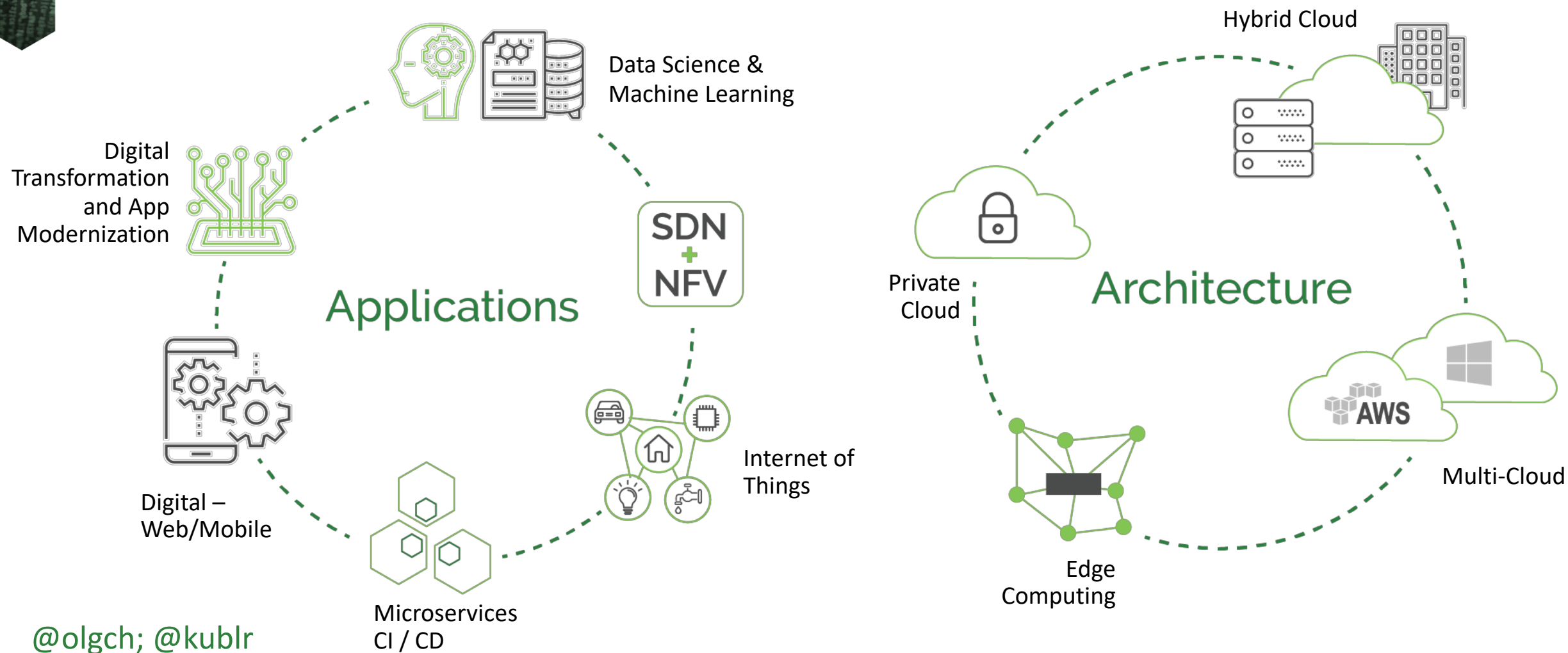


# Cloud Native Attributes

- ✓ Lightweight containers
- ✓ Language agnostic
- ✓ Microservices
- ✓ API
- ✓ Stateless/stateful separation
- ✓ Self-service infrastructure
- ✓ Isolated from OS/server deps
- ✓ Agile DevOps processes
- ✓ Highly automated
- ✓ Declarative resource management



# Applications & Architecture





# Cloud Native

## Cloud native precursors

- ✓ SRE, DevOps, 12factor app
- ✓ SOA / Microservices, API (management)
- ✓ Containers, Cloud, Virtualization

## Benefits

- ✓ Empower IT teams to respond to business requirements quickly, reliably, and predictably
- ✓ Larger enterprises can benefit most, but adoption is lagging behind



# “Restrictive” Environment

Due to scale and/or nature of business:

⇒ requires governance

⇒ limits access and options



# Enterprise Requirements

- ✓ Multiple/**complex environments**

on-prem, multi-cloud, hybrid

- ✓ Centralized/unified management and **governance**

Provisioning, monitoring, log collection, IdM/AAA, Cost

- ✓ **Integration** with existing, often legacy, components

- ✓ **Security** infrastructure

OS, IdM/AAA

- ✓ **Software management**

patches, packages, images





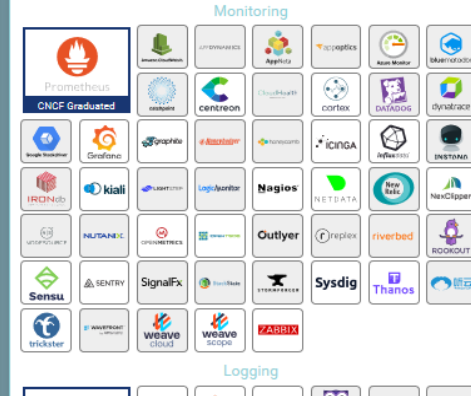
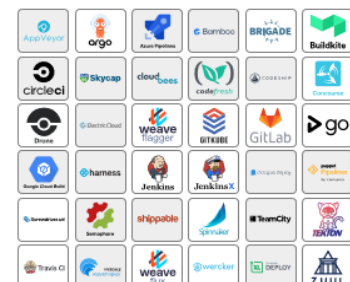


# Enterprise Challenges & Constraints

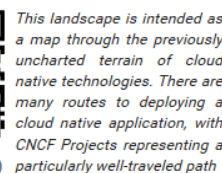
- ✓ **Separation** of responsibilities  
Infrastructure, Operations, Security, Legal
- ✓ **Network** access  
white/black-listing, air gap
- ✓ **Security** tools and processes  
infra, OS, platform, apps
- ✓ OS, platform, and software **practices and standards**  
Vendor and version certification; configuration practices; custom package repositories; etc
- ✓ **Regulations**
- ✓ **Complexity**



## Provisioning



## Cloud-Native Network



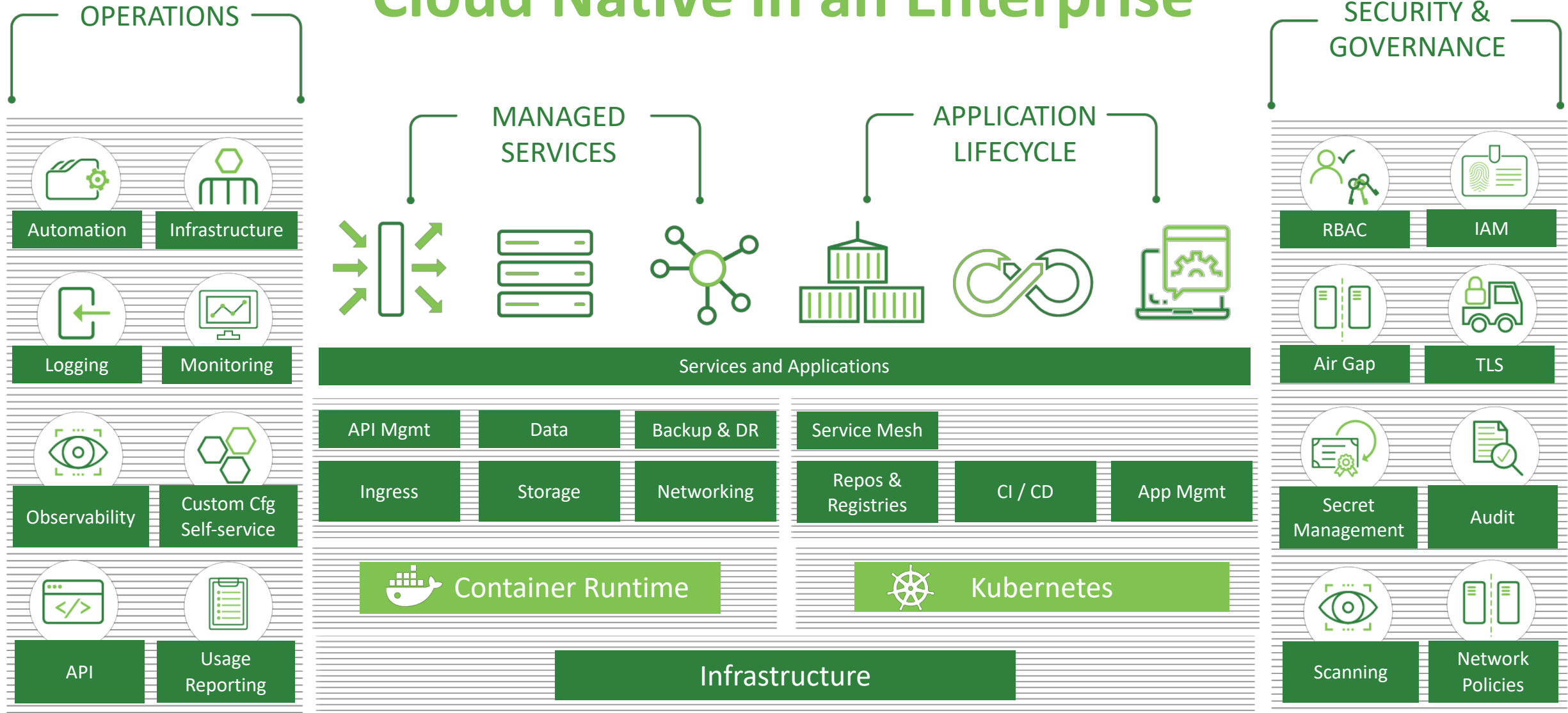


# What is Kubernetes?

- Container orchestrator?
- A step in the evolution from mainframes to serverless?
- Microservices platform?

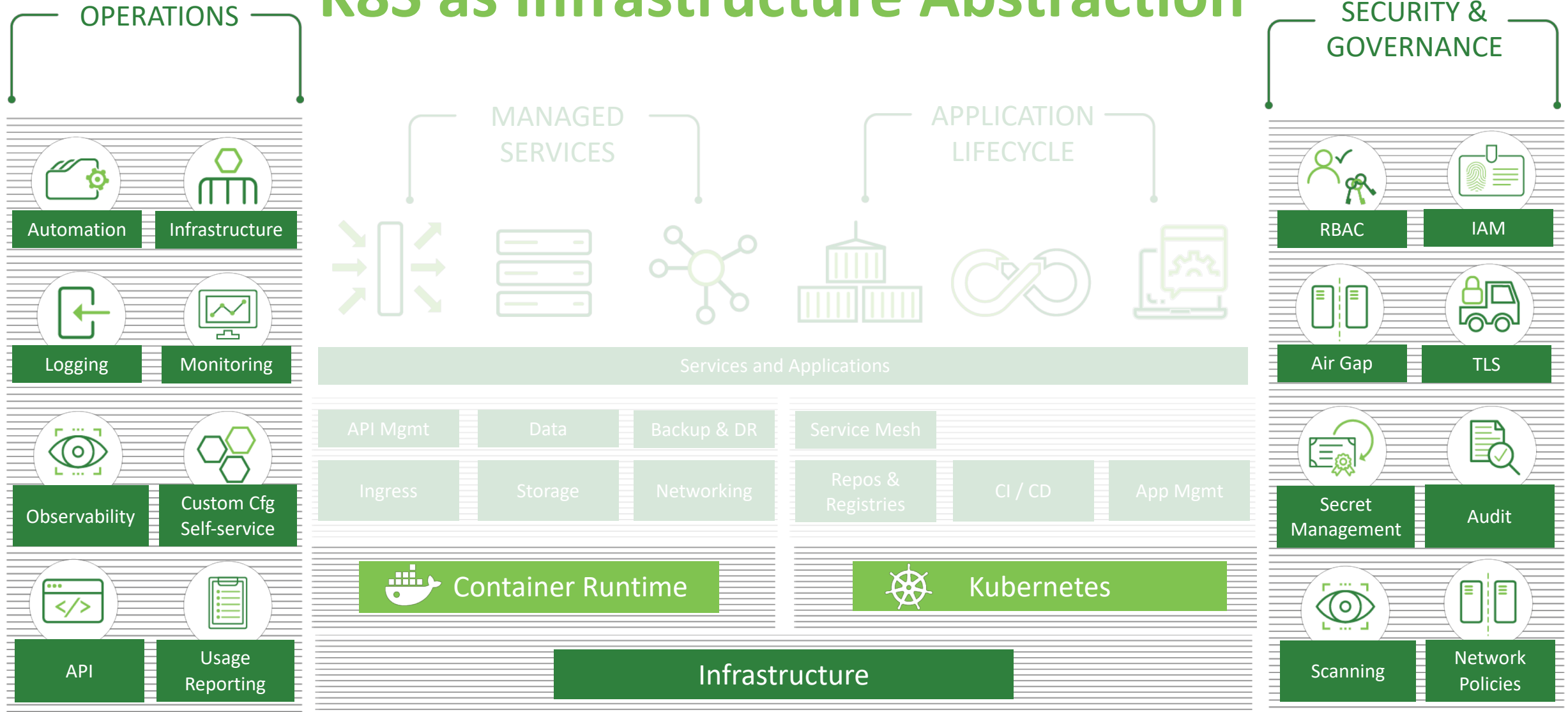
✓ Infrastructure/cloud abstraction and platform

# Cloud Native in an Enterprise





# K8S as Infrastructure Abstraction



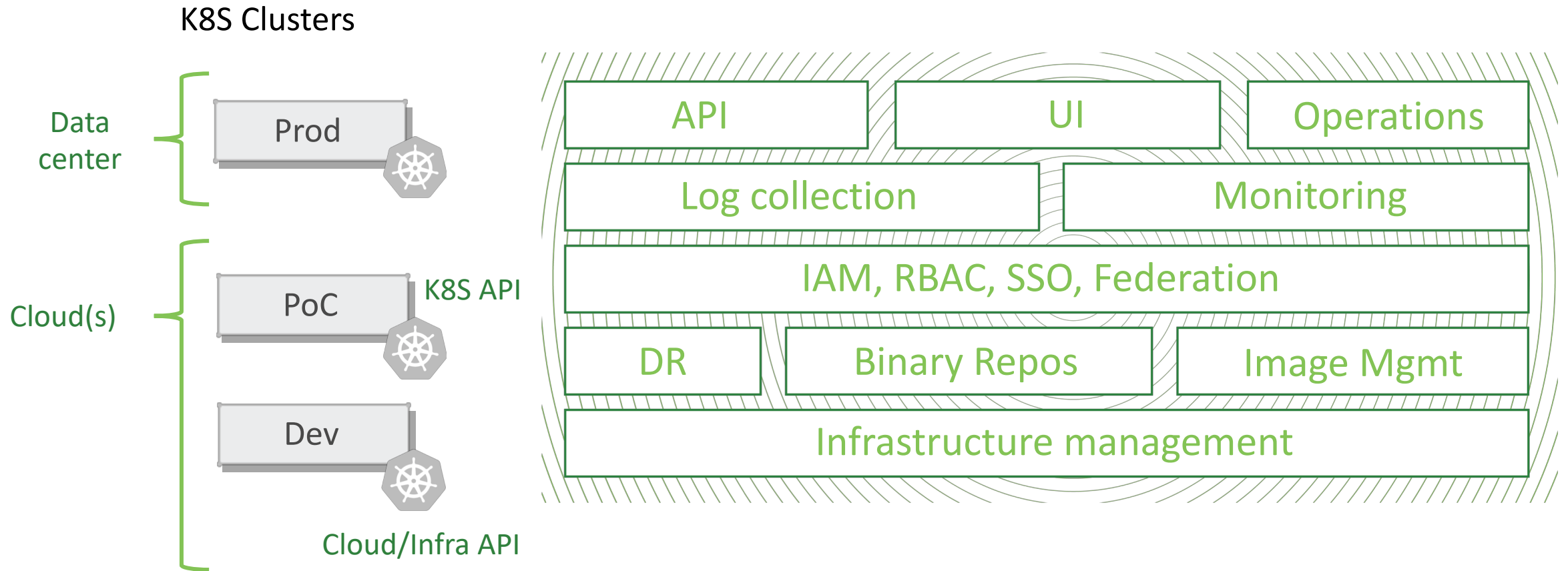


# Kubernetes Management Platform

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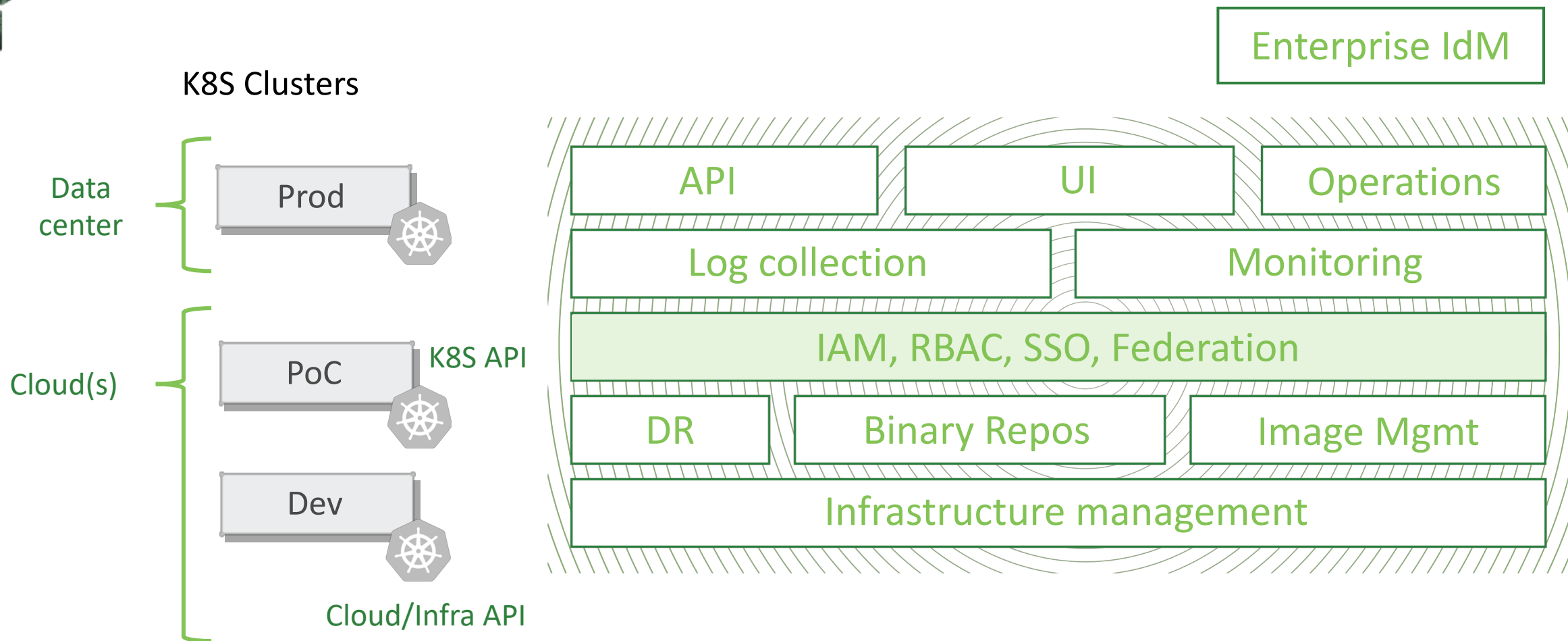


# Kubernetes Management





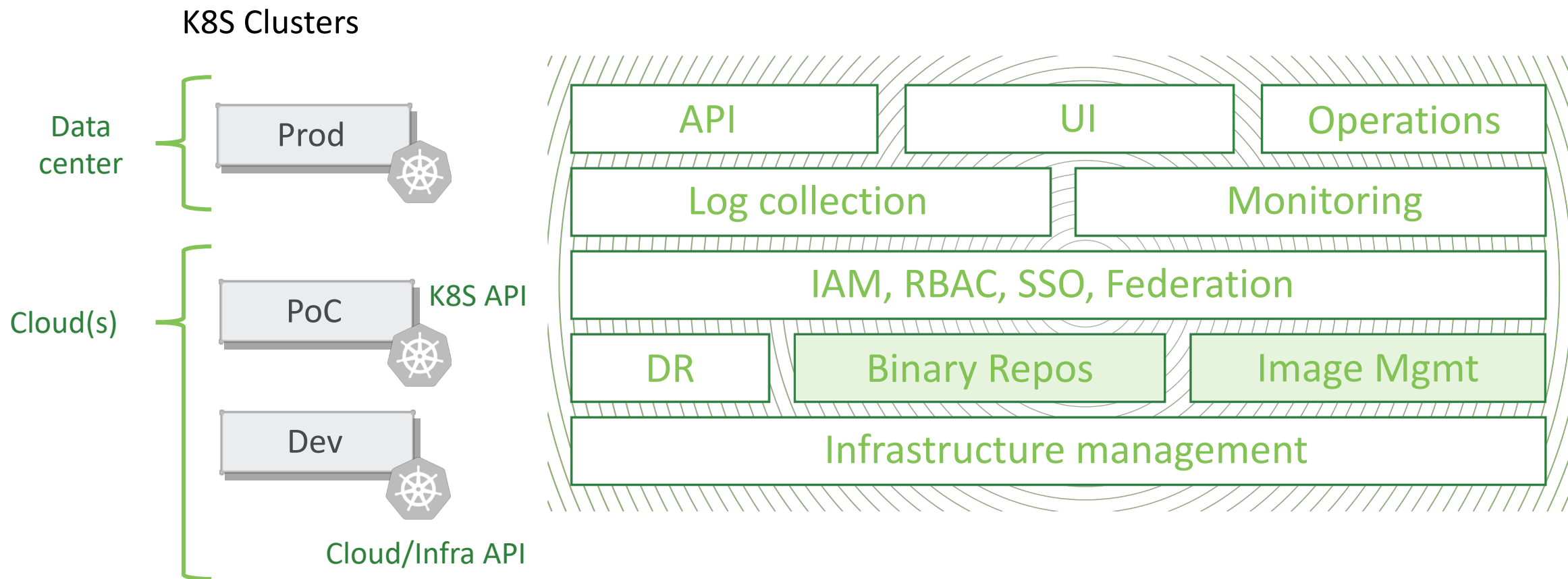
# Identity Broker: AAA, SSO, Federation



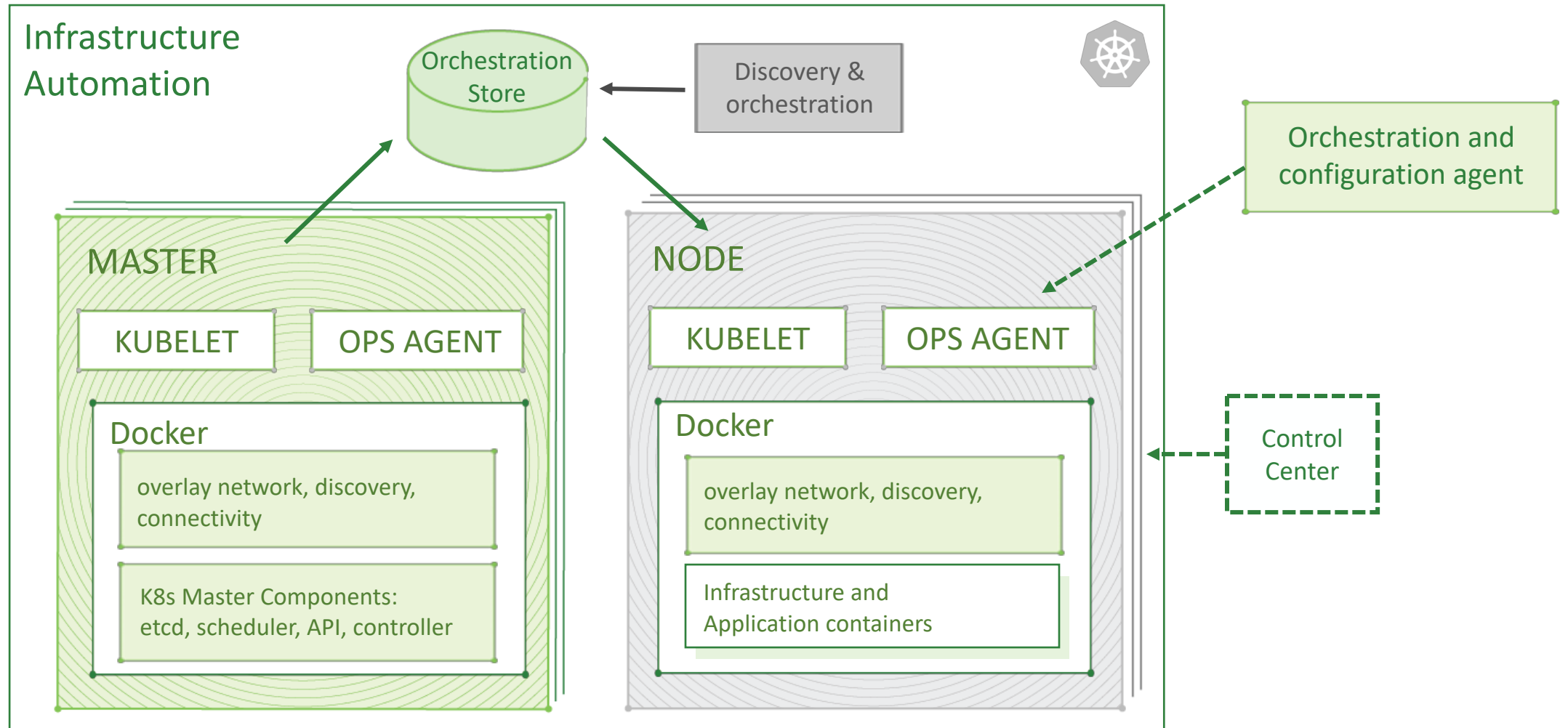




# Kubernetes Services



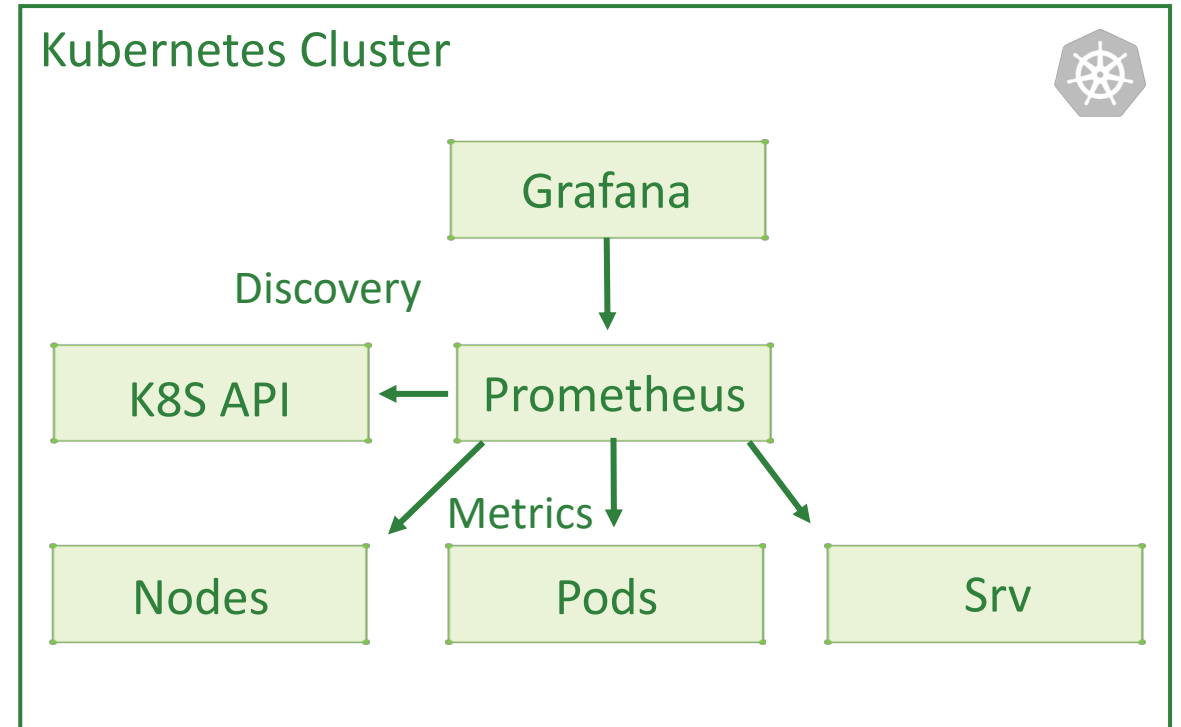
# Cluster Architecture





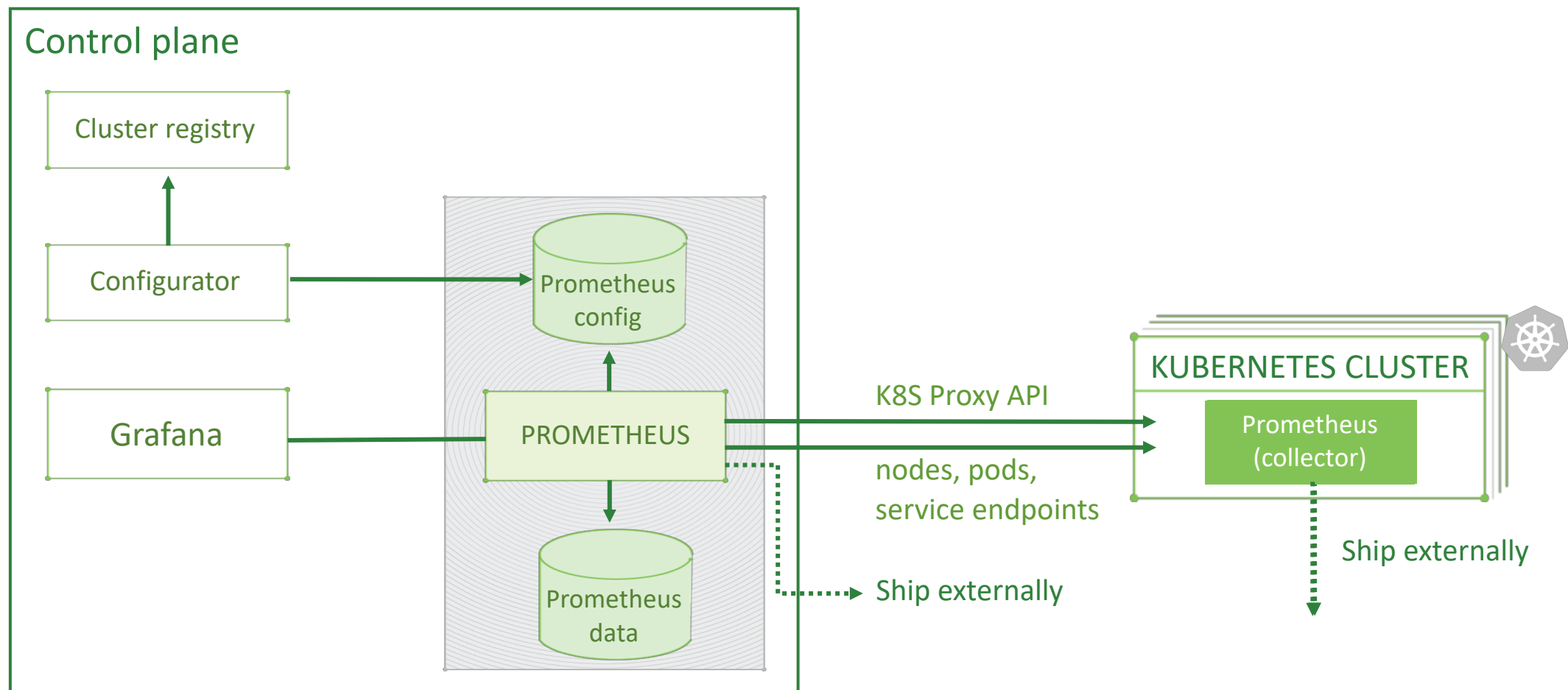
# K8S Monitoring with Prometheus

- Discover nodes, services, pods via K8S API
- Query metrics from discovered endpoints
- Endpoint are accessed directly via internal cluster addresses





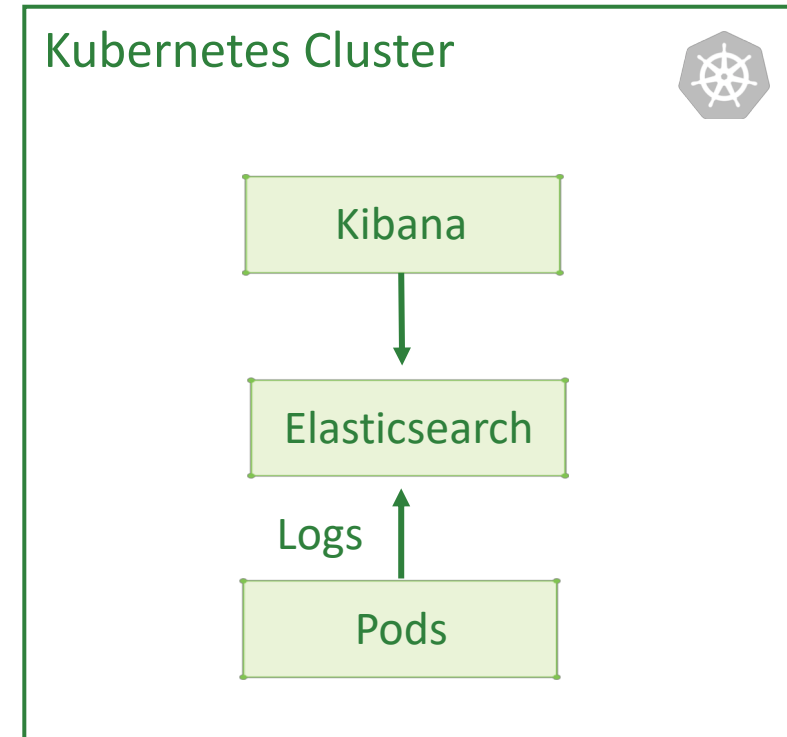
# Centralized Monitoring





# K8S Logging with Elasticsearch

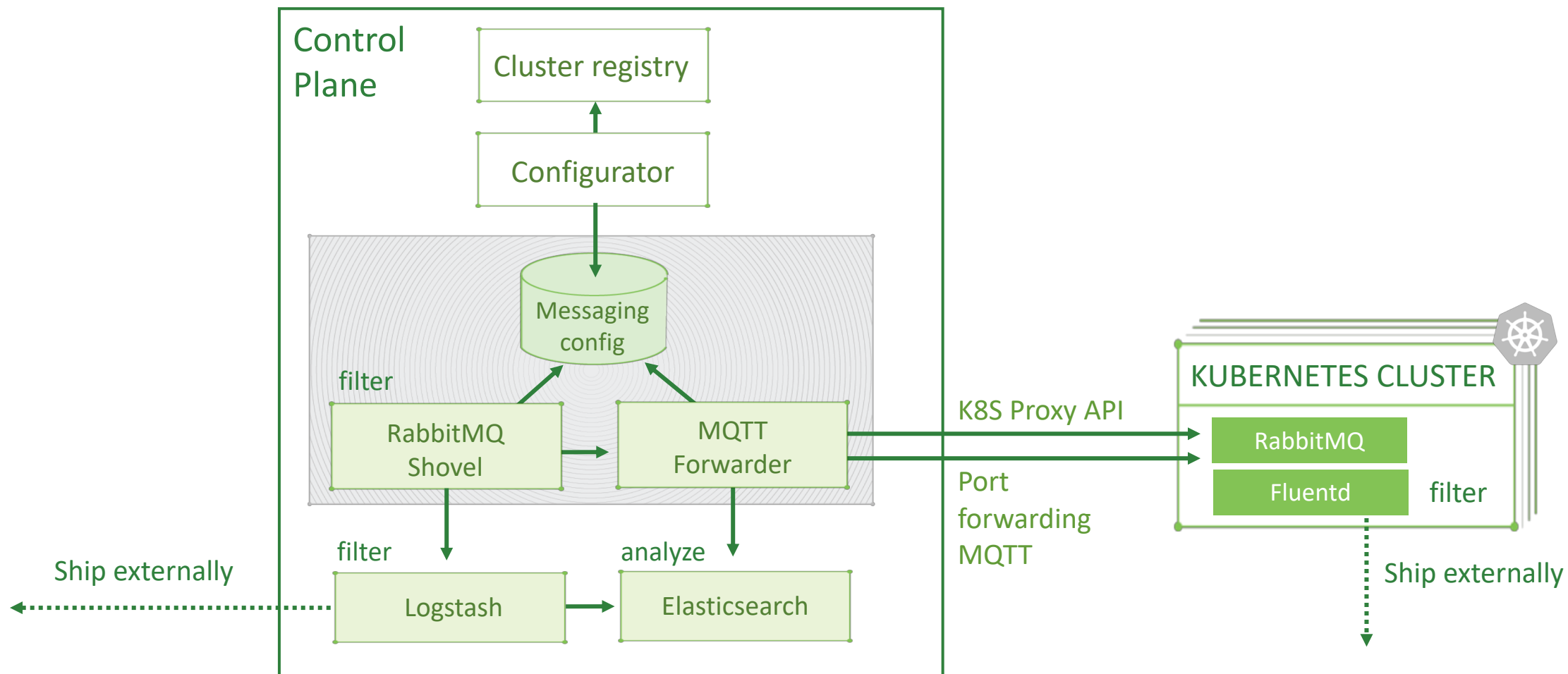
- Fluentd runs on nodes
- OS, K8S, and container logs collected and shipped to Elasticsearch
- Kibana for visualization



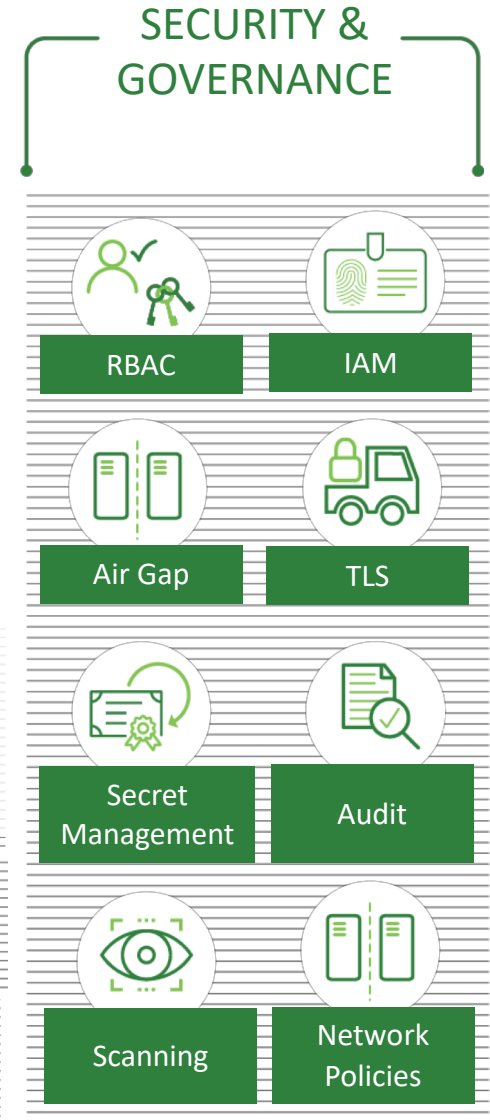
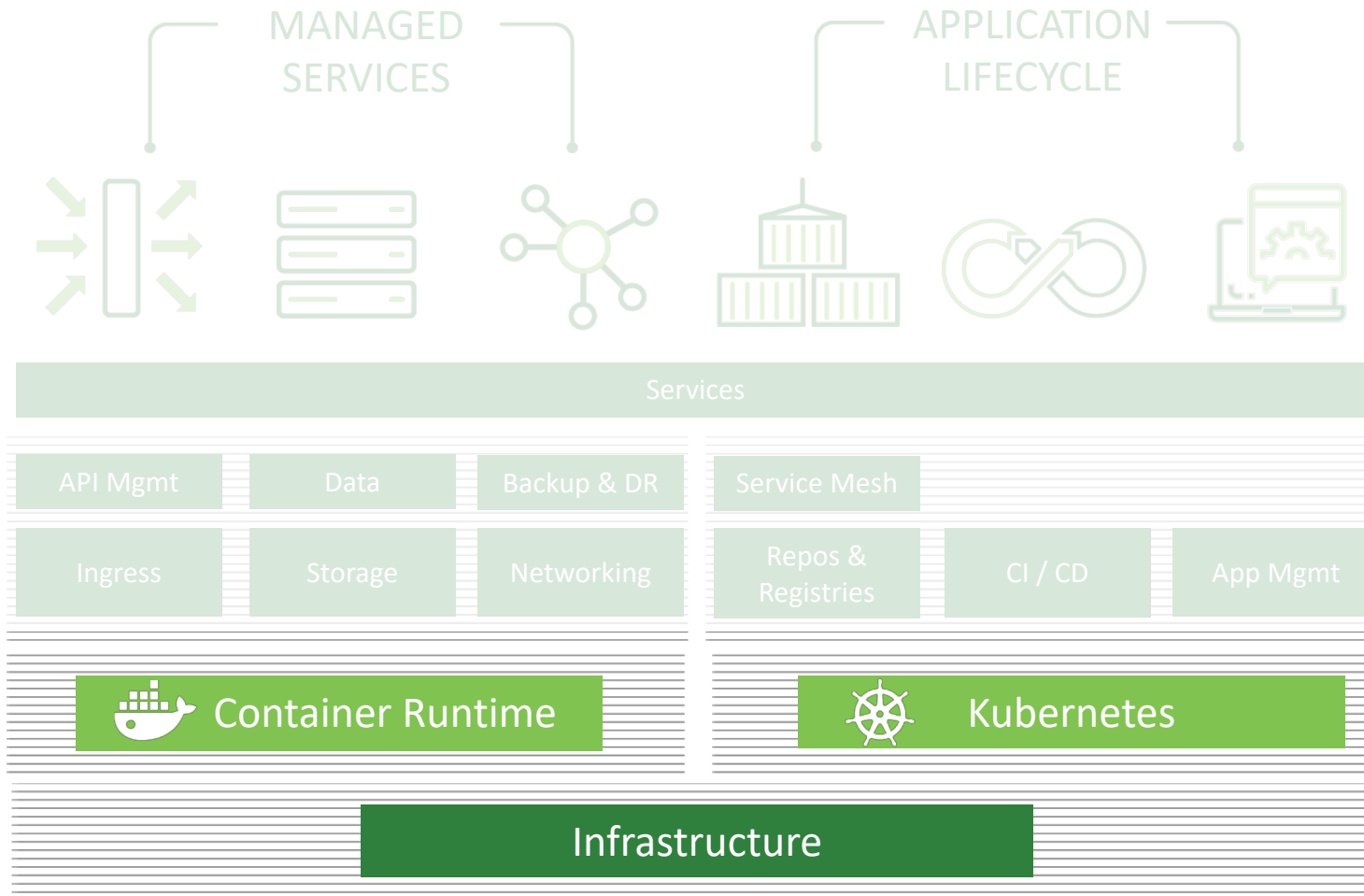
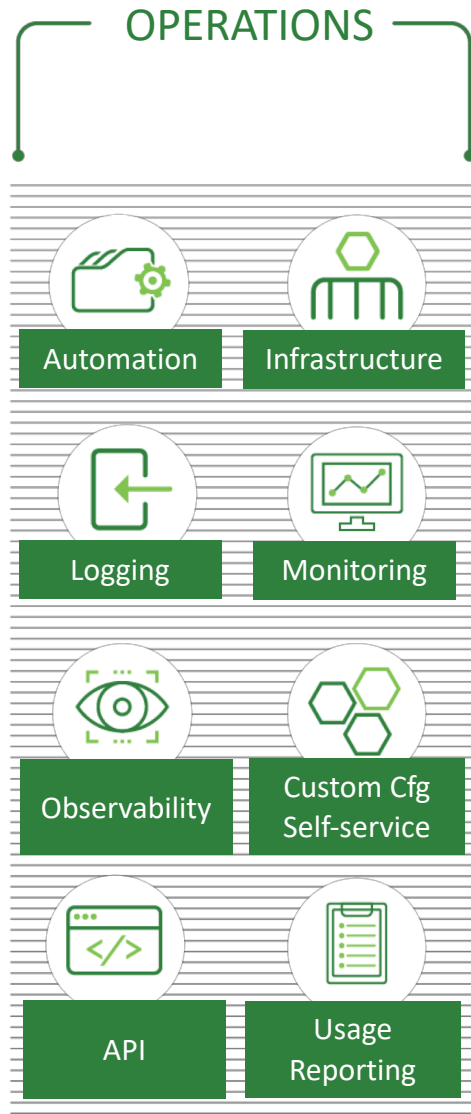




# Centralized Log Collection



# Enterprise Kubernetes





# Q&A

Take Kublr for a test drive!  
[kublr.com/deploy](https://kublr.com/deploy)



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