

vSphere With Tanzu
Federal SE Team

January 2021

Agenda

Introduction

VMware's Strategic Priorities

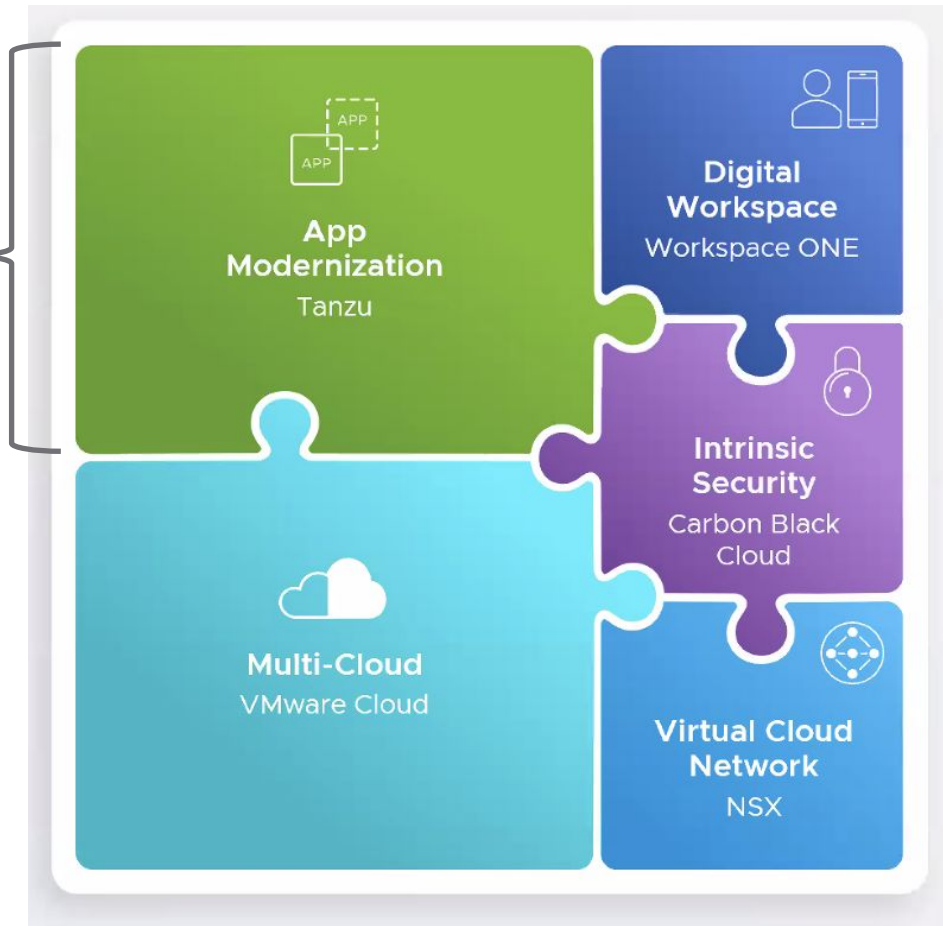
Customer Outcomes

Kubernetes Built Into vSphere(Demo)

Summary

Tanzu

A suite of tools that enables enterprises to build, run and manage applications *consistently, reliably and securely* at scale across any cloud



Who we are: A modern software company delivering in the Federal space

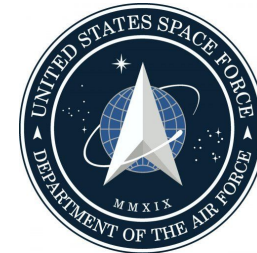
OVER 200 Federal Modernization Engagements since 2017

- 65 AppDev
- 86 Platform
- 50 App Mod

91% of our greenfield apps are in prod

50 Tanzu Platform foundations installed

We drive to production ATO on average in 90 days



Over **150 articles** about our Work in the Federal Space

The Pentagon has tried to get Silicon Valley on its side for years. Now it's part of the air war against ISIS.

The Washington Post — July 19, 2017 ([link](#))

The Air Force Learned to Code & The Pentagon Saved Millions

Fast Company July 5, 2018 ([link](#))

AFCENT Innovation Summit: 'We're here to win Wars'

Centcom.mil — March 15, 2018 ([link](#))

CSpOC Eyes New Space C2 Tools From Speedy Coders

AirForceMag.com — February 19, 2020 ([link](#))

A Superhero Culture that Fights Cyber Threats

Business Chief Magazine — April 1, 2020 ([link](#))

The Air Force Software Revolution

Air Force Magazine — September 1, 2019 ([link](#))

Bringing SMC's Software Factory to Life

MilSatMagazine — September 3, 2019 ([link](#))

Software Wins Modern Wars: What the Air Force Learned from Doing the Kessel Run

Modern War Institute — January 17, 2020 ([link](#))

Defense Innovation Board Vignette on Kessel Run

Defense.gov — May 1, 2019 ([link](#))

How Fake Agile at DoD Risks National Security

Forbes — September 22, 2019 ([link](#))

Goal - Address BOTH Applications and Infrastructure

Solve for developer experience AND operator experience across clouds



Applications

DEVELOPER EXPERIENCE



Azure

aws

Multi-cloud



IBM Cloud



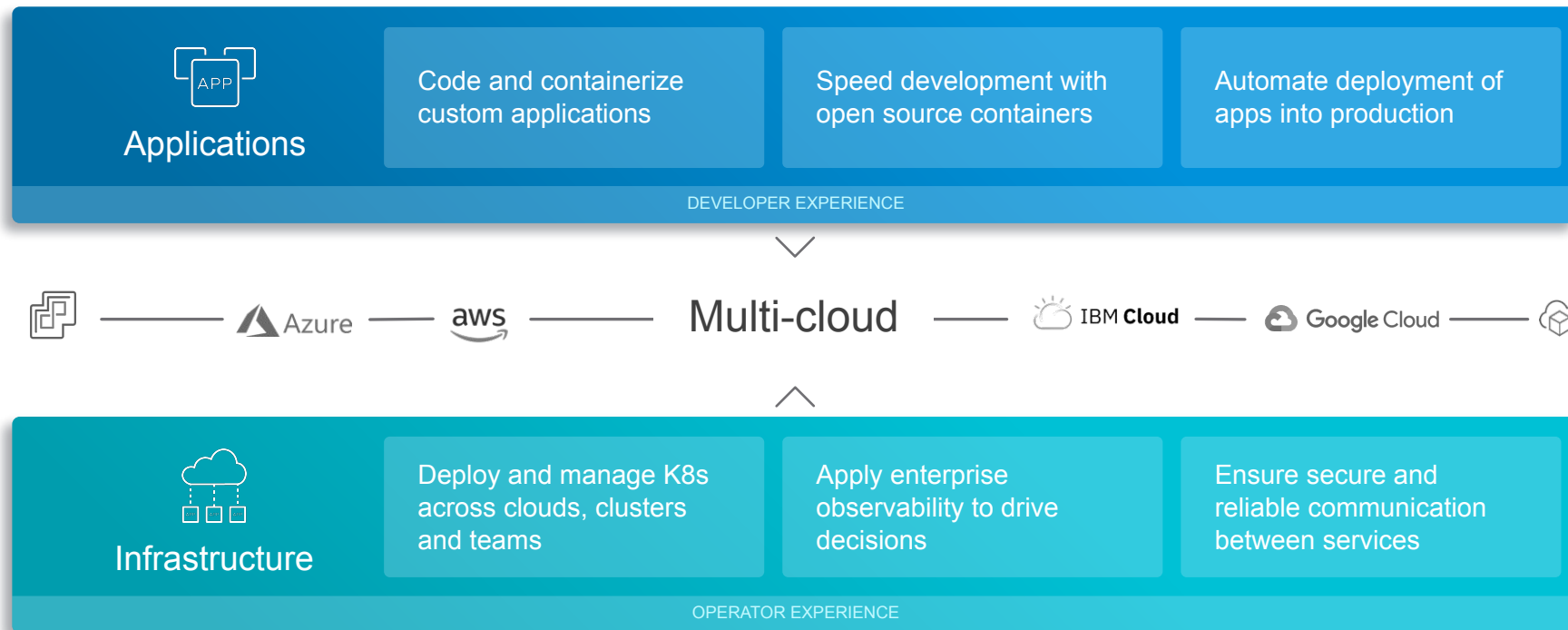
Google Cloud



Infrastructure

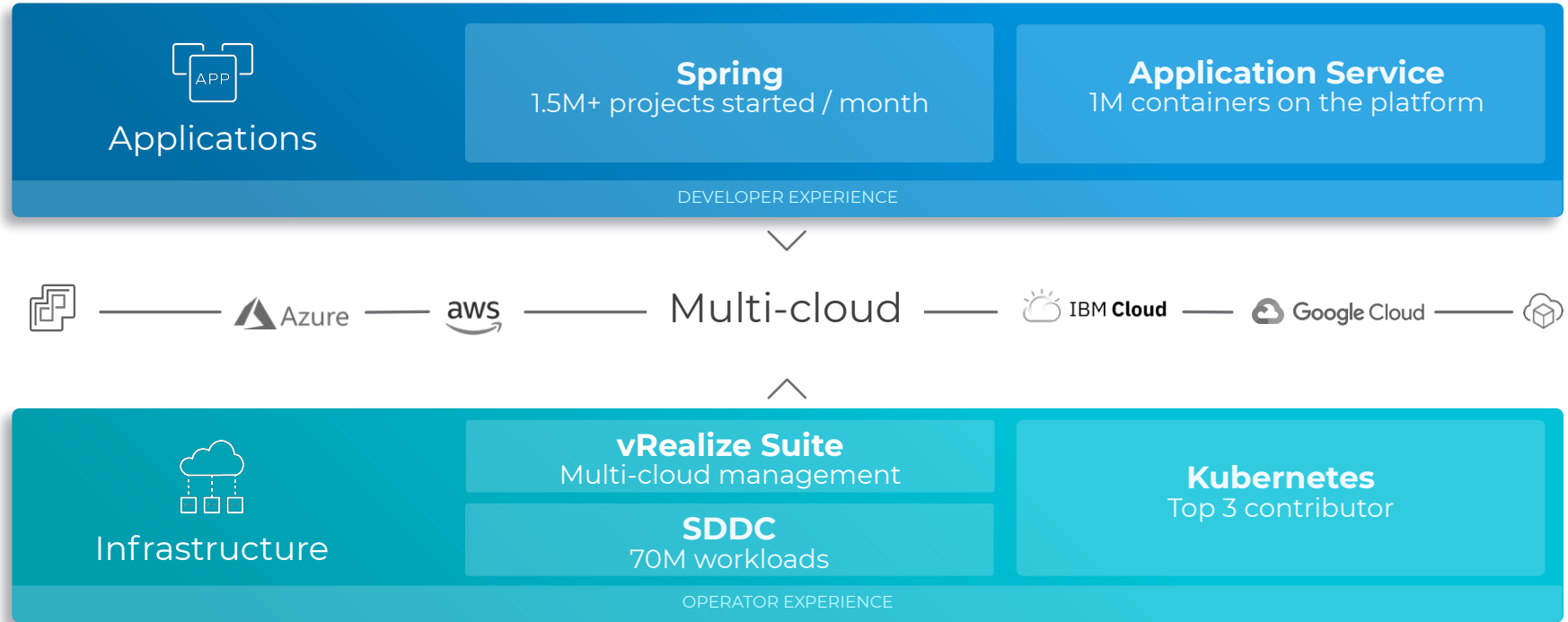
OPERATOR EXPERIENCE

Structured Around Critical Capabilities
Deliver better software to production, faster



Address BOTH Applications and Infrastructure

Solve for developer experience AND operator experience across clouds



Bring Dev & Ops together to build, run & manage apps
Deliver better software to production, faster



Applications



Azure



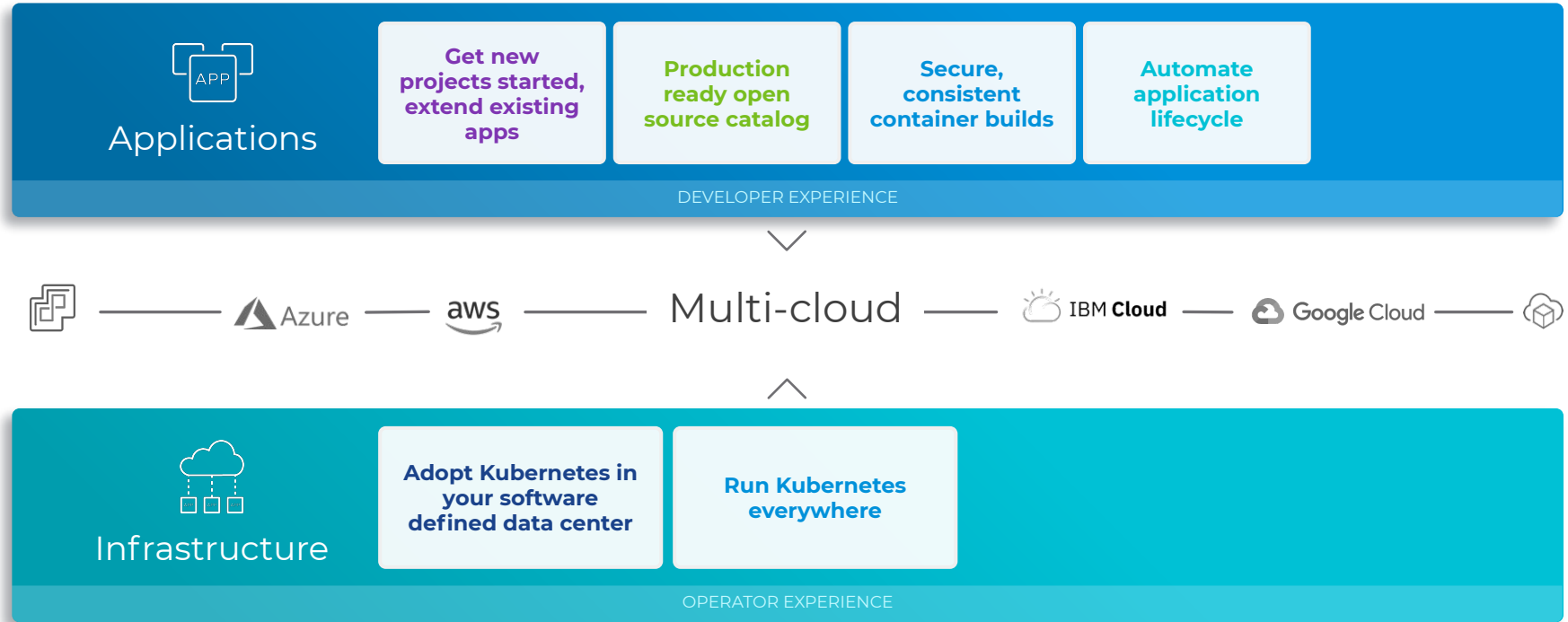
VMware Tanzu™



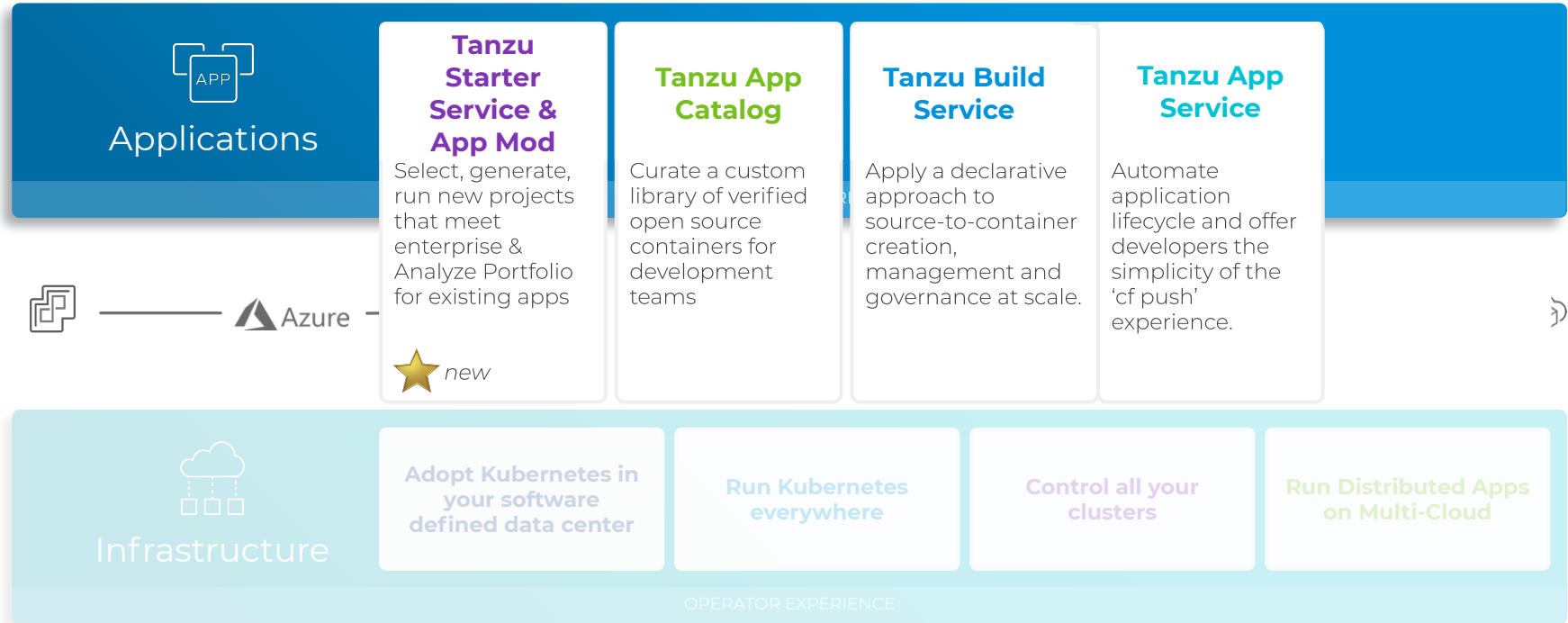
Infrastructure

OPERATOR EXPERIENCE

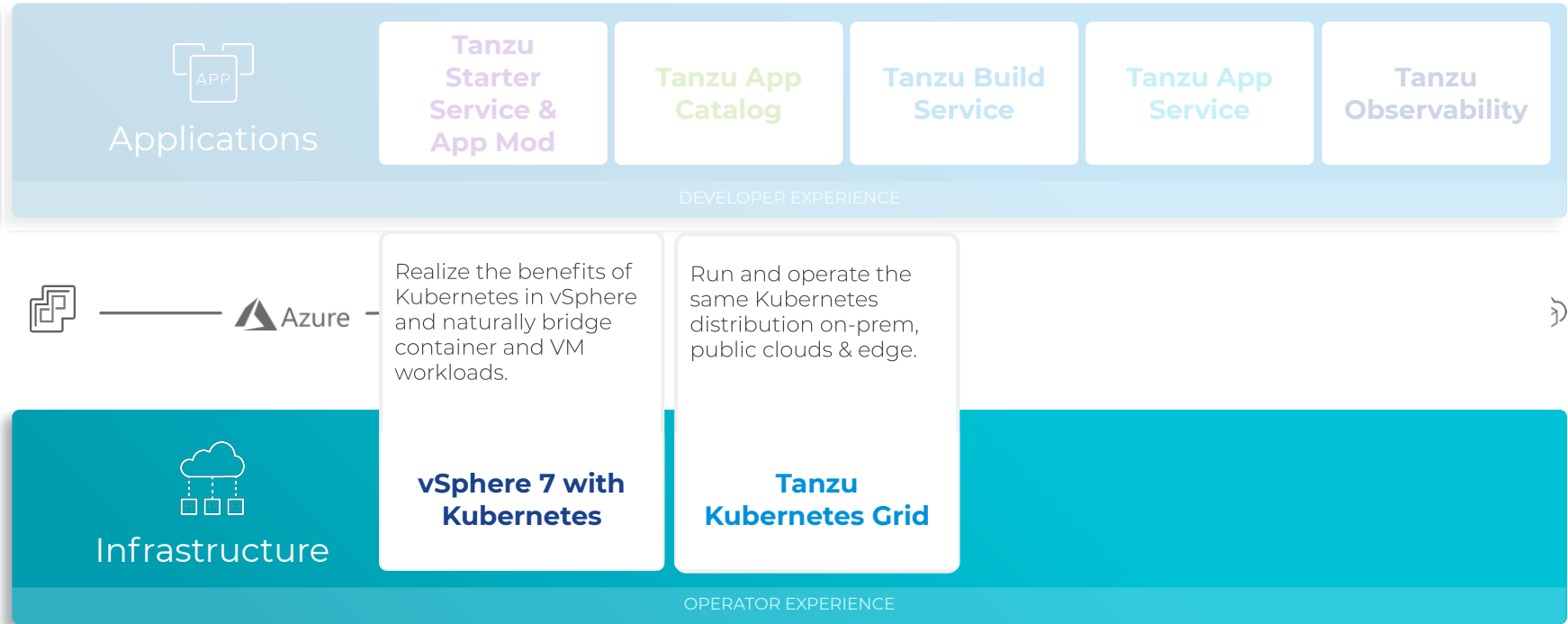
Bring Dev & Ops together to build, run & manage apps
Deliver better software to production, faster



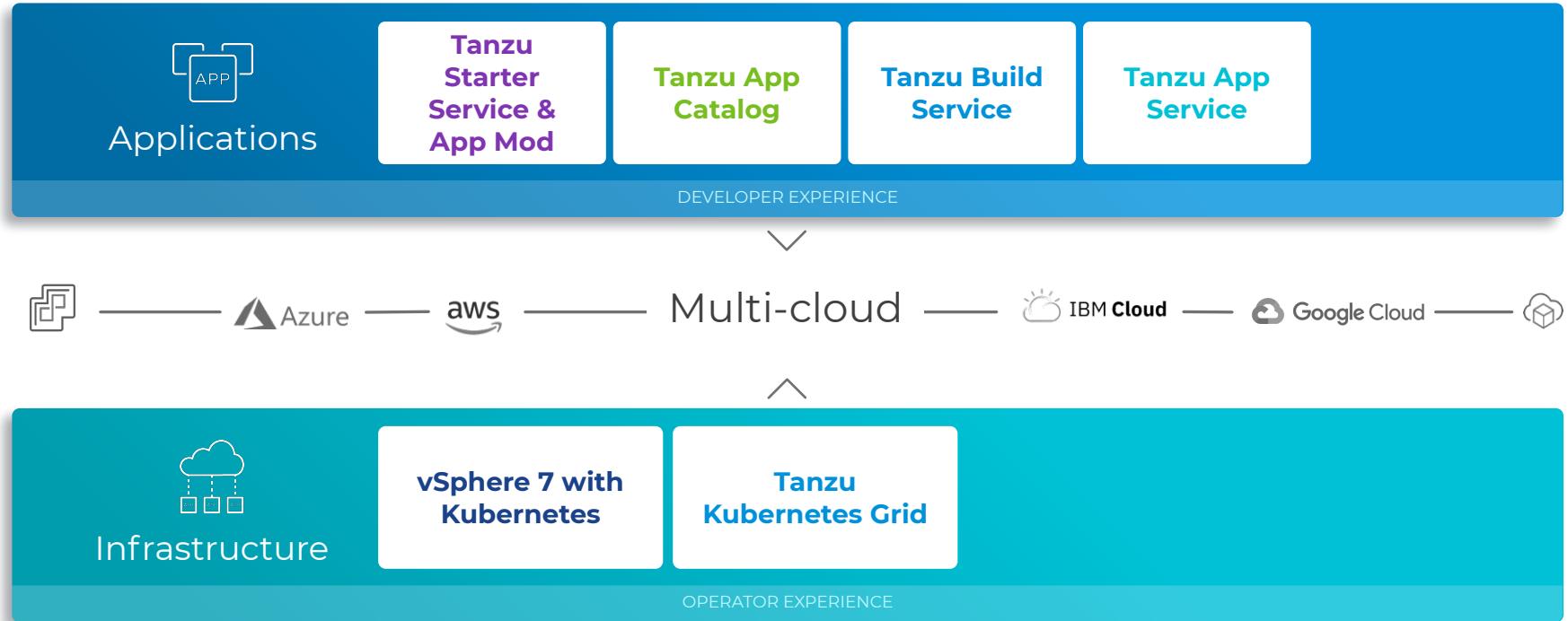
Bring Dev & Ops together to build, run & manage apps
Deliver better software to production, faster



Bring Dev & Ops together to build, run & manage apps
Deliver better software to production, faster



Bring Dev & Ops together to build, run & manage apps
Deliver better software to production, faster



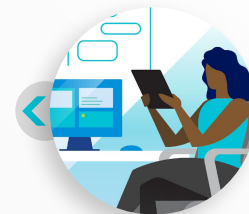
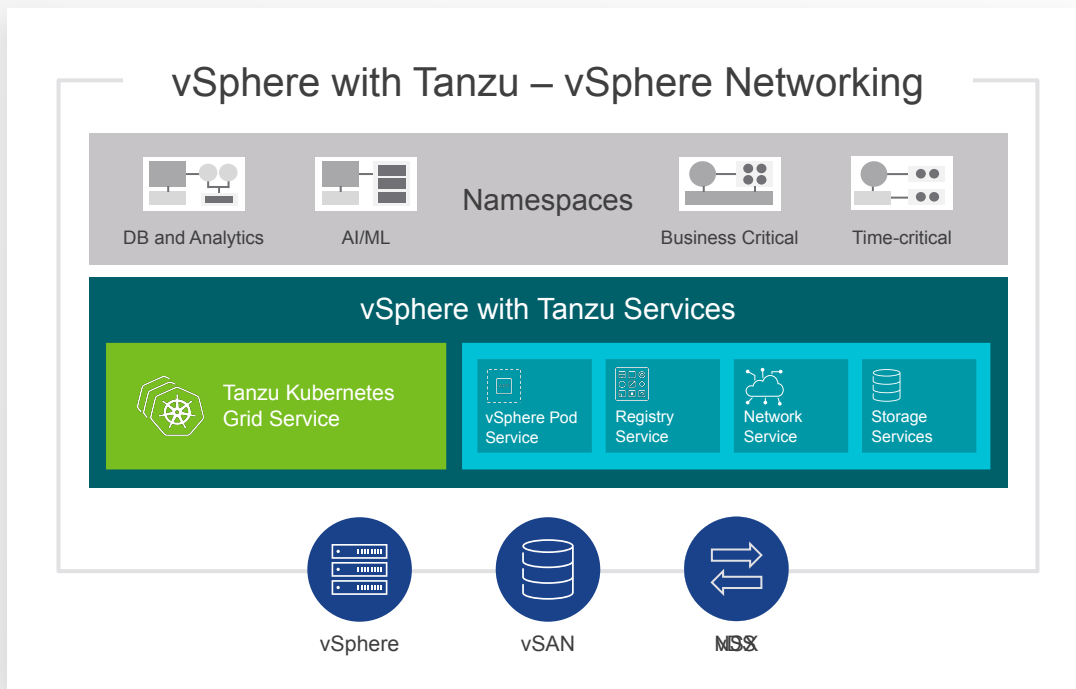
Live Environment

Simplified Deployment and Consumption

vSphere with Tanzu



Developer



vSphere Admin

Enabling Workload Management

vm vSphere Client

Menu Search in all environments Administrator@VSPHERE.LOCAL

Home Shortcuts

Hosts and Clusters
VMs and Templates
Storage
Networking
Content Libraries
Workload Management
Global Inventory Lists

Policies and Profiles
Auto Deploy
Hybrid Cloud Services
Developer Center

Administration
Tasks
Events
Tags & Custom Attributes
Lifecycle Manager

vCloud Availability
vRealize Operations

Workload Management

Workload Management is the vSphere with Kubernetes feature that enables you to manage namespaces. Namespaces provide compute, network, and storage resources for running an application. The applications you run in namespaces leverage both Kubernetes and vSphere functionality. To optimize resource usage by your application, you can apply policies to namespaces to manage resource consumption.
[Learn more about Workload Management](#)

Getting Started with Workload Management

[PACIFIC-VCSA.TRV.CLOUD.COM \(NSX-T\)](#)

Before you can use Workload Management, you need to ensure that your environment is configured with the following:

1. An HA- and fully automated DRS-enabled cluster where Workload Management will run
2. Networking configured to meet the requirements described in [Configuring and Managing vSphere with Kubernetes](#)
3. A storage policy and datastores sufficient to support the control planes, images, and containers in the namespace

After you configure these items, your cluster will have the capacity it needs to run namespaces without impacting any existing VMs in the cluster.

ENABLE

Recent Tasks Alarms

Enabling Workload Management - Pick a Cluster

The screenshot shows the vSphere Client interface for enabling Workload Management. The top navigation bar includes the vSphere Client logo, a menu, a search bar, and the user's name (Administrator@VSPHERELOCAL). The left sidebar contains navigation options such as Home, Shortcuts, Hosts and Clusters, VMs and Templates, Storage, Networking, Content Libraries, Workload Management (highlighted), Global Inventory Lists, Policies and Profiles, Auto Deploy, Hybrid Cloud Services, Developer Center, Administration, Tasks, Events, Tags & Custom Attributes, Lifecycle Manager, vCloud Availability, and vRealize Operations.

Workload Management

[BACK](#)

Enable Workload Management

1. Select a Cluster Select a cluster to enable namespaces

You are selecting a cluster that would support namespace creation and management. It's best to pick a cluster with enough space. This cluster will also need to run a couple of control plane nodes and worker VMs to support the namespace management.

pacific-vcsa.trvcloud.com

pacific-datacenter

Cluster Details | All Clusters

COMPATIBLE | INCOMPATIBLE ⓘ

Cluster Name	Number of Hosts	Available CPU	Available Memory
compute-cluster	3	88.57 GHz	116.38 GB

1 - 1 of 1 items

[NEXT](#)

- Cluster Settings** Select the master size and configure NSX on the selected cluster
- Network** Configure Networking for the Control Plane and Worker Nodes
- Storage** Specify the storage details for your namespaces
- Review and Confirm** Review all the details and confirm your namespaces set up

Recent Tasks | Alarms

Enabling Workload Management - Control Plane VM Size

The screenshot shows the vSphere Client interface for configuring Workload Management. The left sidebar contains navigation options like Home, Shortcuts, Hosts and Clusters, VMs and Templates, Storage, Networking, Content Libraries, Workload Management (selected), Global Inventory Lists, Policies and Profiles, Auto Deploy, Hybrid Cloud Services, Developer Center, Administration, Tasks, Events, Tags & Custom Attributes, Lifecycle Manager, vCloud Availability, and vRealize Operations. The main content area is titled 'Workload Management' and shows a progress bar for 'Enable Workload Management' with five steps: 1. Select a Cluster (selected), 2. Cluster Settings (current step), 3. Network, 4. Storage, and 5. Review and Confirm. Step 2 includes a table for 'Control Plane size' with columns for Size, Maximum number of pods, CPU, Storage, and Memory. The 'Small' size is selected.

Workload Management

< BACK

Enable Workload Management

> 1. Select a Cluster compute-cluster Selected

▼ 2. Cluster Settings Select the master size and configure NSX on the selected cluster

We need to allocate some capacity for the Master VMs. The more resources you allocate, the more namespaces can be supported by this cluster

Control Plane size

	Size	Maximum number of pods	CPU	Storage	Memory
<input type="radio"/>	Tiny	1000	2	16 GB	8 GB
<input checked="" type="radio"/>	Small	2000	4	16 GB	16 GB
<input type="radio"/>	Medium	4000	8	16 GB	24 GB
<input type="radio"/>	Large	8000	16	16 GB	32 GB

NEXT

3. Network Configure Networking for the Control Plane and Worker Nodes

4. Storage Specify the storage details for your namespaces

5. Review and Confirm Review all the details and confirm your namespaces set up

Recent Tasks Alarms

Enabling Workload Management - Networking

The screenshot shows the vSphere Client interface for configuring Workload Management networking. The page is titled "Workload Management" and includes a "BACK" link. The main heading is "Enable Workload Management".

3. Network

Management Network:
Network Selected: VM Network IP Address: 192.168.2.10 Subnet Mask: 255.255.255.0 Gateway: 192.168.2.1 DNS Servers: 192.168.2.3 NTP Servers: 192.168.2.1

Namespace Network:
vSphere Distributed Switch: 50 20 5c 7c aa 6a-11 76 8d 77 fd ab 38 49 Edge Cluster: ec974a03-72ef-429b-9597-b7863464b8f0 FODN: supervisor.planetvoor.com DNS Servers: 192.168.2.3, 192.168.2.2 Pod CIDRs: 10.244.0.0/21 Service CIDR: 10.96.0.0/24 Ingress CIDRs: 192.168.7.64/26 Egress CIDRs: 192.168.7.128/25

Enter network details to be used for namespaces. [VIEW NETWORK TOPOLOGY](#)

Management Network

The workload platform consists of a control plane and set of workers per cluster. Each cluster sits on a management network that supports traffic to vCenter.

Network *	VM Network	Starting IP Address *	192.168.2.10
Subnet Mask *	255.255.255.0	Gateway *	192.168.2.1
DNS Server	192.168.2.3 <small>Optional</small>	NTP Server *	192.168.2.1
DNS Search Domains	E.g. domain.local <small>Optional</small>		

Workload Network

The workload network supports traffic to the Kubernetes API and to the Pods/Services that are deployed on the Supervisor cluster. This network is supported by NSX.

vSphere Distributed Switch *	DSwitch	Edge Cluster *	edge-cluster-01
API Server endpoint FODN	supervisor.planetvoor.co <small>Optional</small>		
DNS Server *	192.168.2.3, 192.168.2.2		
Pod CIDRs *	10.244.0.0/21	Service CIDRs *	10.96.0.0/24 <small>This field cannot be edited later once saved. Make sure all CIDR-values are unique.</small>
Ingress CIDRs *	192.168.7.64/26	Egress CIDRs *	192.168.7.128/25

Enabling Workload Management - Control Plane VM Disks

vm vSphere Client | Menu | Search in all environments | Administrator@VSPHERE.LOCAL

Workload Management

[BACK](#)

Enable Workload Management

- 1. Select a Cluster** compute-cluster Selected
- 2. Cluster Settings** Small: CPU 4, Storage 16 GB, Memory 16 GB
- 3. Network**

Management Network:
Network Selected: mgmt-vlan10 IP Address: 10.10.10.200 Subnet Mask: 255.255.255.0 Gateway: 10.10.10.1 DNS Servers: 10.197.107.131 NTP Servers: 10.197.107.131 DNS Search Domains trvcloud.com

Namespace Network:
vSphere Distributed Switch: 50 3d 41 62 2c a8 78 0e-9e 1c 08 23 25 44 d5 68 Edge Cluster: af28114e-a31a-4c34-bbdd-28fdf7d01e28 FQDN: k8s.trvcloud.com DNS Servers: 10.197.107.131 Pod CIDRs: 10.244.0.0/20 Service CIDR: 10.96.0.0/23 Ingress CIDRs: 10.10.50.64/26 Egress CIDRs: 10.10.50.128/26
- 4. Storage** Specify the storage details for your namespaces

The cluster is going to run a set of control plane VMs (master and workers) in order to support namespaces. We need a datastore where these master and worker control plane VMs will live.

Control Plane Node *	No Storage Selected	SELECT STORAGE
Ephemeral Disks *	No Storage Selected	SELECT STORAGE
Image Cache *	No Storage Selected	SELECT STORAGE

[NEXT](#)
- 5. Review and Confirm** Review all the details and confirm your namespaces set up

Recent Tasks | Alarms

Enabling Workload Management - Review & Confirm

The screenshot shows the vSphere Client interface for configuring Workload Management. The left sidebar contains navigation options like Home, Shortcuts, Hosts and Clusters, VMs and Templates, Storage, Networking, Content Libraries, Workload Management (highlighted), Global Inventory Lists, Policies and Profiles, Auto Deploy, Hybrid Cloud Services, Developer Center, Administration, Tasks, Events, Tags & Custom Attributes, Lifecycle Manager, vCloud Availability, and vRealize Operations. The main content area is titled 'Workload Management' and shows a progress bar for 'Enable Workload Management' with five steps: 1. Select a Cluster (compute-cluster Selected), 2. Cluster Settings (Small: CPU 4, Storage 16 GB, Memory 16 GB), 3. Network (Management Network, Namespace Network), 4. Storage (Control Plane Node Storage, Ephemeral Storage, Image Storage), and 5. Review and Confirm (Review all the details and confirm your namespaces set up). A success message at the bottom states: 'You have successfully completed all the steps required to enable namespaces on compute-cluster. Review and confirm all the details to enable namespace. Once the process is complete, you will be all set to create your first namespace.' A blue 'FINISH' button is visible.

vm vSphere Client Menu Search in all environments Administrator@VSPHERE.LOCAL

Workload Management

< BACK

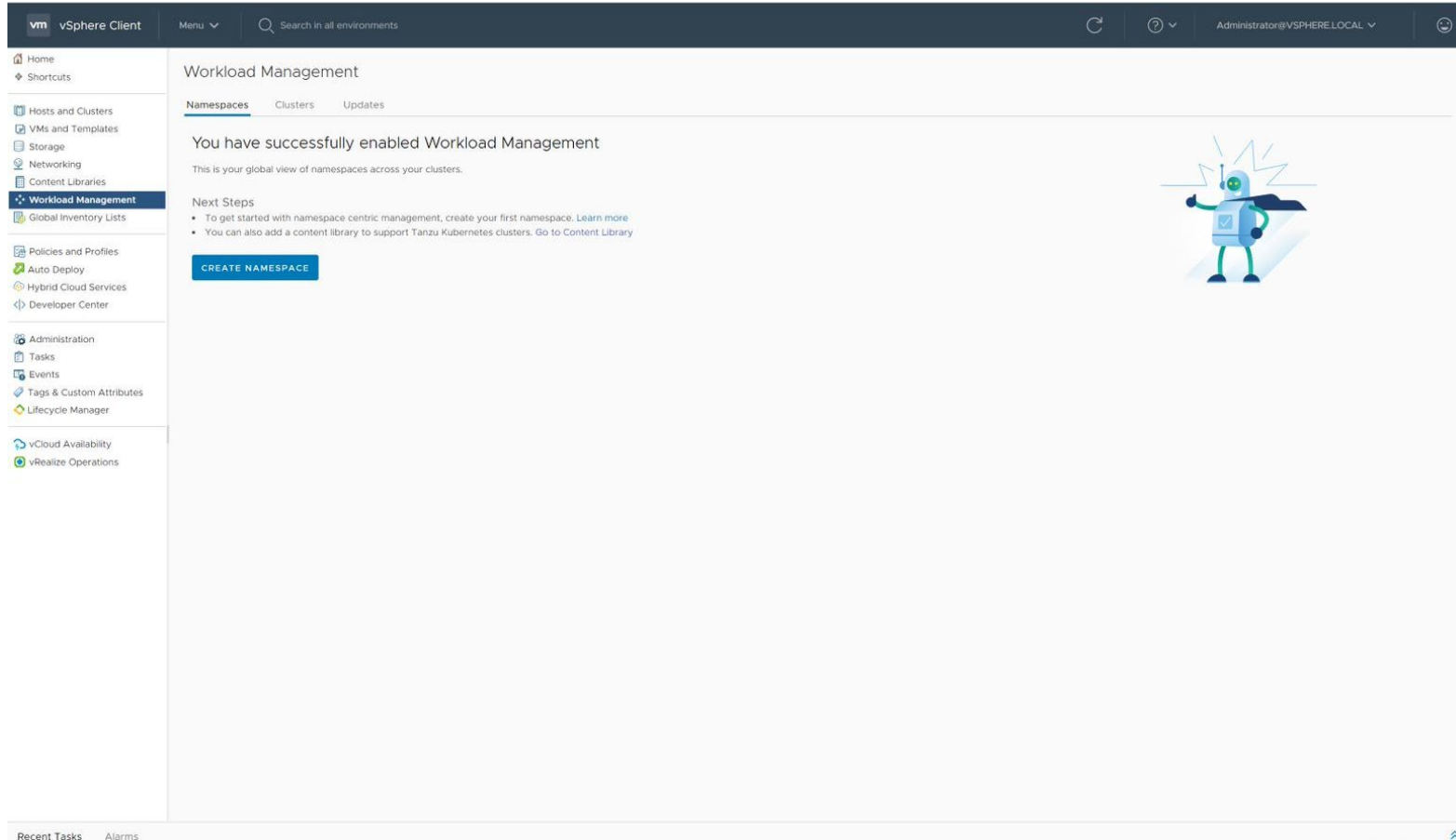
Enable Workload Management

1. Select a Cluster compute-cluster Selected
2. Cluster Settings Small: CPU 4, Storage 16 GB, Memory 16 GB
3. Network
Management Network:
Network Selected: mgmt-vlan10 IP Address: 10.10.10.200 Subnet Mask: 255.255.255.0 Gateway: 10.10.10.1 DNS Servers: 10.197.107.131 NTP Servers: 10.197.107.131 DNS Search Domains trvcloud.com
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4. Storage
Control Plane Node Storage vm-pacific-storage-policy
Ephemeral Storage vm-pacific-storage-policy
Image Storage vm-pacific-storage-policy
5. Review and Confirm Review all the details and confirm your namespaces set up

You have successfully completed all the steps required to enable namespaces on compute-cluster. Review and confirm all the details to enable namespace. Once the process is complete, you will be all set to create your first namespace.

FINISH

Enabling Workload Management - Profit!



The screenshot shows the vSphere Client interface. The top navigation bar includes the 'vm vSphere Client' logo, a 'Menu' dropdown, a search bar for environments, and user information for 'Administrator@VSPHERE.LOCAL'. The left sidebar contains a navigation tree with categories like 'Hosts and Clusters', 'Policies and Profiles', and 'Administration'. The 'Workload Management' option is highlighted in blue. The main content area is titled 'Workload Management' and has tabs for 'Namespaces', 'Clusters', and 'Updates'. A success message reads: 'You have successfully enabled Workload Management. This is your global view of namespaces across your clusters.' Below this, a 'Next Steps' section lists two items: 'To get started with namespace centric management, create your first namespace. Learn more' and 'You can also add a content library to support Tanzu Kubernetes clusters. Go to Content Library'. A prominent blue button labeled 'CREATE NAMESPACE' is positioned below the list. To the right of the text is a cartoon robot character with a blue body, green head, and a black cape, standing on a white shadow. At the bottom of the page, there are links for 'Recent Tasks' and 'Alarms'.

What Matters Most

Open source aligned



Capture the innovation
and freedom of the
community

Consistent across clouds



Realize the potential
of Kubernetes as an
abstraction

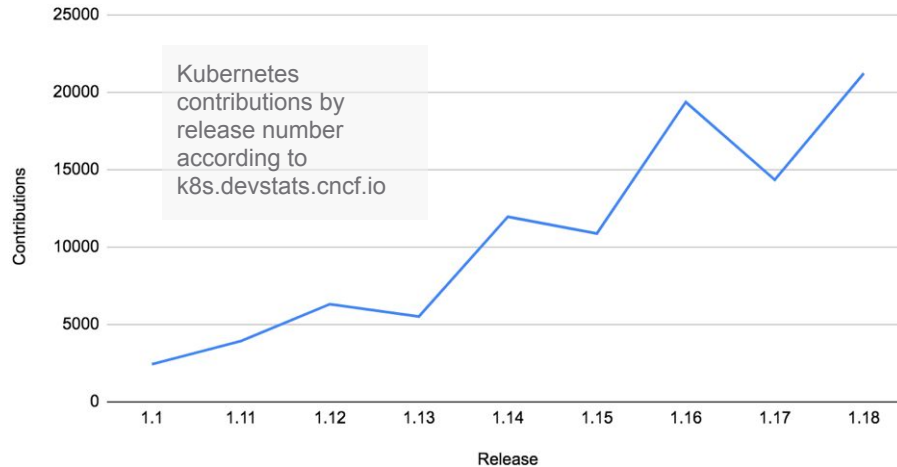
Developer self-service



Set clear guidelines
and policies; then set
developers free

VMware is a Leader in the Open Source Community

Committed to chopping wood and carrying water



2 of 7

steering committee members

10 of 23

special interest groups led by VMware

4

working groups led by VMware

2nd

leading contributor to kubernetes



CONTOUR



VELERO



HARBOR



SONOBUOY



OCTANT

Publicly Available HOL

HOL-2113-01-SDC

The screenshot shows the VMware HOL Online catalog interface. The left sidebar contains navigation options: Enrollments, Labs, and Transcript. The main content area displays the details for the lab 'HOL-2113-01-SDC - vSphere 7 with Kubernetes'. The lab is marked as 'NEW' and has a 4-star rating. It is available in English. A table of lab modules is provided, and the lab is currently 'Available Now'. The 'LAB DETAILS' section lists the time limit, valid period, exit and end allowed status, availability, and manual languages. The products, authors, and VMs are also listed.

labs.hol.vmware.com/HOL/catalogs/catalog/123

vmware
HOL Online

Operations and other vRealize Suite products.

Cloud Native Applications
Tanzu, Kubernetes, VMware PKS, vSphere Integrated Containers, PhotonOS

Dell Technologies
Dell Provisioning, MX 7000, vXRAIL

Emerging Technologies
Blockchain, Machine Learning, OpenStack, NFV, VMware Learning Platform

Hybrid Cloud 1
Hybrid Cloud and Cloud Services

Hyper-Converged Infrastructure 1
vSAN, Virtual Volumes and VxRail

Network Virtualization
NSX, NSX-T, NSX Cloud, VeloCloud, Avi Networks

Software Defined Data Center 4
VMware Software Defined Data Center

Solution Labs
Solve Business Challenges with VMware Solutions

Unified Endpoint Management
This catalog contains VMware Workspace ONE

HOL-2113-01-SDC

HOL-2113-01-SDC - vSphere 7 with Kubernetes

vSphere 7 with Kubernetes is the new generation of vSphere for modern applications and it is available only through VMware Cloud Foundation. Developers can now consume the newly introduced VMware Cloud Foundation Services that includes Tanzu Kubernetes Grid Services and a family of Hybrid Infrastructure Services.

This lab is available in **English**

#	Title	Time	Level
1	Introduction to vSphere with Kubernetes	15	I
2	Managing vSphere with Kubernetes	30	I
3	Consuming vSphere Foundation Services	30	I
4	Working with Tanzu Kubernetes Clusters	15	I

Available Now

ENROLL

A Module Time can be either 15, 30, 45 or 60 Minutes in Length.
A Module Level can be either Beginning, Intermediate, or Advanced.
[Close](#)

LAB DETAILS

Time Limit: 1 hour 30 minutes
Valid Period: 2 hours
Exit Allowed: No
End Allowed: Yes
Availability: Available Now
Manual Languages: English

Products: [Kubernetes](#), [vSphere HTML Client SDK](#)
Authors: [Bob Bauer](#), [Jose Manzanogue](#), [Peter Kieren](#)
VMs: Microsoft Windows Server 2012 (64-bit)

HOL-2113-01-SDC - vSphere 7 with Kubernetes