Self-Service Private Cloud with VMware Cloud Foundation

A Smarter Way to a Unified Cloud Consumption Experience

"VMware Cloud Foundation provides everything we need: compute, storage, and networking as well as load balancing and flexibility. With VCF Automation we're providing a public cloud-like user experience while maintaining security, compliance and control. We are a small team, but VMware enables us to offer anything as a service (XaaS)."

- Philippe Morel, Director of IT Operations and Infrastructure, EPFL

SOLUTION OVERVIEW

VMware Cloud Foundation® (VCF) enables IT organizations to deliver a self-service private cloud for application teams to build, run, and manage AI, Kubernetes, and VM-based applications. VCF makes it easier to jump start and scale a multi-tenant cloud with private cloud services available out-of-the-box to help bring applications to market faster, while maintaining control with policy-based governance. The solution helps VI Admins evolve into Cloud Admins that can offer self-service consumption of infrastructure resources "as a Service" to application teams. Applications teams gain improved secure and compliant consumption experience with better request reliability, while IT teams are freed up time spent on helpdesk tickets and infrastructure maintenance to focus on more strategic initiatives, driving innovation.

Accelerating data center modernization

As organizations navigate a complex world of geopolitical tensions, inflation, and global trade wars, emerging technologies like generative AI and AI Agents have triggered an urgency for many to accelerate the transformation of applications and clouds to deliver a differentiated, digital customer experience and increase revenue. Many CIOs recognize one of the key requirements to leading a full-scale modernization of the enterprise starts with cloud infrastructure transformation, redefining the foundation of IT with cloud capabilities and modern architectures from the data center that can also extend to public cloud and the edge for all applications.

However, in many cases, IT organizations are simply not ready to benefit from these emerging technologies and opportunities due to outdated infrastructure and processes. Furthermore, competing priorities, no time to investigate, and the lack of skillsets to transform cloud infrastructure often make it challenging for many organizations to adopt on-premises private clouds. Meanwhile, lines of business and application teams have leveraged public clouds and open source tools without a lot of IT oversight to address their needs around agile software development, DevOps, and continuous delivery.

Unlocking self-service consumption for private clouds

As many organizations have already embraced the public cloud for a portion of their business needs, they have experienced the advantages that cloud infrastructure and operations offer. They now seek to replicate the public cloud's self-service experience in their on-premises environments. Industry research shows that IT professionals recognize self-service is perceived as both an efficiency and transformation enabler for both IT and end users. IDC predicts that "by 2028, 80% of IT buyers will prioritize as-a-service consumption for key workloads that require flexibility to help optimize IT spending, augment ITOps skills, and attain key sustainability metrics."[1]

While public cloud has its place in overall application development and digital initiatives, it is not a fit for everything. Certain applications and workloads may need to also reside in on-premises environments due to compliance, security, integration, and cost considerations. They may also need to move between different environments over time based on demand and

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1. IDC FutureScape: Worldwide Future of Digital Infrastructure 2024 Predictions, October 2023, #US50401023

KEY BENEFITS:

- Accelerate innovation for all types of applications - reduce the time required to bring new products and services to market, by faster provisioning, deployment, and configuration of resources with a single platform.
- Scale governance and compliance - jump start and scale a multi-tenant cloud, while maintaining control with governance and policies.
- Reduce CapEx and OpEx - reduce hardware costs and optimize infrastructure utilization. Increase efficiency and productivity while improving reliability and minimizing errors.
- Enable a private cloud operating model that runs across both on-premises data centers and VMware supported public cloud providers, with license portability.
- Help modernize infrastructure and implement a highly efficient cloud operating model that provides the scale and agility of public cloud with the security and performance of private cloud.

consumption patterns. Self-service delivery models enable IT organizations to abstract services and provide users what they need, while IT retains the flexibility to move resources on the back end with control and compliance, optimizing the use of strategic corporate infrastructure resources at the same time. According to an IDC survey, "63% of companies deployed production workloads on premises, including the edge. These on-premises platforms are often designed to operate as automated, scalable, self-service private clouds."[1]

Key challenges

For many IT organizations, building and delivering a single platform that empowers applications teams with a simple, unified, self-service cloud experience for building, running, and managing any application – AI, Kubernetes, or virtual machine (VM)-based – is challenging, costly to maintain, and complex to operate, not to mention keeping up with the latest technologies. Challenges include:

- Building and maintaining a DIY private cloud from scratch using various technologies piecemeal can result in heavy capital costs, combined with deployments that can take several months. On top of this, customers may incur ongoing investment for maintaining and updating disparate systems, resulting in increased operational expenses.
- Integrating automation platforms easily and seamlessly with existing infrastructure environments needs to happen without disruptions to existing business processes and operations.
- Improving the automation of the IT infrastructure and incorporating existing, established governance policies and management tools are needed to manage both VM and container-based workloads.
- Having a consistent cloud infrastructure that is easy to learn and leverages existing skillsets is needed to prevent skill shortage in teams tasked with automating IT resources in their existing on-premises data center.

Solution description

Self-service private cloud with VMware Cloud Foundation enables IT organizations to transform data centers into a modern private cloud with self-service consumption and delivery capabilities, as well as deliver a private cloud on VMware supported public clouds. At the heart of this transformation is VMware Cloud Foundation Automation, the industry's leading cloud infrastructure automation solution, a component of VCF.

VMware Cloud Foundation delivers the software-defined private cloud with compute by VMware vSphere®, networking by VMware NSX®, storage by VMware vSAN™, VMware Cloud Foundation Operations, and VMware Cloud Foundation Automation. As a core component of VMware Cloud Foundation, VCF Automation abstracts resources across a fleet of VCF environments and provides a single consumption interface, transforming any data center infrastructure based on VMware Cloud Foundation into a modern, self-service private cloud.

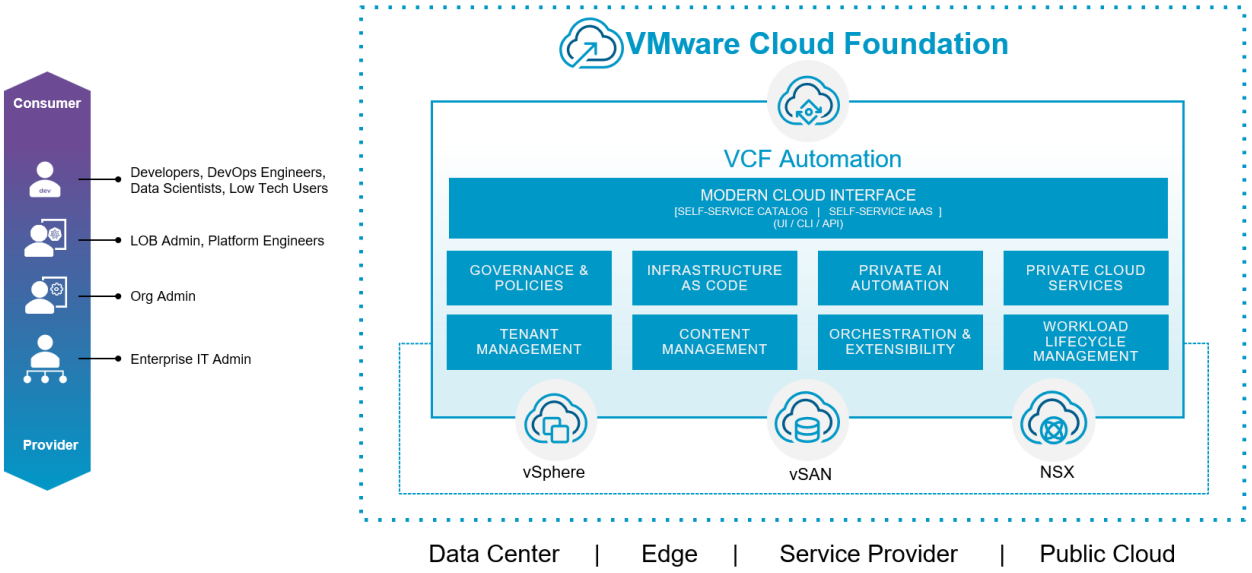

FIGURE 1. VMware Cloud Foundation enables Providers to deliver a true self-service cloud consumption experience to Consumers via a Modern Cloud Interface and infrastructure automation capabilities in a private cloud environment.

Key capabilities

VCF 9.0 delivers a radically new approach to private cloud that enables you to become your own cloud provider with the following capabilities:

- Modern Cloud Interface – Empower users with a choice of self-service consumption options: provider-oriented self-service catalog curated with pre-approved standardized application blueprints, or developer-oriented self-service IaaS exposing private cloud services consumed via choice of interfaces (UI, CLI, declarative Kubernetes APIs). Balance the amount of self-service consumption and apply controls at varying levels at various environments and stages of an application's lifecycle (conception, development, deployment, management, maintenance, and retirement).
- Private Cloud Services - Deliver public cloud-like IaaS services (VM, VKS, Network, Volume, VM Image) in a VCF private cloud straight out-of-the-box. Enable application teams to use a Kubernetes manifest to provision VMs and VKS clusters (as Kubernetes objects), allowing for a more agile and responsive development process. Expand with extensible services (e.g., Harbor for OCI Image registry, Cert Manager for certificate management, Velero for backup, etc.).
- Infrastructure as Code – Enable GitOps-based iterative development with enterprise-ready infrastructure as code (IaC). Design blueprints via a visual canvas with a drag-and-drop interface and/or define through IaC using low code YAML format. Ensure consistent configurations across environments, reducing discrepancies. Increase standardization for more reliable systems and minimize risk of configuration drift.
- Governance & Policies - Centrally manage and enforce catalog instance-centric policies (approval, Day 2 Action, and lease). Build custom policies for IaaS resources with YAML-based Policy as Code without having to rely on external tools or add-ons. Programmatically enforce/apply policies at the infrastructure-level consistently across an entire Organization or subset (i.e., specific Project(s)). Scale governance controls, reduce the risk of human error, and help ensure infrastructure resources adhere to organization requirements, improving compliance.

RESOURCES:

- Visit the VMware Cloud Foundation and VCF Automation webpages for more information, or contact your VMware representative.
- Connect with a VMware expert for a tailored self-service private cloud demo for you and your team.
- Test-drive via Hands-on Lab.
- Visit the VMware Cloud Foundation blog to read more about private cloud.
- Follow us on X @vmwarevcf.

- Tenant Management – Isolate infrastructure and segment networks with Virtual Private Cloud (VPC) constructs to establish a multi-tenant private cloud and manage multiple Organizations (tenants). Allocate resources, assign infrastructure quota, track utilization and chargeback across organizations. Apply Projects and Namespace Classes to organize applications and workloads based on business purpose and ownership, making it easier to apply security postures and operational controls.
- Content Management - Govern and manage content (e.g., vSphere VM images) across vCenters and VCF environments via unified content portal. Publish a catalog of services with created or imported content (e.g., content libraries, VM images, blueprints, orchestrator workflows) from Content Hub. Reduce complexity, minimize errors, and streamline the overall content management process, while boosting productivity and collaboration with a unified content management process.
- Workload Lifecycle Management – Discover and onboard workloads. Apply changes to deployed resources with day 2 (e.g., power on, shutdown, create snapshot) and custom actions (e.g, update a CMDB record, add a machine to a backup policy, move a machine from one Active Directory OU to another). Optimally place workloads during provisioning with Advanced Workload Placement, optimizing infrastructure utilization.
- Orchestration and Extensibility - Apply powerful custom extensibility frameworks, including serverless function Action-Based Extensibility (FaaS), orchestrator workflows, and event subscription service. Customize, tailor, and adapt automation (via workflows, actions) to specific and changing needs to support unique use cases and integrate with 3rd party tools and services. Future-proof automation investments, by enabling platform to incorporate newer technologies, helping to evolve automation capabilities and stay competitive.
- Private AI Automation Services - Automate private AI service setup and provisioning of GPU-enabled machines for ML workloads and RAG workloads, leveraging the VMware Private AI Foundation with NVIDIA add-on. Reduce the time required to set up an enterprise-ready Private AI as a Service for developers and data scientists.

Discover self-service private cloud from VMware

Discover how VCF 9.0 redefines private cloud with its revolutionary unified self-service consumption experience. VMware Cloud Foundation makes self-service private cloud easier with a consistent operating, governance, and consumption model. Powered by VCF Automation, VMware Cloud Foundation helps you jump start and scale a multi-tenant private cloud that enables your application teams to build workloads faster, more securely, and at lower cost.

Learn how VMware can help you replicate the scalability and agility of public cloud in your data center with the security and performance that private cloud offers. Find out how you can rapidly implement a centralized consumption interface on a single platform for both VMs and containers to drive greater business and IT agility, productivity, and efficiency. And discover how to unlock the power and potential of your IT resources and teams with the true cloud experience delivered by VMware Cloud Foundation.

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