

# Build, run & manage cloud-native apps met Kubernetes

SD Lijn

**Viktor van den Berg**

Sr. Solution Engineer – Applications Platform Tanzu

[vvandenbergh@vmware.com](mailto:vvandenbergh@vmware.com)



Confidential | ©2021 VMware, Inc.



# About

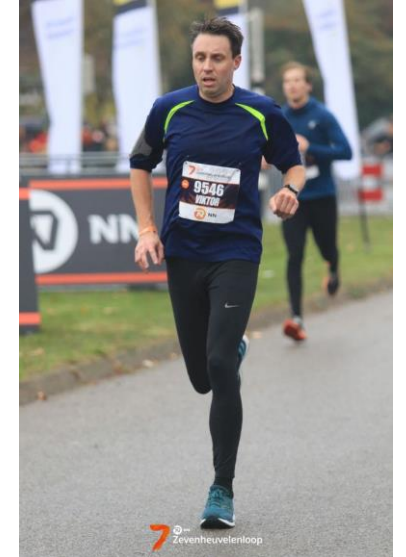
Viktor van den Berg

SE App Platforms Tanzu @ VMware

Part of the Tanzu team since May 2022

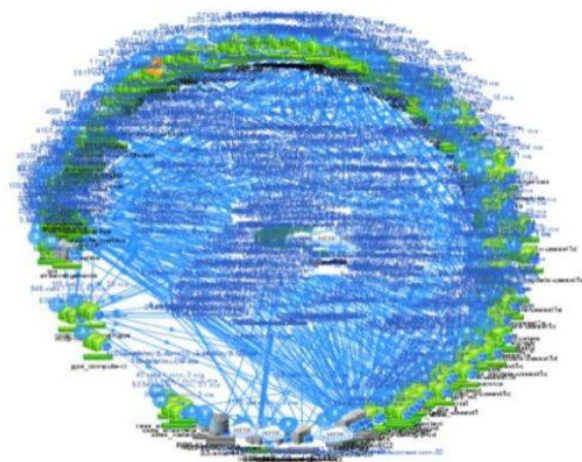
 @viktoriousss

 <https://www.viktorious.nl>



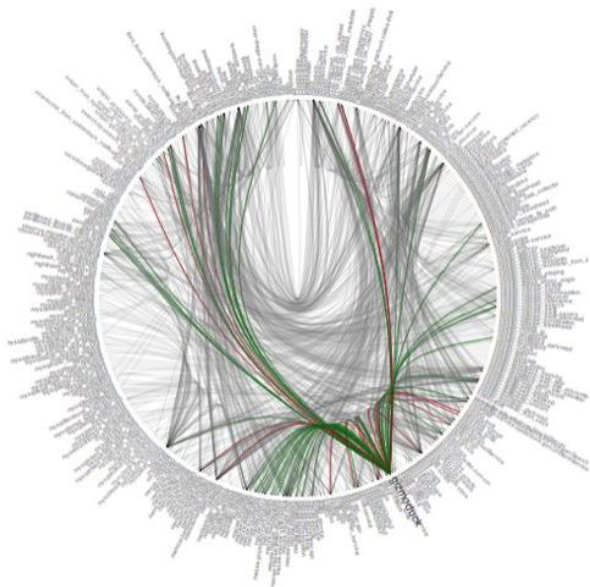
# Kubernetes is built for these needs

Netflix 200+ million subscribing users



NETFLIX

Twitter 190+ million daily users

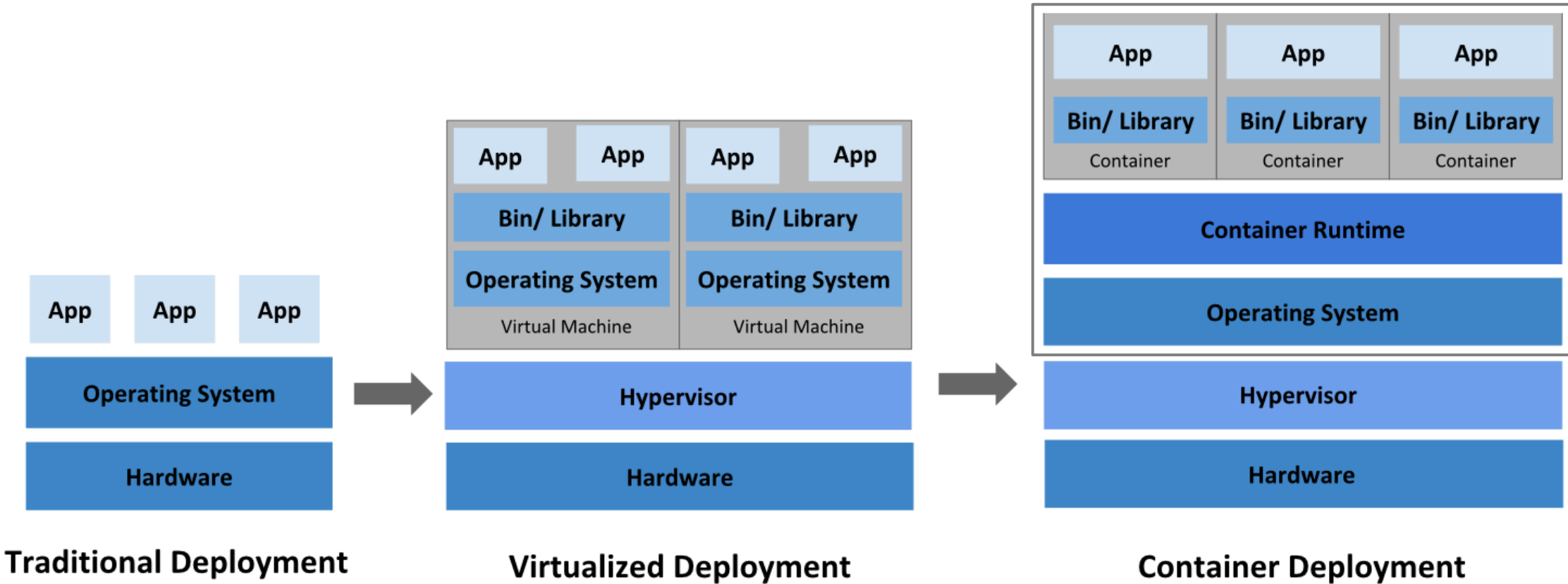


Google 5.6 billion searches daily



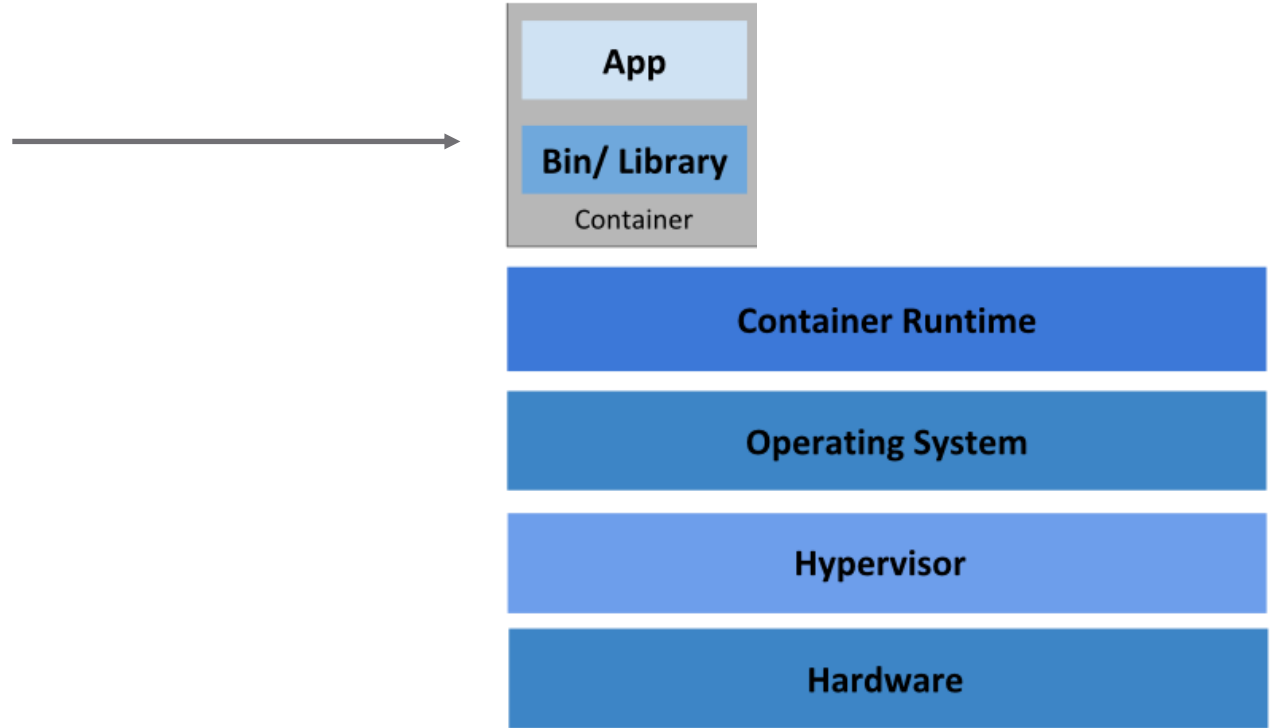
# Evolution of how we run apps

## Moving to Cloud Native Applications



# Creating an OCI container

```
</:docker build -t myApp:latest>  
FROM python:3.9.1  
RUN apt-get update -y && \  
    apt-get install -y python-pip python-dev  
COPY ./requirements.txt /app/requirements.txt  
WORKDIR /app  
RUN pip3 install -r requirements.txt  
COPY . /app  
ENTRYPOINT [ "python3.9" ]  
CMD [ "app.py" ]
```

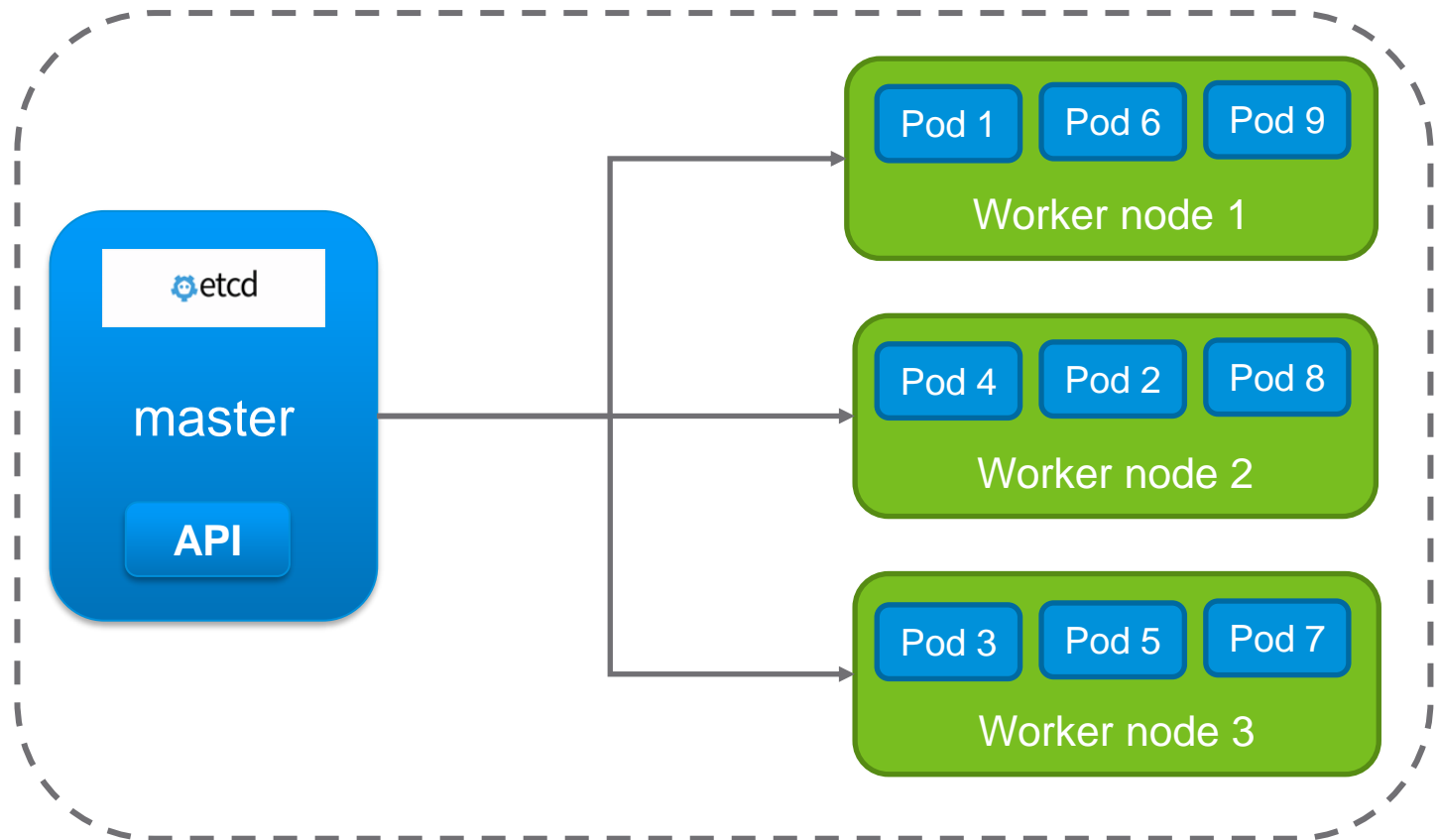


# What is Kubernetes?

Kubernetes comprises a set of independent, composable control processes that continuously drive the current state towards the provided desired state.

K8S components:

- Master
- Worker(s)
- Pods
- Cluster



# Kubernetes - capabilities

Some of the Kubernetes capabilities:

- Service discovery & load balancing
- Storage orchestration
- Automated rollouts and rollbacks
- Self-healing
- Network policies
- Secret and configuration management

Kubernetes is very extensible

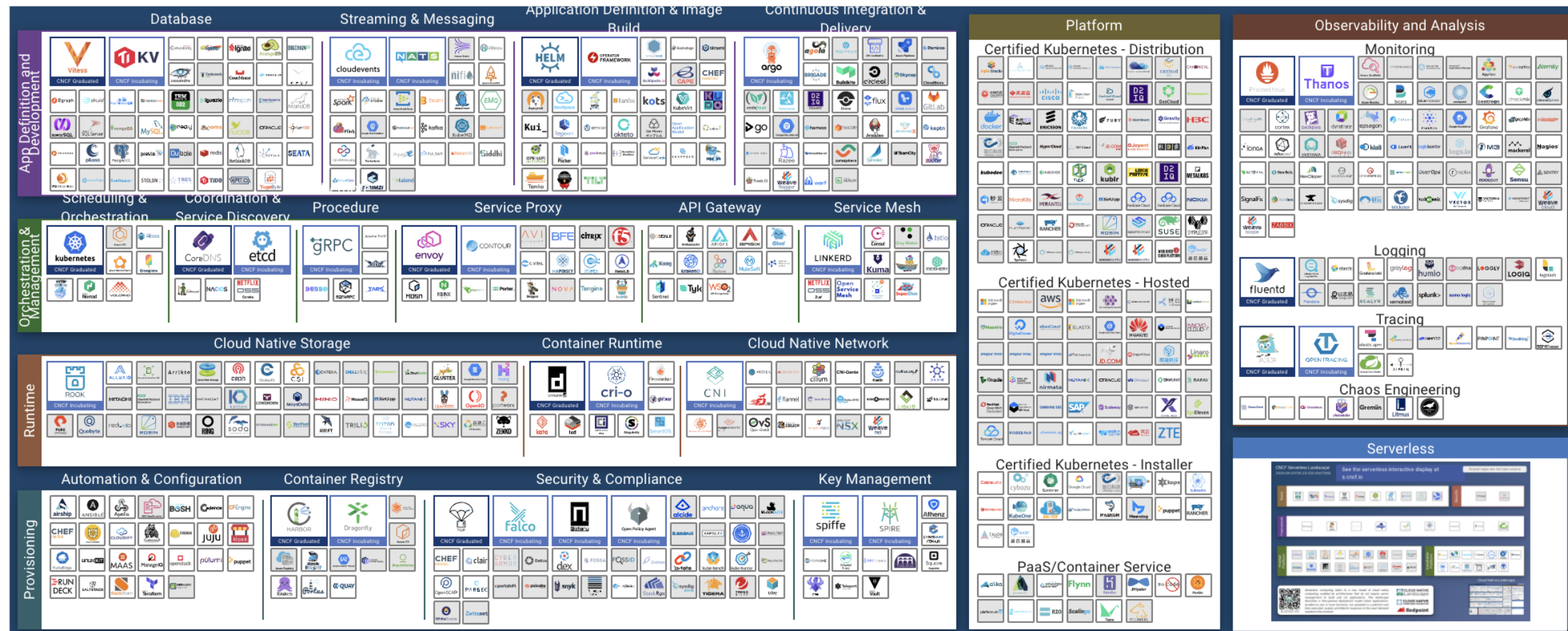
- K8S cluster deployment
- Ingress
- Logging
- Monitoring/observability
- Directory integration





# It's not only about containers & kubernetes

Navigate the CNCF landscape...jungle?





# Introducing VMware Tanzu

**Build** Modern Apps

**Run** Enterprise Kubernetes

**Manage** Kubernetes for Developers AND IT



# Why Tanzu?

Modernize your apps & infrastructure to continuously deliver better software to production



VMware Tanzu™



Applications

Code and containerize custom applications

Speed development with open-source containers

Automate deployment of apps into production

DEVELOPER EXPERIENCE



Azure

aws

Multi-Cloud



IBM Cloud



Google Cloud



Infrastructure

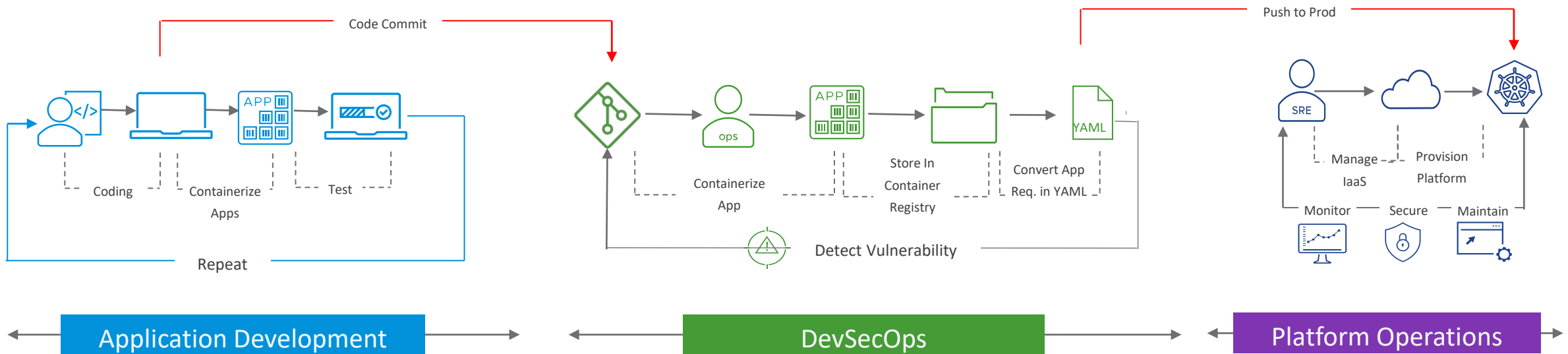
Deploy and manage K8s across clouds, clusters and teams

Apply enterprise observability to drive decisions

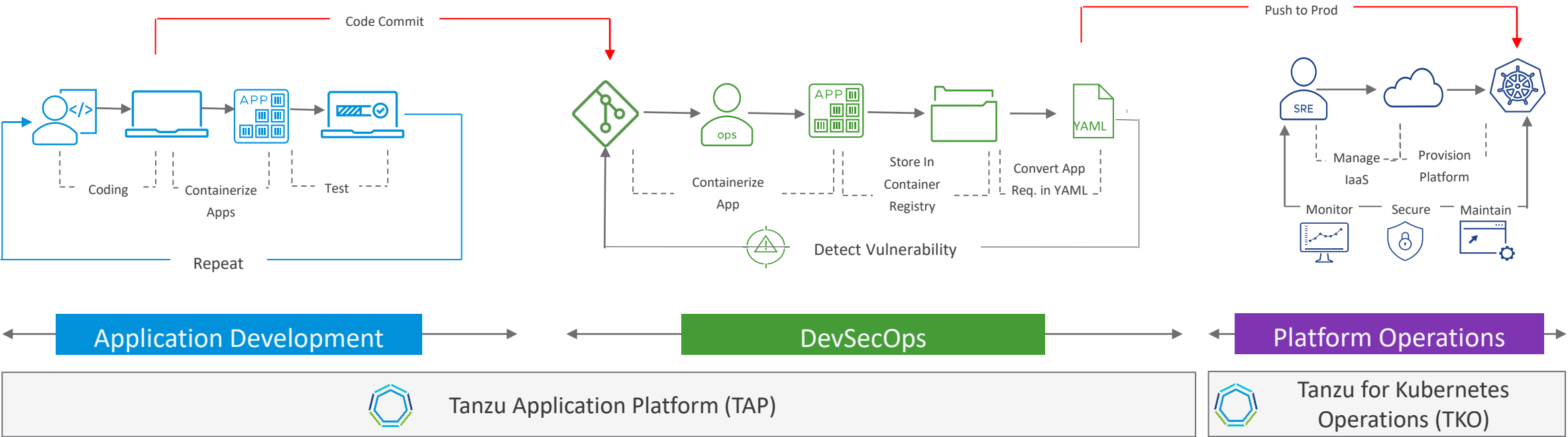
Ensure secure and reliable communication between services

OPERATOR EXPERIENCE

# Cloud Native Application Development Process



# Cloud Native Application Development Process



# Build Modern Apps

# Deploying an App Today

Too much Developer Toil

Developer



Start



Code



Prep a  
Dockerfile



Create  
image and  
push



Create k8s  
specs



Add “best  
practices”



Configure  
Service and  
Ingress



kubectl  
apply



Running  
app

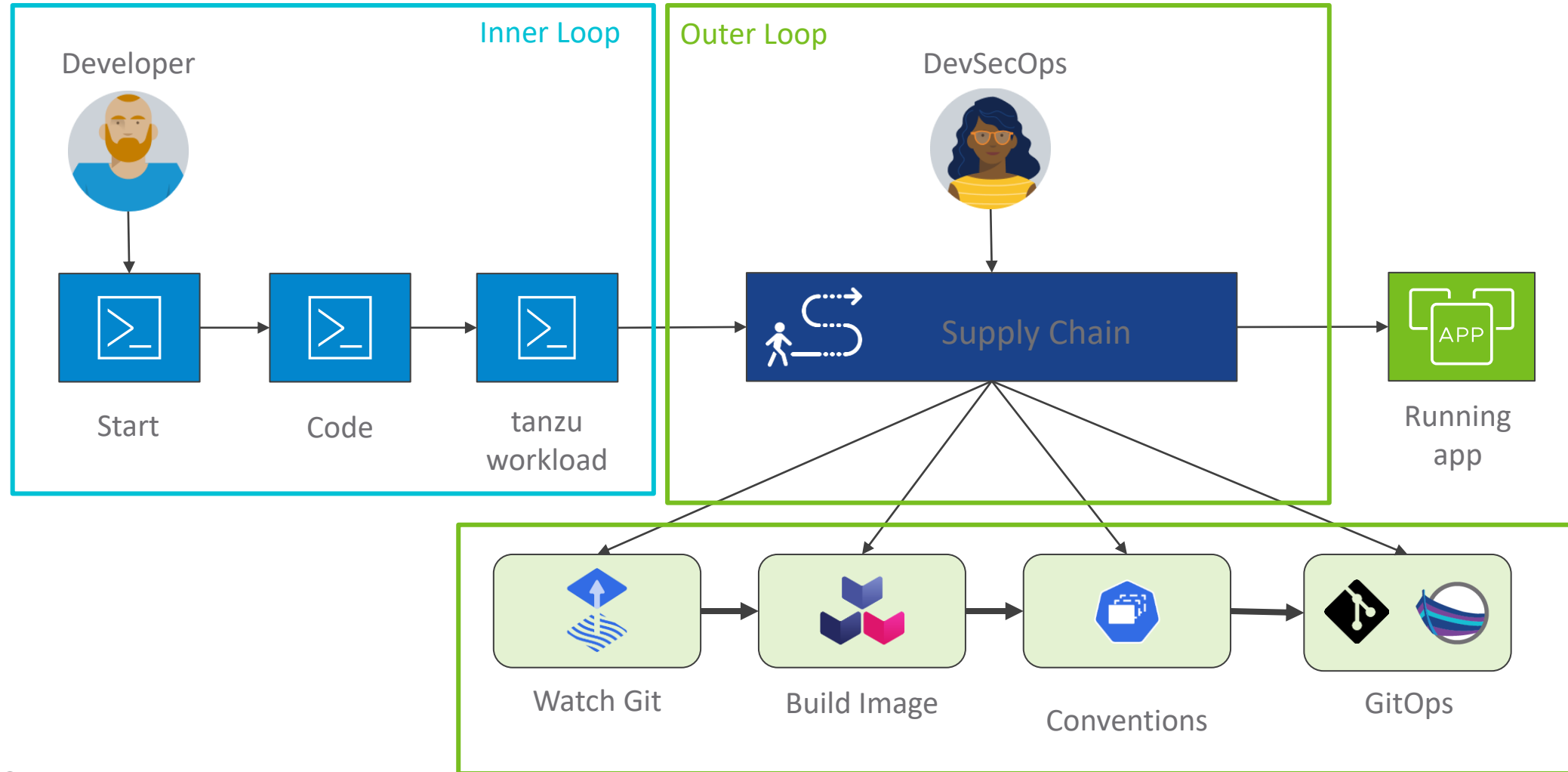
DevSecOps



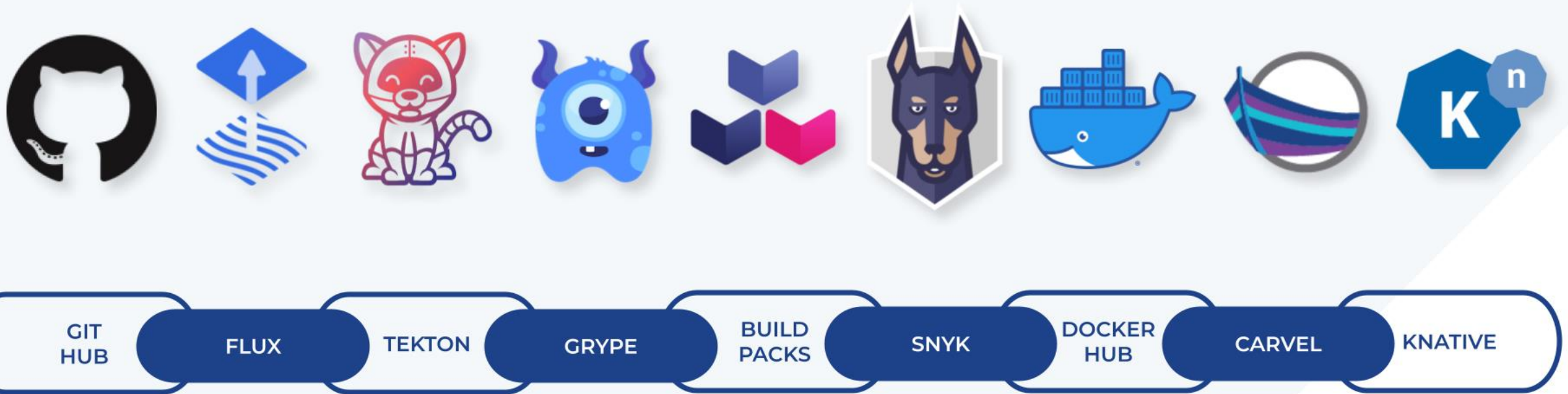


# Deploying an App with Tanzu Application Platform

## A Superior Developer Experience



# How does code get to production?

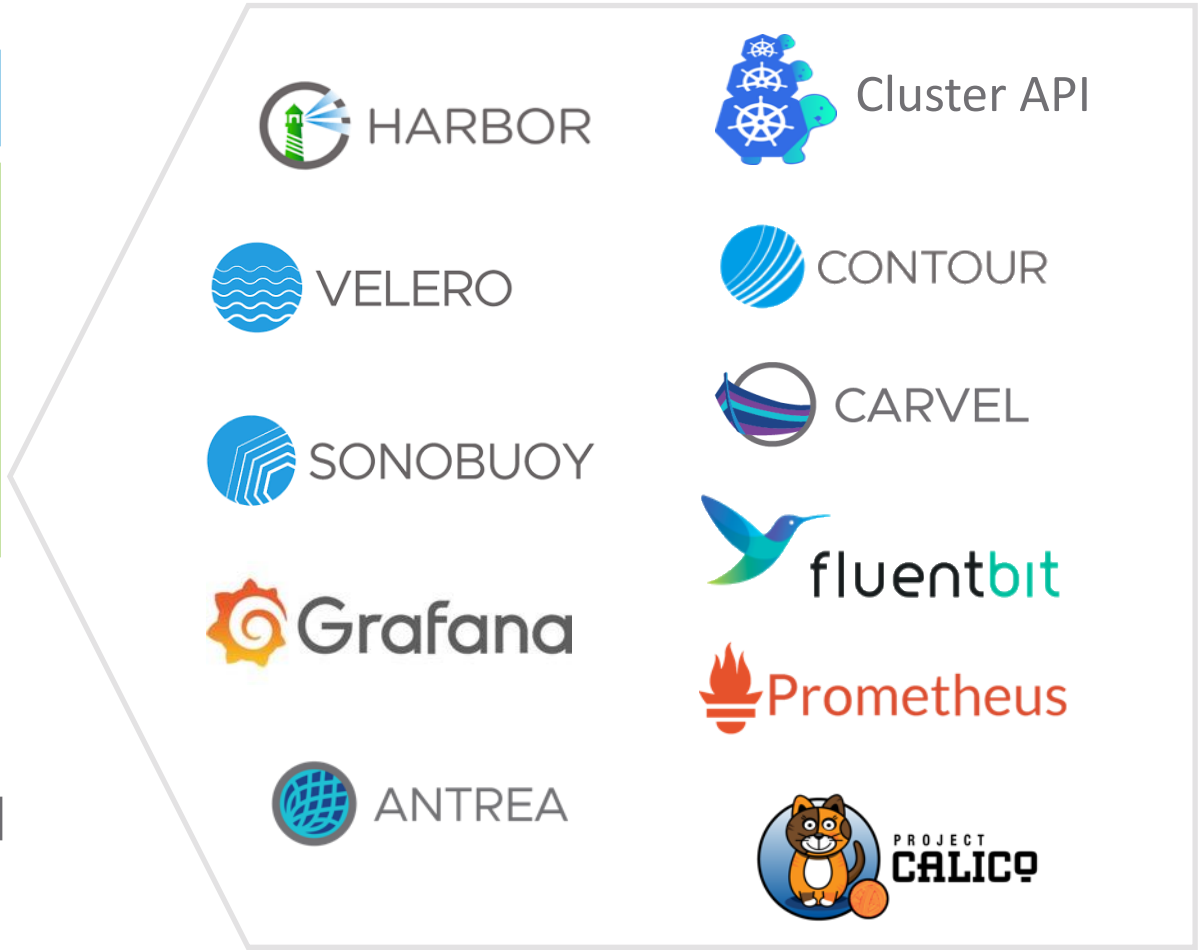
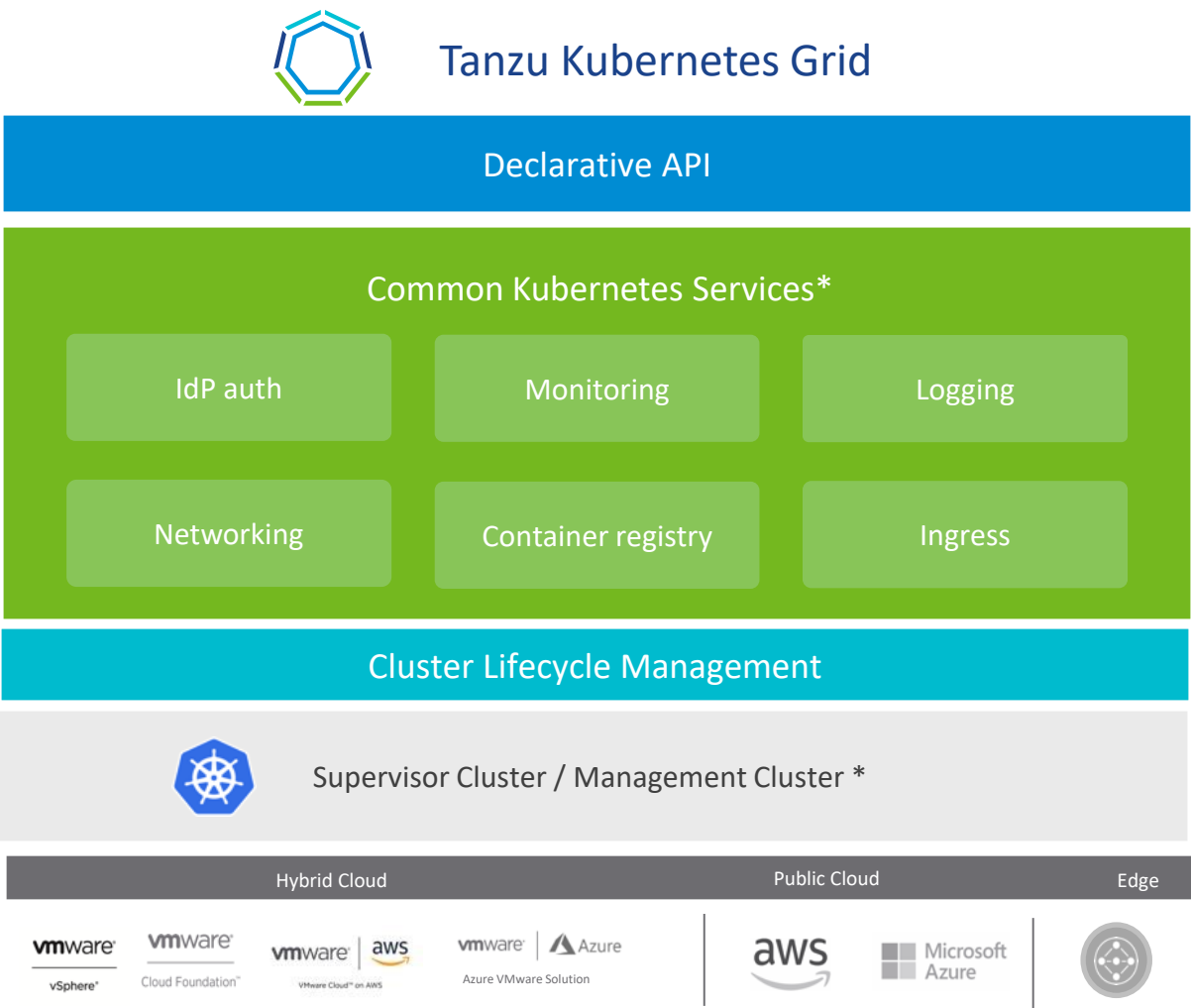


vmware

# Run & Manage Modern Apps

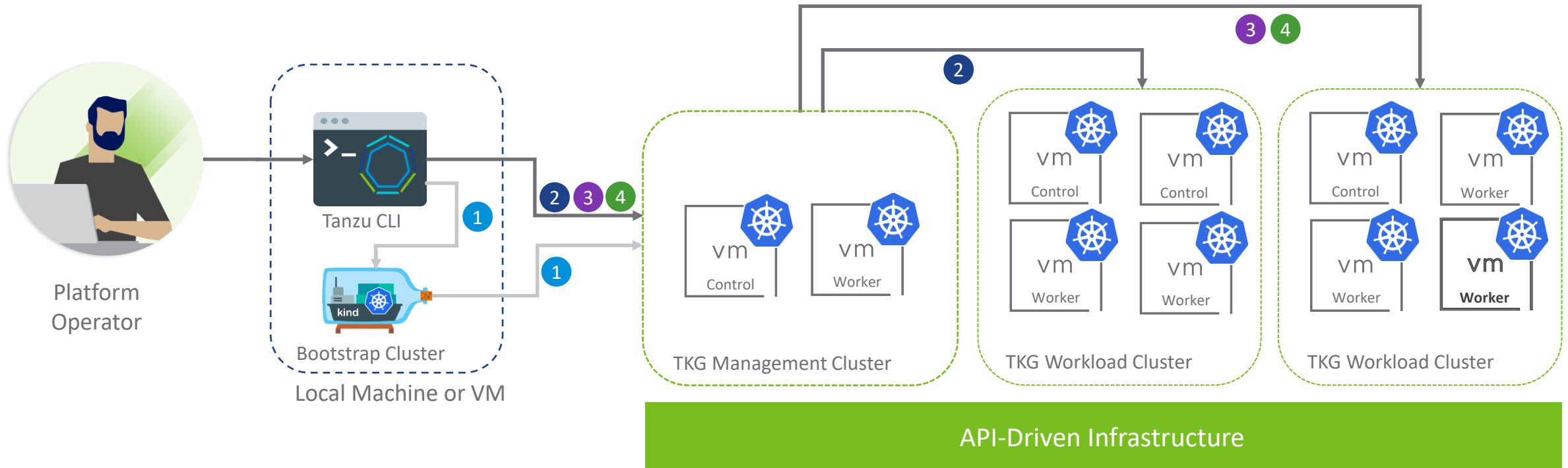
# Full Kubernetes runtime built with best open-source technologies

Packaged for enterprise adoption and supported by VMware



# TKG Deployment & Cluster Management

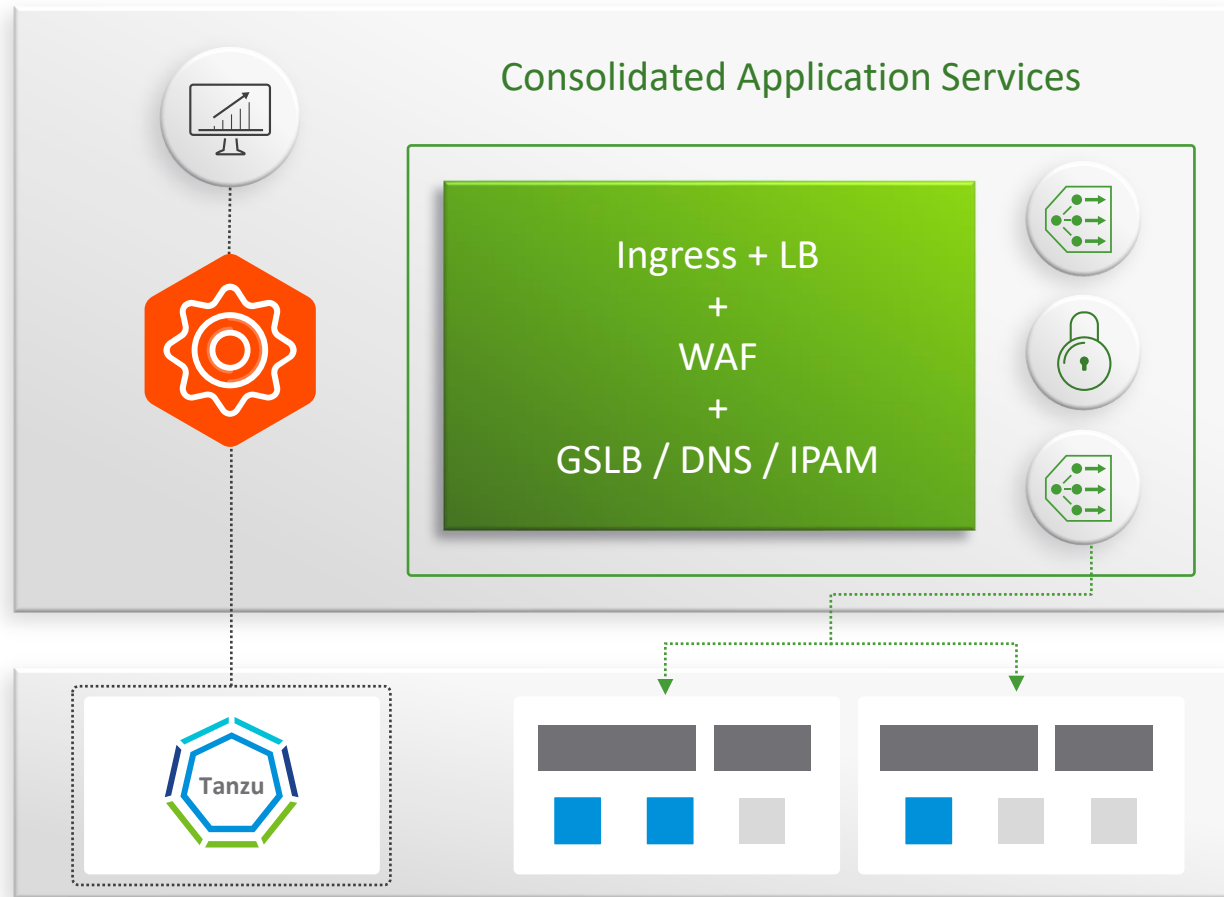
Done by the Operator using the Tanzu CLI



- ❶ `tanzu management-cluster create --ui`
- ❷ `tanzu cluster create my-prod-k8s -f config.yaml`
- ❸ `tanzu cluster create my-dev-k8s -f config.yaml`
- ❹ `tanzu cluster scale my-dev-k8s -w 3`

# Converged Kubernetes Ingress Services

Single L4 and L7 platform for holistic app operation



- **Integrated solution**

Comprehensive LB, Ingress, intrinsic security, WAF, GSLB, DNS, and IPAM

- **Operational simplicity**

A single solution with central control and ease of troubleshooting

- **Rich observability**

Real-time telemetry with application insights

- **Cloud-native automation with elasticity**

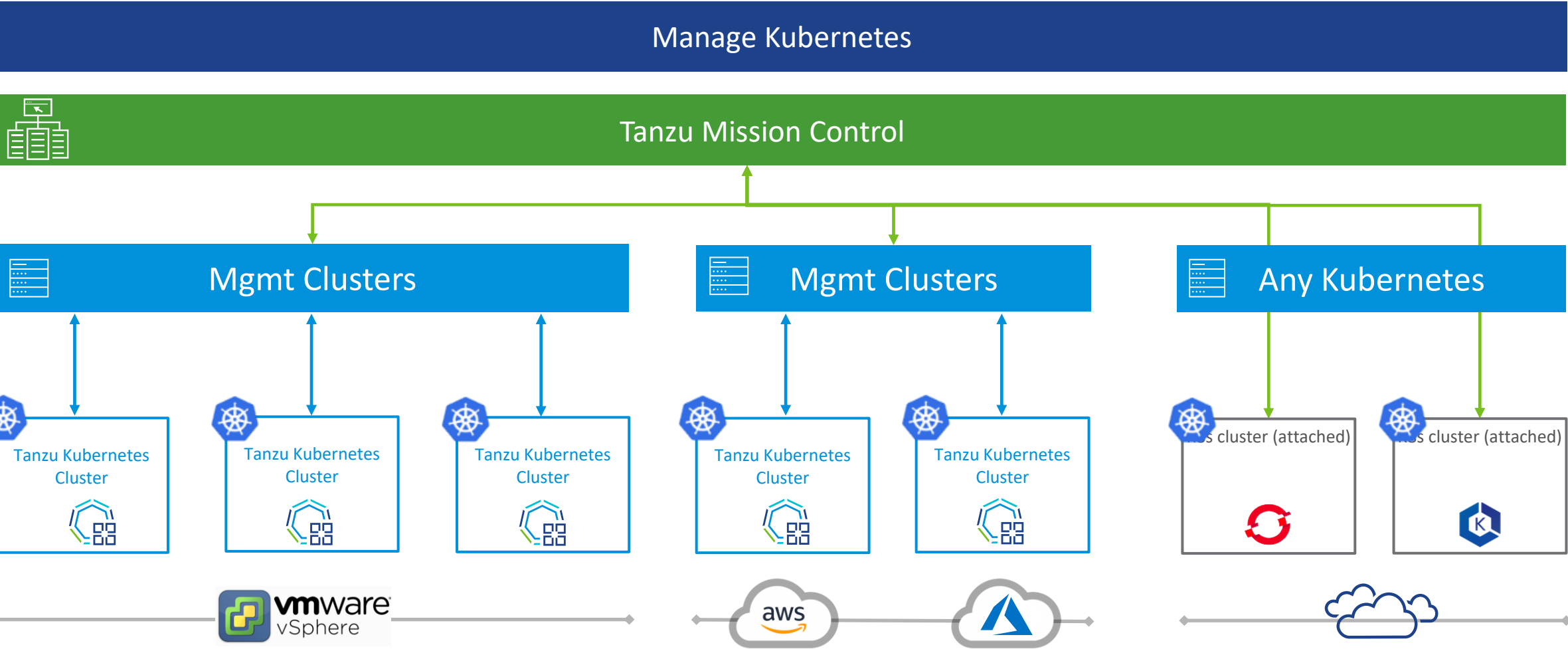
Elastic autoscaling based on closed-loop analytics and decision automation





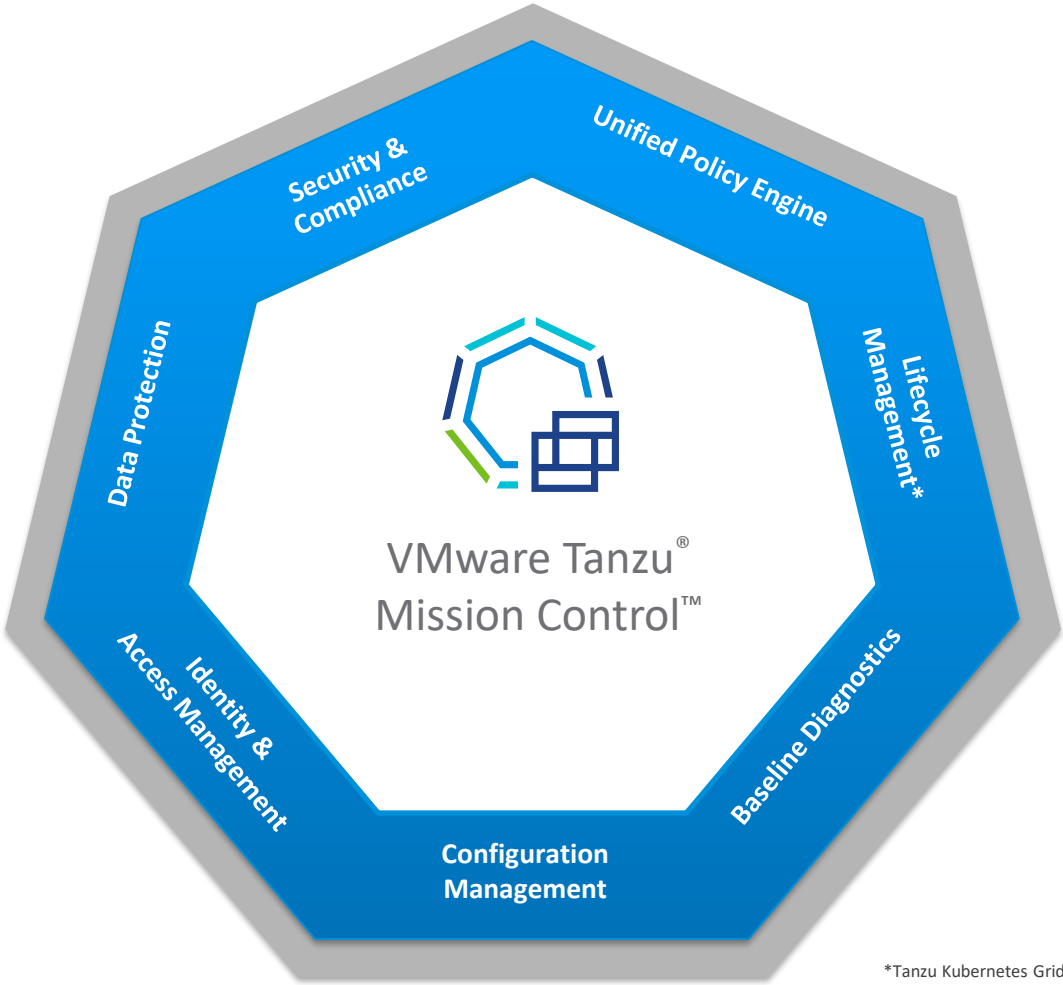
# Global Control Plane Visibility, Lifecycle, & Policies

For any Kubernetes

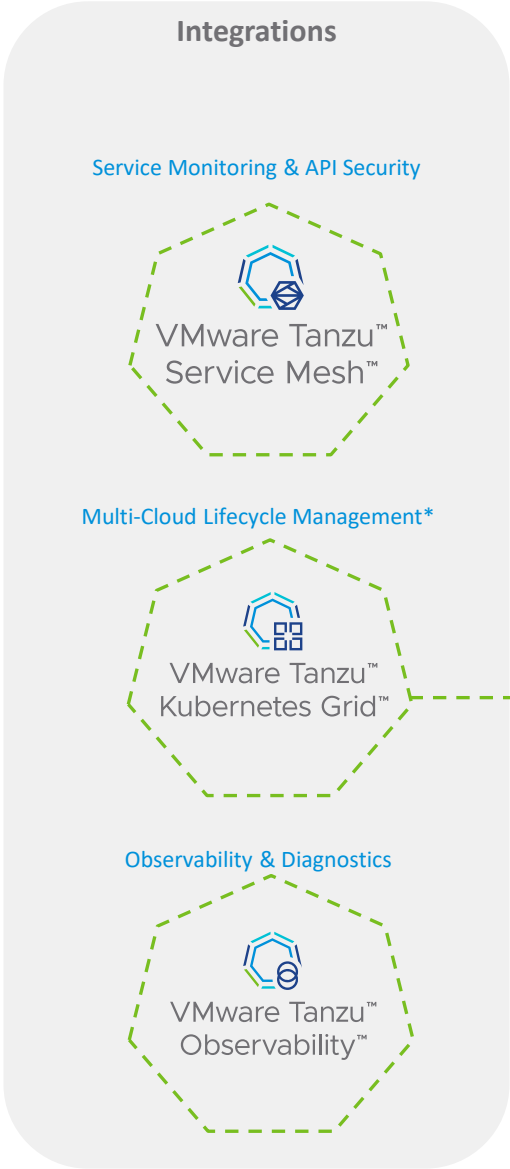


# Tanzu Mission Control Capabilities

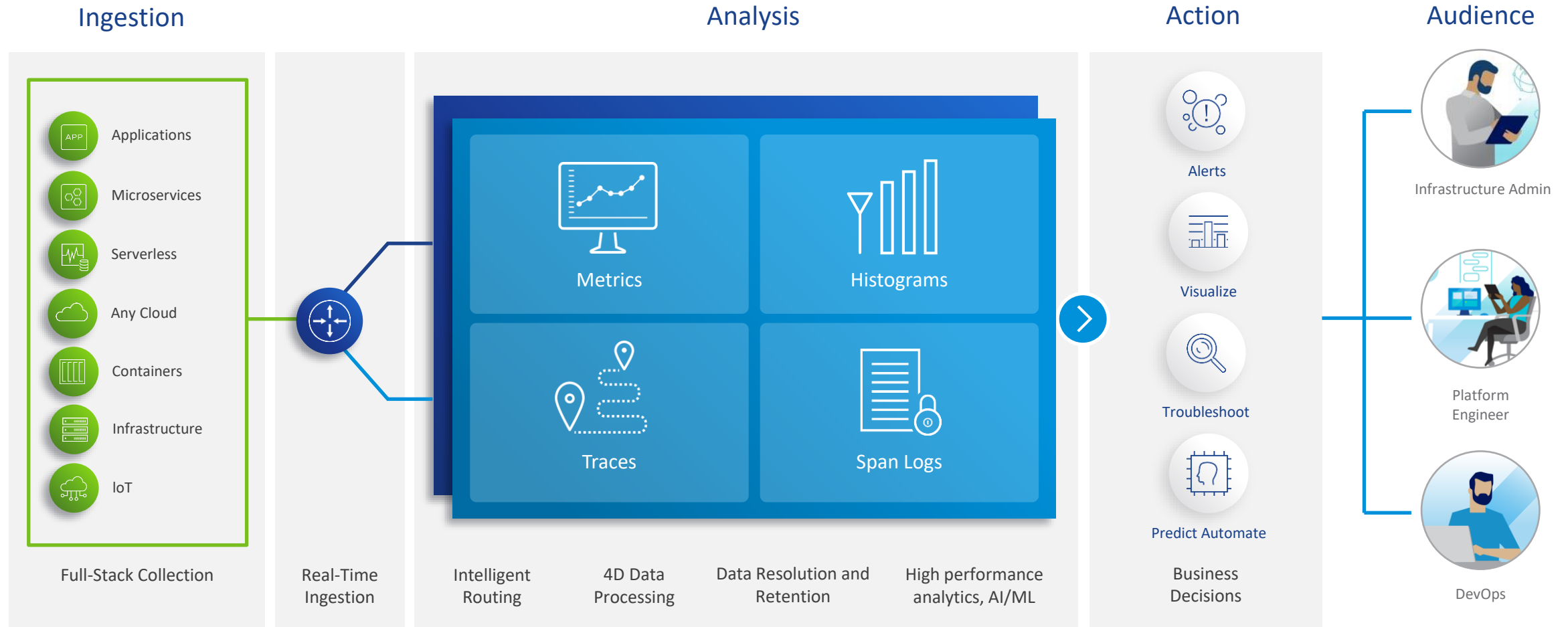
More than a control plane



\*Tanzu Kubernetes Grid clusters only



# Full Stack Visibility for Everyone



End to End Observability

# Enterprise-Class Service Mesh

Consistent Visibility, Control, and Security, for Applications Across Clouds

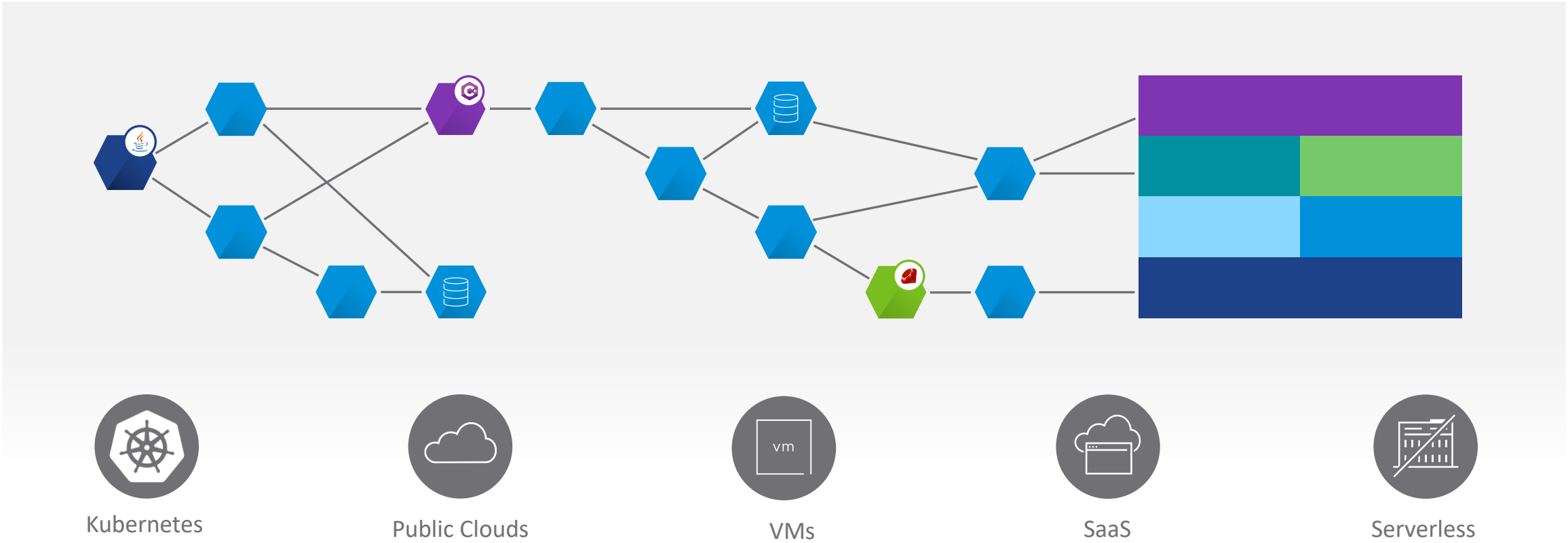
Multi-platform and multi-cloud federation

Centralized visibility and remediation

Global policies for users, services and data

Centralized security, audit, and compliance

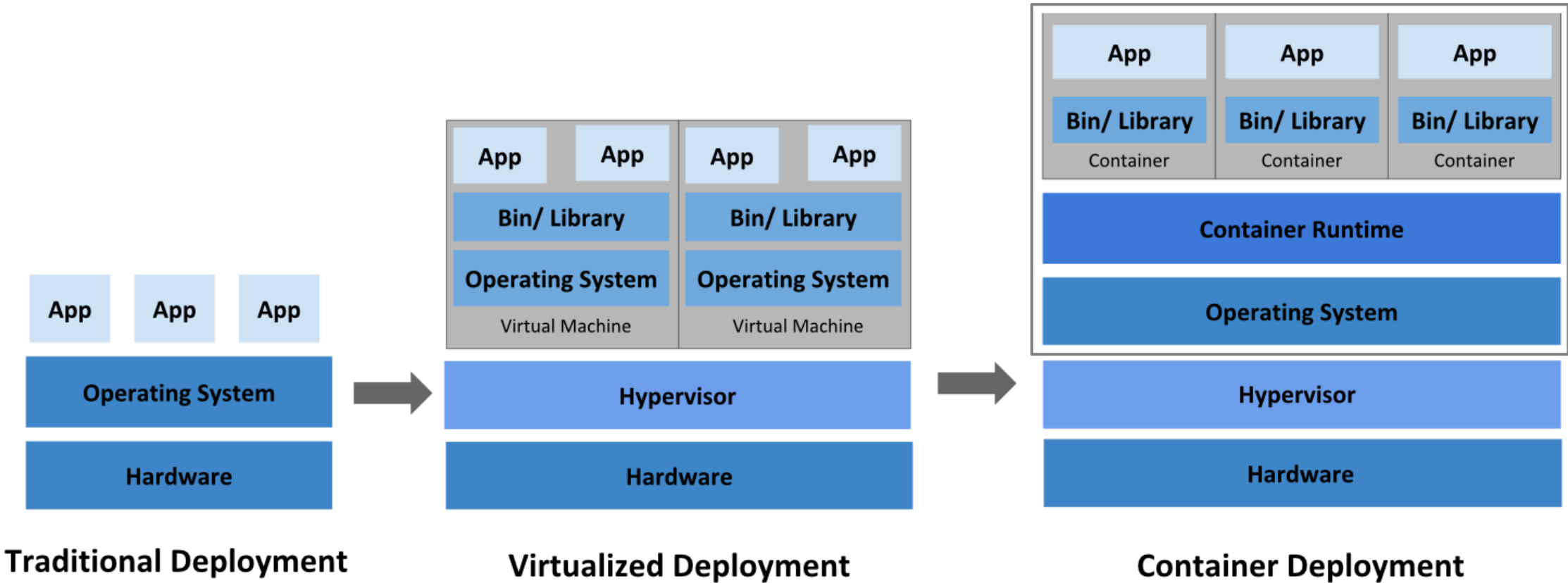
No changes to application code



To summarize

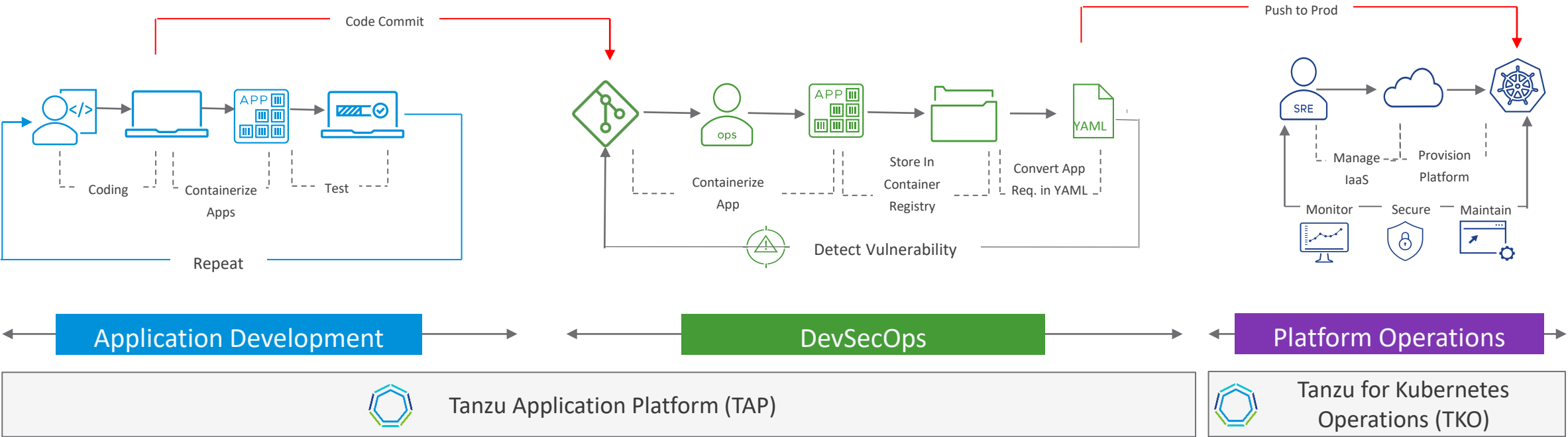
# Evolution of how we run apps

## Moving to Cloud Native Applications






# Cloud Native Application Development Process

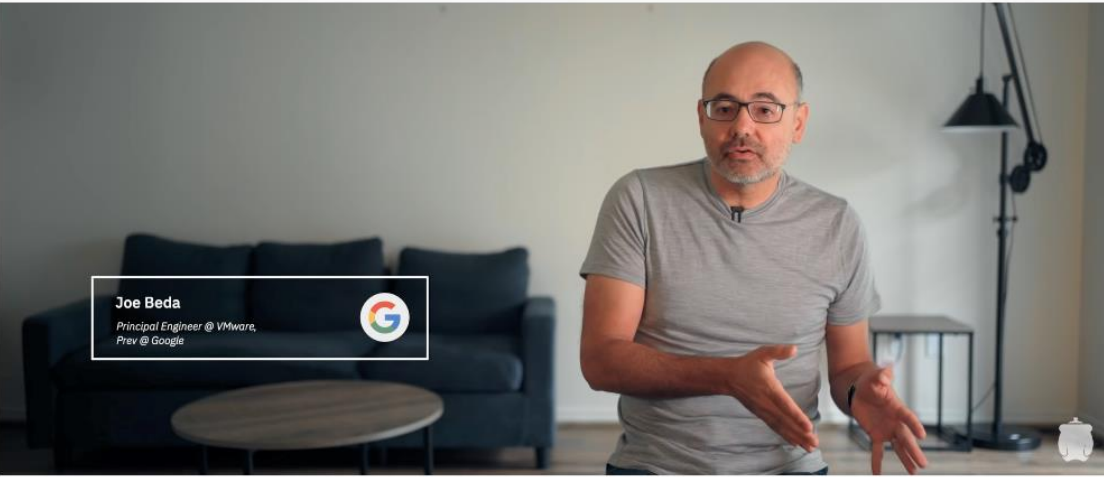


Learn more?


# YouTube: Kubernetes - The Documentary [Part 1+2]



kubernetes documentary



**Joe Beda**  
Principal Engineer @ VMware,  
Prev @ Google



## Kubernetes: The Documentary [PART 1]

278.902 weergaven In première gegaan op 21 jan. 2022 The official Kubernetes Documentary Part 1.

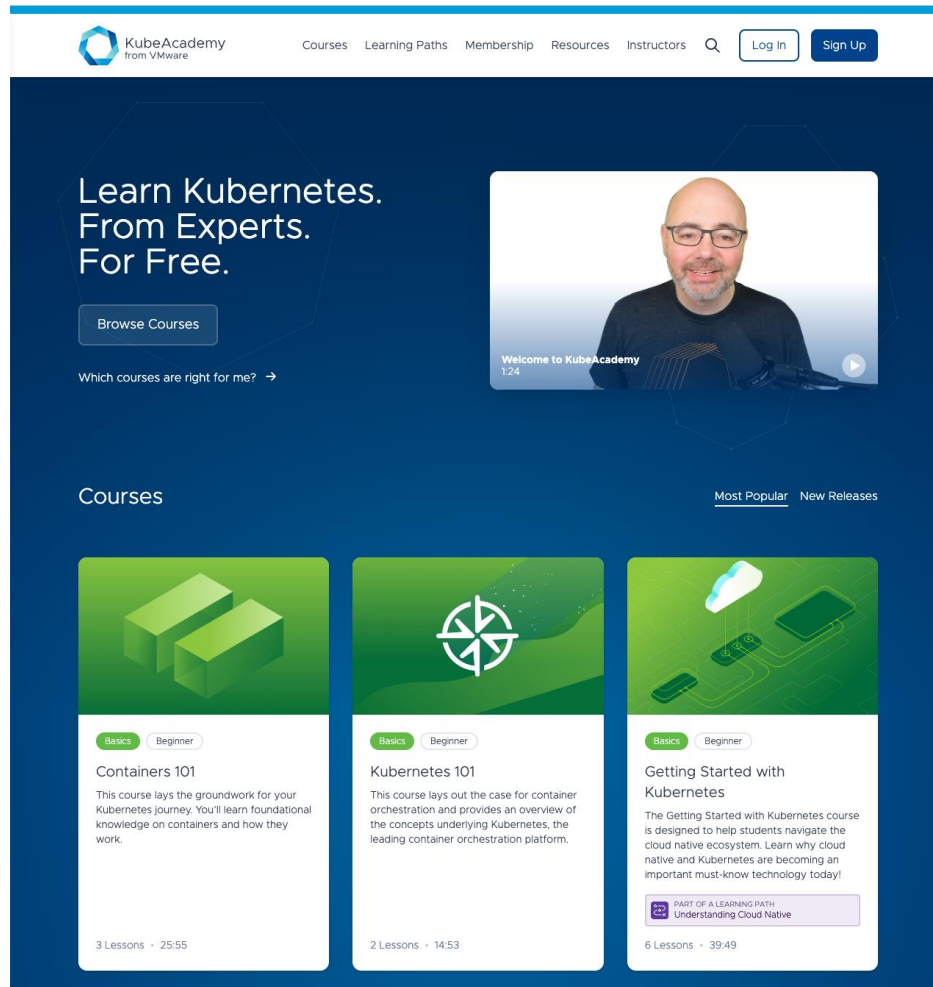
Inspired by the open source success of Docker in 2013 and seeing the need for innovation in the area of large-scale cloud computing, a handful of forward-thinking Google engineers set to work on the container orchestrator that would come to be known as Kubernetes– this new tool would forever change the way the internet is built.

These engineers overcome technical challenges, resistance to open source from within, naysayers, and intense competition from other big players in the industry.

Most engineers know about “The Container Orchestrator Wars” but most people would not be able to explain exactly what happened, and why it was Kubernetes that ultimately came out on top.

There is no topic more relevant to the current open source landscape. This film captures the story directly from the people who lived it, featuring interviews with prominent engineers from Google, Red Hat, Twitter and others.

# Free training: KubeAcademy



KubeAcademy from VMware

Courses Learning Paths Membership Resources Instructors Q Log In Sign Up

Learn Kubernetes. From Experts. For Free.

Browse Courses

Which courses are right for me? →

Welcome to KubeAcademy 1:24

Courses Most Popular New Releases

**Containers 101**  
Basics Beginner  
This course lays the groundwork for your Kubernetes journey. You'll learn foundational knowledge on containers and how they work.  
3 Lessons • 25:55

**Kubernetes 101**  
Basics Beginner  
This course lays out the case for container orchestration and provides an overview of the concepts underlying Kubernetes, the leading container orchestration platform.  
2 Lessons • 14:53

**Getting Started with Kubernetes**  
Basics Beginner  
The Getting Started with Kubernetes course is designed to help students navigate the cloud native ecosystem. Learn why cloud native and Kubernetes are becoming an important must-know technology today!  
PART OF A LEARNING PATH Understanding Cloud Native  
6 Lessons • 39:49

Containers 101

Kubernetes 101

Getting started with Kubernetes

Introduction to Kubernetes for the Virtual Infrastructure Administrator

Kubernetes in depth

Kubernetes platform security



BY THE NUMBERS

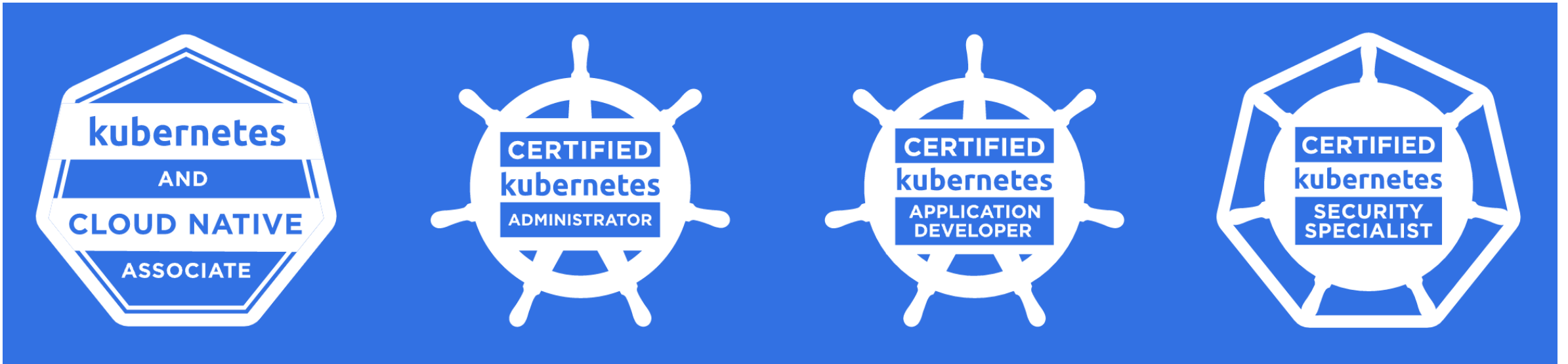
30  
Online courses

39  
Hours of learning

29  
Instructors

<https://kube.academy>

# Kubernetes certifications



## YouTube: DevOps Toolkit

Home

Shorts

Subscriptions

Library

History

Watch later

Liked videos

Subscriptions

Explore

More from YouTube

YouTube

devops toolkit

Search

Microphone

Settings

Notifications

Profile

The DevOps Toolkit

LinkedIn

Twitter

YouTube

Profile picture

DevOps Toolkit

@DevOpsToolkit

38.9K subscribers

Join

Subscribe

HOME

VIDEOS

SHORTS

LIVE

PLAYLISTS

COMMUNITY

CHANNELS

ABOUT

What Is Kubernetes (k8s)? Kubernetes Explained

9,112 views · 6 months ago

What is Kubernetes (k8s)? A container orchestrator? Cluster OS? A control plane? Something else?

#Kubernetes #k8s

Consider joining the channel:  
<https://www.youtube.com/c/devopstoolkit>

READ MORE

Our members

Thank you channel members!

J

Join

Popular videos

Play all

TEST YOUR KUBERNETES MANIFESTS

34:49

How To Write And Test Kubernetes Manifests With...

767K views · 9 months ago

BRANCHING STRATEGIES

18:19

Branching Strategies Explained

55K views · 1 year ago

DOCKER DESKTOP REPLACEMENT?

18:19

Should We Replace Docker Desktop With Rancher...

49K views · 1 year ago

20 min. or less

22:02

Argo CD - Applying GitOps Principles To Manage A...

45K views · 2 years ago

GONE FOREVER!

18:50

How To Replace Docker With nerdctl And Rancher Desktop

42K views · 1 year ago





# Thank You