# App Modernization 여정 어디까지 가봤니?

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# Dec. 30 2019


Pivotal



A commissioned study conducted by Forrester Consulting on behalf of VMware.
Transformative CIOs Use Customer Experience to Differentiate & Deliver Results. February 2020.

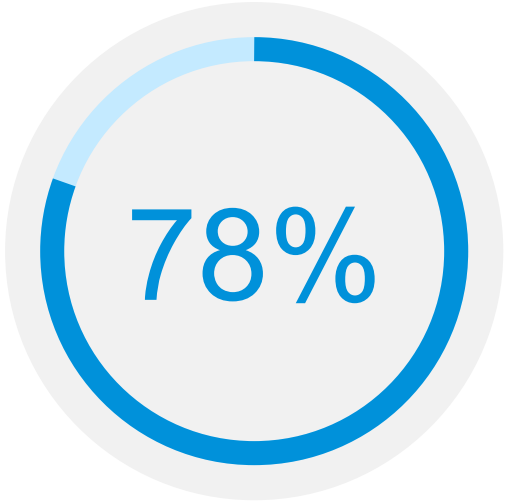
How

# VMware Tanzu

# Agenda

| 시간 | 내용 및 발표자 | 진행 |
|---|---|---|
| 14:00 ~ 14:25<br>(25분) | **Path 1: App down 방향의 이야기**<br>애플리케이션 개발팀 입장에서, 운영의 안정성의 희생 없이 최대의 개발 속도를 내도록 도움을 주는 방법을 소개합니다. 설계(Build), 개발(Run), 운영(Manage)의 3가지 영역 중에 "Build"의 영역에 있는 과제과 어려움을 위한 해결책을 제시합니다. Tanzu Application Catalog, Tanzu Application Service, Tanzu Build Service 그리고 VMware Pivotal Labs 전반에 대한 간략한 소개를 진행합니다. | 이정인 매니저 |
| 14:25 ~ 14:50<br>(25분) | **Path 2: Infra up 방향의 이야기**<br>기존 애플리케이션과 Cloud Native 애플리케이션을 포함한 전체 애플리케이션 워크로드를 다양한 클라우드 환경에서 효율적으로 운영하는 방법을 소개합니다. 설계(Build), 개발(Run), 운영(Manage)의 3가지 영역 중에 "Run & Manage"의 영역에 있는 과제와 어려움을 위한 해결책을 제시합니다. vSphere with Kubernetes, Tanzu Kubernetes Grid, Tanzu Mission Control 등 모던 애플리케이션 운영에 필요한 인프라 전반에 대한 간략한 소개를 진행합니다. | 김영태 상무 |
| 14:50 ~ 16:00<br>(10분) | **질의 응답** | |

# Software Quality = Our Competitive Edge




Improving application portfolio is a TOP priority


Have NOT made improvements in the last year

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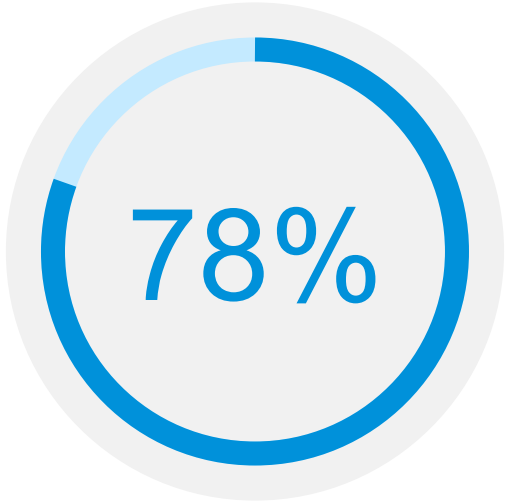
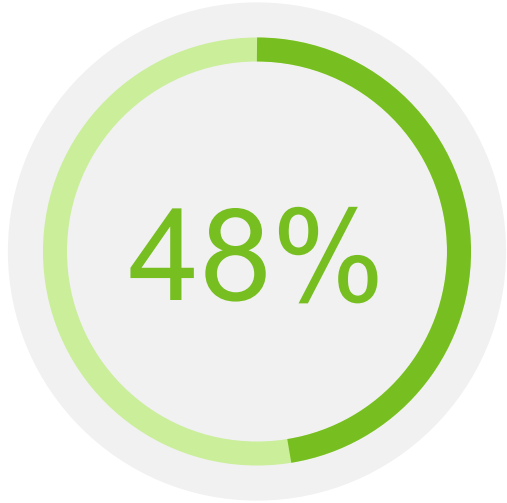
How




Improving application portfolio is a TOP priority

# Why?




Have NOT made improvements in the last year

1. 애플리케이션 플랫폼의 부재
2. IT 인프라의 민첩성 확보
3. 기술 부채



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How

“How do we move toward

modern apps

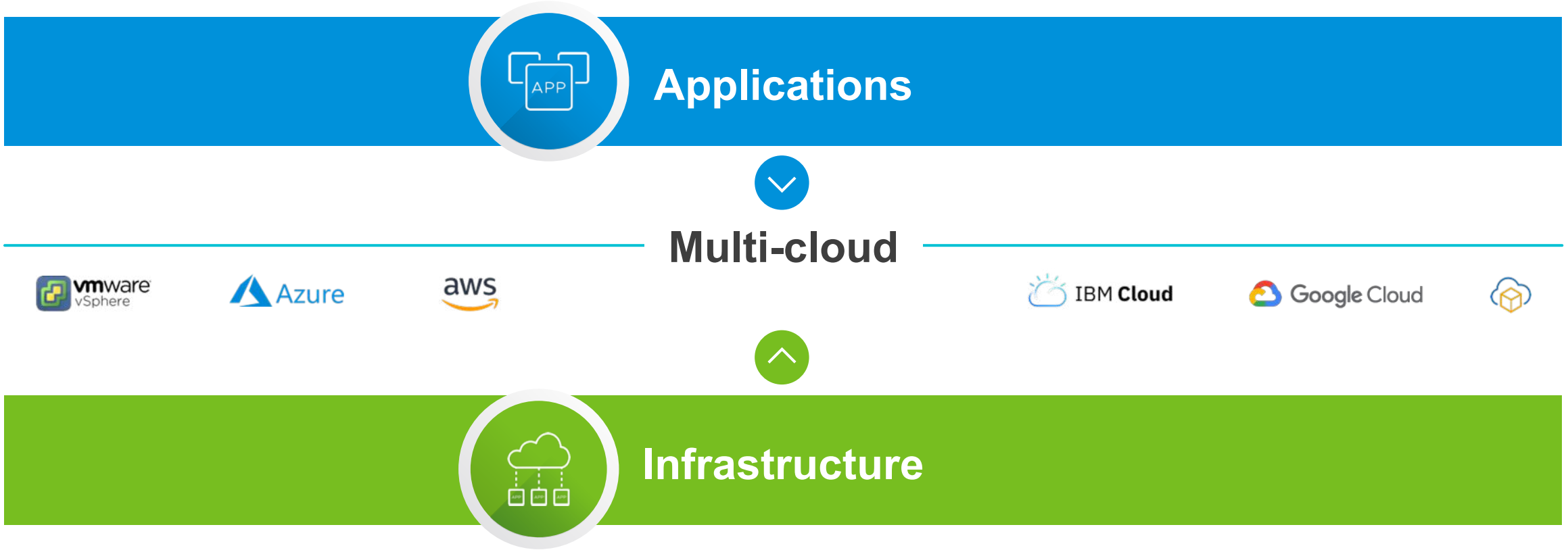
with greater velocity?”

“How do we operate

modern infrastructure

with more stability at scale?”

# Application Modernization Demands a Dual Focus



# Why VMware?

**Spring**
1.5M+ projects started / month


**Applications**

**Application Service**
1M containers on the platform

VELOCITY

**Multi-cloud**

vmware vSphere · Azure · aws · IBM Cloud · Google Cloud

STABILITY

**SDDC**
70M workloads

**Infrastructure**

**Kubernetes**
Top 3 contributor

# VMware Tanzu

## Build

**Modern Applications**

Traditional | Open Source | Cloud Native

## Run

**Ubiquitous Kubernetes Runtime**

On-premises | Public Cloud | Edge

## Manage

Kubernetes for
Developers and IT

Multi-cloud
Multi-cluster
Multi-team

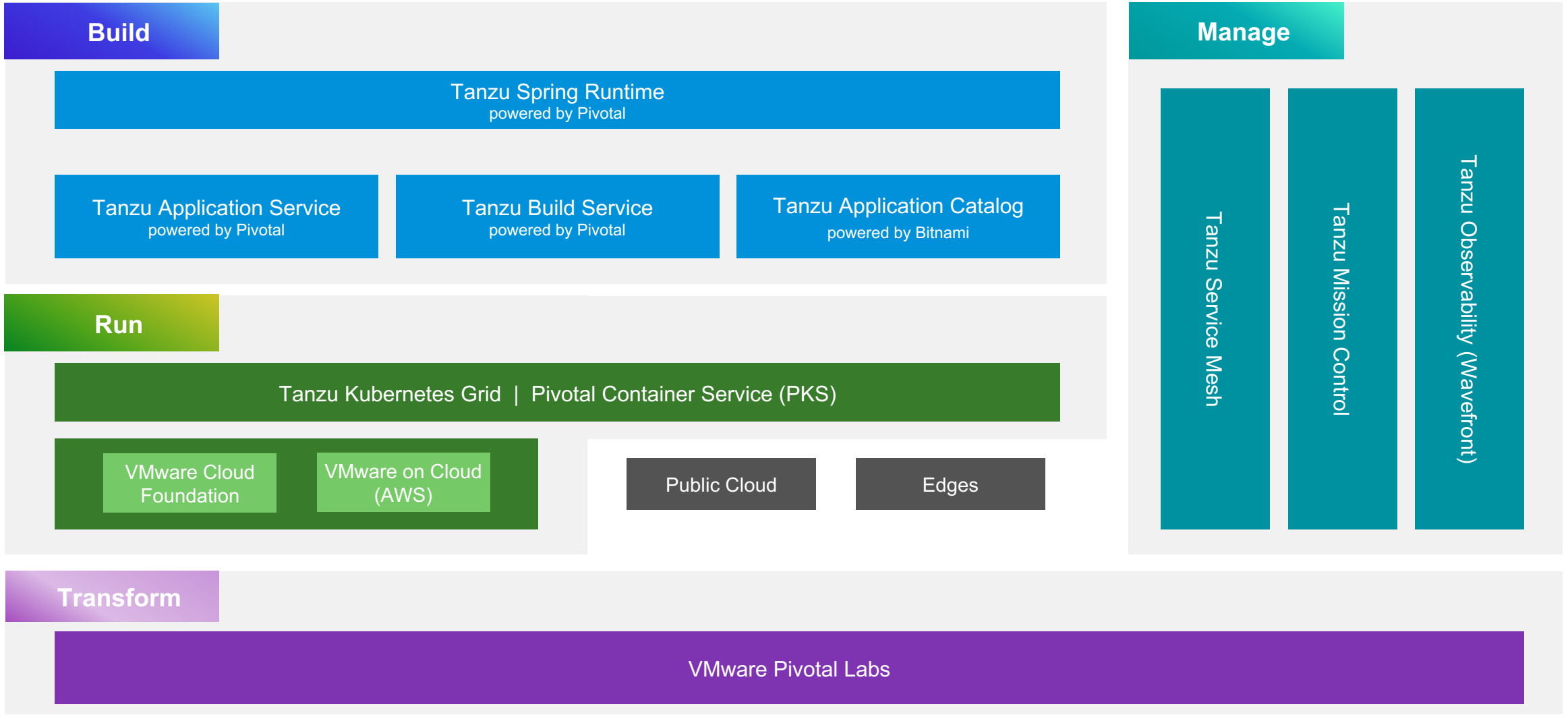
## Transform

**VMware Pivotal Labs**

Platform Ops | Application Modernization | Education

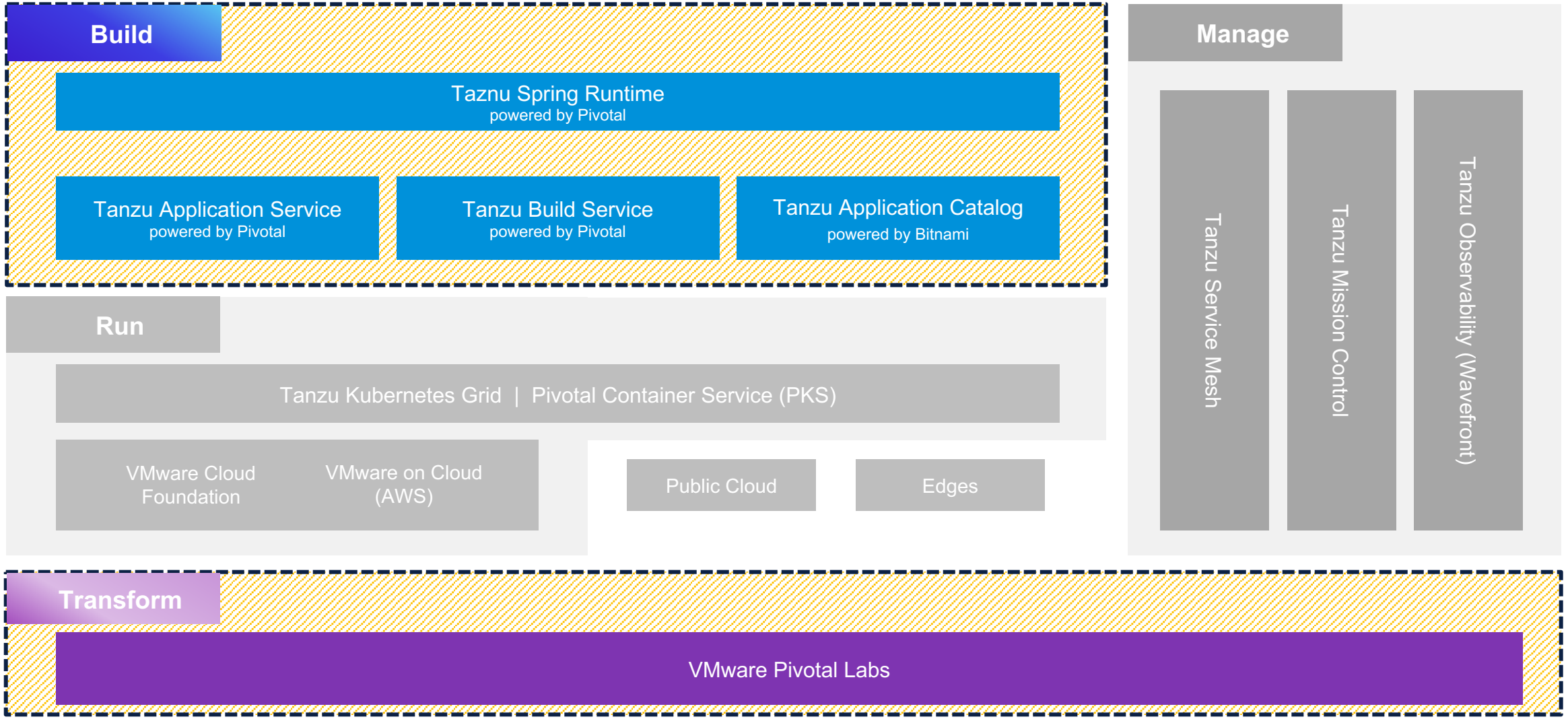
# Comprehensive Stack to Modernize Your Applications

## VMware Tanzu + Pivotal Labs



# Comprehensive Stack to Modernize Your Applications

## VMware Tanzu + Pivotal Labs



Realize

# High Impact Outcomes

## Microservices

80%

Uses Spring Boot Applications

Tanzu Spring Runtime

## Focus developers on code instead of infrastructure

37%

increase in developer productivity

Tanzu Application Service

## Shorten the path to production

82%

increase in software in production

Tanzu Build Service

## Opensource Adoption

54%

More adoption than low performers

Tanzu Application Catalog



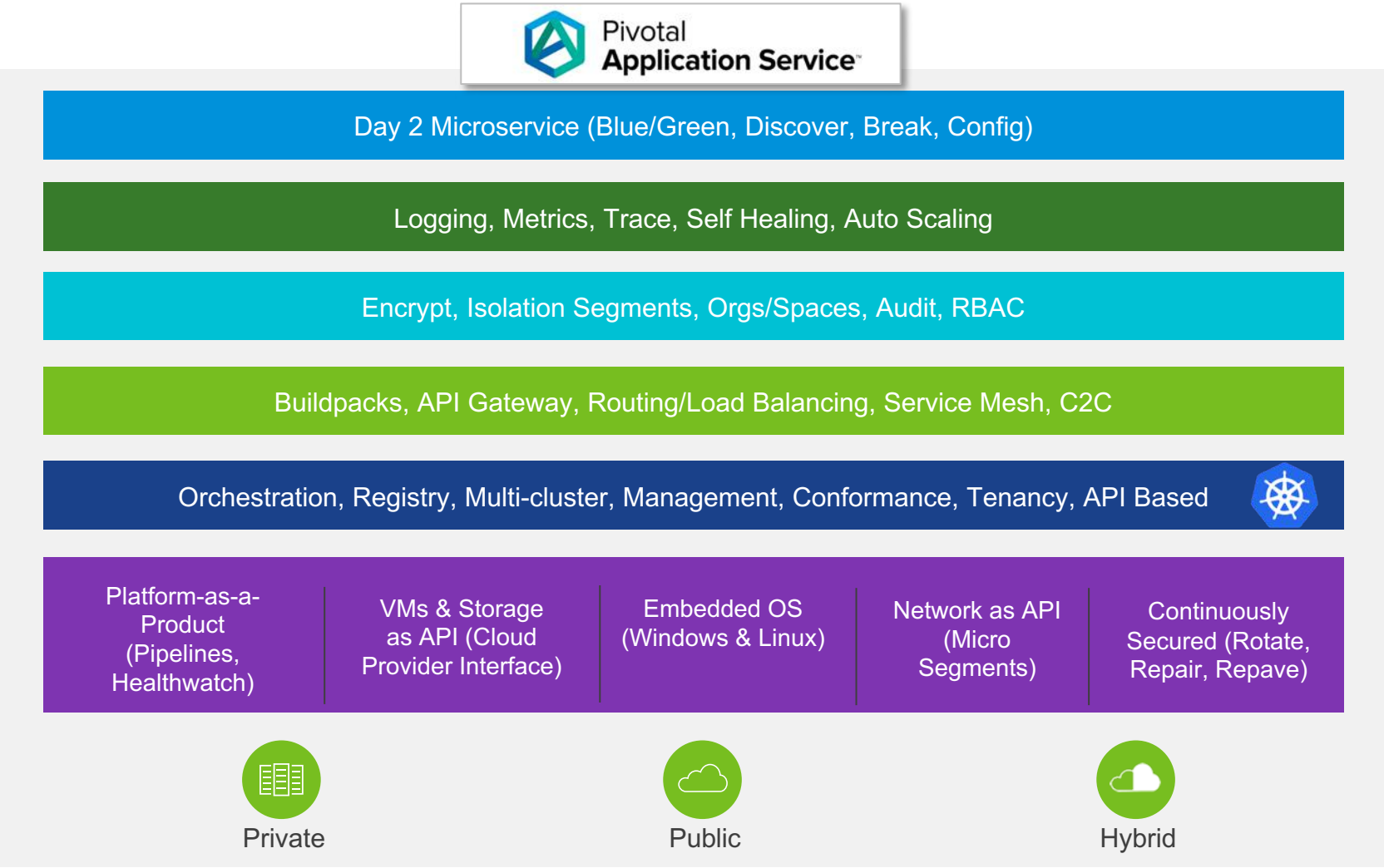

Average results based on interviews with VMware customers

# Tanzu Build

## Tanzu Application Service
## (Former Pivotal Application Service)

# Tanzu Application Service

## Increase speed and deploy code to production thousands of times per month.

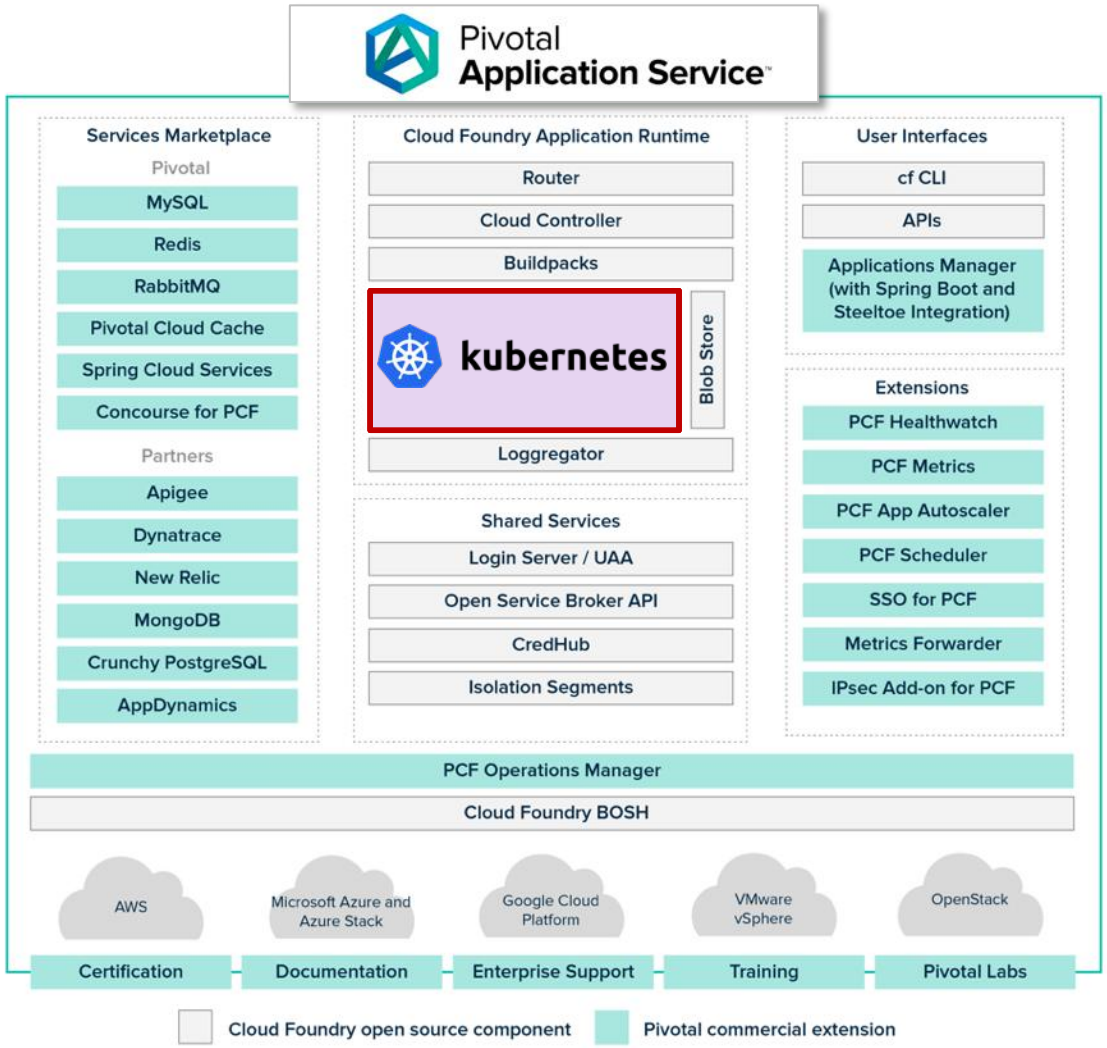



- cf push
- Best runtime for Spring and Spring Boot
- Turnkey microservices operations and security
- A native Windows and .NET experience
- Built for apps
- Container-ready

# Tanzu Application Service for Kubernetes

*Kubernetes는 플랫폼을 만들기 위한*

*"시작 점"에 불과하다.*

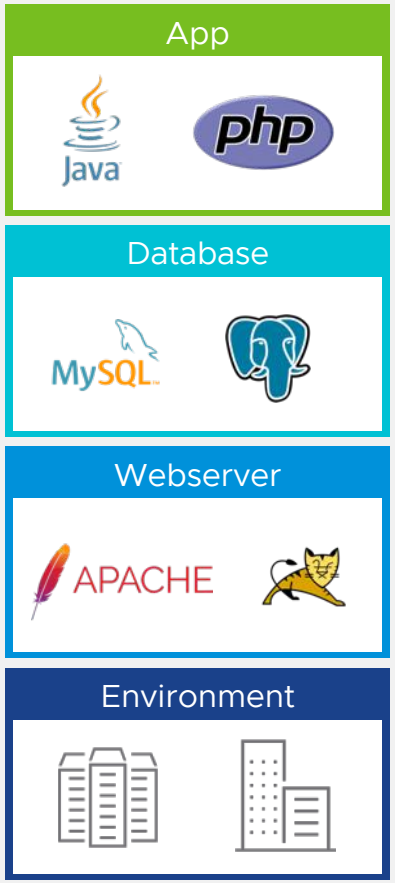
# Tanzu Build

## Tanzu Application Catalog

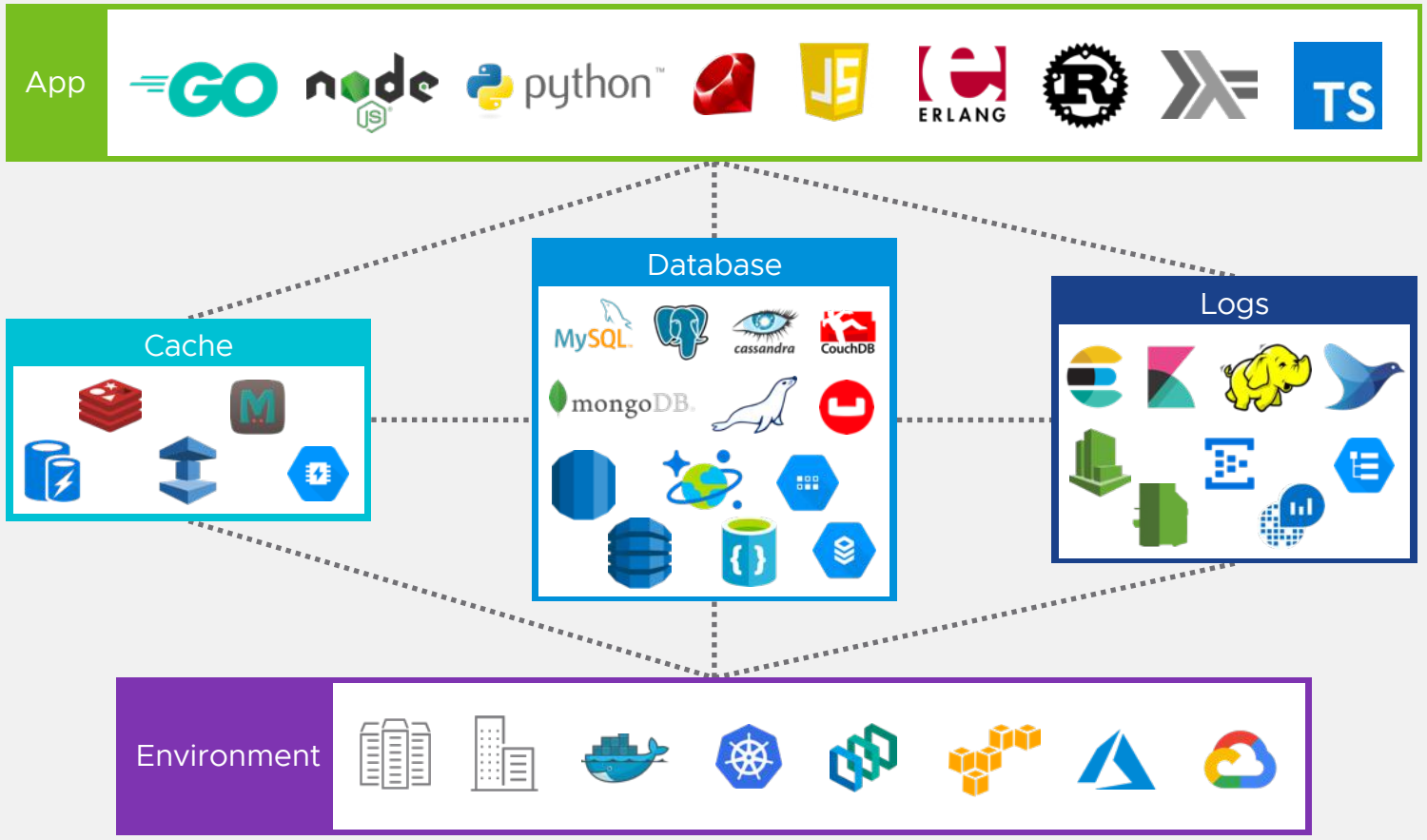
# Application Architectures Are Changing

## We've moved from simple and centralized, to complex and decentralized. Open source tech is everywhere.

### Then...




### Now...

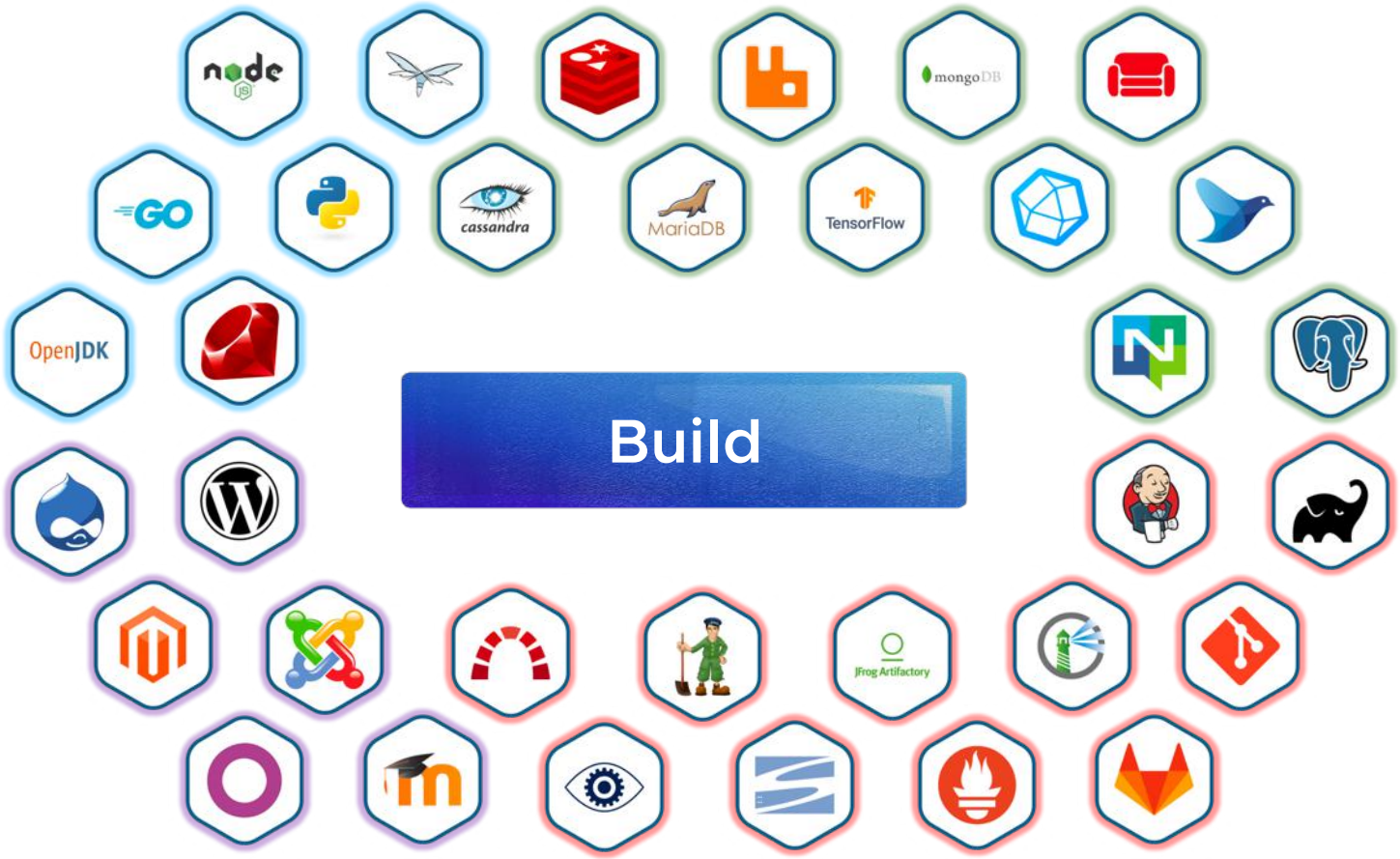


# The Solution: Tanzu Application Catalog

## Production-ready containers for popular open source software

Language Runtimes

App Components



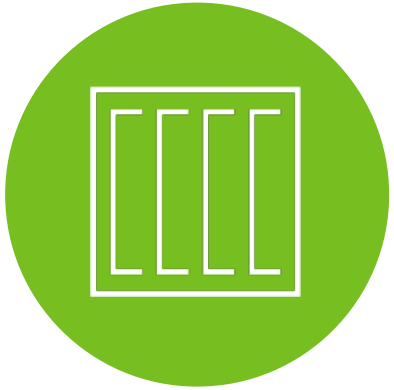

Business Apps

Supporting Apps

# Tanzu Application Catalog bridges the gap

## Production-ready containers for popular open source software

Use **Tanzu Application Catalog** and deploy open source with **confidence**:



Golden Image Support

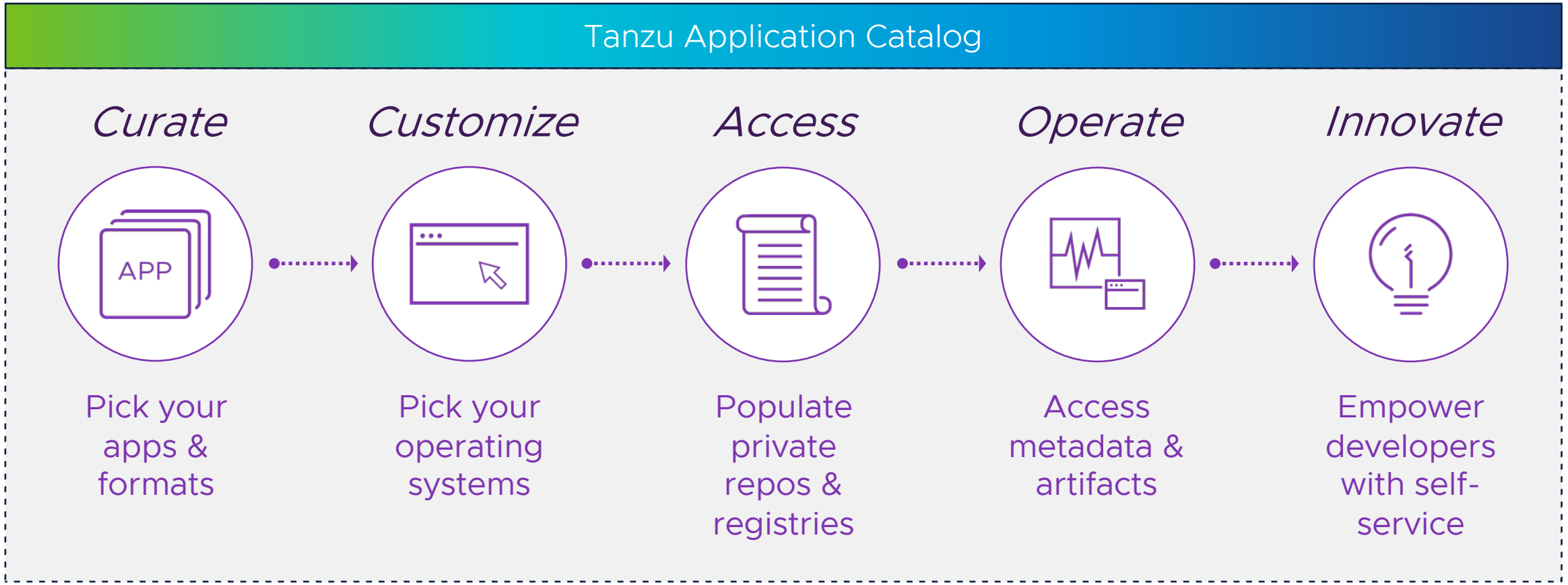
Proof of Provenance

Proof of Testing

Align Developers and IT around velocity, stability, and security

# Tanzu Application Catalog: How It Works

An automated assembly line of continuously maintained and pre-configured software.



# VMware Pivotal Labs

VMware Pivotal Labs

| | Apps | Platforms | |
|---|---|---|---|
| TRAIN | Technology Training (Introduction \| Foundation \| Advanced) | | |
| | Skill Training (Practices \| Craft) | | |
| PREPARE | Discovery Workshop | | |
| | Navigator | | |
| DELIVER | Modern App Development | Platform Deployment | Platform Management |
| | Continuous Delivery | | |
| SCALE | Program Delivery | Modern Platform Governance | |
| | Health Check | | |
| OUTCOMES | • Gain Higher Value with Modern App Development<br>• Develop Internal Product Practices<br>• Improve Resiliency of Business Systems<br>• Increase Cloud Adoption | • Installed, Configured, and Integrated Platform<br>• Patched, Updated, Secure, and Available Platform<br>• Continuously Improving Path to Production<br>• Increased Developer Productivity | |

# New Modern Application Development

San Francisco

Atlanta

Berlin

Boston

Boulder

Chicago

Dallas

Denver

Dublin

London

Los Angeles

New York

Paris

Palo Alto

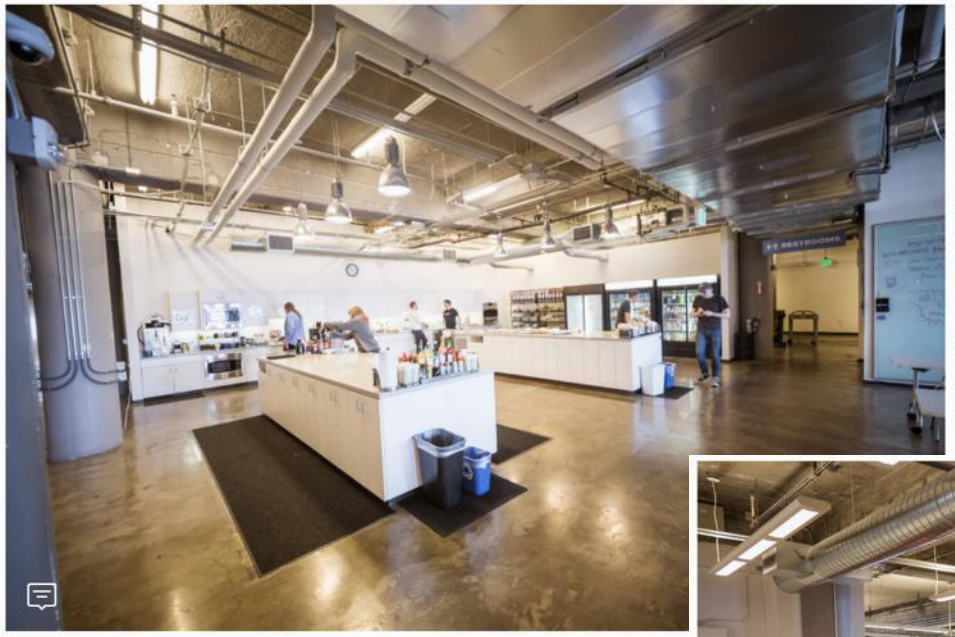
Seattle

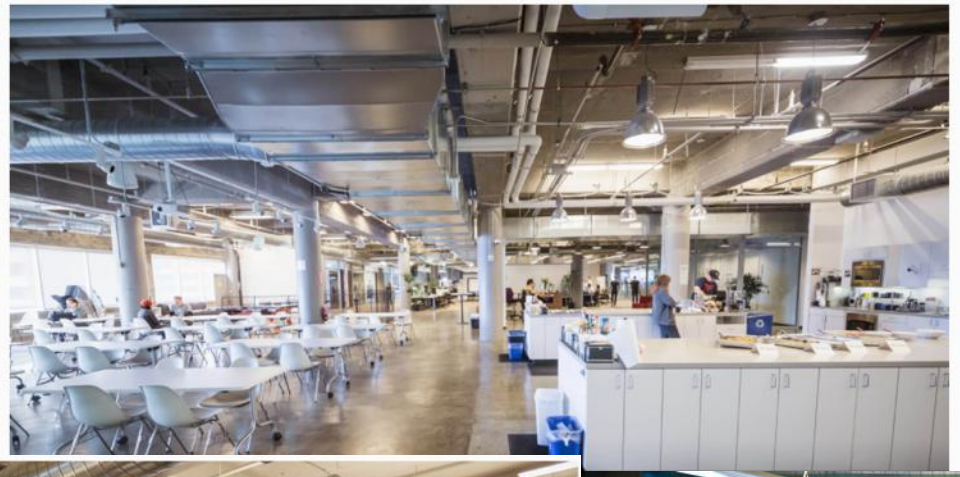
Singapore

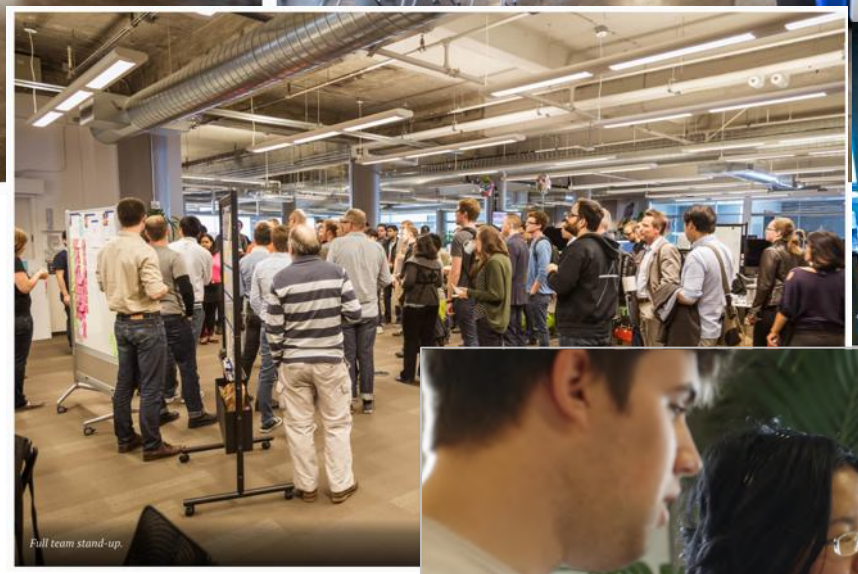
Sydney

Tokyo

# New Modern Application Development








# 2-Pizza Team


User Interview

Lean

Test Driven Development

Agile

UI/UX

Design Thinking

Discovery Workshop

Microservices

User Centered Design

CI/CD

Backlog MGMT

Extreme Programming

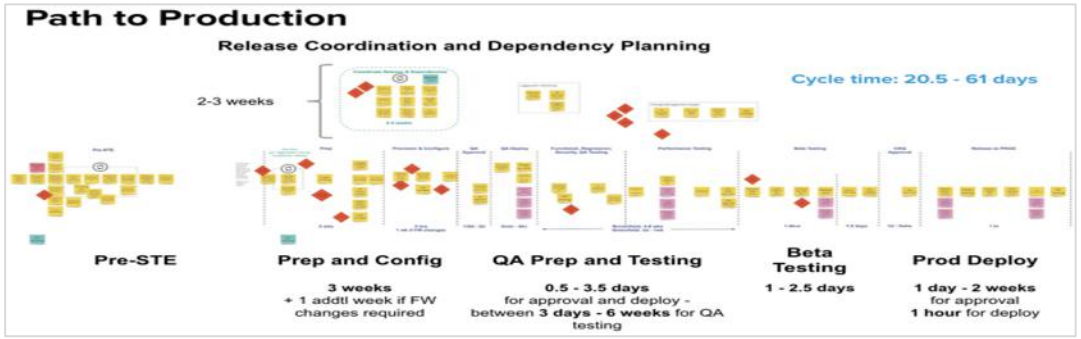
Pair Programming

Domain Driven Design

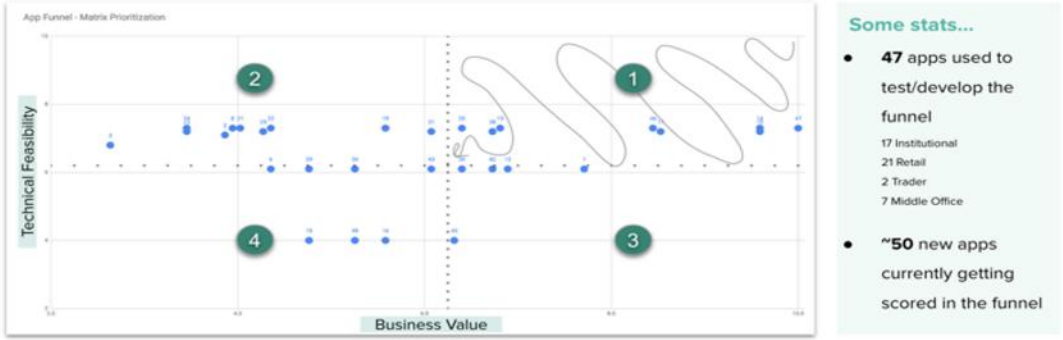
# Microservice Journey

2017년 프로그램 런칭 후 약 300회이상의
마이크로 서비스 전환 프로젝트 수행

특정 마이크로 서비스에 대한 기술 다이어그램 및
상세 스펙 정의 (Boris Diagram, SNAP-E)




4주의 디자인 단계(Event Storming)를 거쳐 마이크로 서비스의 윤곽을 잡고,
특정 서비스를 선택하여 구현 시작




여러 사업 영역에 걸쳐 복수개의 마이크로 서비스를 도출함

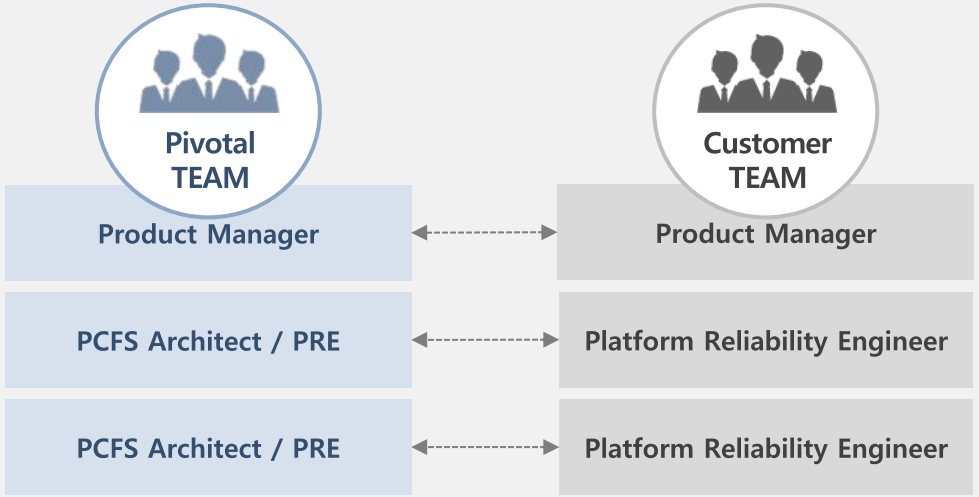
8-12주의 구현 기간(Modernization)을 통해 현업 팀과 협업하여, 기존 모놀리틱 어플리케이션을 마이크로서비스로 구현

# Platform Journey

## Platform Management

### Platform Dojo 추진 방식

**"Pivotal 전문가와 HMG 플랫폼 팀의 1:1 Pair 매칭"**




- 고객의 전담 플랫폼 팀과 함께 한 팀을 구성하여 일하는 방식
- Pivotal 플랫폼 엔지니어 2명 + PM 1명이 고객에 함께 상주하며 3개월 간 역량을 내재화 할 수 있도록 도움을 주는 프로그램
- 개발팀의 니즈를 주기적으로 파악하여 개발팀이 원하는 기능 위주로 구축해 나가는 과정

## Enablement

### Platform Dojo 추진 전략

**"Lean 방식의 플랫폼 운영"**

**예시적 Roadmap**

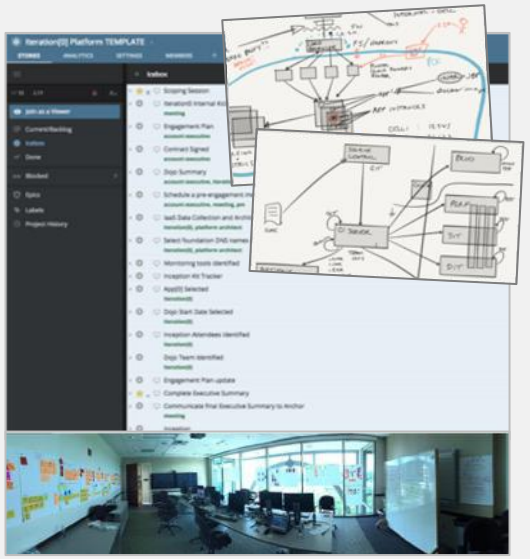
**M1 : Scoping, Design**
목표, 리스크, 업무 범위 설정
플랫폼 설계 및 컨트롤 플레인 설정

**M2 : Automation, CI/CD**
플랫폼 업그레이드, 패치
OS 업그레이드 패치 자동화

**M3 : Monitoring/Logging**
플랫폼, 애플리케이션 모니터링
로깅 아키텍처 수립

**M4 : HA(High Availability)**
고가용성 아키텍처 수립
DR Drill 테스트

**M5 : App Onboarding / Backup**
애플리케이션 구동 지원
플랫폼 백업 및 복구



**Stand-Up, Pairing, Iteration Planning Meeting 등 애자일 방식의 업무 수행 방식 채택**

# Platform Acceleration Lab

## for Application Architects

### APPLICATION PORTFOLIO ANALYSIS

(Week 2, Day 1)

- Portfolio Analysis
- Application Snap Analysis

### RE-PLATFORMING

(Week 2, Days 2-4)

- Packaging, Build & Deployment
- Configuration
- Bootification
- Data Integration and Data Access Techniques
- Local & Distributed Transactions
- File System Access
- Logging
- Handling Batch and ETL Jobs
- Worker Process and Threading
- External Integrations
- Instance-Specific State
- Mavenization / Gradling
- Security

### MODERNIZATION

(Week 3, Day 1-4)

- Struts to Spring
- Strangling The Monolith
- Microservices
- Data Refactoring Patterns
- Dual Data Storage / Single DB versus multiple DB
- Event Storming
- Event Shunting
- Starving the Event Stream
- Facades
- Event Decorators
- Handling User Interfaces
- Branch By Abstraction

### Replatforming

| | |
|---|---|
| CF Push and Buildpacks | LAB |
| Spring Bootification | LAB |
| Managing Datasources | LAB |
| Removing Reads from the File System | LAB |
| Removing Persistence to the File System | LAB |
| Logging | LAB |
| Background Jobs with the Database | LAB |
| Background Jobs with AMQP | LAB |
| Remove Instance Specific State | LAB |
| Spring Bootification of Struts | LAB |
| Ant to Maven | LAB |
| Ant to Gradle | LAB |

### Modernization

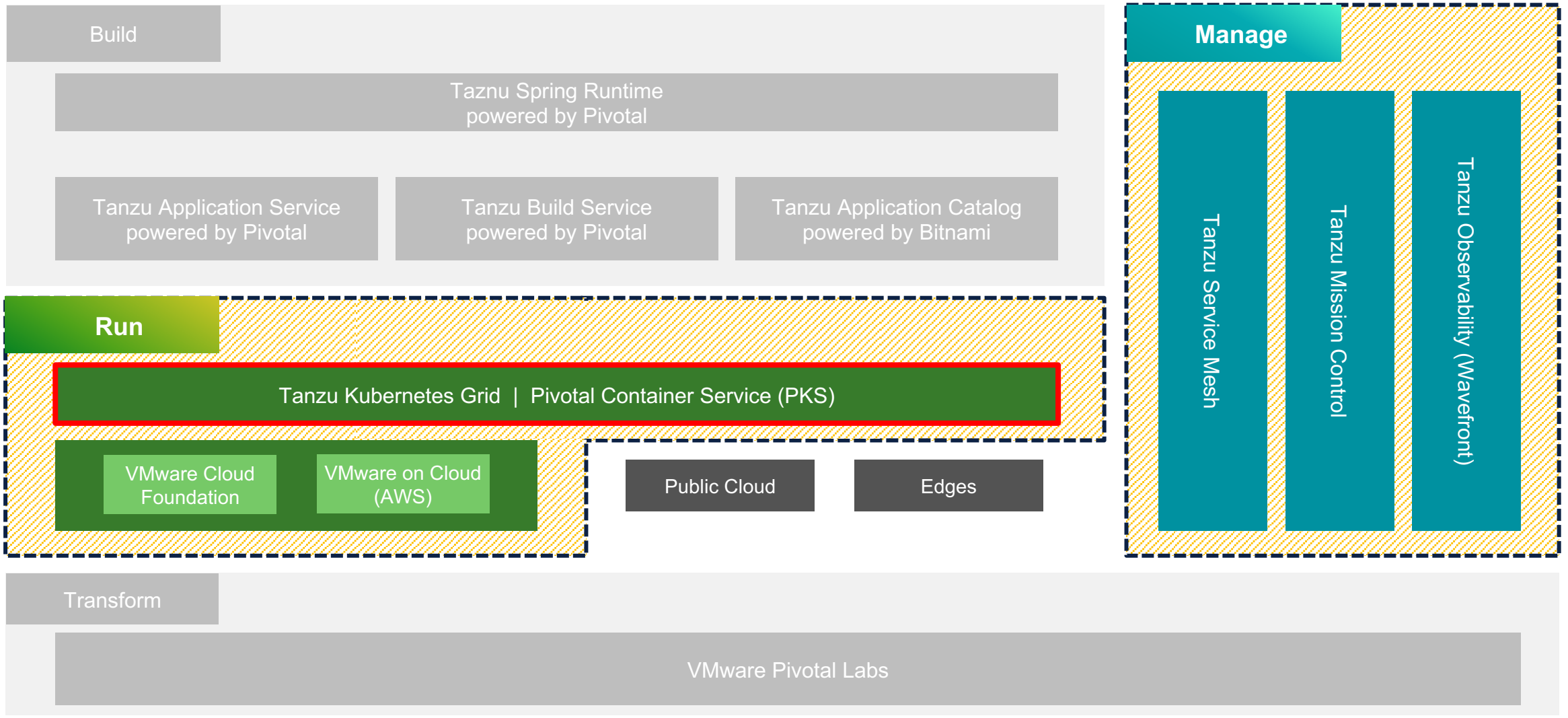
| | |
|---|---|
| Struts to Spring | LAB |
| Maven to Gradle | LAB |
| Multiple Jars | LAB |
| Microservices | LAB |
| Migrations | LAB |
| Security | LAB |
| Service Discovery | LAB |
| Config Server | LAB |
| Circuit Breaker | LAB |

# Tanzu Run

## Tanzu Kubernetes Grid

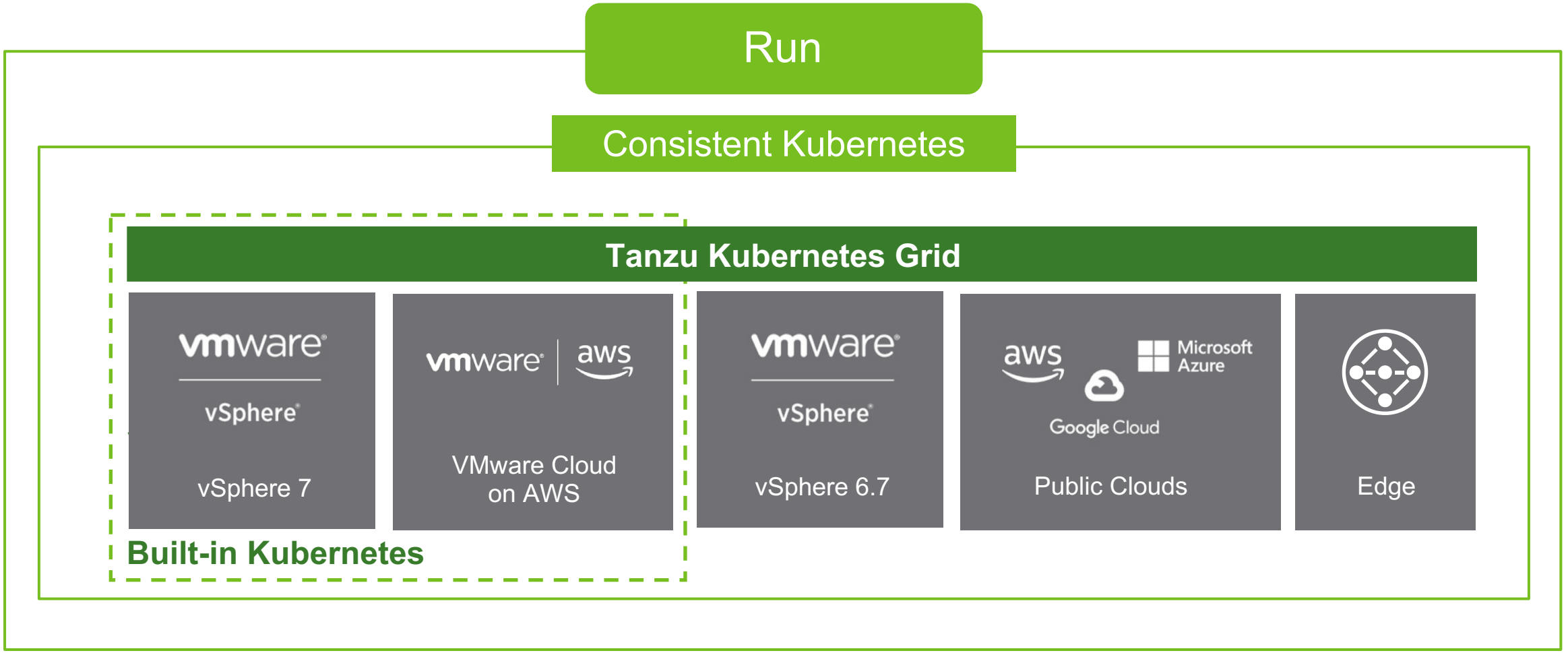
# Comprehensive Stack to Modernize Your Applications

## VMware Tanzu + Pivotal Labs



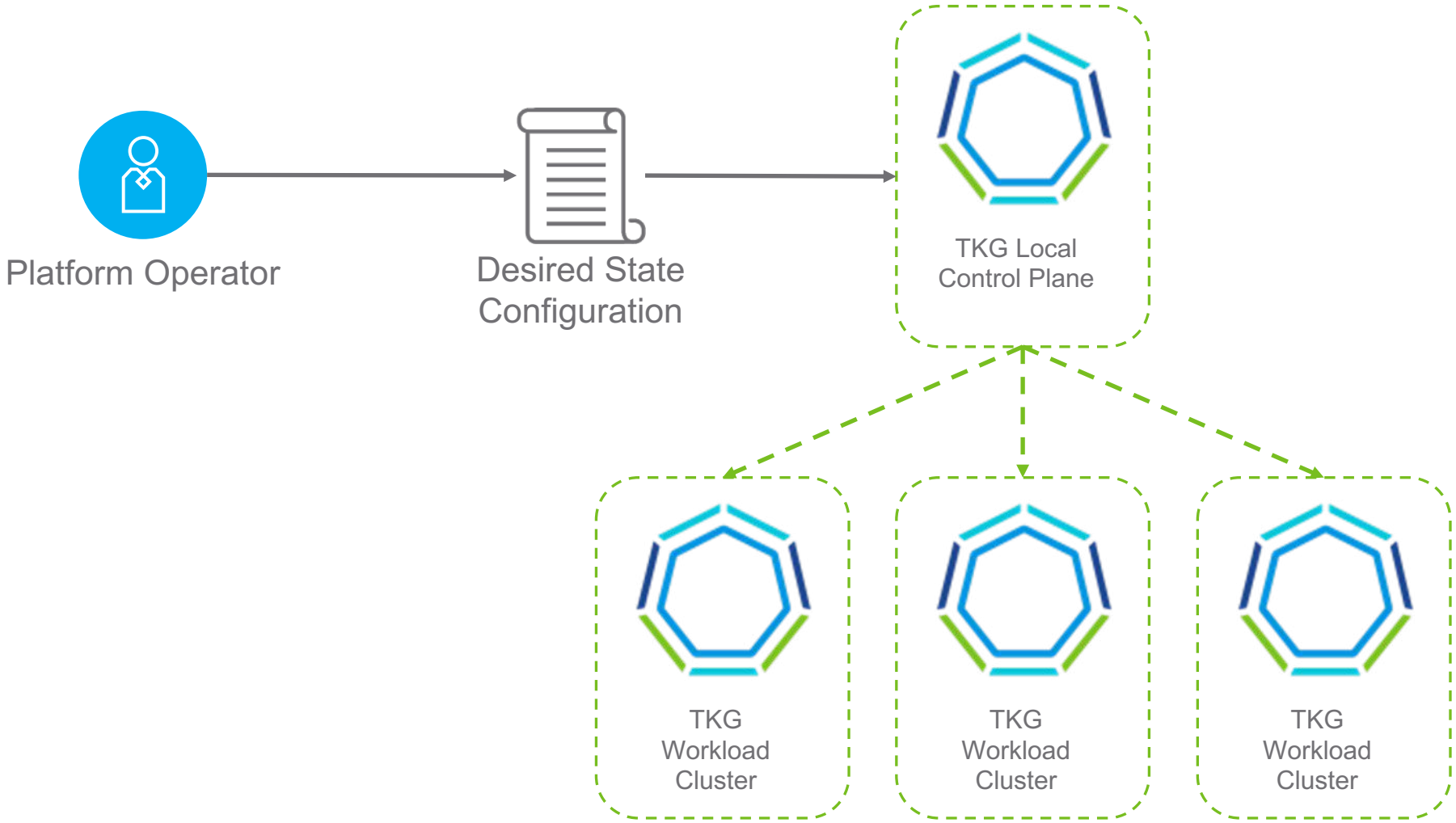
VMware Tanzu

# RUN a Kubernetes grid across any environment



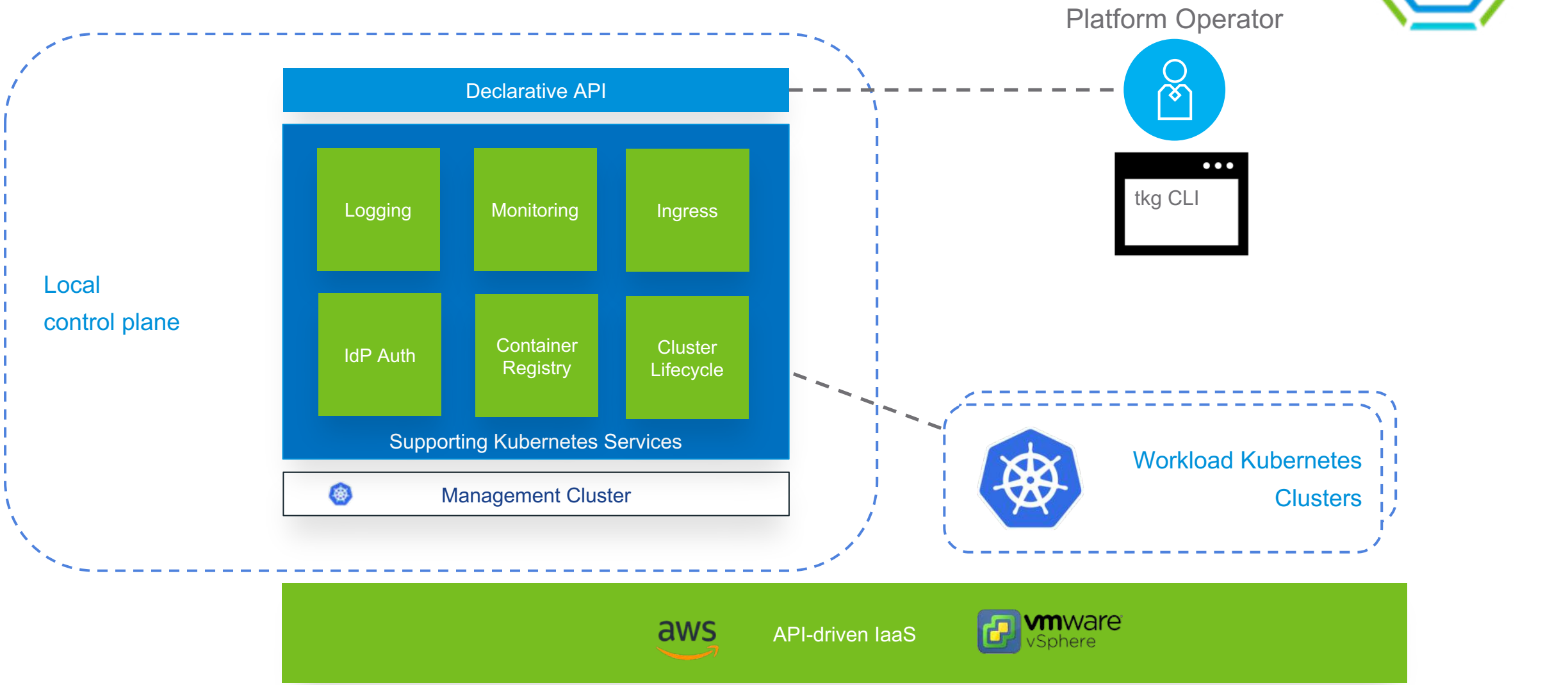
# Automated Multi-Cluster Operations

## Using Kubernetes to Automate Kubernetes



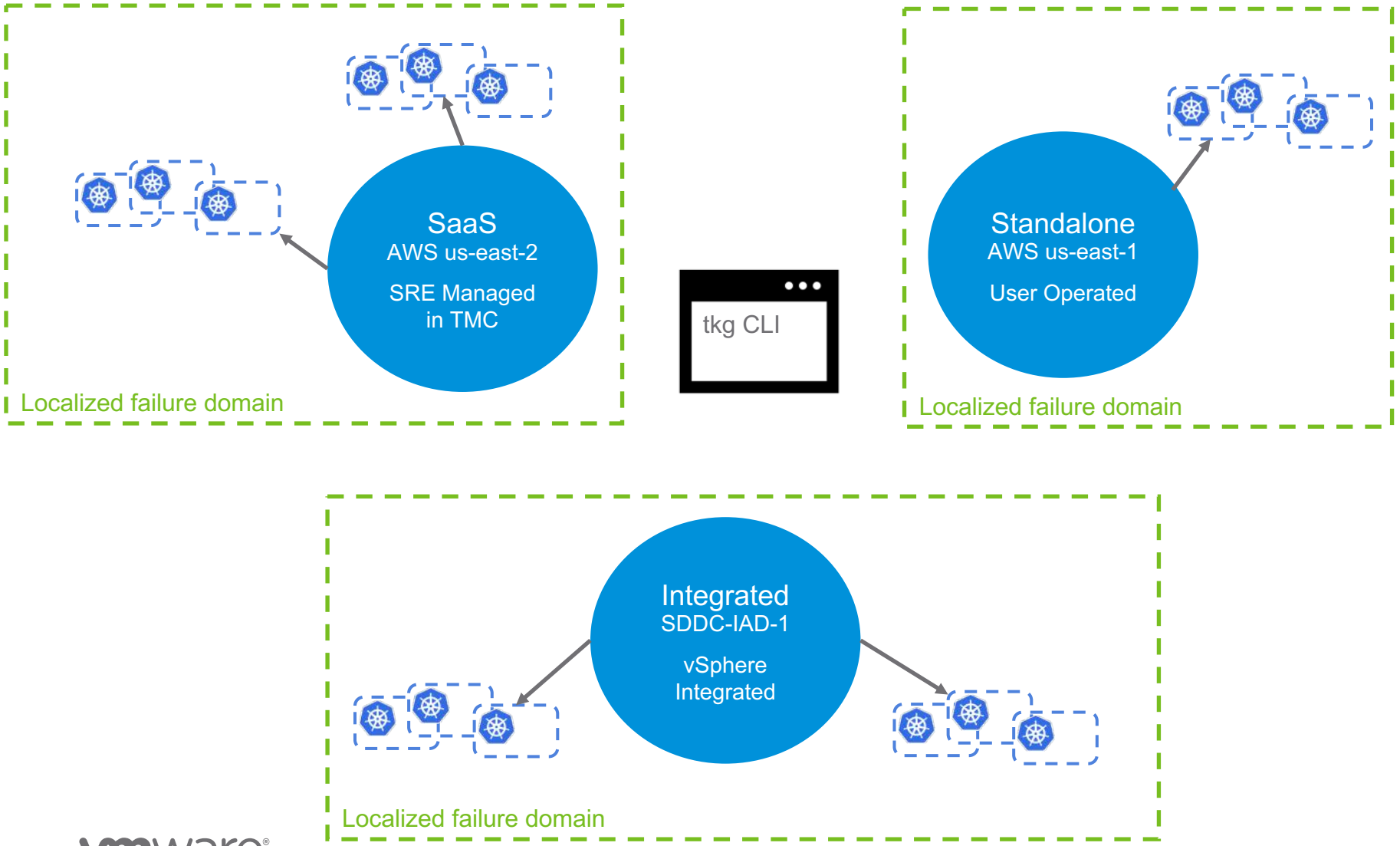
# Tanzu Kubernetes Grid

## Local control plane



# Tanzu Kubernetes Grid

## Flexible consumption model




Self-contained regional Kubernetes environment

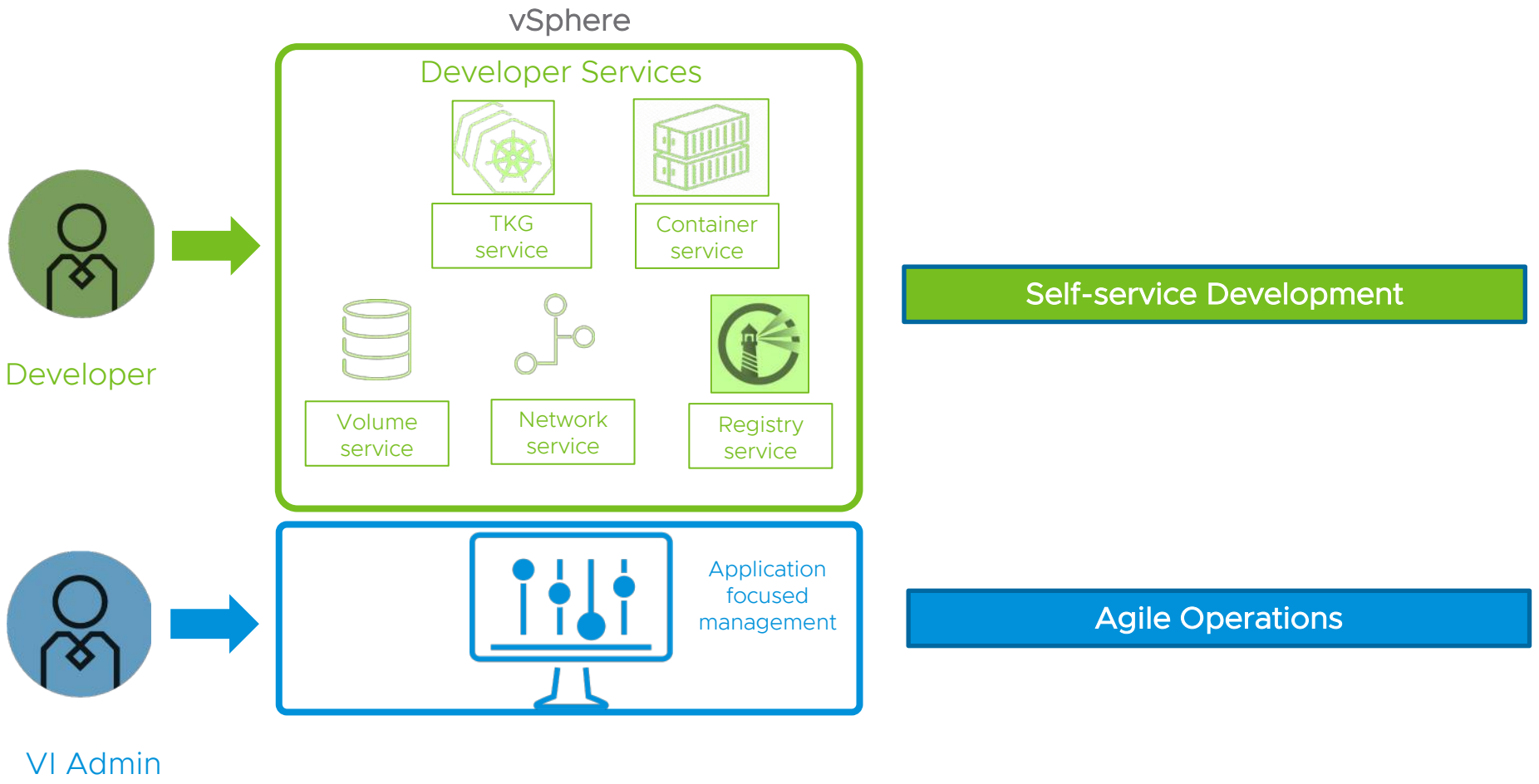
API-driven cluster lifecycle manages hundreds of workload clusters

Workload clusters are CNCF Conformant Kubernetes Clusters ready for end-user workloads

Built-in cluster extensions and shared services

# Introducing vSphere 7

## Built-in Kubernetes

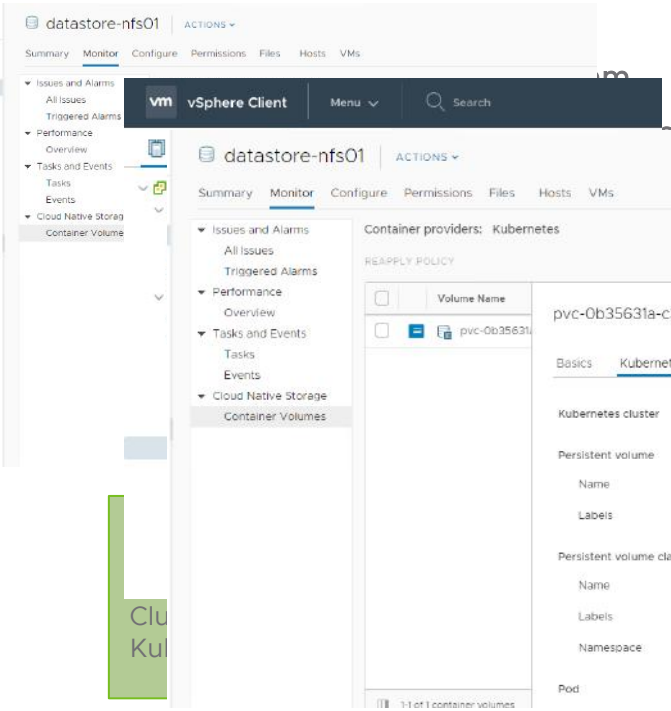


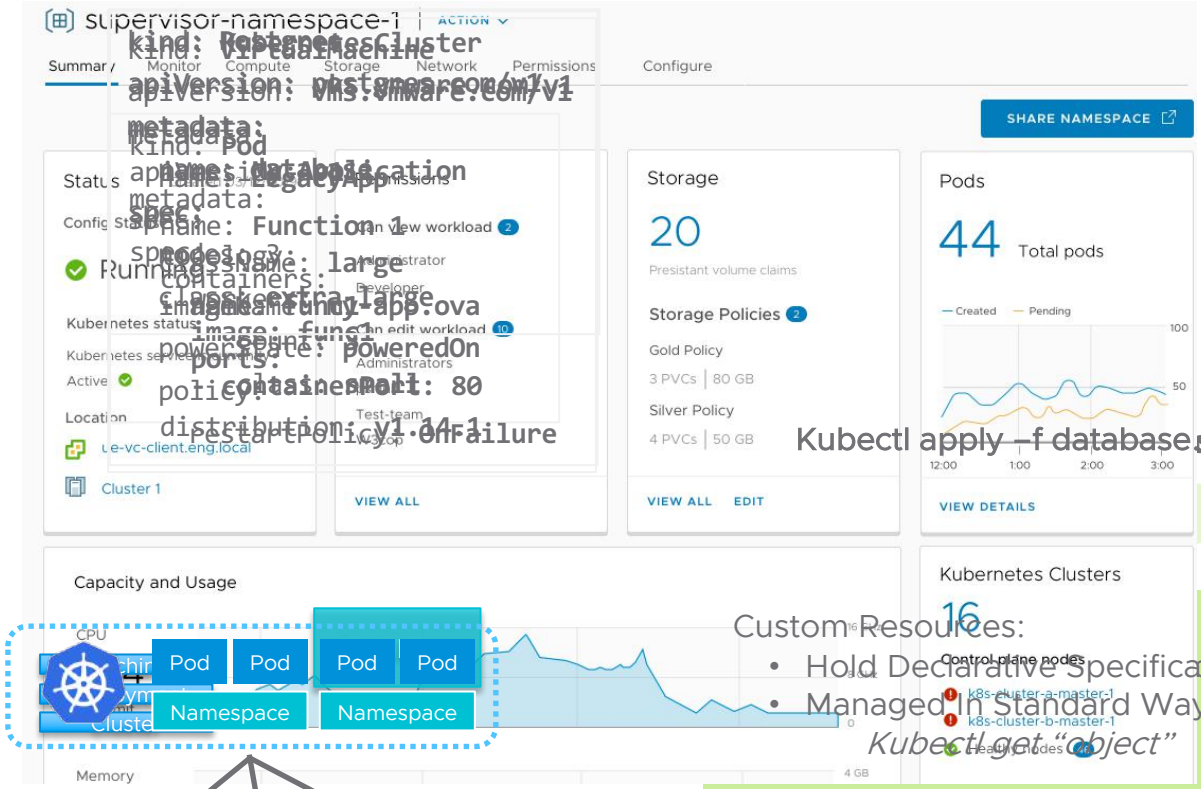
Operator

I Have Visibility Into K8 From VCenter

I Need a Database

Developer



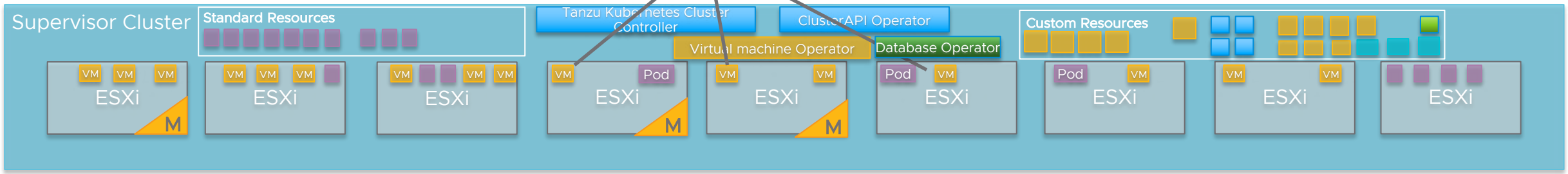

```
kind: KubernetesCluster
apiVersion: vmware.com/v1
kind: VirtualMachine
apiVersion: vms.vmware.com/v1
metadata:
  name: LegacyApp
spec:
  powerState: poweredOn
  image: funsi
  ports:
    - containerPort: 80
  policy:
    restartPolicy: OnFailure
metadata:
  name: Database
spec:
  containers:
    - image: mydb-app.ova
  policy:
    distribution: v1.14.1
```

Kubectl apply –f database.yaml

Custom Resources:

- Hold Declarative Specification of Objects
- Managed In Standard Way

*Kubectl get “object”*



# TKG Alexandria: Engineered Upstream Kubernetes Platform

## Target GA: Early April 2020

### CNCF Kubernetes

- Kubernetes 1.17
- Signed Calico distribution
- VMware-built OS images

### Multi-Cloud Cluster Operations

- CLI & UI-driven installation wizards
- Cluster API Kubernetes provisioning
- Provision clusters in vSphere 6.7u3, Project Pacific, and AWS EC2
- Offline installation
- Customer IdP-backed cluster authentication

### In-Cluster & Local Services

- Contour ingress controller
- Fluentbit log exporter

### Flexible Consumption

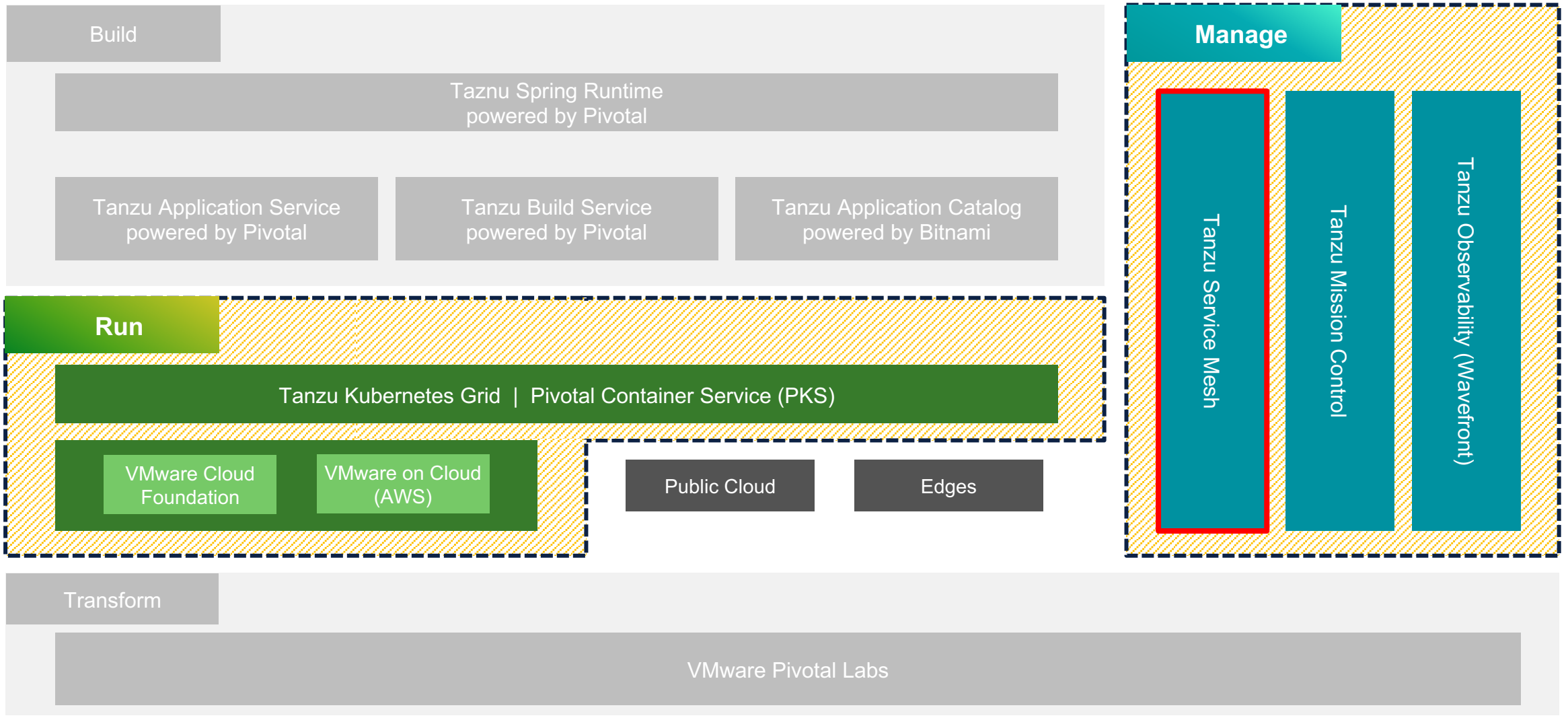
- User-operated on vSphere 6.7u3 and AWS EC2
- Integrated into vSphere 7.0 with VMware Tanzu Kubernetes Grid Service for vSphere
- As a service with Tanzu Mission Control for AWS EC2

# Tanzu Manage

## Tanzu Service Mesh

# Comprehensive Stack to Modernize Your Applications

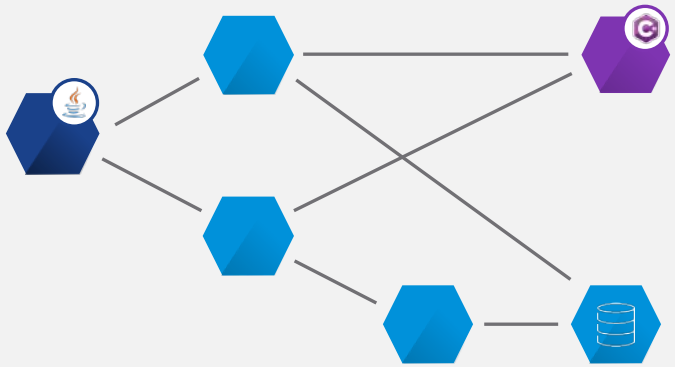
## VMware Tanzu + Pivotal Labs



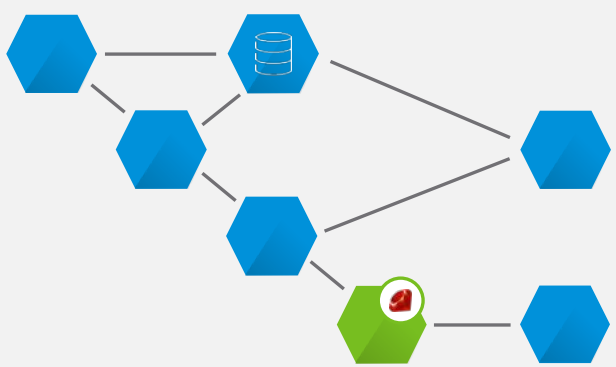
# Microservices Challenges

## How to consistently connect, control, monitor, and remediate cloud native apps?

| App silos—running in multiple platforms and clouds | Many endpoints to monitor, scale, and make resilient | Inconsistent operational and remediation policies | Disjointed security, auditing, and compliance |
|---|---|---|---|



Kubernetes



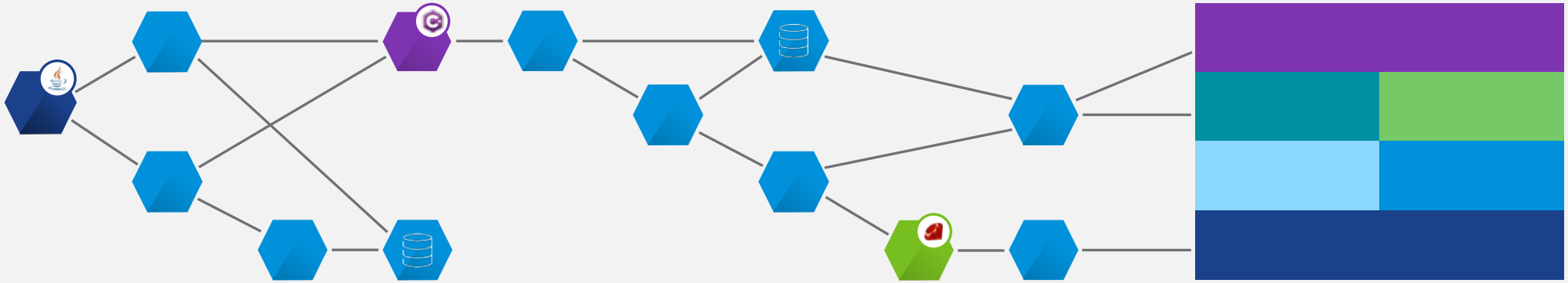
Public Clouds


VMs / Monoliths

# The Ideal Solution: Enterprise-Class Service Mesh

## Consistent visibility, control, and security for applications across any cloud

| 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 |
|---|---|---|---|---|



Kubernetes

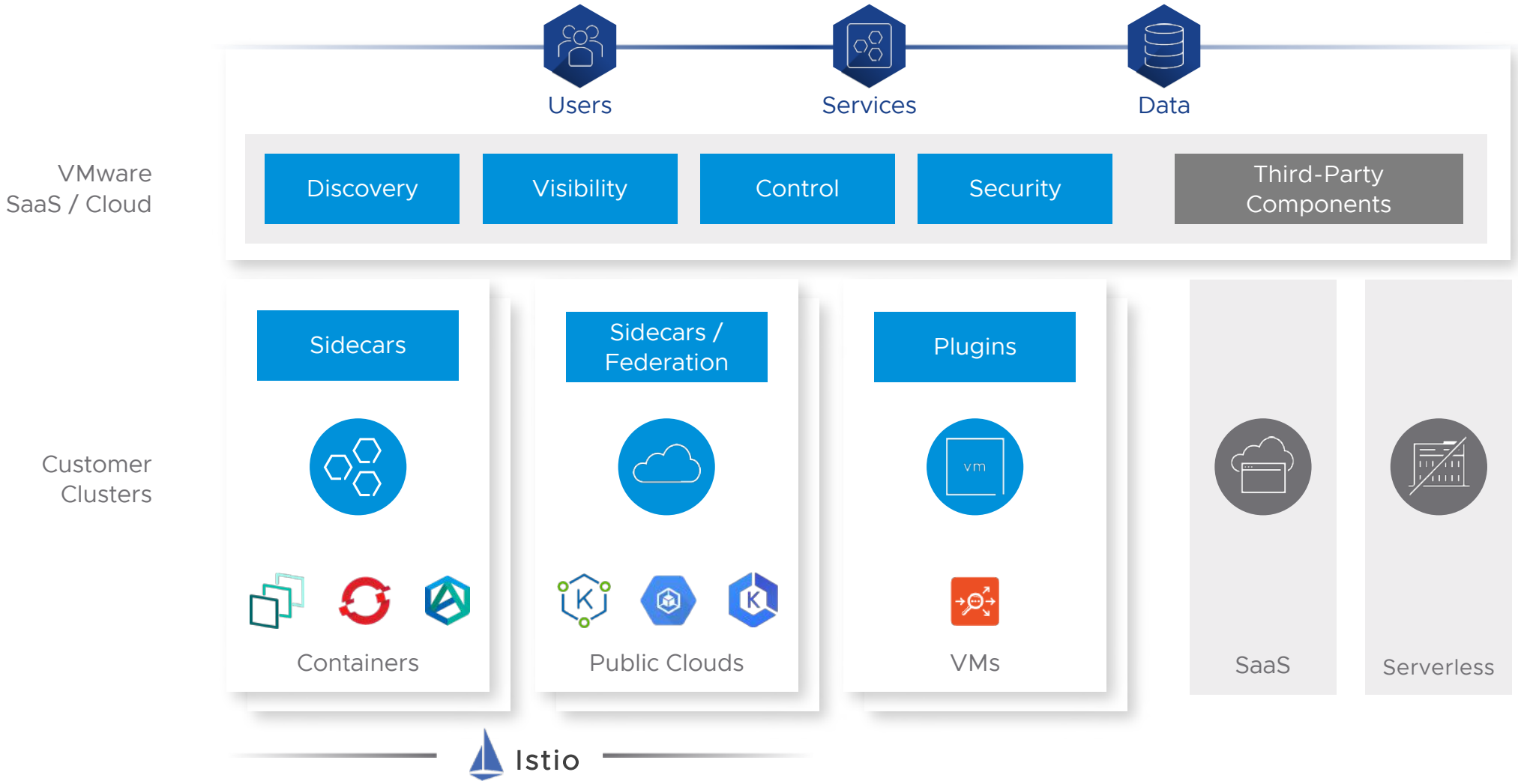
Public Clouds

VMs

SaaS

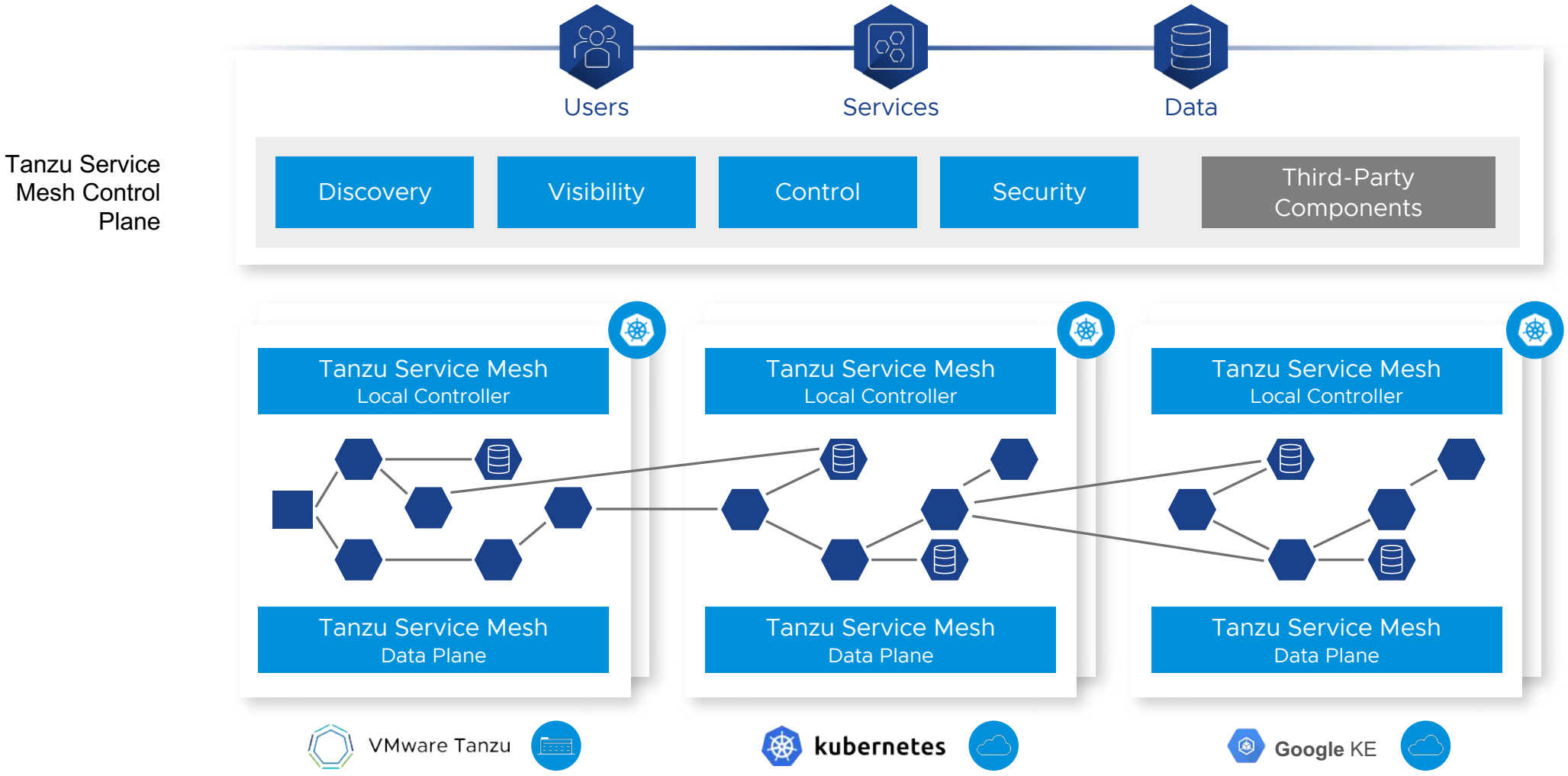
Serverless

# Build on Open Source Istio Foundation for Multi-Platform

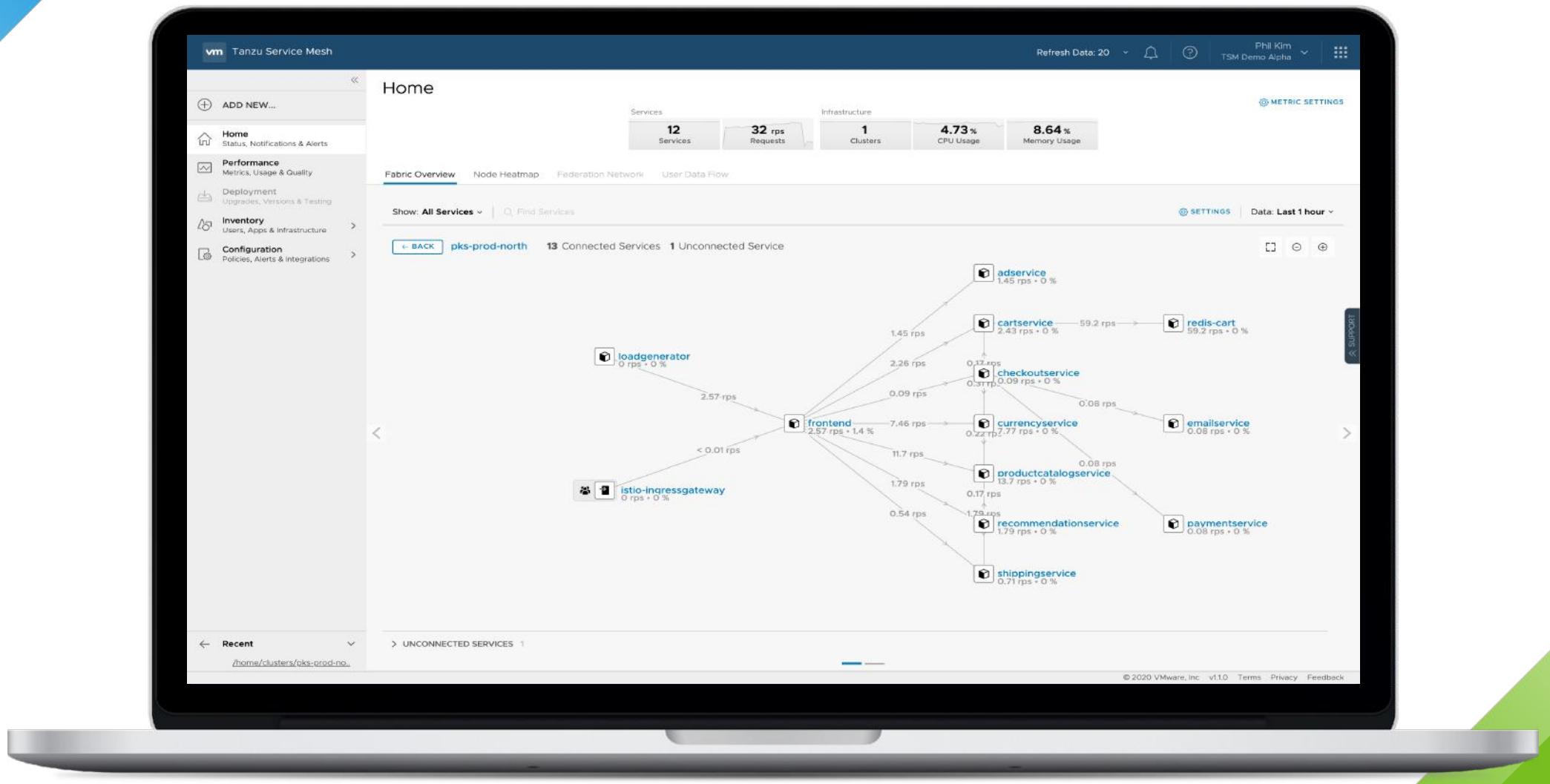


# Connect and Secure Kubernetes Clusters on Any Cloud

## Multi-Cluster, Multi-Platform



# Demo: Tanzu Service Mesh

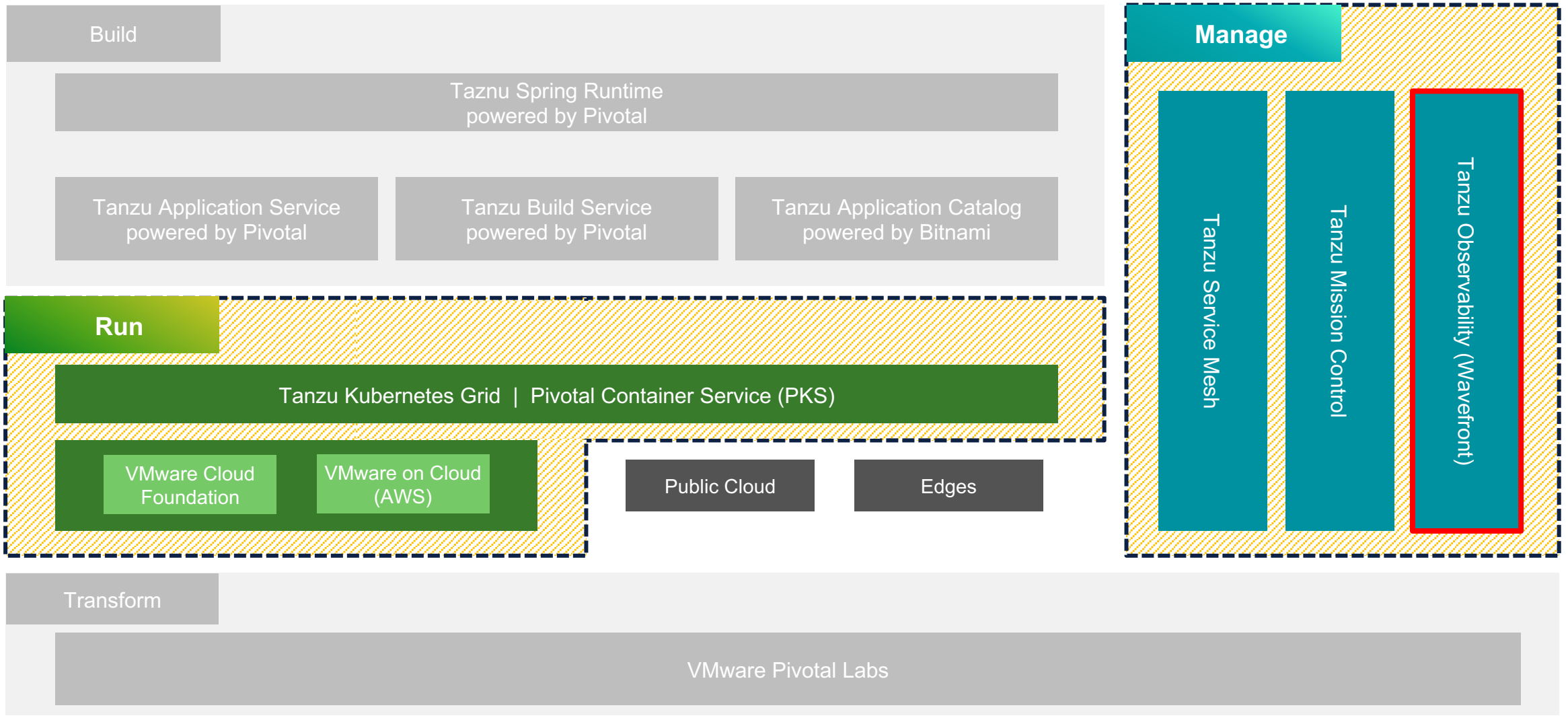


# Tanzu Manage

## Tanzu Observability (Wavefront)

# Comprehensive Stack to Modernize Your Applications

## VMware Tanzu + Pivotal Labs



# Use Cases for Wavefront

**Public Cloud Monitoring**

**Kubernetes & Containerized Applications Monitoring**

**Microservices Observability**

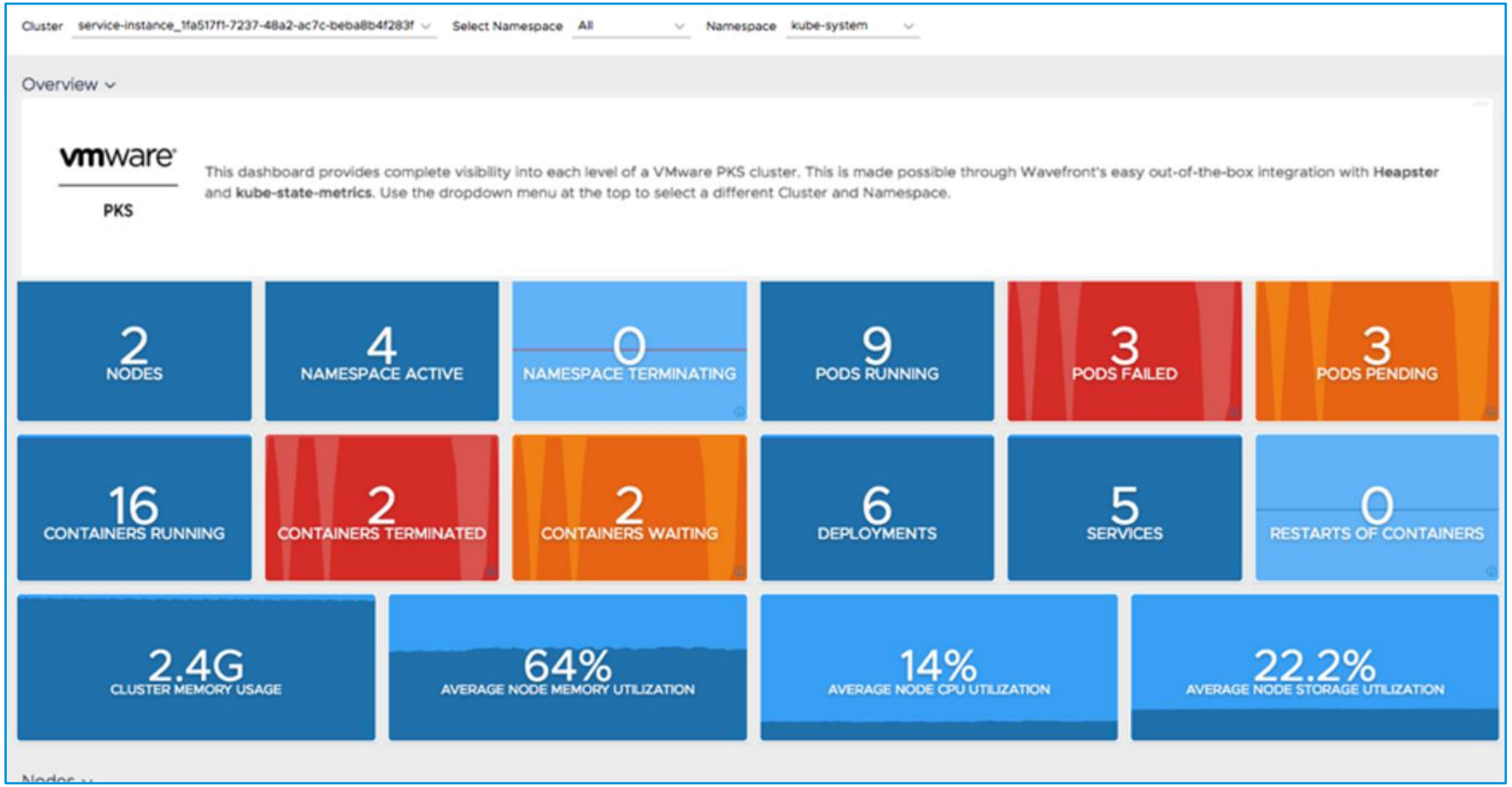
**Intelligent Alerting & Auto-Remediation**

**CI/CD Pipeline Monitoring**

# Use Case:  Better Together - Wavefront and PKS

## Future proof. **Bring Developers and PKS admins**

- Containerized Application Visibility
- Kubernetes Health Monitoring
- Resource Consumption
- Programmatic Automation




vmware PKS

WAVEFRONT by vmware

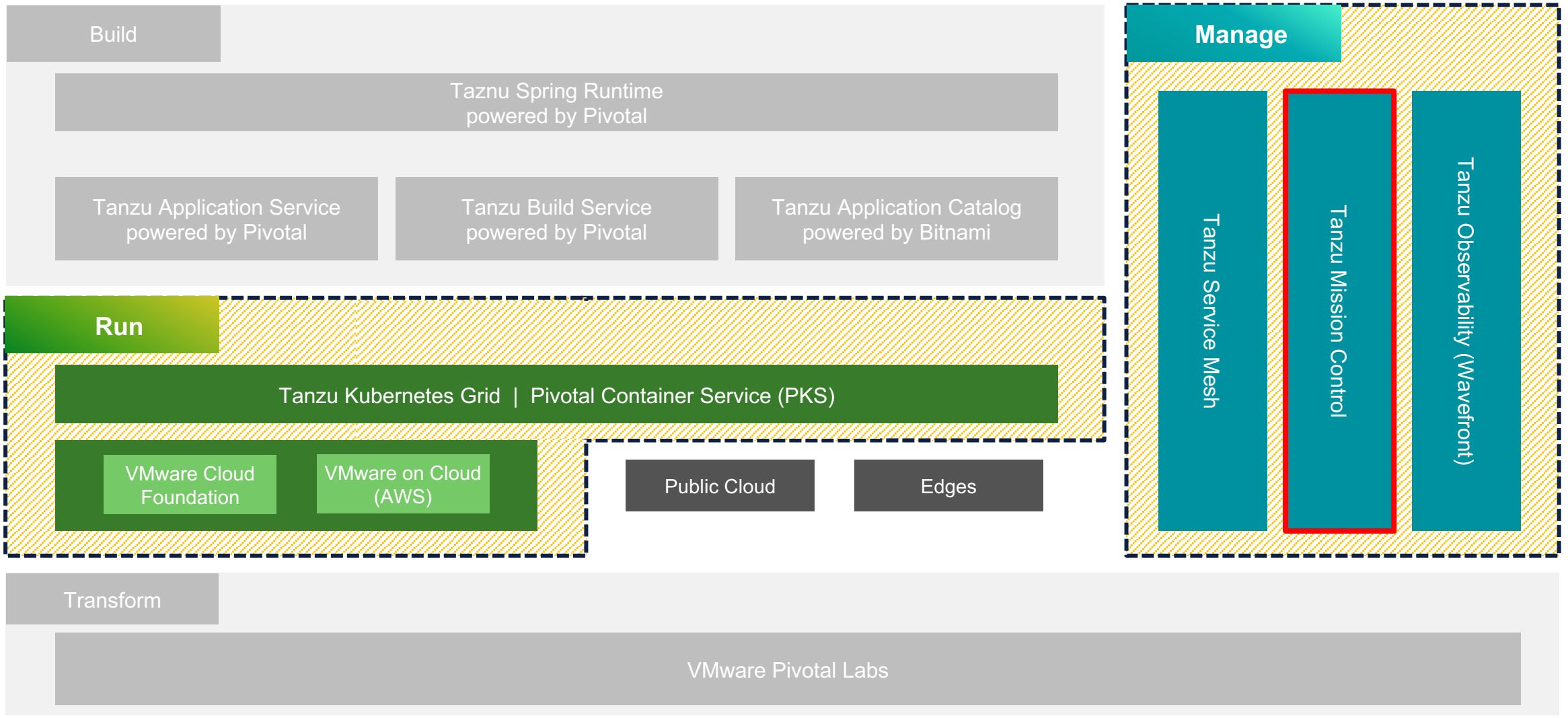
vmware Cloud PKS

# Tanzu Manage

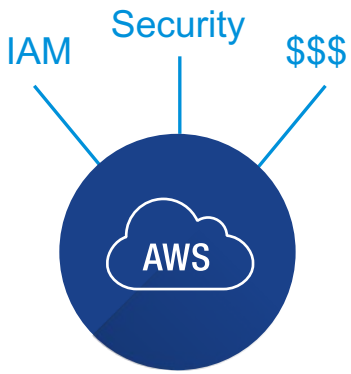
## Tanzu Mission Control

# Comprehensive Stack to Modernize Your Applications

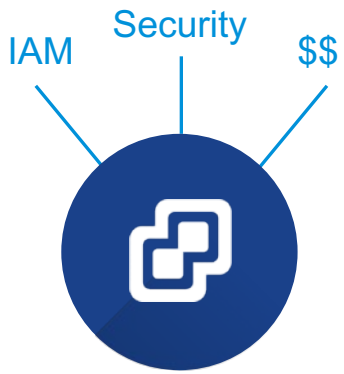
## VMware Tanzu + Pivotal Labs



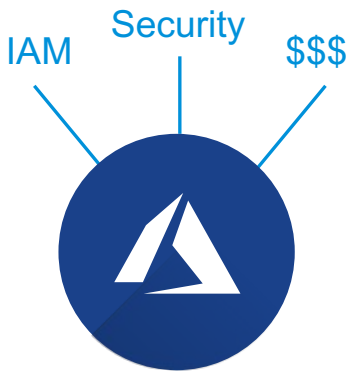
# Kubernetes adoption reality: growing fragmentation



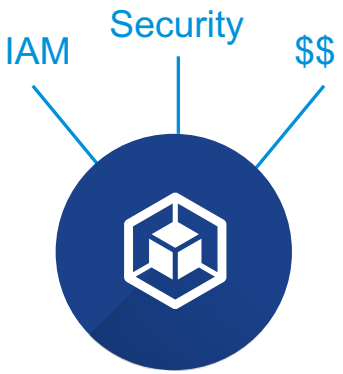

Amazon Web Services



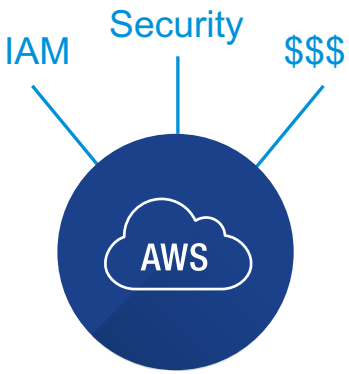

VMware vSphere




Microsoft Azure




Google Kubernetes Engine




Amazon Web Services

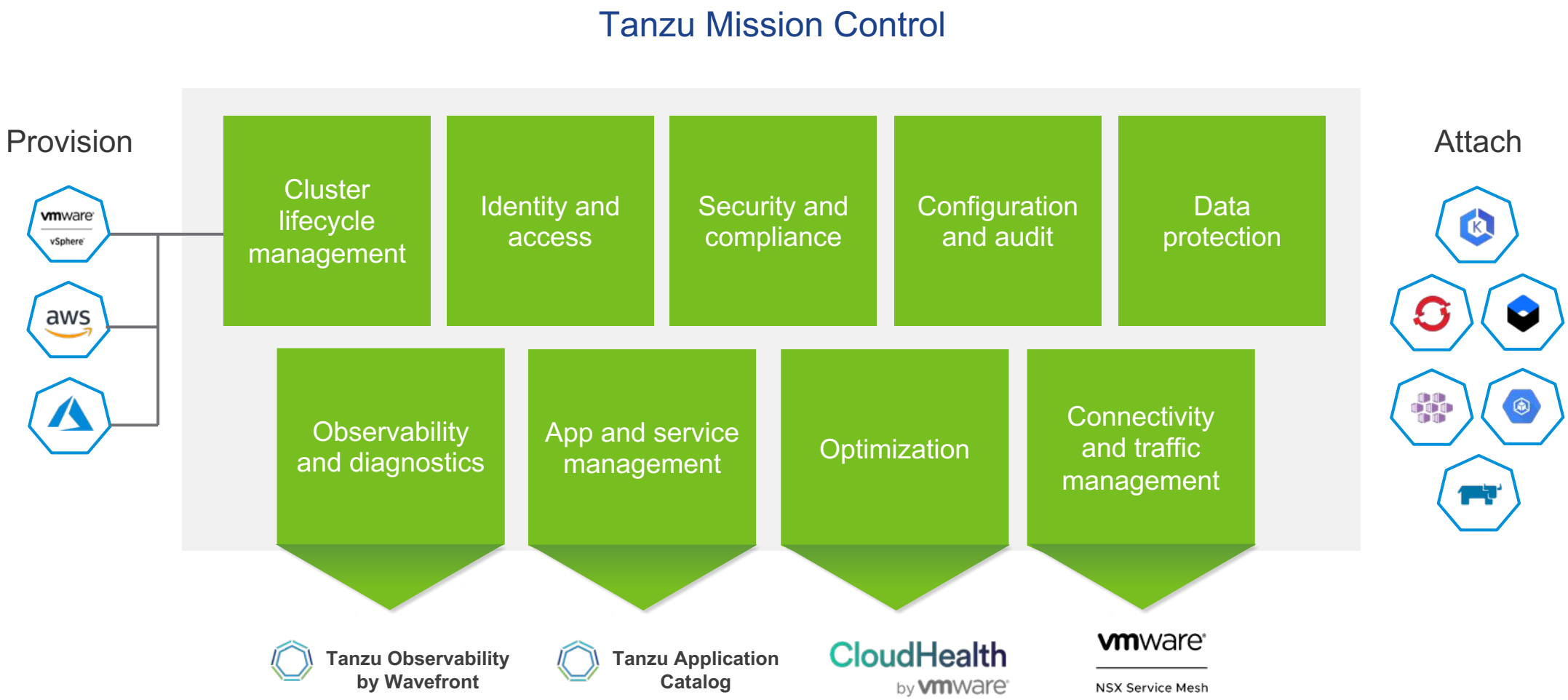
Manual configuration and management, siloed by environment

Access, networking, security policies applied cluster-by-cluster

Lack of cost visibility and control

# VMware Tanzu Mission Control

## Key Capabilities



# Architecture principles

## TMC agent and extensions

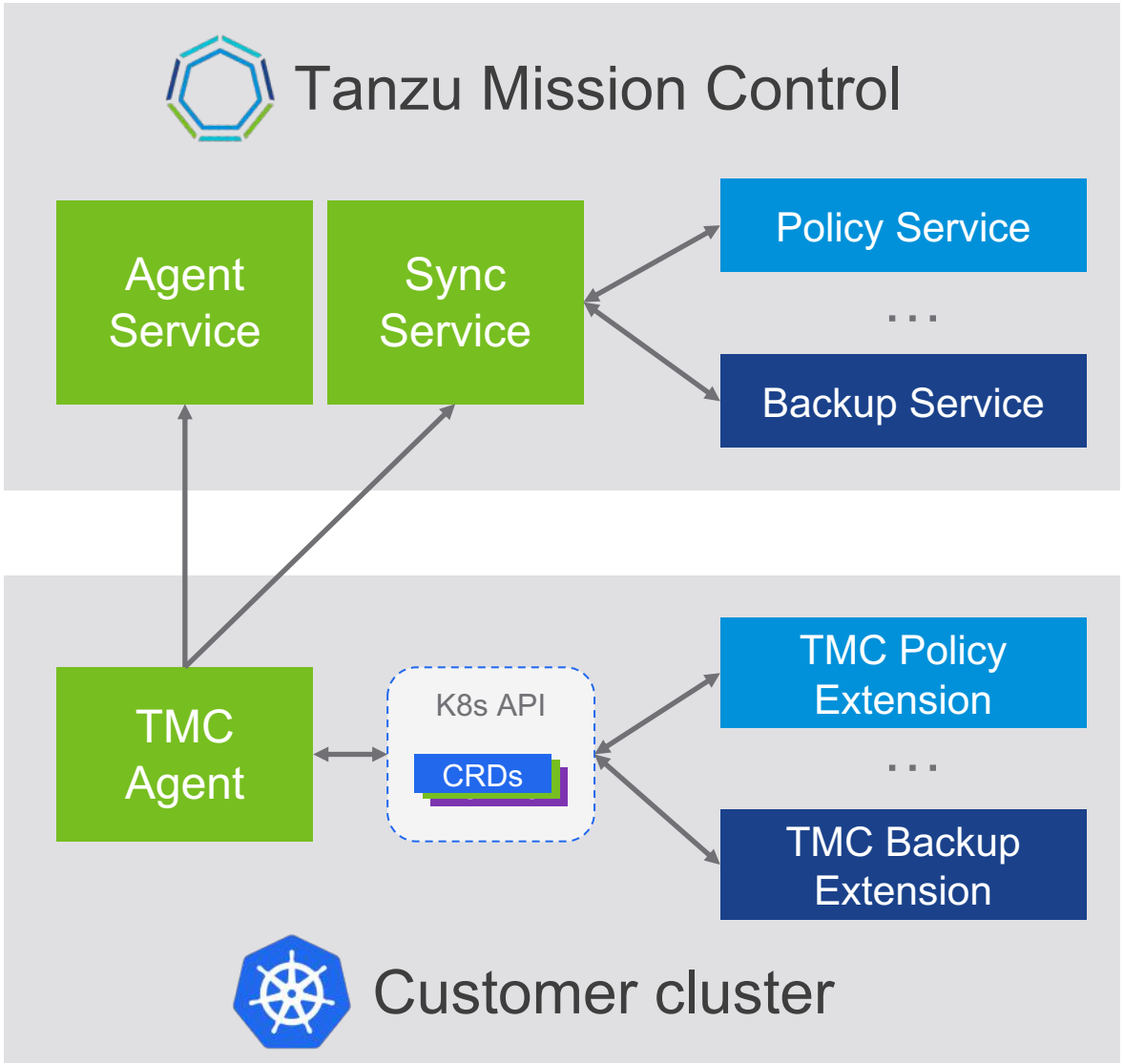
The agent “attaches” a cluster to TMC. Once installed, it installs other needed extension binaries

The agent manages extension lifecycle

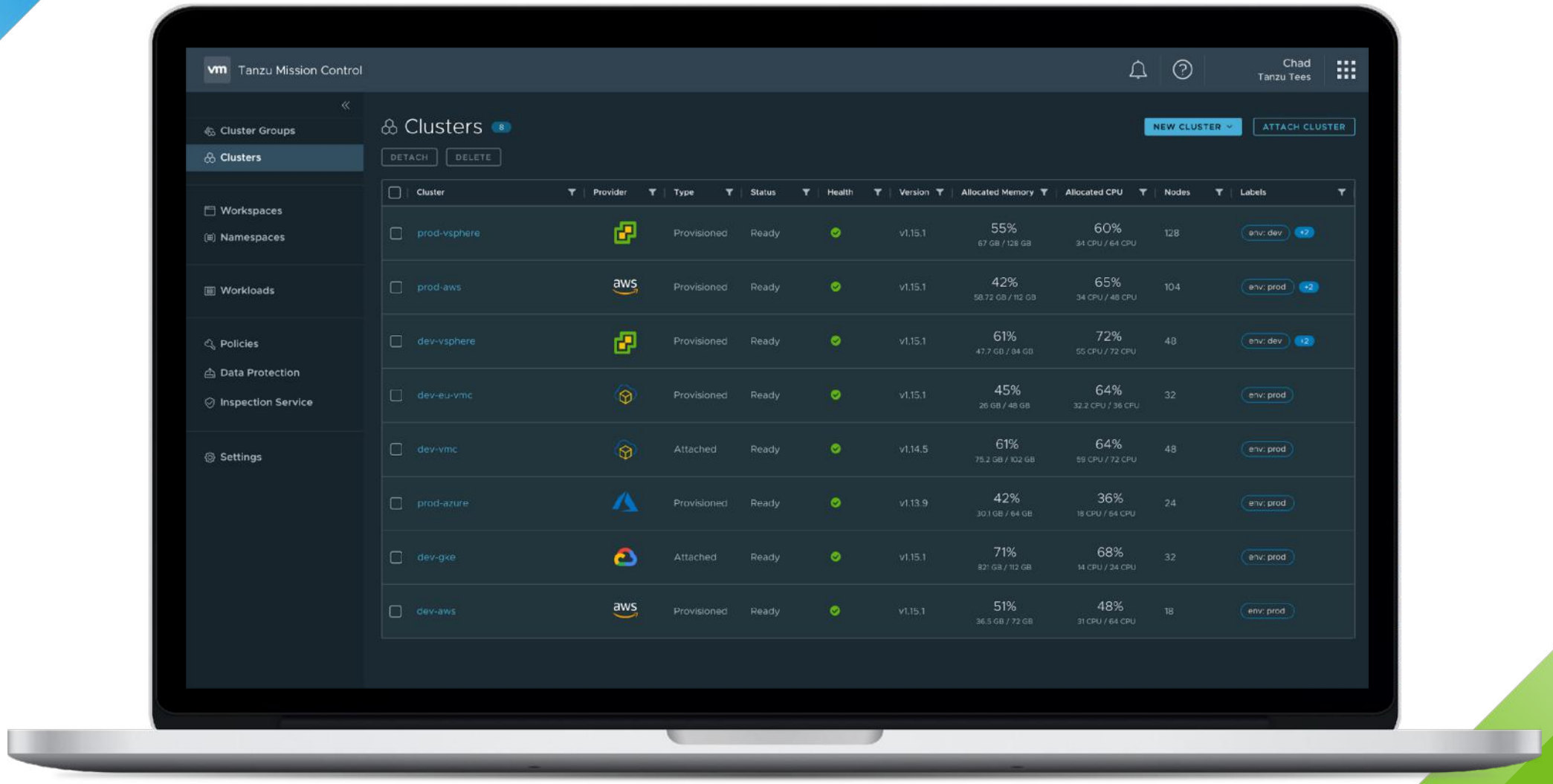
- Health checks
- Diagnostics (metrics, logs)

The agent provides common set of functionality like secure connection, proxy, etc.

The agent and extensions communicate via CRDs



# Demo: Tanzu Mission Control



# Thank You

vmware EVOLVE™

주제:

- 클라우드를 위한 앱 모더나이제이션
- 모던 애플리케이션 설계하기
- 멀티클라우드에서 Kubernetes 관리하기

날짜: 2020년 **4월 23일**(목)
시간: 오후 2시
등록페이지: **https://evolve.vmware.com/kr/**

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