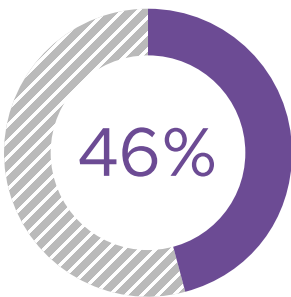


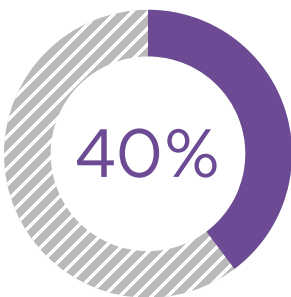


VMware Cloud Foundation with Built-in Kubernetes

The Fastest Path to Modern Apps



Survey respondents reported that lack of training and complexity are the biggest challenges facing organizations that have not started or are just beginning their cloud native journey.



Survey respondents reported that security is the leading challenge.

Source: [CNCF 2023 Annual Survey](#)

In today's fast-paced digital landscape, over 60% of enterprises have adopted Kubernetes, with projections indicating this number could surpass 90% by 2027.¹ However, managing both traditional and container-based applications simultaneously presents complexity, security risks, and operational inefficiencies. Organizations need a flexible, scalable, and secure platform to bridge the gap between legacy IT and modern environments.

These trends open up new opportunities, but they also introduce new challenges that IT teams must solve to stay competitive and efficient.

- 1. Complex infrastructure with silos:** Organizations often struggle with managing both legacy and modern cloud- traditional applications typically run on virtual machines (VMs), while modern applications leverage containers and Kubernetes-based orchestration. Maintaining separate infrastructures and components increases operational complexity and silos.
- 2. Fragmented Management tools with skill gaps:** Different infrastructure components (compute, storage, networking, security, and Kubernetes clusters) often require separate tools. Each tool requires specialized expertise, and IT teams need continuous training to stay up to date.
- 3. Security and compliance concerns:** Security is often not enforced at the platform level, leaving workloads, applications, and data vulnerable by default. As workloads dynamically shift between VMs and Kubernetes environments, organizations struggle to apply consistent security policies.
- 4. Costs exceeding budgets:** Running both legacy and modern applications leads to redundant hardware cost and software licensing expense, as well as spending on hiring skilled personnel.
- 5. Hard to scale and meet performance demands:** Enterprises struggle to scale dynamically, often requiring costly hardware upgrades and manual reconfigurations to meet growing demands. Especially when Workloads running on shared Kubernetes clusters can cause "noisy neighbor" issues, which further prevent from meeting performance requirements.

1. [Kubernetes: Adoption and Market Trends Report 2024](#)

“97% of organizations are running data-intensive workloads on their cloud native platforms.

A significant number of critical applications like databases (72%), analytics (67%), and AI/ML workloads (54%) are being built on Kubernetes”

Source: [The Voice of Kubernetes Experts Report 2024](#)

6. **Slow to market:** Organizations struggling with slow infrastructure provisioning, inefficient workflows, and rigid architectures face difficulties in rapidly deploying new applications and services.

To address these challenges, organizations need a modern, unified infrastructure platform — and that’s where VMware Cloud Foundation comes in.

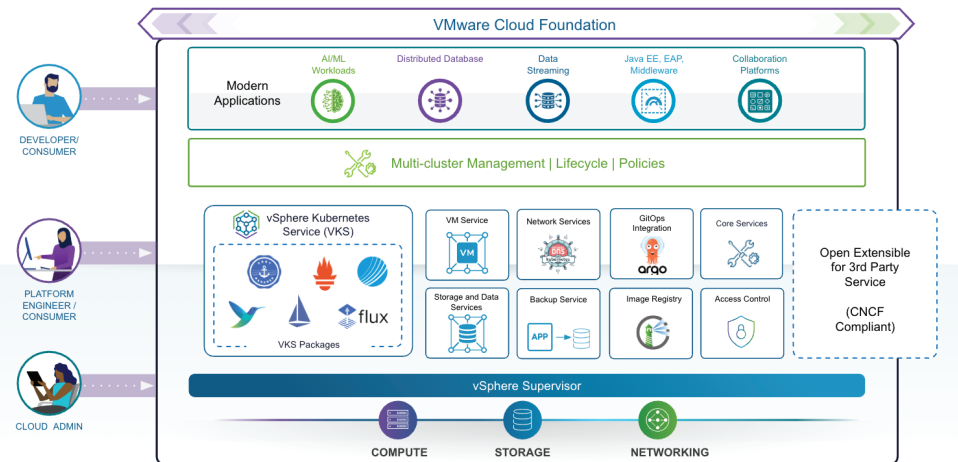


Figure 1: VMware Cloud Foundation with Applications and vSphere Supervisor

VMware Cloud Foundation (VCF) delivers a single platform with built-in certified Kubernetes runtime, vSphere Kubernetes Service (VKS), that simplifies Kubernetes deployment and management, enabling enterprises to run modern applications alongside traditional workloads. With automated deployment and lifecycle management, built-in security and resiliency, and enterprise-grade scalability, VCF offers a comprehensive private cloud infrastructure. VKS delivers high performance, cost optimization, and a familiar management experience, making Kubernetes more accessible for IT teams.

Additionally, as shown in Figure 1, the vSphere Supervisor provides the users self-service access to a comprehensive set of cloud services. VCF empowers Cloud Admins and Platform Engineers with interfaces attuned to their preferences, including GUI, CLI and API, making it easier for teams to be efficient and productive quickly, instead of having to spend time learning new toolsets.

Loomis, a global leader in cash-handling products and services:

“We are moving more and more workloads on Kubernetes environments. It’s like a revolution where we migrate legacy solutions to a modern platform.”

Jean-Michel Blanc
Ground Head of System Engineering
Loomis

“We have to modernize our data center infrastructure. VMware Cloud Foundation allows us to build a flexible and scalable private cloud infrastructure that helps with our operational needs. And it complies with regulatory standards.”

Christian Böke
Project Management Lead
Ratiodata

Now that we’ve introduced the solution, let’s explore the key features that make VMware Cloud Foundation so impactful.

- **Unified API to provision and manage both VMs and containers:** A consistent API allows users to create, deploy, and manage both VMs and Kubernetes clusters. This simplifies automation, reduces integration challenges, and ensures uniform policies and security controls across all workloads. With Unified API, it allows Platform Engineers to interact with compute resources in a consistent manner, eliminate the need for separate tooling, and lower training costs.
- **Self-service access to cloud services with governance:** Through a role-based access model, Platform Engineers can leverage self-service capabilities to provision infrastructure resources and a rich set of cloud services on demand, while Cloud Admins maintain governance and control through policies and resource quotas. Self-service access also supports multi-tenancy with isolated environments for different teams and projects.
- **Upstream conformant Certified Kubernetes Release independent from vSphere:** VCF runs a fully upstream conformant Kubernetes distribution that is certified by Cloud Native Computing Foundation (CNCF). This certification ensures that the vSphere Kubernetes implementation complies with the Kubernetes Conformance Program, which validates upstream Kubernetes APIs, workloads, and ecosystem tools. In addition to that, VKS can be upgraded independently of the underlying vSphere infrastructure (ESX, vCenter), reducing downtime and allowing organizations to stay up-to-date with the latest Kubernetes innovations. For example, after upgrading to VKS 3.4, you’ll be able to create and manage Kubernetes clusters using the latest vSphere Kubernetes release (VKr) 1.33, aligned to the latest community release.
- **Support for N-2 Kubernetes versions for flexible deployment:** VKS supports the current Kubernetes release and the two previous major versions. This means that VKS ensures compatibility across three Kubernetes versions at any given time that allows different enterprise teams to run the version their apps need, and upgrade at their own pace.
- **Embedded declarative API, CLI, and UI access with vSphere Supervisor:** VCF empowers Cloud Admins and Platform Engineers by offering a range of flexible interfaces that align with their preferred workflows. Whether it’s Graphical User Interface (GUI) for visual management, the powerful Command Line Interface (CLI) for scripting and automation, or the robust APIs for integration with external tools and CI/CD pipelines, VCF ensures that teams can be efficient and productive, instead of having to learn new toolsets.
- **Integrated VKS Cluster Management and Istio Service Mesh in VCF:** VKS Cluster Management (previously known as Tanzu Mission Control) and Service Mesh are now part of VCF. VKS Cluster Management provides industry leading capabilities including RBAC and policy management, cluster inspections, data protection, package management, and continuous delivery. Service Mesh provides reliable control and security for microservices, users, and data across all clusters. With the integration of both tools, it completes VCF with unified Kubernetes operations with visibility, governance, and control, and further enhances end-to-end security and observability for distributed applications.
- **Flexibility to enable OS FIPS Mode:** With vSphere Kubernetes Service 3.3, it introduces a new configuration option for enabling FIPS mode at the OS level. Administrators now have the flexibility to enable FIPS mode for both Linux and

Ready to take the next step?

Explore VMware Cloud Foundation resources, hands-on labs, and technical guides to start your journey today:

- Learn more at VCF [website](#) and [VCF Blog](#) page
- Explore assets about VCF as the unified platform for running all workloads: [Solution Brief](#) and [Infographics](#)
- Access to technical resources at VCF [Resource Center](#)
- Follow us on VCF social media: [X](#), [LinkedIn](#), and [Youtube](#)

Windows workload clusters. For organizations operating in regulated industries, FIPS compliance is critical for meeting security requirements and reducing compliance risks.

- **Kubernetes Clusters Autoscaler:** Clusters can now scale up from zero and down to zero worker nodes when using vSphere Kubernetes release (VKr) versions 1.31 and later. This enhancement enables cost savings and resource efficiency by dynamically reducing resource consumption when workloads are idle, while seamlessly scaling up when demand increases.

The benefits of leveraging VCF to deliver modern applications are clear:

- **Single platform with fully integrated stacks:** VCF delivers a unified platform that brings together compute, storage, networking, and security into a private cloud infrastructure. By managing traditional VMs and modern containerized workloads on a single platform, VCF eliminates infrastructure silos and reduces the need for separate tools.
- **Consistent management tools:** With VCF, IT teams can manage both VMs and Kubernetes clusters using a common operational model and familiar tools. This consistency allows teams to leverage their existing skills and toolsets, minimizing the learning curve and eliminating the need for extensive retraining or process changes.
- **Robust security and resiliency:** VCF offers enterprise-grade security with features like end-to-end encryption (at rest and in transit), role-based access control, integrated security dashboards, and distributed firewalls. Additionally, VCF provides built-in fault tolerance, high availability, and six levels of workload isolation, ensuring that infrastructure remains secure, resilient, and compliant.
- **Lower Total Cost of Ownership:** By enabling higher VM density per host, advanced memory management, and disaggregated vSAN storage with features like deduplication and compression, VCF drives better resource utilization and infrastructure efficiency. Organizations also reduce costs by lowering licensing fees and maximizing the value of existing hardware.
- **Simplified Kubernetes deployment and management with scalability:** VCF simplifies Kubernetes operations by providing built-in, certified Kubernetes runtime and cluster management with easy deployment and lifecycle management. Clusters can scale up or down in minutes, even from or to zero nodes, helping organizations meet dynamic workload demands with speed and flexibility.
- **Extended Support:** With VCF 9.0, we offer patches for qualified critical security vulnerabilities. The extended support will be provided for an additional 12 months for vSphere Kubernetes release 1.33 and subsequent odd-numbered minor versions (1.35, 1.37, etc.). Extended support gives Cloud Admins additional time and flexibility to plan Kubernetes upgrades.

VMware Cloud Foundation delivers a modern, unified platform that addresses challenges from operational complexity and scaling limitations to security and cost efficiency. Whether you're managing multiclouds, scaling containerized workloads, or simplifying operations, VCF provides the private cloud platform to run Kubernetes with confidence—today and into the future.