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TKGm vs. vSphere with Tanzu: Decoding the Best Fit for Your vSphere

Mincho Tonev
Staff II @ Vmware R&D
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Agenda

- VMware Tanzu Overview
- Tanzu over the years
- Introduction of TKGm and Tanzu on vSphere
- Comparison of two solutions
- Choosing the right solution

kubernetes

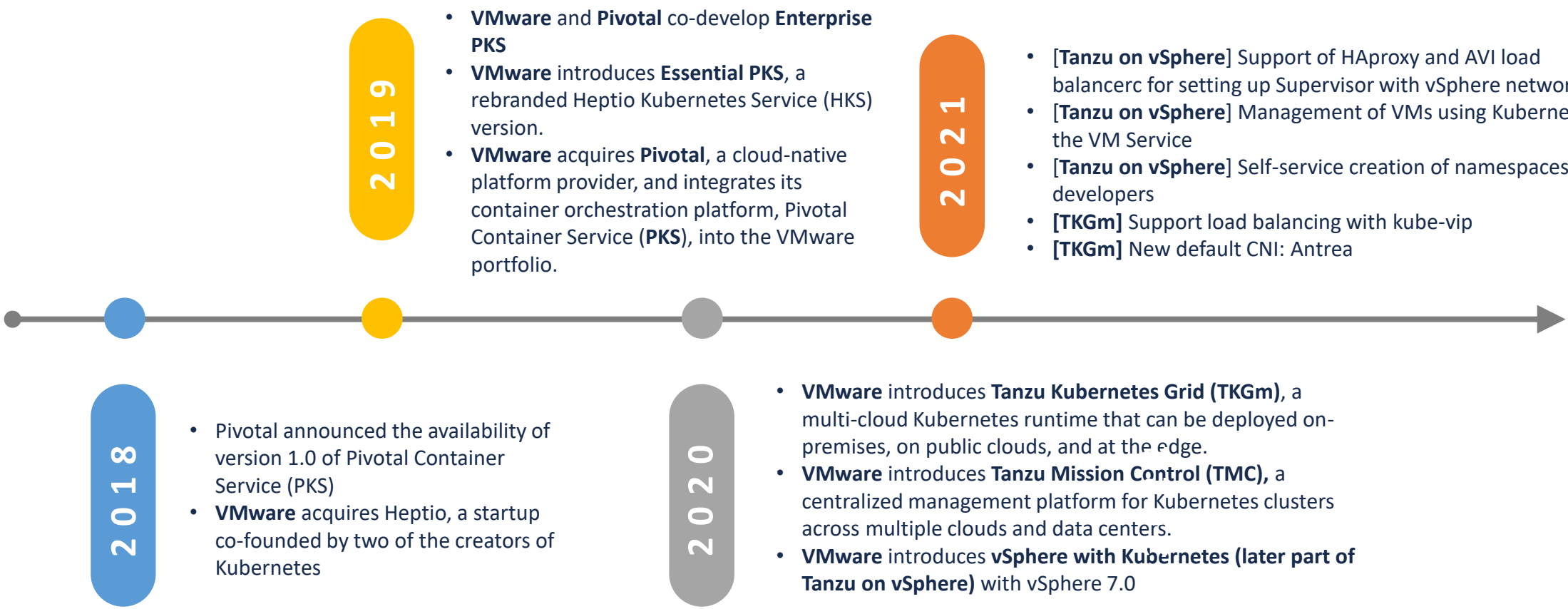
VMware Tanzu

VMware Tanzu

VMware Tanzu is a suite of products and services designed to help organizations in the adoption, deployment, and management of modern containerized applications and Kubernetes clusters.

- **Origins and Collaboration:**
  - A collaborative effort with Pivotal in the development of container services.
  - VMware's acquisitions of Heptio and Pivotal were essential in shaping VMware Tanzu.
- **Core Products:**
  - VMware Tanzu Kubernetes Grid multi-cloud (TKGm).
  - VMware Tanzu Kubernetes Grid Service (Tanzu on vSphere).

VMware Tanzu


2018
Pivotal announced the availability of version 1.0 of Pivotal Container Service (PKS)
VMware acquires Heptio, a startup co-founded by two of the creators of Kubernetes
2019
VMware and Pivotal co-develop Enterprise PKS
VMware introduces Essential PKS, a rebranded Heptio Kubernetes Service (HKS) version.
VMware acquires Pivotal, a cloud-native platform provider, and integrates its container orchestration platform, Pivotal Container Service (PKS), into the VMware portfolio.
2020
VMware introduces Tanzu Kubernetes Grid (TKGm), a multi-cloud Kubernetes runtime that can be deployed on-premises, on public clouds, and at the edge.
VMware introduces Tanzu Mission Control (TMC), a centralized management platform for Kubernetes clusters across multiple clouds and data centers.
VMware introduces vSphere with Kubernetes (later part of Tanzu on vSphere) with vSphere 7.0
2021
[Tanzu on vSphere] Support of HAproxy and AVI load balancerc for setting up Supervisor with vSphere networking
[Tanzu on vSphere] Management of VMs using Kubernetes via the VM Service
[Tanzu on vSphere] Self-service creation of namespaces for developers
[TKGm] Support load balancing with kube-vip
[TKGm] New default CNI: Antrea

Tanzu Kubernetes Grid multi-cloud (TKGm)

- VMware Tanzu Kubernetes Grid Integrated Edition (TKGm) enables organizations to deploy and manage Kubernetes clusters on their infrastructure, including vSphere, AWS, Azure, and GCP.
- TKGm includes automation tools for easy deployment, upgrades, and managing Kubernetes clusters across diverse environments.
- Provides a consistent and repeatable approach to Kubernetes cluster deployment, reducing complexity and enhancing operational efficiency.
- Integration with other VMware Tanzu products like Tanzu Mission Control for centralized cluster management and Tanzu Observability for monitoring and observability.

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Tanzu on vSphere (Tanzu Kubernetes Grid Service)

- Tanzu on vSphere provides a unified platform for managing Kubernetes components through vSphere with the vSphere UI.
- VI admins can choose the location of Kubernetes clusters and manage hardware resource access, creating namespaces with CPU, memory, and storage quotas.
- vSphere Namespaces enable VI admins to manage resource allocation like resource pools, with each team having administrative autonomy in their assigned namespace.
- Developers can natively deploy vanilla Kubernetes clusters (TKCs) and Kubernetes Pods on vSphere alongside Virtual Machines, known as vSphere (Native) Pods.
- Tanzu on vSphere allows DevOps teams to independently provision containers and VMs while VI admins maintain control over VMware cluster resources.

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Tanzu solutions comparison

- TKGm deploys Kubernetes on various infrastructures, including VMware, AWS, Azure, and GCP, using a "bring your own Kubernetes" model.
- Tanzu on vSphere is tailored for Kubernetes on vSphere, offering exclusive features and tight integration with the platform.
- TKGm lets users manage their own control plane, while Tanzu on vSphere handles it for the customer.
- Both TKGm and Tanzu on vSphere prioritize security with automated updates, identity management, and network policies. However Tanzu on vSphere has better integration with existing vSphere
- TKGm provides flexibility in infrastructure and Kubernetes choice, while Tanzu on vSphere offers a streamlined, fully managed distribution for vSphere.

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Comparison Feature set Table (1)

	vSphere with Tanzu (TKGs)	TKGm (multi-cloud)
Management Interface for Admins	vSphere Client	Tanzu Mission Control (TMC)
Management Interface for Developers	Kubernetes API and Tanzu Mission Control (TMC)	Kubernetes API and Tanzu Mission Control (TMC)
Deployment and Management	Integrated into vSphere	It can be deployed on any infrastructure platform
Networking	vSphere Distributed Switch and NSX-T	It depends on the underlying infrastructure managed by the Admin
Storage	vSphere Storage Policy-Based Management	It depends on the underlying infrastructure managed by the Admin
High Availability	vSphere Availability Zones (one or three)	Based on the underlying infrastructure, CP and worker nodes can be in different availability zones
Scalability	Scale up/down by adding or removing hosts in the clusters from the zones	Just spin off a new worker/management node For vSphere, scaling up/down can be done only within the datacenter.

Comparison Feature set Table (2)

	vSphere with Tanzu (TKGs)	TKGm (multi-cloud)
Kubernetes Version	Tied to vSphere release cycle (using MP releases as well)	Independent of the vSphere release cycle
Load Balancers	NSX-T, AVI, HA Proxy	AVI, Kube-VIP
Tanzu CLI	Partial Support	Full Support
Cluster API	Yes	Yes
vSphere Pods (PodVM)	Yes, supports PodVM for running virtual machines as pods	No native support for PodVM
VM Service	Yes, provides a Kubernetes API for virtual machine management	No native support for VM Service
Supervisor Services (including Carvel)	Yes, with management through the vSphere UI	Tanzu CLI (Support for Carvel, no central managment)
Tanzu Mission Control	Yes, fully integrated	Yes, fully integrated
Licensing	Included with vSphere+	Included in the Tanzu Editions with limitations based on the edition

Choosing between TKGm and vSphere with Tanzu (1)

Use-case	Deployment type	Comment
Deploy natively on Azure, AWS, and Google Cloud (excluding vSphere in the cloud)	TKGm	TKGm is multi-cloud. Tanzu on vSphere works with vSphere only.
Have vSphere deployment (including vSphere in the cloud)	Tanzu on vSphere	TKGs is better integrated with vSphere and provide richer feature support VI admins' knowledge of managing the virtual infrastructure is fully applicable to TKGs. On top, they will have more fine-grain control compared to TKGm. While with TKGs, most of the workloads will appear in the inventory, with TKGm the VI admins will only see the management and workload VMs in the inventory.
Lower learning curve for VI admins	Tanzu on vSphere	
High Availability	Tanzu on vSphere in case of HA with 3 clusters, TKGm in the other cases	Both Tanzu on vSphere and TKGm are limited to the datacenter they are deployed in. Tanzu on vSphere supports HA with 3 Cluster (each having at least 3 hosts). TKGm is not limited to clusters. It can be deployed in clusters or hosts individually. TKGm can also have an arbitrary number of worker nodes.
Scale vertically	Tanzu on vSphere in case of scale-up only, TKGm in the other cases	Tanzu on vSphere supports only scaling up on the CP nodes. Scaling up the worker nodes means scaling up the hosts' hardware. TKGm can scale up and down its CP and worker nodes by altering the template size of the nodes.

Choosing between TKGm and vSphere with Tanzu (2)

Use-case	Deployment type	Comment
Scale horizontally	Tanzu on vSphere scale up/down worker nodes, TKGm in the other cases	Worker nodes, in the case of Tanzu on vSphere, are the hosts. The horizontal scale means adding or removing a host in a cluster (minimum of 3 hosts in a cluster). TKGm nodes being VMs can scale up and down on both CP and worker nodes through tanzu CLI. TKGm supports Autoscaler, which scales the number of worker nodes depending on the load.
Single host	TKGm	Tanzu on vSphere is limited to a minimum of 3 hosts. TKGm can be deployed on a single host.
Single host per domain/Edge deployment	TKGm	Here the use case differs from the Single host case, where you want the whole deployment to be on the same host. In the case of a Single host per domain/Edge deployment, you might want a single management cluster to control multiple small domains (single hosts or clusters with a single host) that are deployed on edge. With such deployments, the edges can work autonomously by having local TKCs deployed on the edges (without HA), and central management is done through the single control plane surface. (TESCO use-case)

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Thank you!

Q & A


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Feature	Tanzu Basic	Tanzu Standard	Tanzu For Kubernetes Operations	Tanzu Advanced
Developer Framework				Yes (Spring Runtime)
Tanzu Application Catalog				Yes
Database				Yes (VMware Tanzu SQL)
Tanzu Build Service				Yes
Container Registry (Harbor)	Yes	Yes	Yes	Yes
Tanzu Service Mesh			Yes	Yes
Observability/Monitoring (Prometheus, Grafana, and TMC)		Yes	Yes (includes Tanzu Observability)	Yes (includes Tanzu Observability)
Policy Management		Yes	Yes	Yes
Container Networking	Yes	Yes	Yes	Yes
Load Balancing (AVI + free HA proxy)	Yes	Yes	Yes	Yes
Access Management	Yes	Yes	Yes	Yes
Lifecycle Management	Yes	Yes	Yes	Yes
Data Protection		Yes	Yes	Yes
Multi-Cloud Support		Yes	Yes	Yes
Tanzu Mission Control		TMC Standard	TMC Advanced	TMC Advanced
vSphere Support	Yes	Yes	Yes	Yes

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