

STRATEGIC KUBERNETES OPTIONS TO DEPLOY ANY APP ON ANY CLOUD

Simplify Ops by Using the Cloud or
Reap the Power of Your Own Platform

Digital transformation and rapid innovation, done right, disrupt the competition's business without disrupting your own. Harnessing the power of containers and Kubernetes streamlines software development, deployment, and operations so you can adapt to market changes with less risk and more reward.

Containers make developers more agile, software testers more productive, and applications more portable. Containers alone, however, are not enough to put next-generation applications into production at scale. For that, you need Kubernetes. It orchestrates containerized applications to automate their deployment and management. The result simplifies operations, speeds up the roll out of custom applications, makes it easier to implement a multi-cloud strategy, and improves your ability to adapt to change.

VMware gives you two complementary strategic options to orchestrate containerized applications with Kubernetes:

- VMware® Enterprise PKS
- VMware® Cloud PKS

You can use either option, or both, to further your digital transformation.

VMware Enterprise PKS enables you to deploy and operate Kubernetes as an enterprise platform that is managed by you on your own infrastructure, which is typically VMware vSphere on premises but can also be Google Compute Platform, the Amazon cloud, or Microsoft Azure.

VMware Cloud PKS presents Kubernetes as a VMware Cloud Service so you can deploy and orchestrate containerized applications at any time and from any location without the overhead of setting up and managing either Kubernetes or its underlying infrastructure, which are managed for you by VMware. The public beta of VMware Cloud PKS is available through [VMware Cloud Services](#).

Both VMware Enterprise PKS and VMware Cloud PKS have advantages. The approach that is right for you depends on what you want to do and how you want to do it. The portability of containers and the compatibility of the Kubernetes versions in VMware Cloud PKS and VMware Enterprise PKS gives you the flexibility to pursue a multi-cloud strategy.

VMWARE ENTERPRISE PKS AT A GLANCE

VMware Enterprise PKS provides a highly available, production-grade Kubernetes platform equipped with advanced networking from VMware NSX® Data Center, a secure image registry named Harbor, and life cycle management with BOSH. The solution radically simplifies the deployment and operation of Kubernetes clusters so you can run, orchestrate, secure, and maintain containers at scale on VMware vSphere, GCP, AWS, or Azure.

VMWARE CLOUD PKS AT A GLANCE

VMware Cloud PKS delivers Kubernetes as an easy-to-use cloud service that is managed by VMware so you can deploy, orchestrate, and scale containerized applications without the burden of implementing, operating, and maintaining Kubernetes. VMware Cloud PKS uses AWS as its underlying infrastructure.

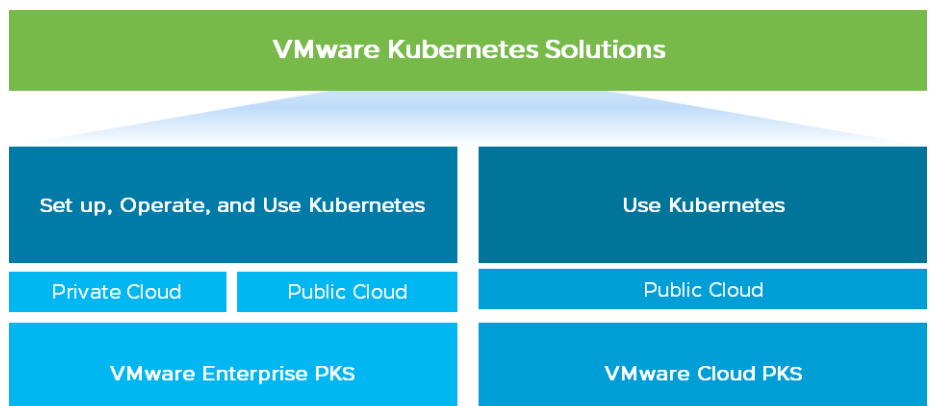


Figure 1: VMware's two complementary Kubernetes options: VMware Enterprise PKS and VMware Cloud PKS.

KEY BENEFITS OF VMWARE ENTERPRISE PKS

- Manage Kubernetes and its components with rolling upgrades, health checks, and autohealing.
- Use advanced container networking with micro-segmentation, load balancing, and security policies.
- Secure container images with vulnerability scanning, image signing, and RBAC.
- Improve operational efficiency with monitoring, logging, and analytics with tools like Wavefront.
- Integrate with other on-premises systems, such as a CI/CD pipeline.
- Optionally use Pivotal Cloud Foundry.

KEY BENEFITS OF VMWARE CLOUD PKS

- Control costs with elastic Smart Clusters that dynamically adjust to changes in demand.
- Run containers on AWS without managing servers or clusters.
- Get seamless integration with AWS compute, storage, analytics, and services, such as AWS Machine Learning.
- Manage globally distributed Kubernetes clusters from a single service endpoint on consistent infrastructure.
- Apply security policies to control access at a granular level in Kubernetes.
- Integrate with Wavefront for monitoring and analytics.

This short overview describes the differences between VMware Cloud PKS and VMware Enterprise PKS, highlights their similarities, and explains why you can use either or both of them as the digital foundation to run any app on any cloud with a common Kubernetes experience for your developers.

VMware Enterprise PKS Architecture and Capabilities

The architecture of VMware Enterprise PKS combines Kubernetes, BOSH, VMware NSX®-T, and the Harbor image registry into a fully integrated cloud-native stack.

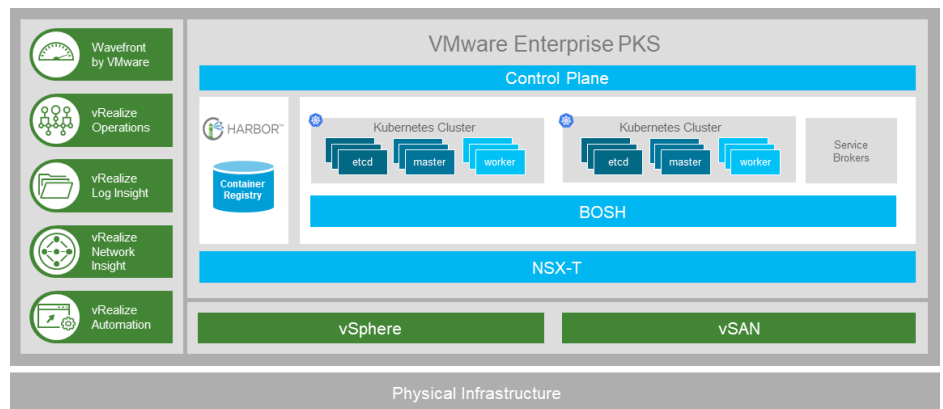


Figure 2: The architecture of VMware Enterprise PKS.

BOSH simplifies and automates the deployment and life-cycle management of Kubernetes and its components. BOSH supports Kubernetes deployments across VMware vSphere®, Google Compute Platform, Microsoft Azure, and Amazon Elastic Compute Cloud (EC2).

NSX-T lets you quickly deploy networks with micro-segmentation and on-demand network virtualization for containers and pods.

Harbor is an open source, enterprise-class registry that stores and distributes Docker images on premises behind your firewall. Harbor scans images for vulnerabilities with Clair, signs images as trusted with Notary, secures images with role-based access control, and regulates the use of images with policies.

VMware Cloud PKS Architecture and Capabilities

VMware Cloud PKS is a cloud service with identity and usage-based billing that is integrated with VMware Cloud™ Services. VMware Cloud PKS includes a policy framework that can limit access at the level of a folder, project, cluster, or namespace for granular role-based access control.

VMware Smart Cluster™ technology automatically optimizes cluster sizes during creation and then, after deployment, dynamically resizes them to adjust to changes in demand, minimizing costs.

VMware Cloud PKS also provides a monitoring framework that is compatible with Wavefront® by VMware® for real-time visibility into the operations and performance of containerized applications and Kubernetes clusters.

In the highly available architecture of VMware Cloud PKS, Amazon Web Services provides the underlying, transparent infrastructure on which Kubernetes clusters run, which enables you to easily integrate with AWS cloud services and other application building blocks.

Key Differences Between VMware Enterprise PKS and VMware Cloud PKS

The architectures of the two platforms reveal the fundamental differences between them: VMware Enterprise PKS is a self-managed enterprise Kubernetes platform that can run on premises on vSphere or in the cloud on AWS, Azure, or GCP. VMware Cloud PKS is a VMware-managed Kubernetes service that runs in the cloud as software as a service, or SaaS, through your VMware Cloud Services account. The following table highlights their key differences:

Property	VMware Enterprise PKS	VMware Cloud PKS
VMware Cloud Service	No	Yes
Management model	Self-managed	Fully managed SaaS
Supported infrastructure	vSphere, GCP, Azure, or AWS	AWS
Use own cloud account	Yes	No

There are a few more differences between the two: VMware Enterprise PKS uses NSX for container and pod networking; VMware Cloud PKS does not. VMware Enterprise PKS includes a private, on-premise image registry called Harbor; VMware Cloud PKS does not at present include a registry, but you can use a public registry with it, such as Docker Hub.

With VMware Enterprise PKS and VMware Cloud PKS, there is something of a trade-off between simplicity and flexibility: VMware Cloud PKS gives you a VMware-managed solution that makes it simple and easy to deploy highly secure Kubernetes clusters at scale and run them cost-effectively in the cloud. VMware Enterprise PKS, meanwhile, gives you the flexibility to tailor an enterprise Kubernetes platform to your enterprise's unique requirements, leverage an existing investment in vSphere, optionally use Pivotal Cloud Foundry, and integrate with other systems, such as an on-premises CI/CD pipeline.

Key Similarities

VMware Enterprise PKS and VMware Cloud PKS share many similarities:

- Both are multi-cloud ready: You can choose the cloud or platform that you want to use. This choice helps you keep clouds from becoming silos with too much complexity and too little visibility.
- Both emphasize security by, for instance, authenticating users and tightly controlling access to system components, commands, and resources.
- Both include their own centralized management plane through which you can manage containerized applications.
- Both have a highly available architecture.
- Both can integrate with Wavefront or other tools for monitoring and analytics.
- Both VMware Enterprise PKS and VMware Cloud PKS have integrated storage options for data persistence. VMware Enterprise PKS integrates with VMware vSAN to extend scalable, software-defined storage to containers. VMware Cloud PKS uses AWS to store data. Both VMware Enterprise PKS and VMware Cloud PKS, therefore, eliminate the need to find a stateful storage solution.

Multi-Cloud Portability

Containers and Kubernetes are technologies primed for portability. The packaging of containers decouples applications from machines to let developers decide where and how to deploy an app. The portability of containers combined with the power of Kubernetes gives you the independence to pursue a multi-cloud strategy.

VMware Enterprise PKS and VMware Cloud PKS are both certified by the Cloud Native Computing Foundation (CNCF) through its Kubernetes Software Conformance Certification program. This certification gives you the confidence that Kubernetes has passed CNCF test suites and complies with the community's specification. As more organizations adopt Kubernetes, certified Kubernetes products like VMware Enterprise PKS and VMware Cloud PKS ensure portability, interoperability, and consistency among different environments. You can easily port a Kubernetes deployment between VMware Enterprise PKS and VMware Cloud PKS or another certified Kubernetes platform.

VMware Enterprise PKS further supports portability by exposing Kubernetes in its native form without proprietary extensions, by implementing a common operating model, and by maintaining constant compatibility with Google Kubernetes Engine. Developers use the native Kubernetes CLI and API. Similarly, VMware Cloud PKS supports portability by also exposing native Kubernetes and by letting developers use the native Kubernetes Dashboard, CLI, and API.

Conclusion

VMware Enterprise PKS supplies a flexible enterprise Kubernetes platform that works on premises with vSphere or in the cloud with GPC, AWS, or Azure; in each case, you are responsible for managing the lifecycle of Kubernetes with BOSH and the underlying infrastructure with either proven VMware tools or your own cloud accounts.

VMware Cloud PKS provides a ready-to-use, always-on Kubernetes service in the cloud as one of the VMware Cloud Services. VMware manages the lifecycle of Kubernetes and the underlying infrastructure on your behalf. You can use VMware Cloud PKS and VMware Enterprise PKS at the same time.

LEARN MORE ABOUT VMWARE ENTERPRISE PKS

To learn about how VMware can help you deploy, manage, and secure cloud-native applications on VMware Enterprise PKS, visit:

cloud.vmware.com

LEARN MORE ABOUT VMWARE CLOUD PKS

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