

VMware Cloud Foundation

The Unified Platform to Run All Workloads

Solution Overview

VMware Cloud Foundation is a comprehensive private-cloud platform that combines the scale and agility of public cloud with the security and performance of private cloud, offering industry-leading Total Cost of Ownership. Purpose built to modernize infrastructure and accelerate innovation, VMware Cloud Foundation delivers integrated, enterprise-class compute, networking, storage, management, and security across all endpoints. By seamlessly integrating the infrastructure components into a single unified platform, it provides maximum visibility, allowing IT operations teams to optimize performance and costs constantly, and shift focus to outcomes rather than operations.

Enterprises today are running a mix of applications, leveraging both virtual machines and containers to meet their evolving infrastructure needs. Kubernetes has emerged as the leading solution for diverse workloads with offering seamless management across both virtual machines and containers.

The industry is experiencing a shift toward cloud-native technologies, with Kubernetes playing a pivotal role in this transition. According to the Spectro Cloud- State of Production Kubernetes 2024 Report, 75% of surveyed organizations are committed to adopting Kubernetes for future infrastructure needs. Additionally, 85% of respondents expressed the need for a unified API that can provision both virtual machines and containers¹. This highlights the growing demand for integrated platforms that simplify modern application management.

When organizations are looking to modernize their infrastructure, they are often faced with a few key challenges:

1. Infrastructure Silos and Multiple Operating Models

Many organizations have ended up with fragmented and disconnected infrastructure environments due to mergers and acquisition. When infrastructure resources like compute, storage, and networking are managed in separate silos, managing Kubernetes clusters becomes more complex. This isolation leads to inconsistent management practices and operational inefficiencies.

2. Disparate Components Slowing Time to Market

Different Kubernetes distributions and third-party services require specialized knowledge or configuration, leading to delays in deployment and hindering the rollout of new features. Consequently, organizations face higher costs, slower innovation, and a diminished competitive edge.

3. Skill Gaps in Modern IT

Kubernetes has rapidly become the cornerstone of modern IT infrastructure, yet many organizations struggle to upskill their workforce to effectively manage these environments. Without the necessary Kubernetes expertise, organizations

1. The Spectro Cloud 2024 State of Production Kubernetes

may experience poor performance, longer development cycles, and increased operational risks. Moreover, this skill gap in IT can result in AppDev teams creating their own shadow IT teams, adding inconsistencies and complexity.

4. Outdated Infrastructure Services

Traditional IT infrastructure services often fail to meet the needs of Kubernetes teams which require fast, agile workflows and automation to support rapid iteration. As a result, consumers working in Kubernetes environments face rigid infrastructure limitations that hinder the speed of application development.

Solution Description

VMware Cloud Foundation delivers a private cloud platform with a Modern Cloud Interface to run modern workloads.

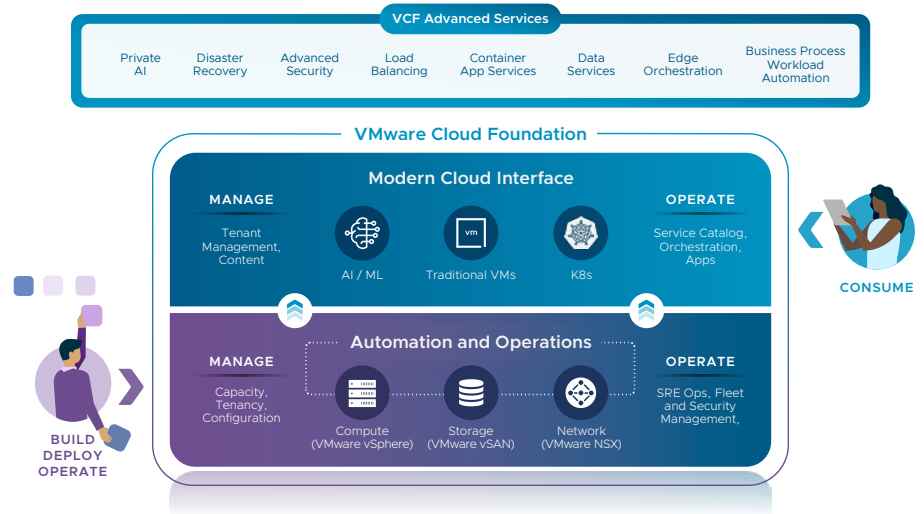


Figure 1: VMware Cloud Foundation

The Modern Cloud Interface enables IT teams to run and manage diverse workloads, including AI/ML and cloud native applications. The platform's flexibility ensures that VMware Cloud Foundation can handle both existing VM-based workloads and newer, containerized or cloud-native applications, all from a unified interface that leverages a consistent skillset.

The Modern Cloud Interface facilitates the operation of services such as orchestration, applications, and service catalogs through an automated system. This means a more streamlined operational experience for both IT admins and DevOps/Platform teams.

IT teams can establish policies with the governance and controls they need. These policies enable users with self-service access to deploy and manage both

virtual machines and Kubernetes clusters. Users can define their virtual machine configuration in a manifest and deploy it using the same API patterns as they would use to deploy Kubernetes clusters. The desired state of the virtual machines is then managed by the vSphere Supervisor.

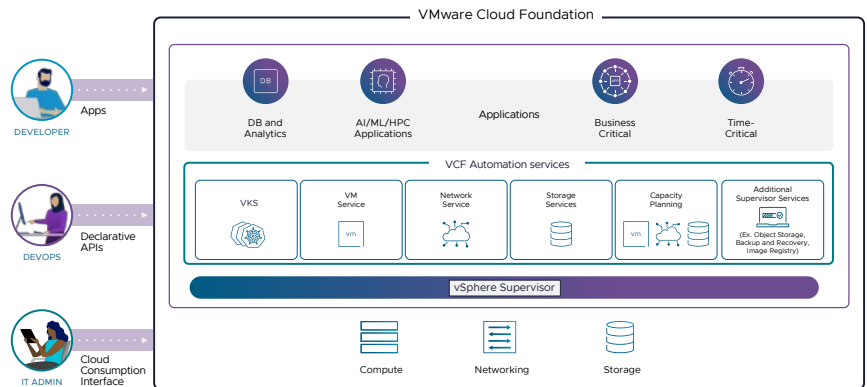


Figure 2: VMware Cloud Foundation with Applications and Services

With Supervisor Services, admins can extend the service offering with additional services that may be required by consumers for their workloads. Now let's take a close look at how VMware Cloud Foundation provides these services. The key components and capabilities include:

- **vSphere Kubernetes Service:** Enables consumers to leverage consistent, compliant, and Kubernetes clusters with ease, ensuring standardization across containerized environments. This was formerly named Tanzu Kubernetes Grid service.
- **VM Service:** Allows consumers to independently create virtual machines without requiring direct access to the vSphere Client, streamlining virtual machine creation alongside Kubernetes workflows.
- **Network Service:** Empowers consumers to manage virtual routers, load balancers, and firewall rules. It leverages the vSphere Distributed Switch's (VDS) centralized interface to configure, monitor, and administer network access for both virtual machines and Kubernetes workloads using existing networking infrastructure.
- **Storage Services:** The Volume Service enables end users to manage persistent disks for use with containers, Kubernetes clusters, and virtual machines. It deploys existing block and file storage infrastructure, supporting the needs of containerized workloads and enhancing storage flexibility.
- **Capacity Planning:** Enhances cost-efficiency and operational performance through real-time, predictive capacity, and cost analytics, providing optimal resource consolidation and proactive infrastructure planning.

VMware Cloud Foundation Delivers

- **Unified Platform** for VMs, Kubernetes clusters, and IaaS services
- **Self-Service** access to infrastructure
- **Rapid Kubernetes** updates
- **vSphere Supervisor** for infrastructure and workload management
- **Modern Cloud Interface** to provision infrastructure, blueprints, and more

Key Benefits:

Once VMware Cloud Foundation is installed, the cloud admin can leverage a self-service private cloud that supports modern use cases quickly and easily with the following benefits:

- Improve the automation of the IT infrastructure and incorporate existing, established governance policies and management tools are needed to manage both virtual machines and container-based workloads in a consistent manner. With this unified platform, it reduces complexity and ensures smooth integration of modern and traditional applications.
- Deploy your enterprise-ready Kubernetes operating model across your private cloud with VMware Cloud Foundation. Leverage your operational workflows and tooling to cloud-native infrastructure, while giving consumers the ability to access Kubernetes clusters through the native Kubernetes API.
- Manage Kubernetes clusters across on-premises vSphere environments. End users can leverage advanced networking capabilities for enhanced security and micro-segmentation, ensuring your applications are robust, secure and scalable in any environment.
- Run your sensitive and regulated workloads on a secure, compliant platform that meets data residency and data sovereignty requirements. vSphere Kubernetes Service simplifies the deployment of self-contained Kubernetes environments, providing enhanced security for application data in isolated regions with flexible security postures at the cluster level.
- Empower users with self-service consumption of Kubernetes and infrastructure resources via Modern Cloud Interface, delivering a unified experience for developing, provisioning, and managing mixed Kubernetes and virtual machines workloads.

Conclusion

VMware Cloud Foundation enables IT teams to manage a diverse range of workloads, from VM-based to containerized environments. With a unified platform and a consistent toolset, it simplifies operations for administrators and DevOps/Platform teams. Consumers gain self-service capabilities to deploy and manage both virtual machines and Kubernetes clusters using the same API. By leveraging the built-in Kubernetes platform capabilities in VMware Cloud Foundation, customers can avoid having to purchase additional expensive specialized solutions just for their modern workloads.

To learn more about how VMware Cloud Foundation can empower your organization, please visit the [VMware Cloud Foundation website](#).