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vINNOVATION

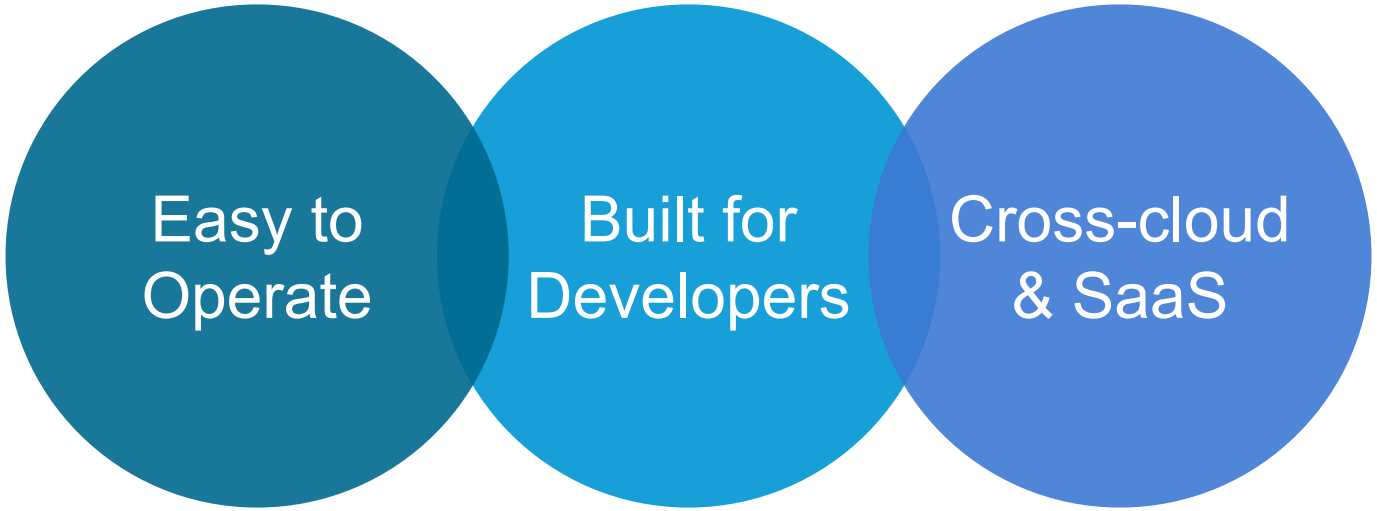
THIS IS HOW TOMORROW IS BUILT

VMware Developer Cloud

Make the Clouds Invisible

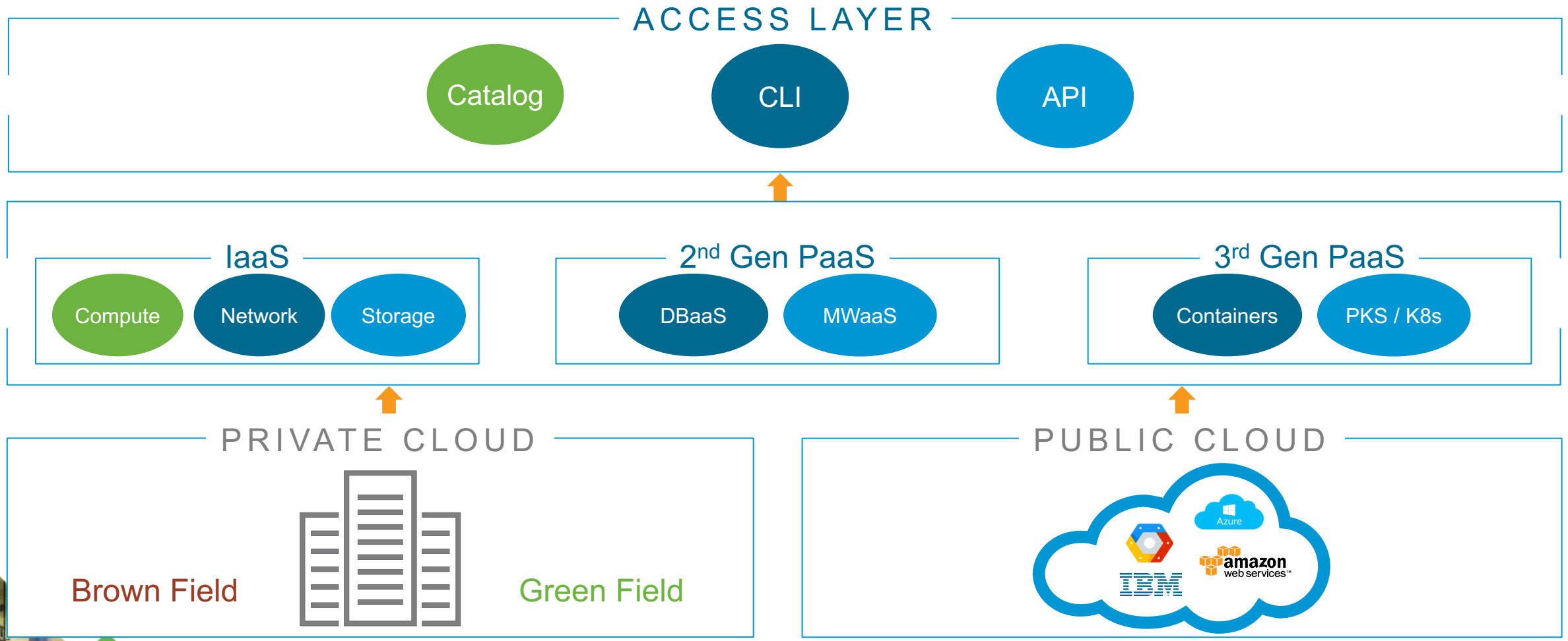
BUSINESS OUTCOMES

Make the private cloud easy to operate + Enable developers + Manage across clouds. On-premises & cloud based delivery



AREAS OF INVESTMENT

A Simplified View Of Your Cloud Journey End State



VMware Cloud

Run, Manage, Connect, Secure Any App on Any Cloud to Any Device

Existing Apps
Reduce Costs • Security • Reliability • Control

Cloud Native Apps
Time to market • Innovation • Scale • Differentiation

VMware Cloud Services

VISIBILITY | OPERATIONS | AUTOMATION | SECURITY | GOVERNANCE

Cloud Management Platform

VMware Cross-Cloud Architecture

vmware Cloud Foundation
amazon web services™ VMware Cloud on AWS
IBM Cloud for VMware
vmware Cloud Providers
OVH.com

Public Cloud IaaS

amazon web services™
Microsoft Azure
IBM Cloud
Google Cloud Platform
virtustream

Consistent Infrastructure
VM Infrastructure • Container Infrastructure

Consistent Operations
Management and Operations • Across Clouds

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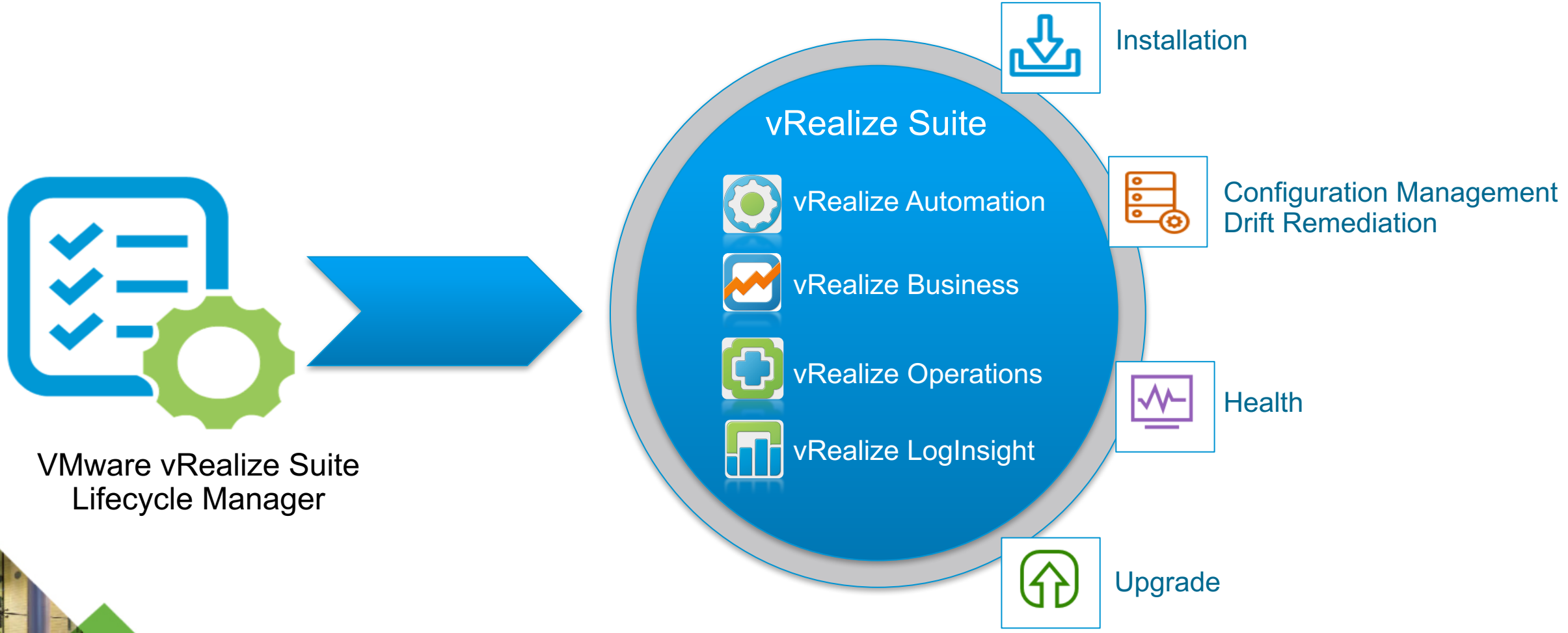
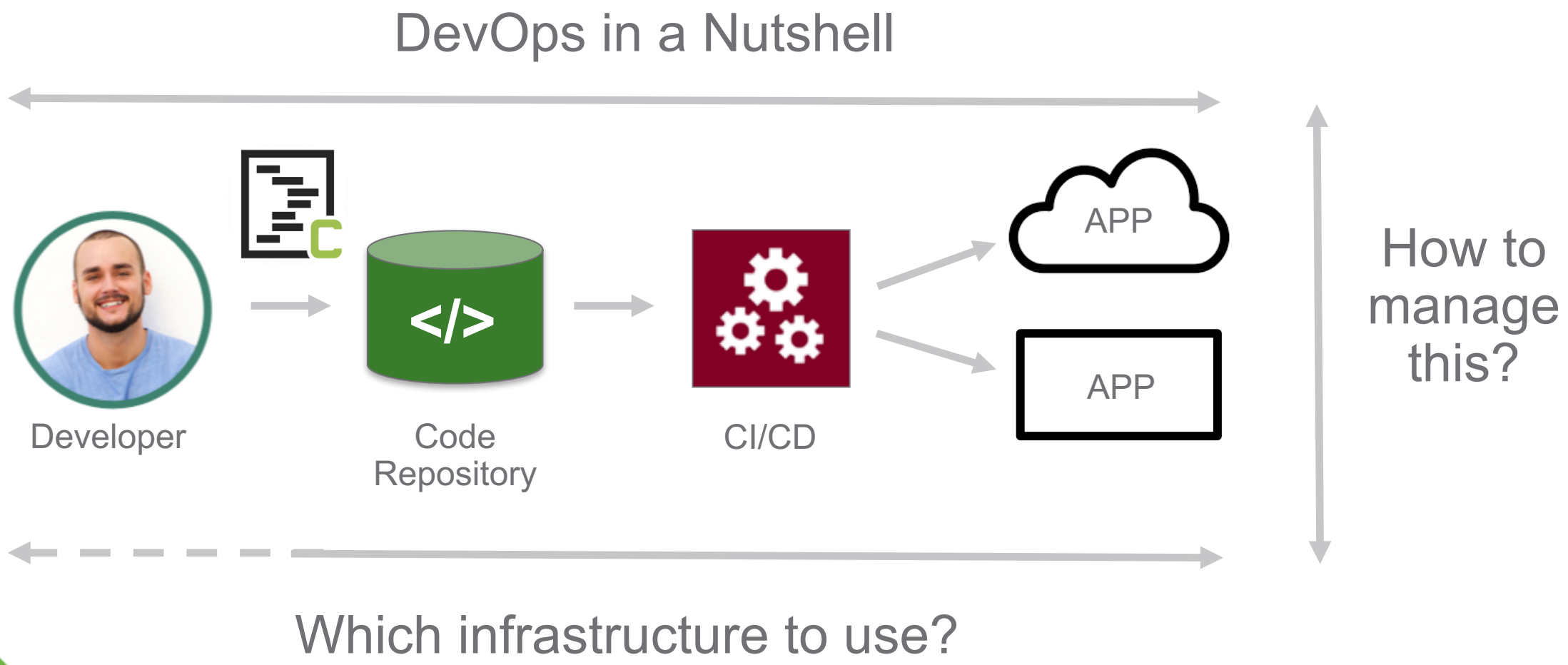
vRealize Suite Lifecycle Manager

Automated Lifecycle Management and Operations (Day 0 to Day 2)

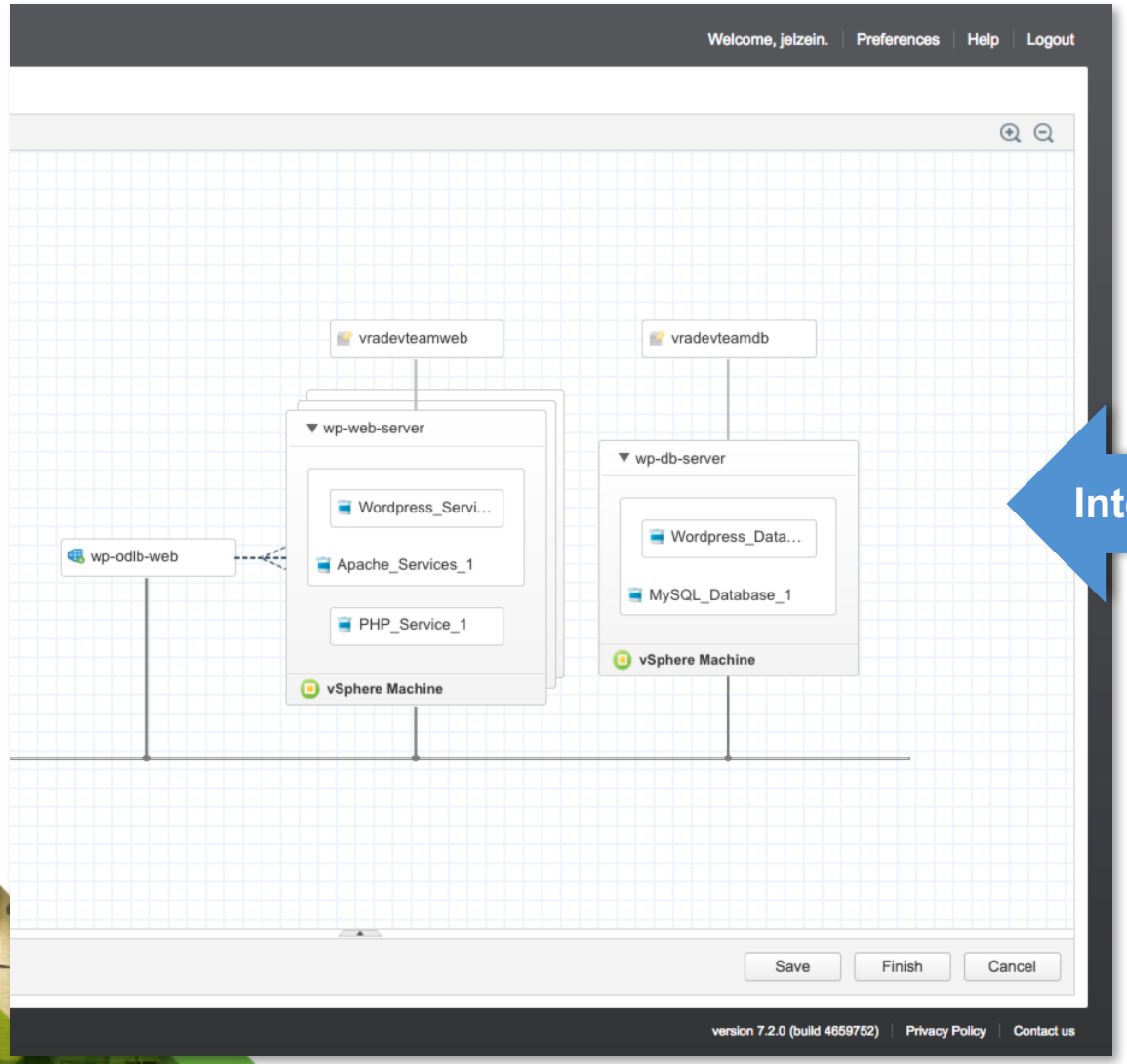


DevOps From an Infrastructure Perspective



Infrastructure as Code

Export | Import | Share

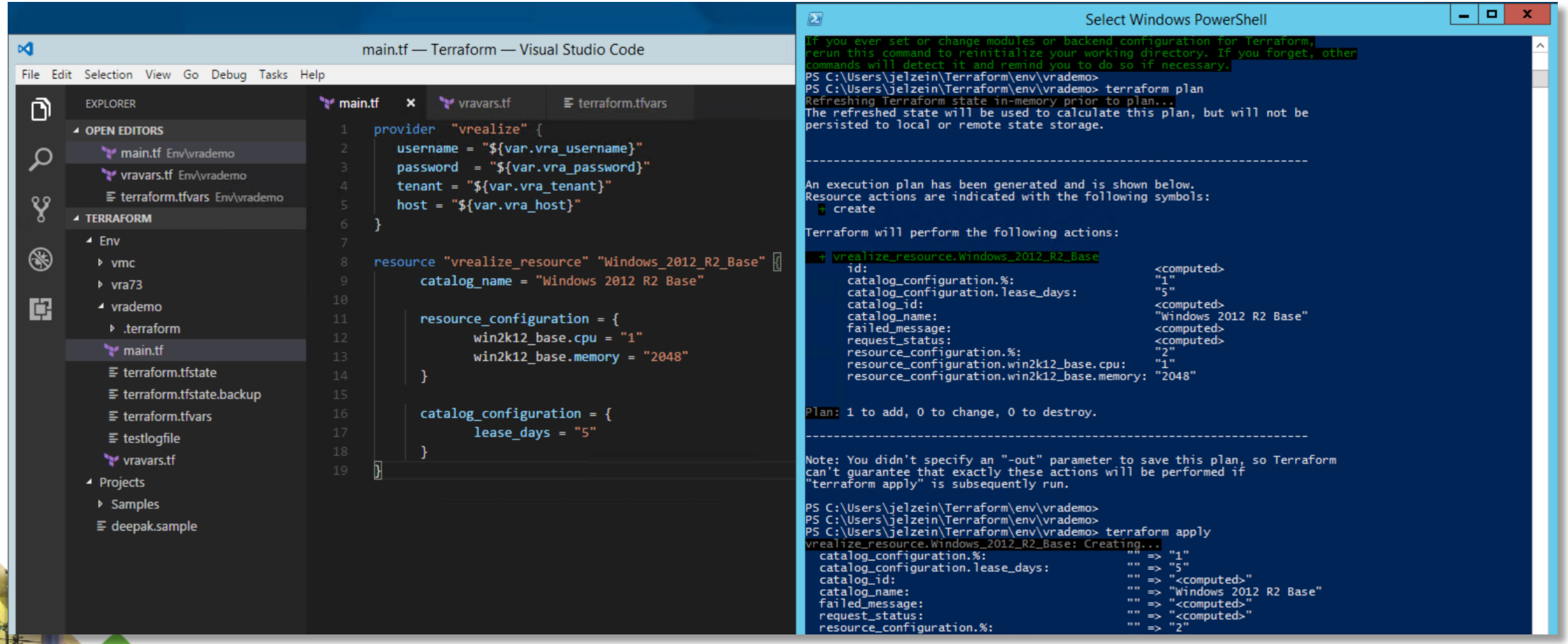


Interoperable

```
id: Wordpress.4.3.1
name: Wordpress 4.3.1
components:
  LB:
    type: Infrastructure.Machine.vSphere
    data:
      machine:
        cpu: {max: 4, default: 2}
        memory: 1024
  wpApache:
    type: Software.wpApache_1
    data:
      host: '${_resource~LB~machine}'
...
  wpMySQLDB:
    type: Software.wpMySQLDB_1
    data:
      db_port: 3306
  WebApp:
    type: data:wpMySQL_Config_1

      db_port: ${MySQL~db_port}
      db_username: ${DB_Setup~db_username}
...
```

vRA Terraform Provider



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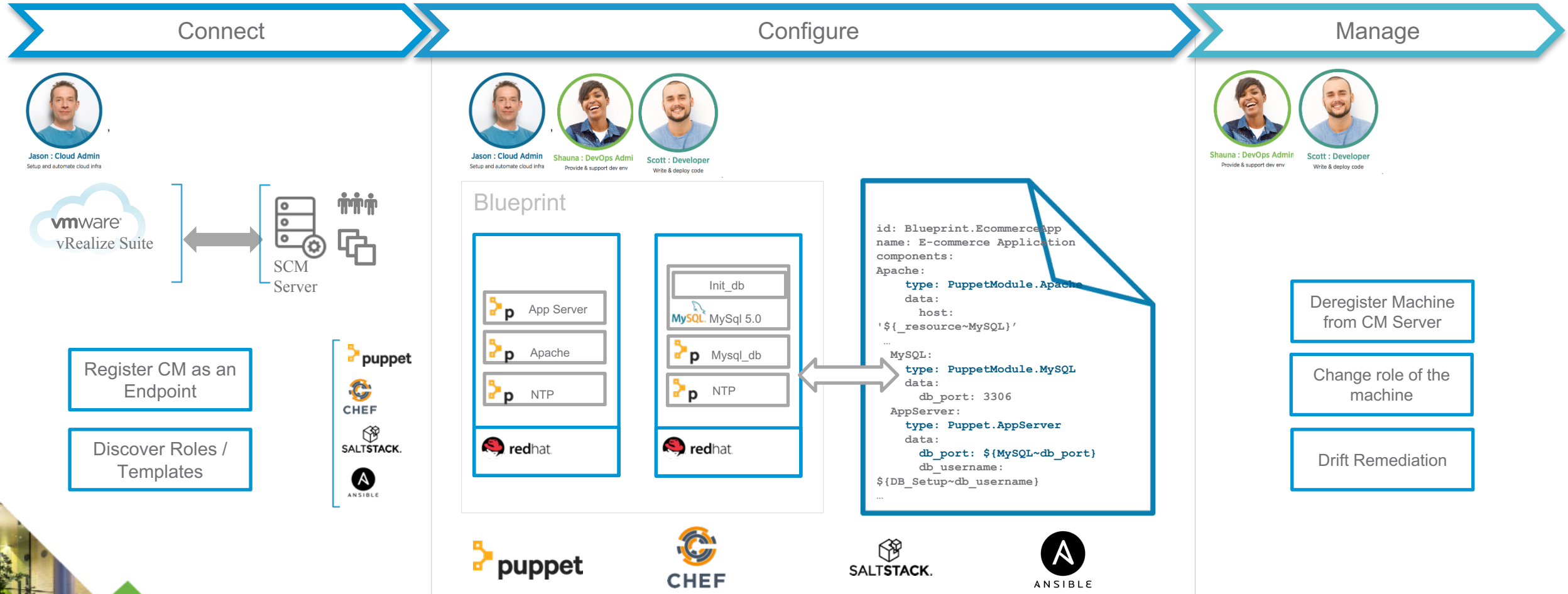
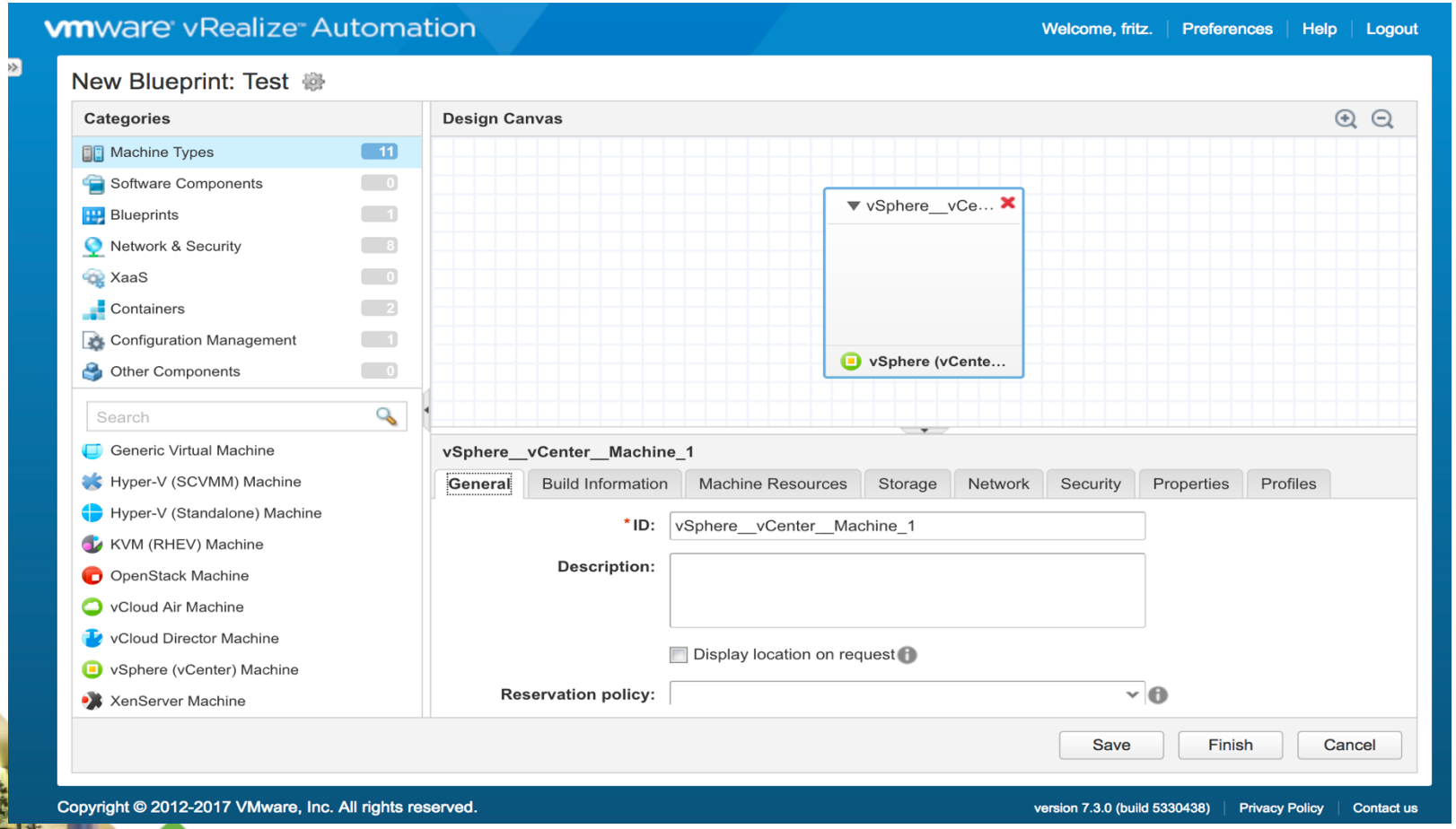
Software Deployment Using Configuration Automation



Configuration Management as a “First Class Citizen”



- Make the vRO plug-in actions **invisible**
- Configuration Management as one the **GUI options** in Blueprint canvas
- Align with existing **workflows and governance**
- First Integration with **Puppet Enterprise**

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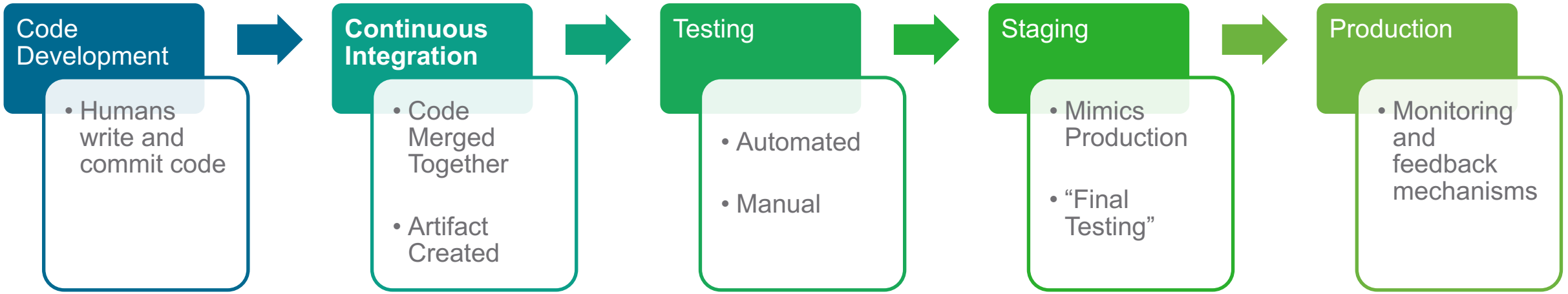
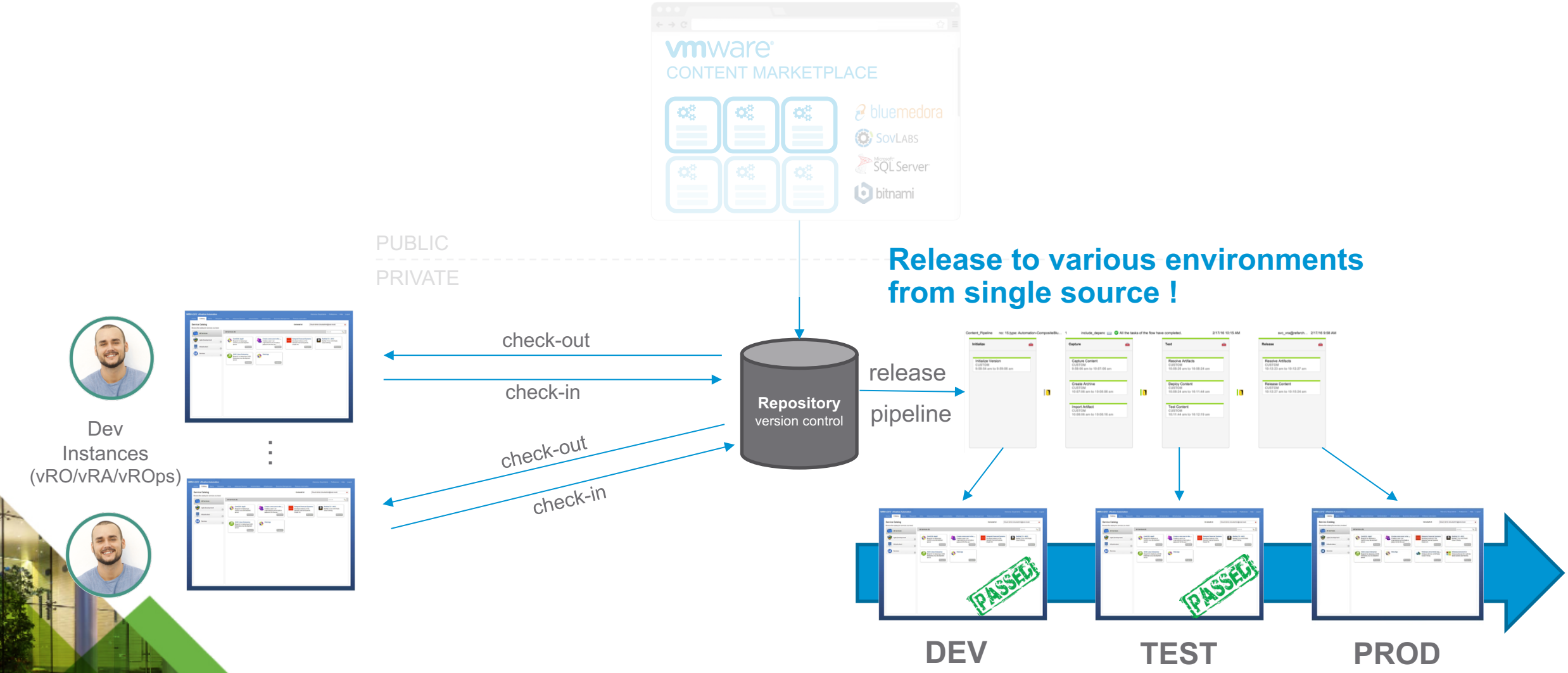
CI/CD Pipeline

Recap a generic software development process



Details: Content Versioning

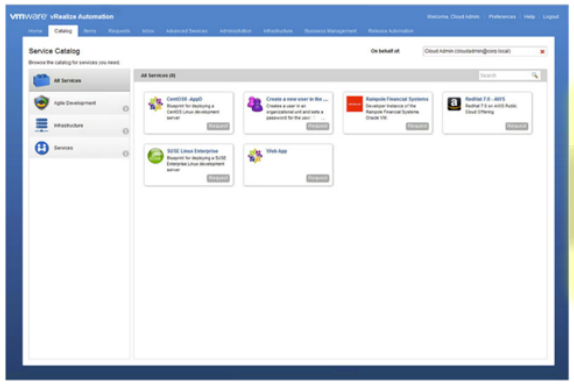


Enable Content Authoring with vRCS Management Pack

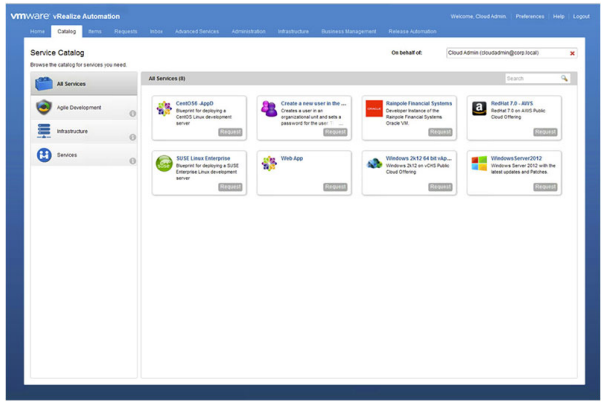
Houdini

- Blueprints & Services
- Templates & workflows
- Configurations & scripts
- Recipes, manifests, etc.

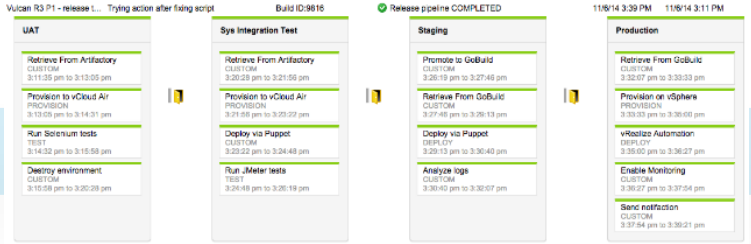
DEV/TEST



PRODUCTION



Upstream



Downstream

vRealize Code Stream

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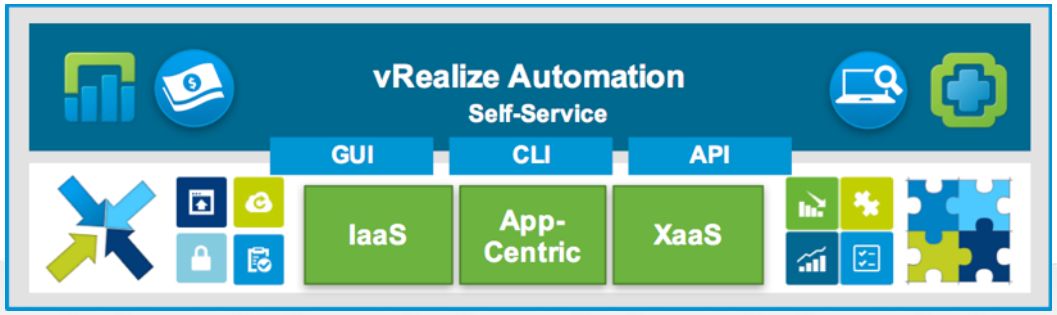
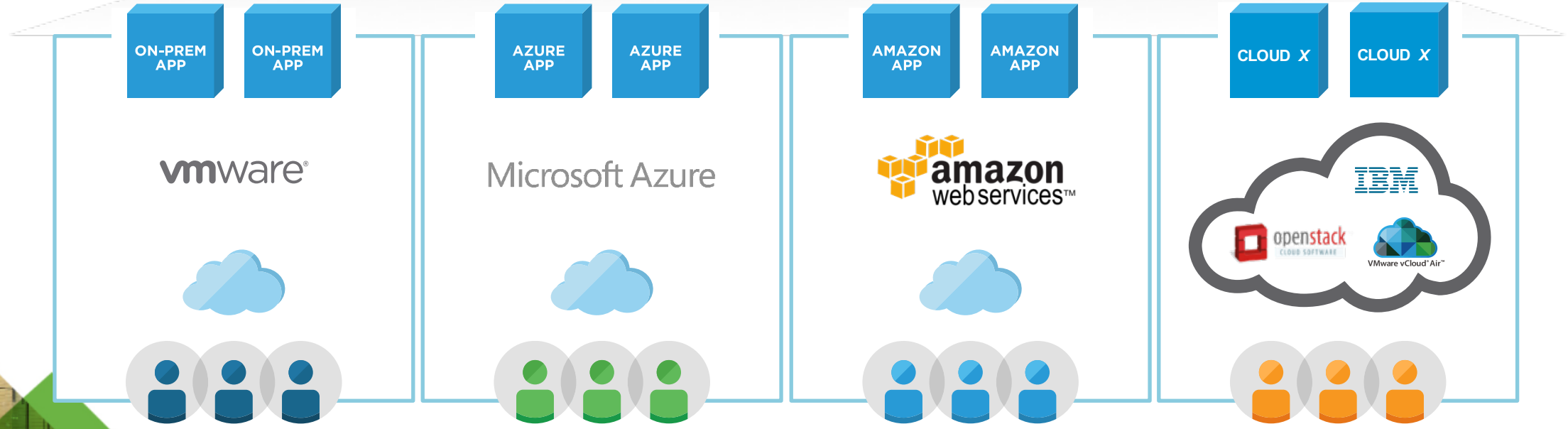
Extending Public Cloud with vRA

Deliver Public Cloud Services to the Enterprise

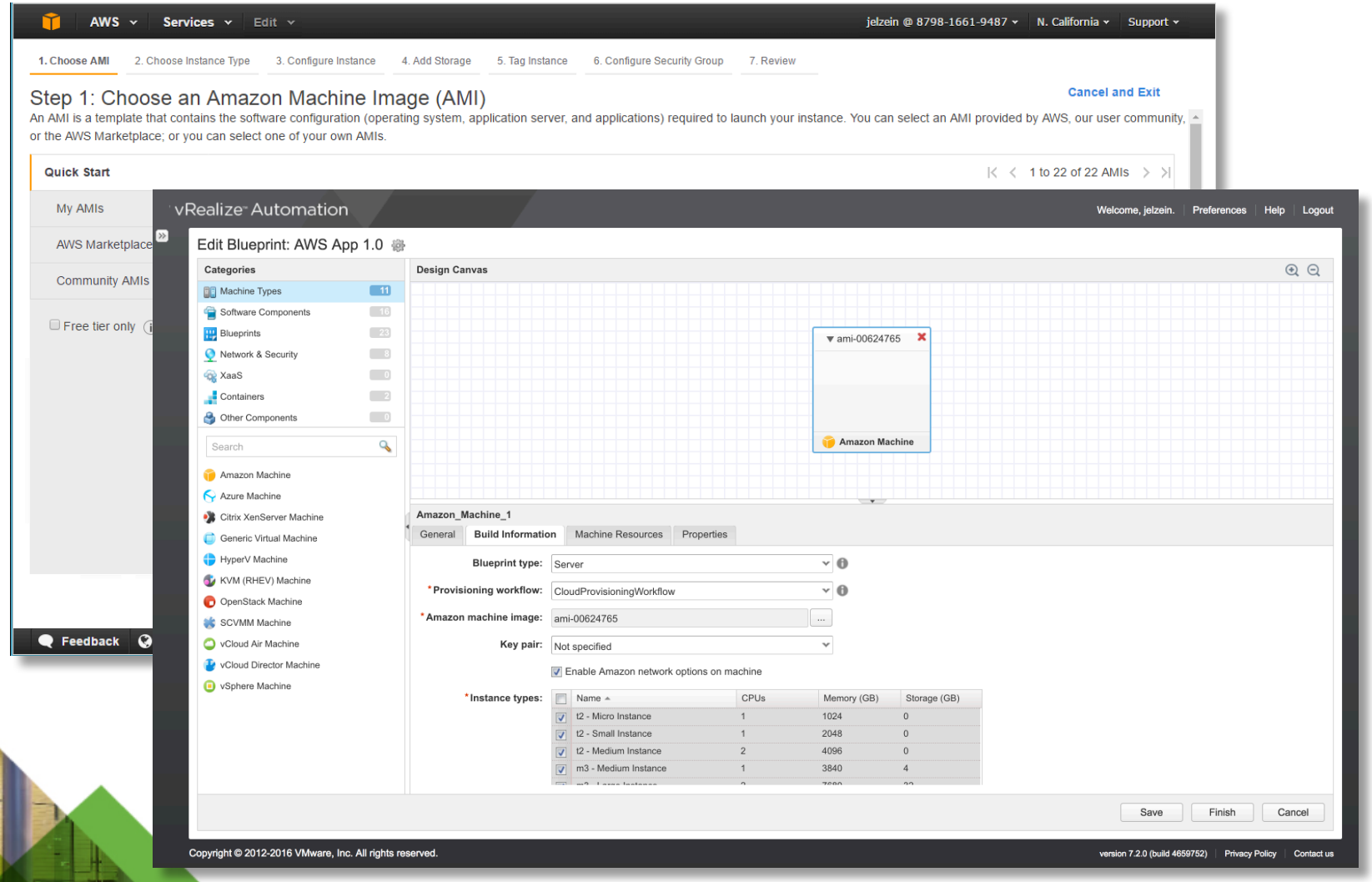


- Federated Authentication
- Governance & Approvals
- Service Entitlements
- Catalog Based Self-Service
- LifeCycle Management



vRA + AWS EC2

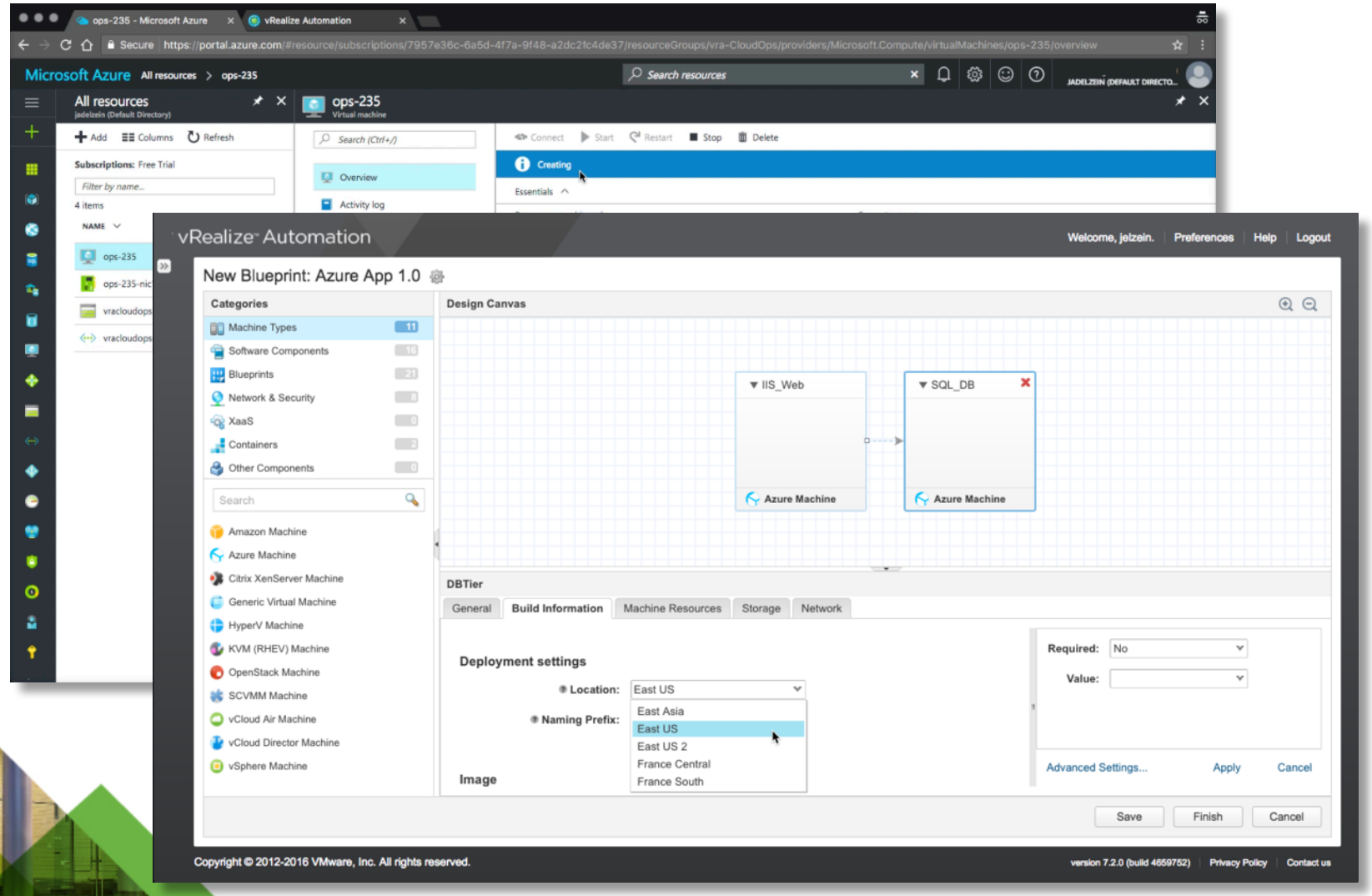
Native AWS EC2 Integration



- Build, provision, and management EC2-based services
- Supports all EC2 Instance types
- Blueprint creation with EC2 VMs, storage disks, and nics
- Software Authoring Support
- EC2 Networking Options
  - VPC's
  - Security Policies

vRA + Azure Public Cloud

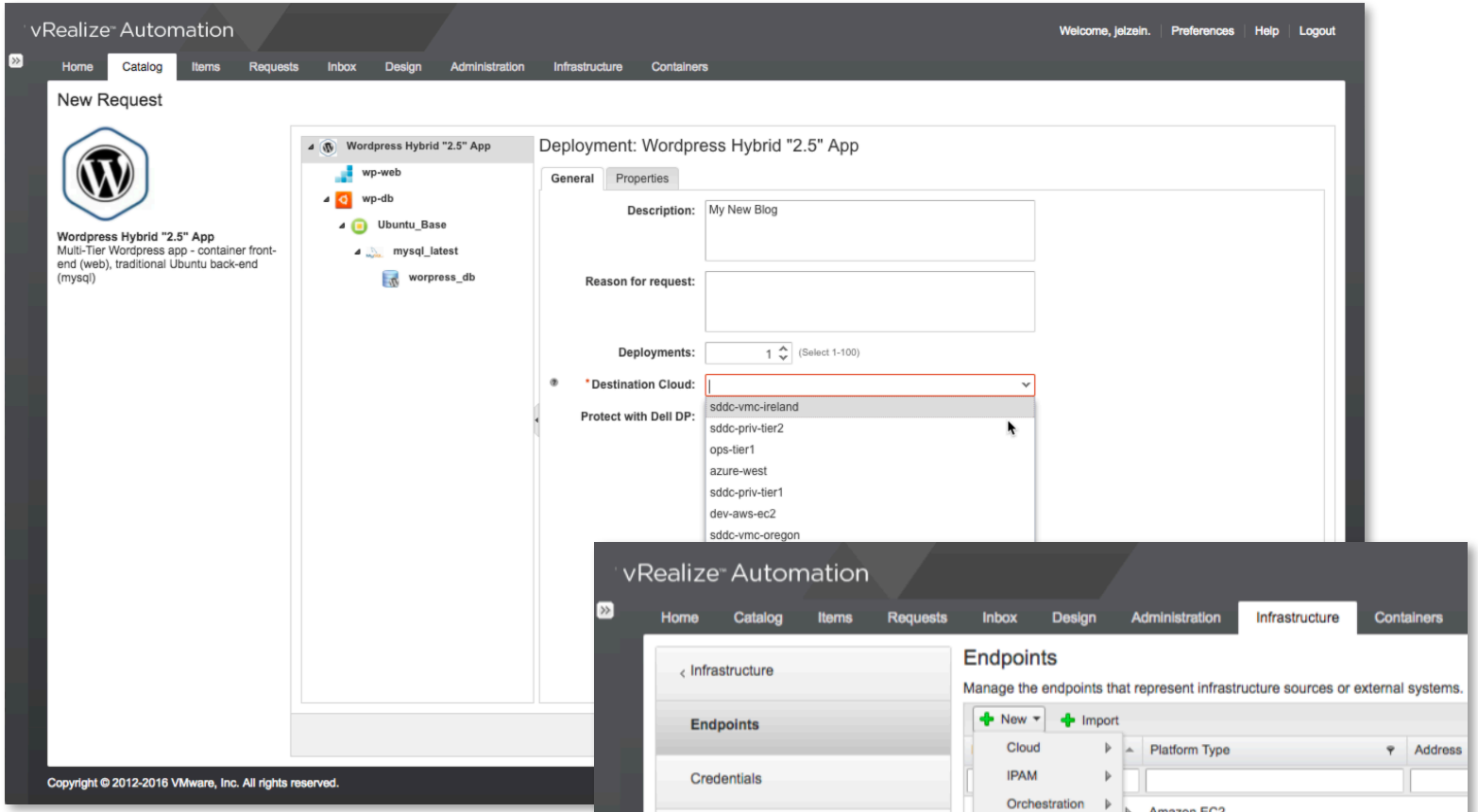
Native Azure Integration

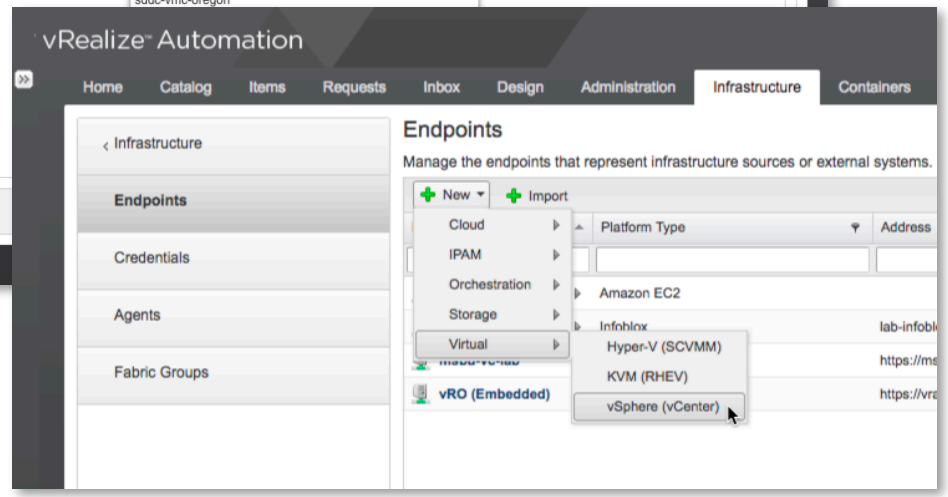


- Azure Endpoint with subscription and Active Directory users information
- Reservations and integration with governance model
- Blueprint creation with Azure VMs, storage disks, and nics
- Software Authoring Support
- Azure Networking Support
  - Subnets
  - Load balancers

Ready for VMware Cloud on AWS

VMC Managed Endpoint





Manage vCenter in VMware Cloud on AWS

- Treated as a traditional vSphere / vCenter Endpoint
- Build an IaaS Fabric using VMware Cloud
  SDDC Resources
- Leverage Reservation Policies for machine placement

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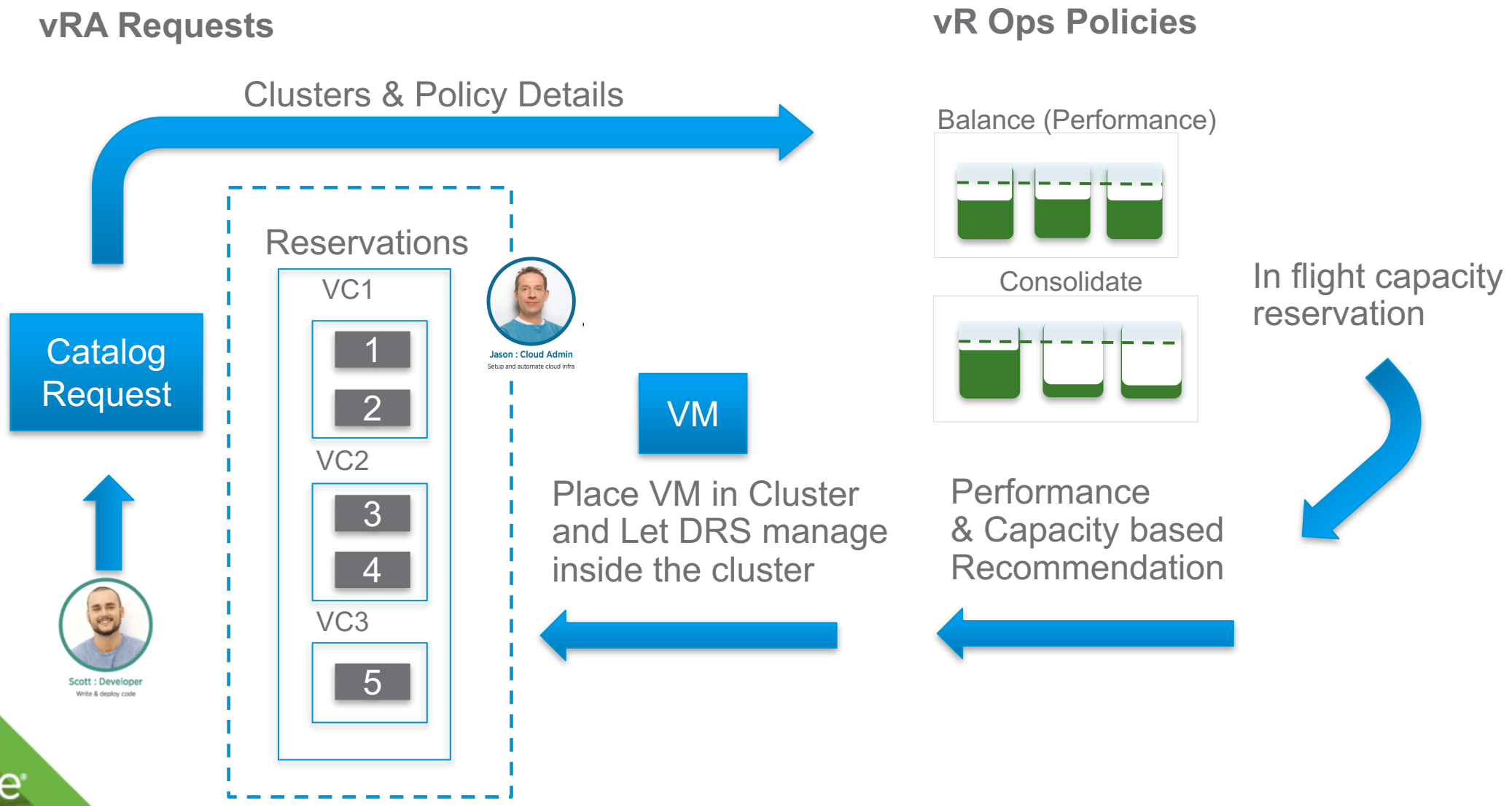
Optimized Placement Using vR Ops Analytics

Intelligent Workload Placement (WLP)



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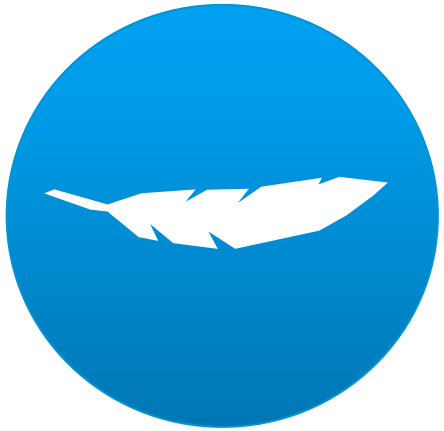
Benefits of Containers

Simple

Boot environments rapidly



Lightweight

Minimal resources needed

Portable

Ability to move containers freely

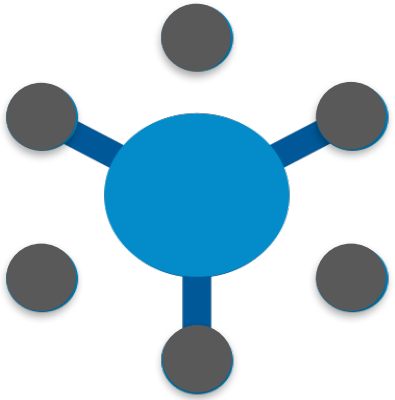
Container Use Cases for Enterprise

The Move to Containerization Will Come in Waves

There Are Many Challenges

Security

Monitoring



Networking

Compliance

Production Environment

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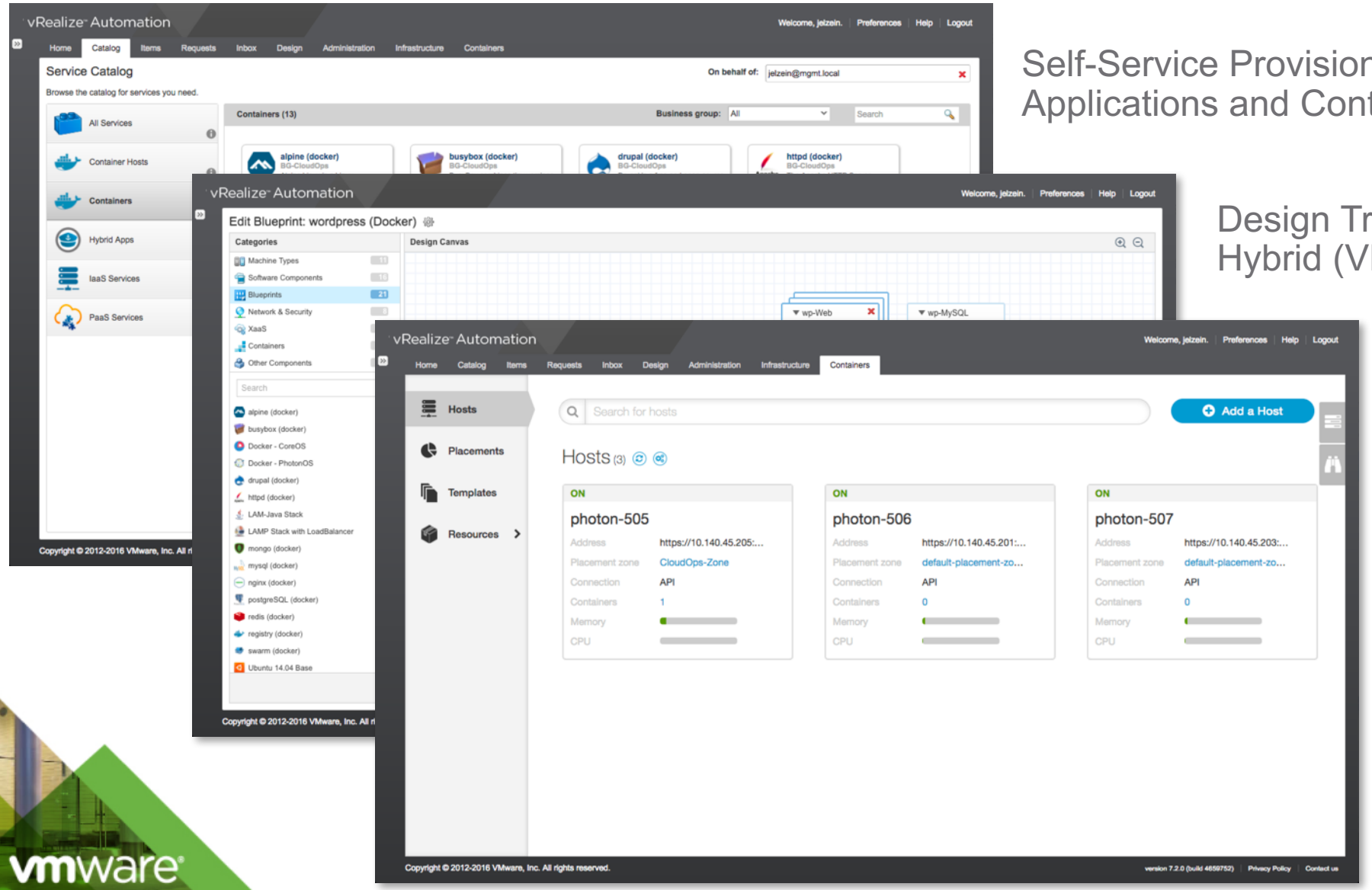
vRA Container Management in Action

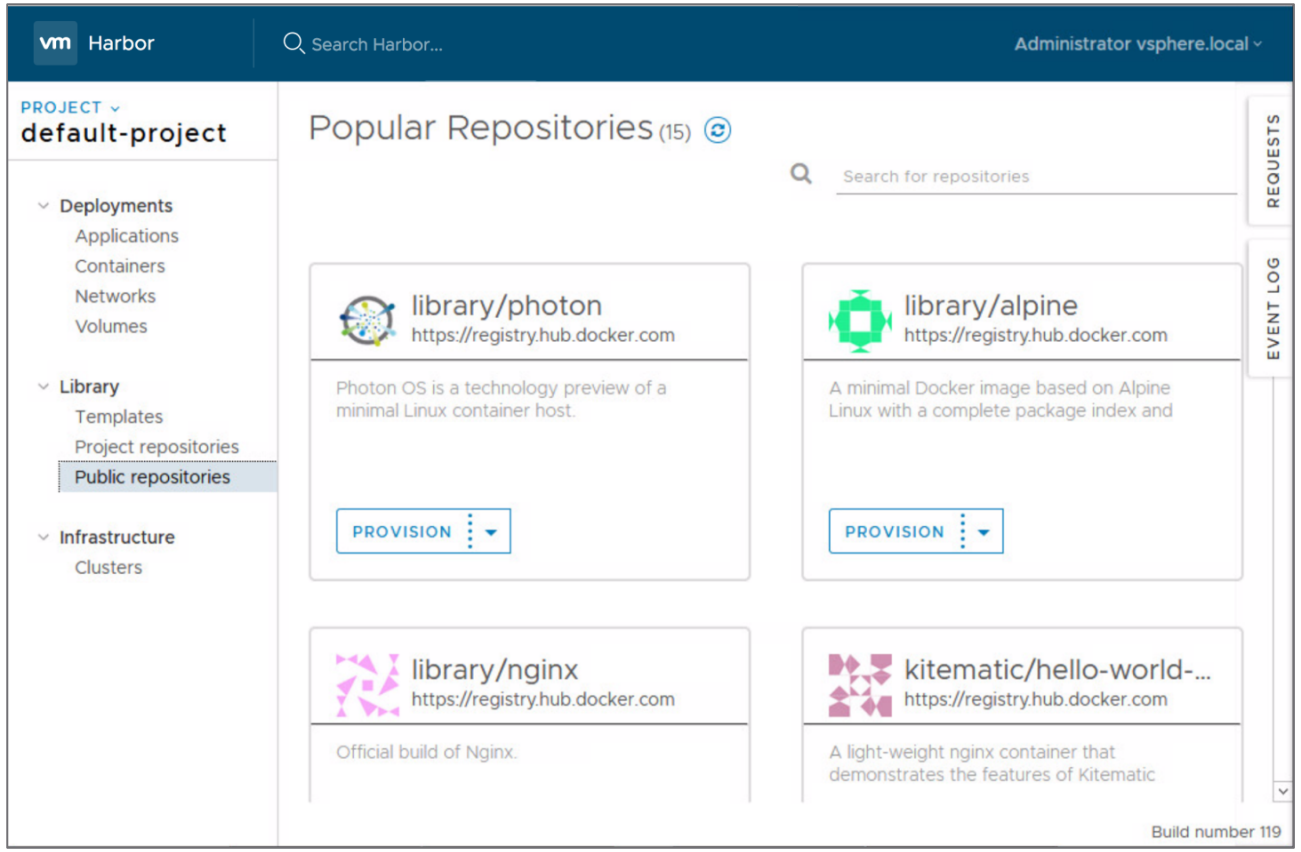


Self-Service Provisioning for Container Applications and Container Hosts

Design Traditional, Container or Hybrid (VM + Container) Applications

Discovery and Management of Container Hosts and Containers

Registry – Enterprise-grade Private Registry



user management & access control

role-based **access control**

AD/LDAP integration

security

vulnerability scanning

content trust - **image signing**

policy based image **replication**

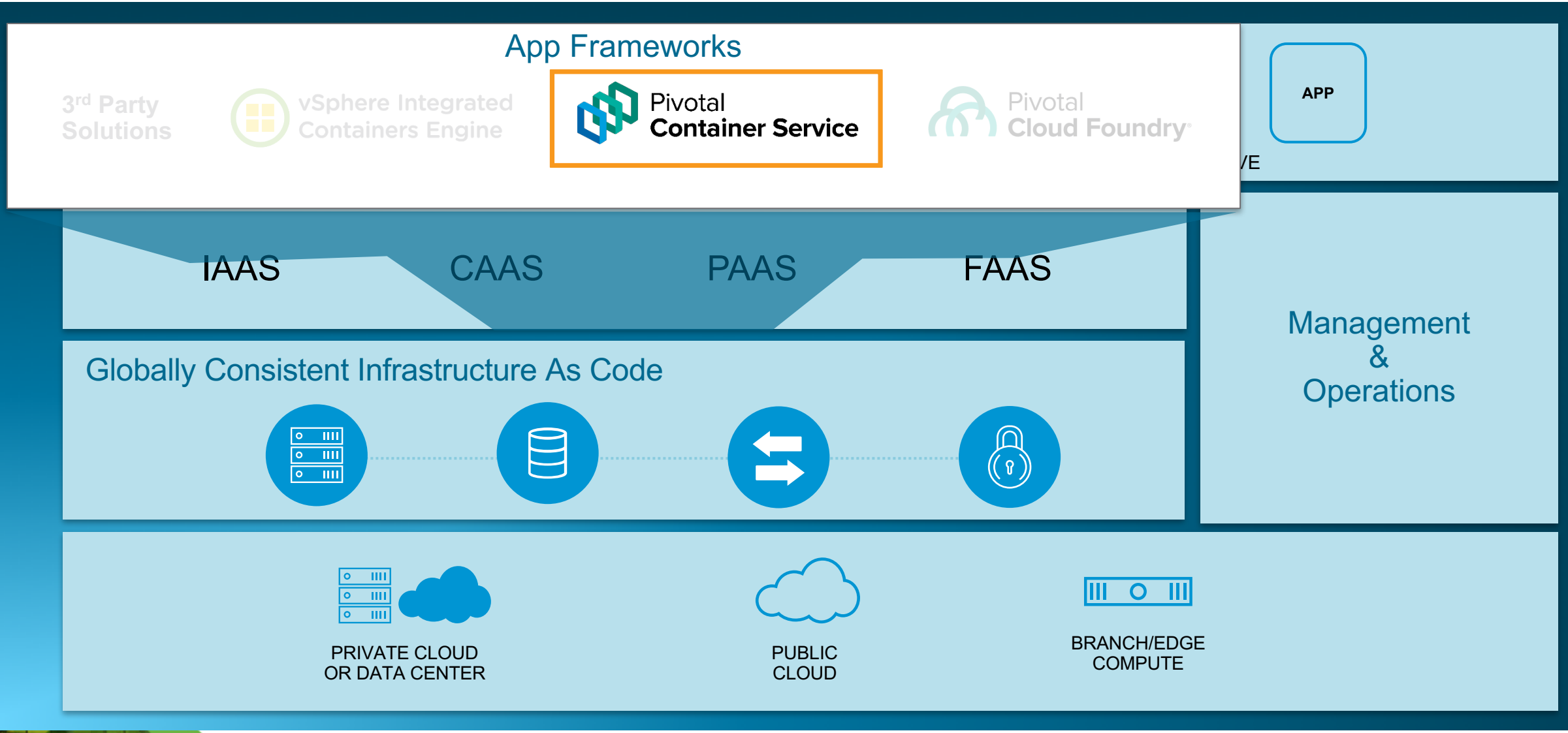
audit and **logs**

restful **API**

lightweight & easy deployment

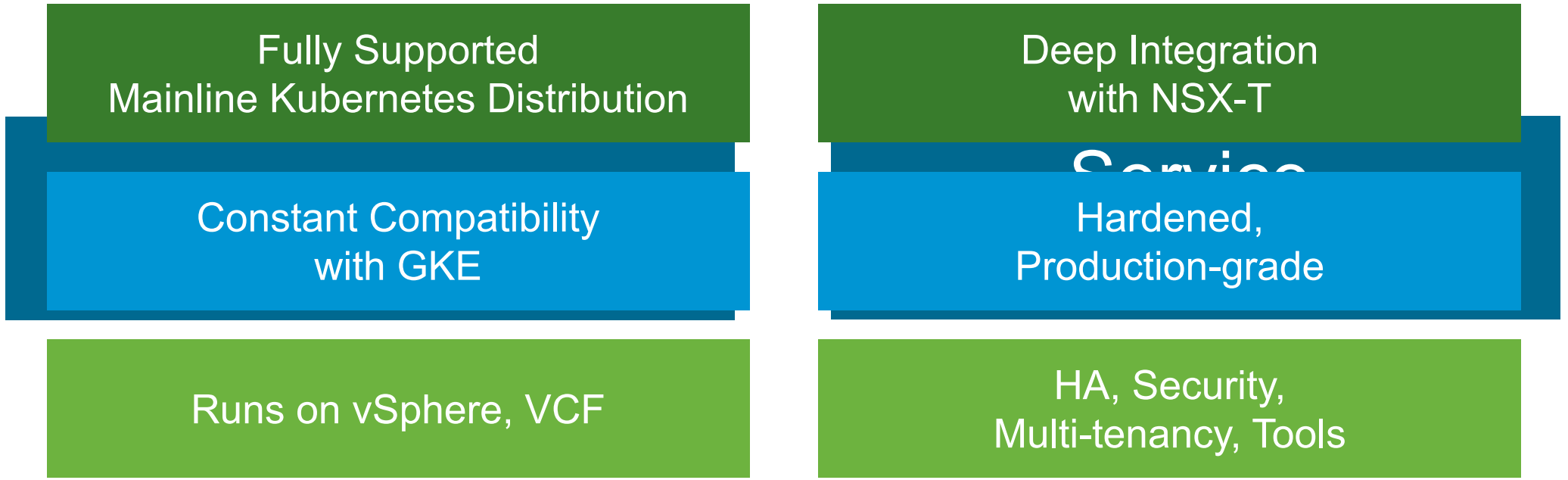
open-source under Apache 2 license

Production-Grade Kubernetes



VMware Pivotal Container Service (PKS)

Purpose-built container service to operationalize Kubernetes



PKS Leverages Project Kubo

Day 1 “Build”

Deploy Kubernetes cluster via BOSH

Deploy Kubernetes clusters on demand

Day 2 “Operate”

Self-healing VMs and monitoring

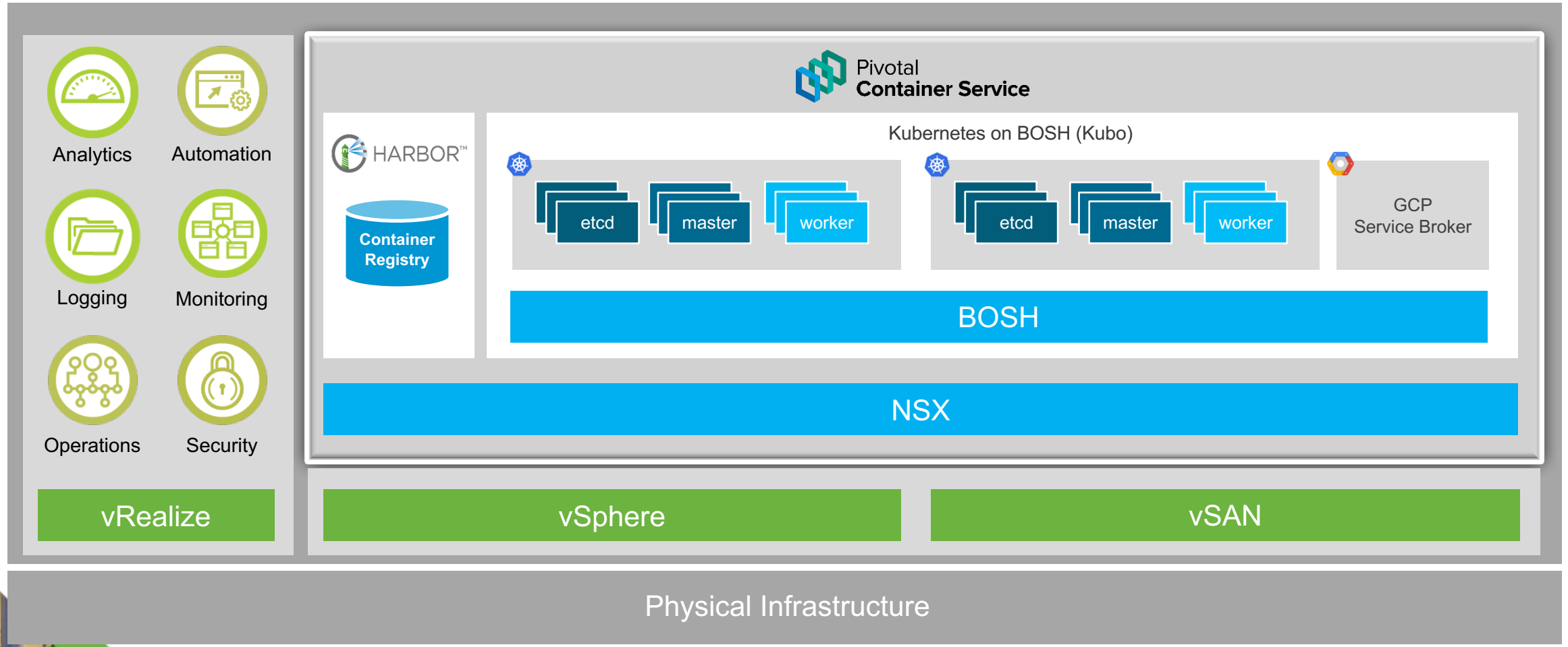
Elastic scaling for clusters

Rolling upgrades to latest Kubernetes release

High availability and multiple clusters & resource pools

Container Infrastructure for Cloud-Native Apps

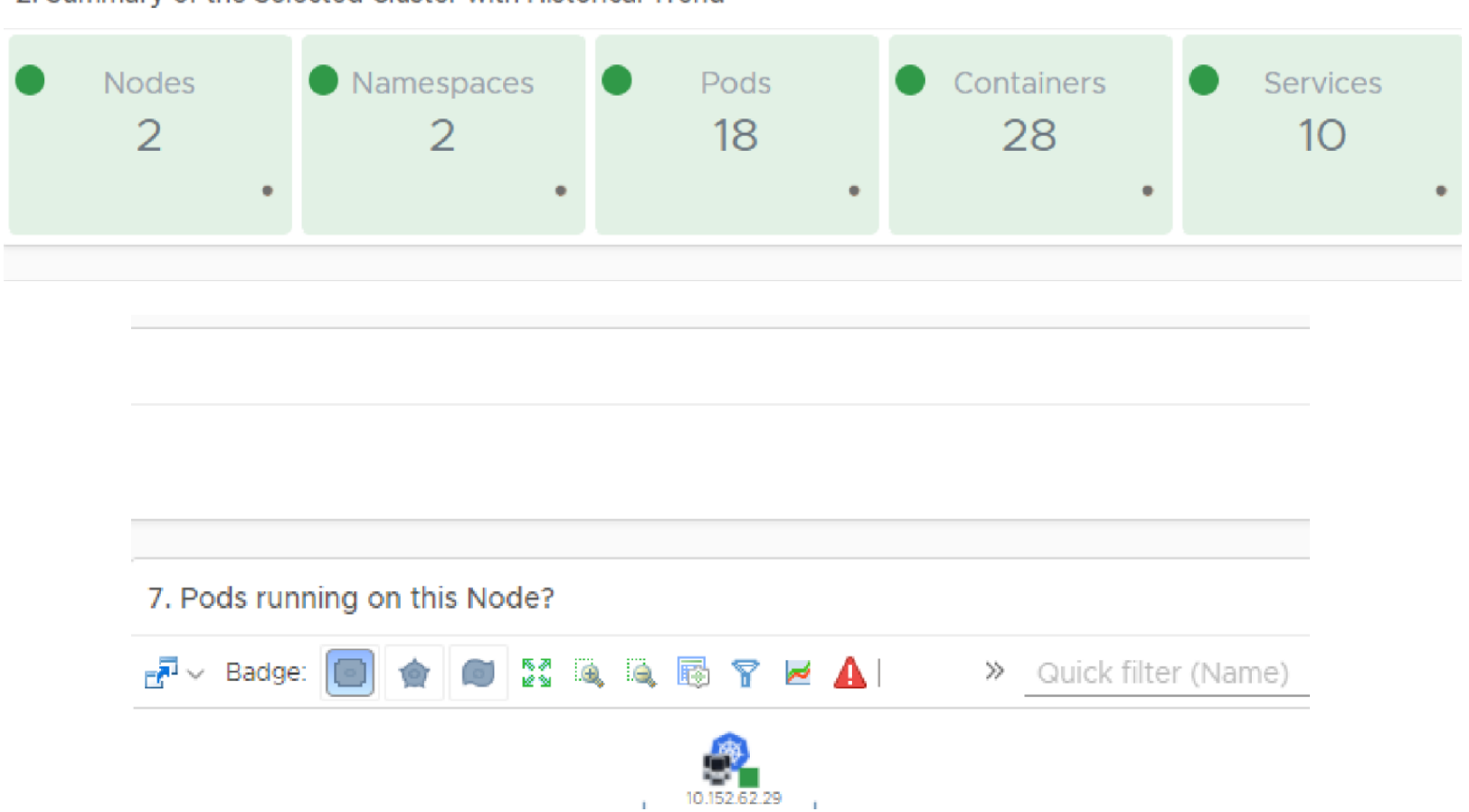
Rapidly deliver and operationalize next generation apps



vRops & PKS (Operations & Monitoring)

vRealize Operations & K8s

- Operator KPIs
- Single Pane for SDDC & K8s clusters monitoring
- vRLI Integrated
- Alert on K8s KPIs
- Entity Relationship
- Capacity Planning
- **Integrated with PKS**



Platform Operator

VMware Cloud

Run, Manage, Connect, Secure Any App on Any Cloud to Any Device

Existing Apps
Reduce Costs • Security • Reliability • Control

Cloud Native Apps
Time to market • Innovation • Scale • Differentiation

VMware Cloud Services

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Cloud Management Platform

VMware Cross-Cloud Architecture

vmware Cloud Foundation
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OVH.com

Public Cloud IaaS

amazon web services™
Microsoft Azure
IBM Cloud
Google Cloud Platform
virtustream

Consistent Infrastructure
VM Infrastructure • Container Infrastructure

Consistent Operations
Management and Operations • Across Clouds

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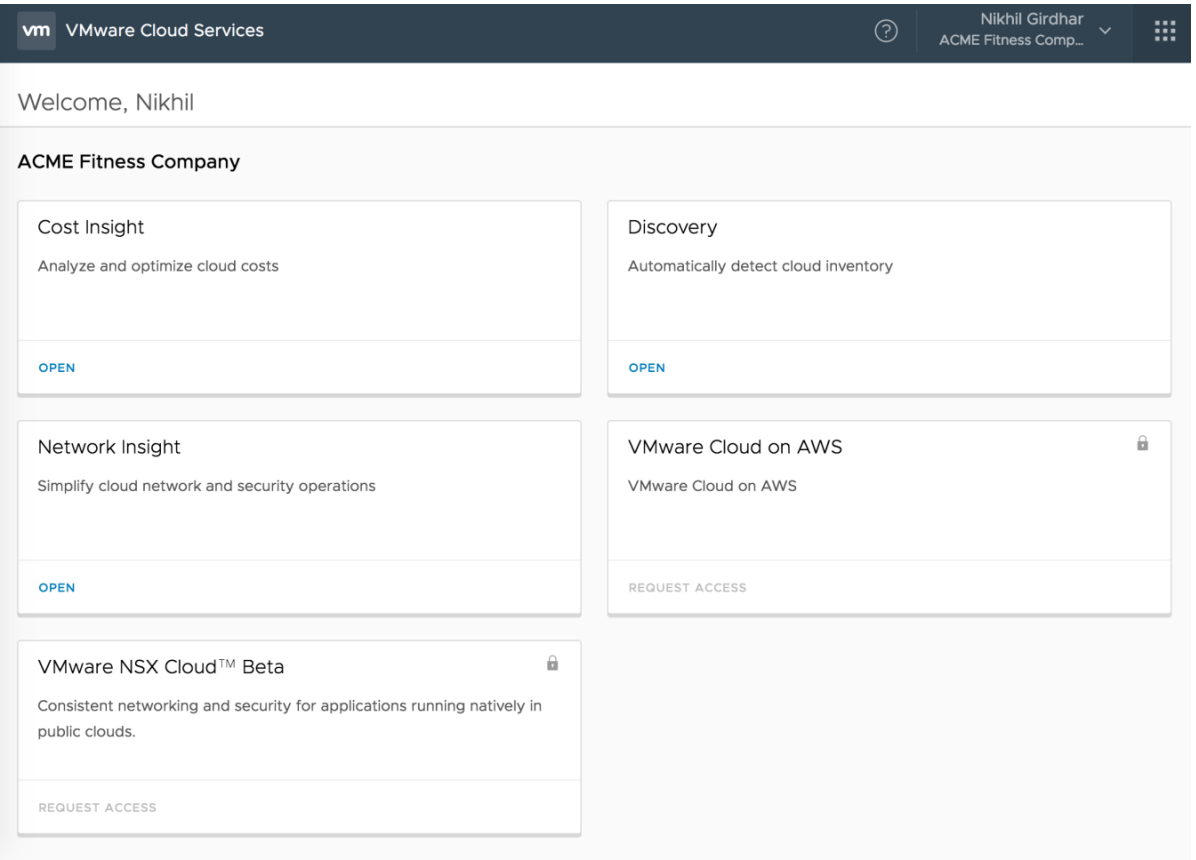
VMware Cloud Services

Manage, Govern and Secure Public and Private Cloud Apps



Discovery

Visibility into apps and resources they consume. Analyze usage and utilization across clouds.

Network Insight

Operational visibility, control, and compliance across clouds. Optimize performance, health, and availability.

Cost Insight

Accounting and cost optimization for multiple clouds. Track and analyze your costs and trends.

Wavefront

Metrics-driven monitoring and real-time analytics.

NSX Cloud

Secure networks with micro-segmentation Create private networks within or across clouds.

AppDefense

Governance for running workloads.

vmware ON PREMISES DATA CENTER

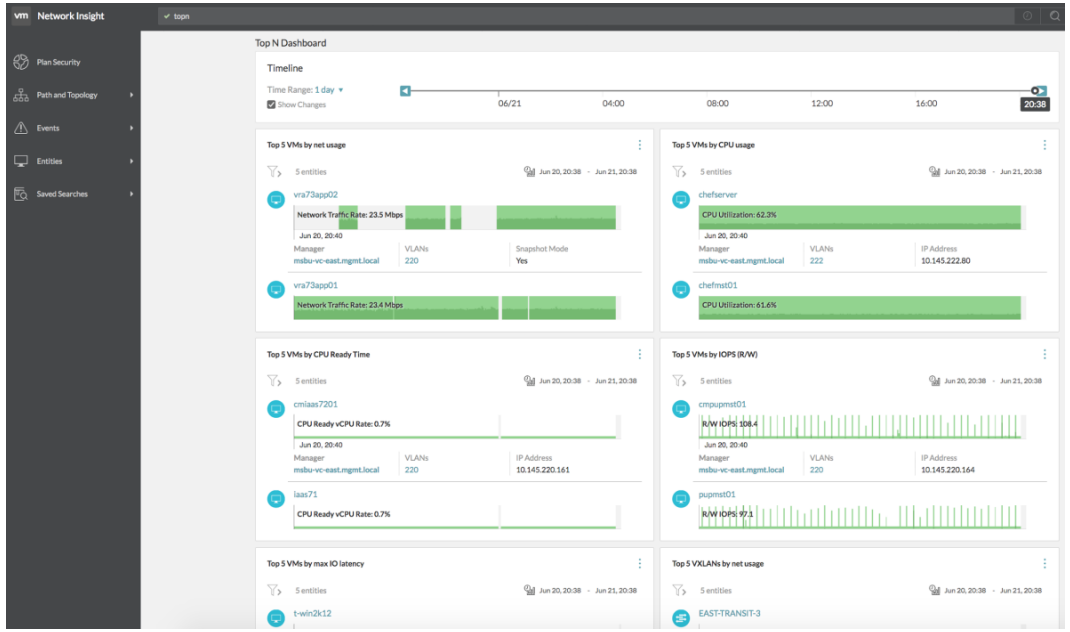
Microsoft Azure

amazon web services™

Google Cloud Platform

Network Insight: Simplify Cloud Network and Security Operations

Purpose-built for Network Virtualization and Public Clouds



Plan and manage application security

- Understand application dependencies by analyzing traffic flow patterns between VMs
- Accelerate micro-segmentation planning and use firewall rule recommendations to improve cloud security
- Continuously monitor, troubleshoot and audit cloud security posture over time

Troubleshoot network with visibility across clouds

- Discover AWS, VMW and physical network infrastructure resources including AWS VPCs, security groups, and cloud tags
- Troubleshoot network connectivity issues within and between public and private clouds
- Rapidly identify issues through pro-active events and alerts

Ensure health and availability of VMware NSX deployments

- Scale across large NSX deployments with powerful visualizations for topology and health
- Avoid configuration issues with NSX deployments based on health checklists
- Quickly pinpoint issues for resolution with the help of intuitive UI and search

Discovery Service :Within minutes get a holistic view of all cloud resources

amazon web services

Compute

AWS EC2 Instances	369

Storage

EBS Volumes	389
S3 Buckets	109

VIEW AWS RESOURCES

Microsoft Azure

Compute

Virtual Machines	1

Network

Virtual Networks	2
Network Interfaces	7
Subnets	4

VIEW AZURE RESOURCES

Compute

Virtual Machines	377
Servers	43
Clusters	8

Storage

Virtual Hard Disk	0

VIEW VCENTER RESOURCES

Resource Groups

Total Groups	4

CREATE GROUP

Cloud Accounts

Amazon Web Services	2
Microsoft Azure	1

ADD CLOUD ACCOUNT

Public and Private

Compute, Storage and Network

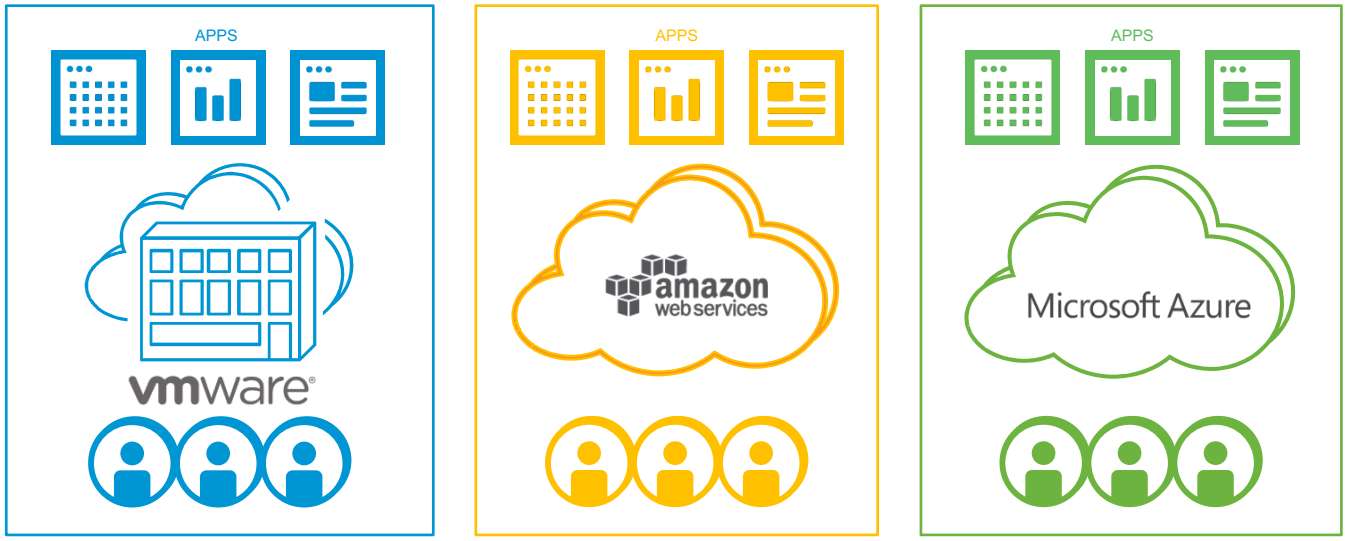
Multi-Cloud Cost and Visibility Challenges for IT

Lack of Visibility
Resources, usage and spend

Cloud Waste
Powered off, underutilized Resources

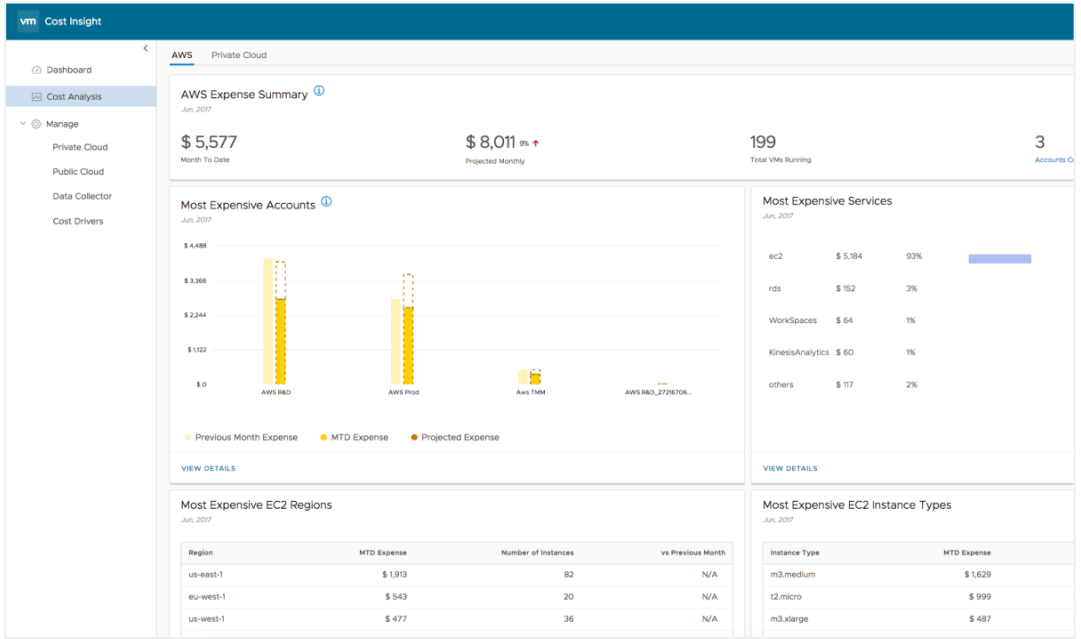
Cost Overruns
Challenges with budget control

No Accountability
Lack of communication



Cost Insight: Make Intelligent Business Decisions

Cost visibility and control for AWS, Azure and VMware



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Microsoft Azure

amazon web services

Cost Visibility

- Estimate total cloud spend across public and private clouds
- Compare spend by cloud providers, regions, accounts, or other custom groups
- Analyze costs and drill deeper to identify key cost drivers

Cost Control

- Track cloud costs over time and project future costs based on historical data
- Compare actual spend with assigned budgets
- Share cloud costs and budget comparisons with application teams

Cost Efficiency

- Identify powered off virtual machines
- Identify unused cloud storage resources
- Customize threshold limits for identifying unused resources

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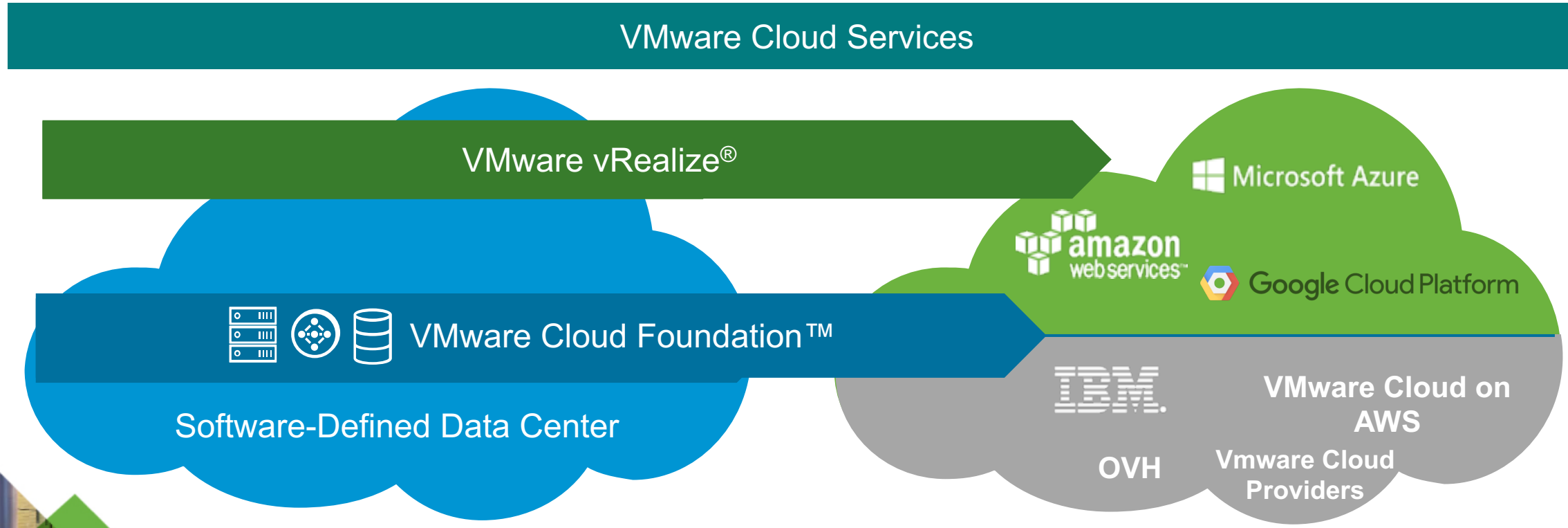
Start By Modernizing Your Data Center…

VMWARE CLOUD ARCHITECTURE™

Private Cloud **Hybrid Cloud** **Public Cloud**



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Thank You !