Self-Service Private Cloud with VMware Cloud Foundation

Enabling self-service consumption and delivery

"VMware Cloud Foundation provides everything we need: compute, storage, and networking as well as load balancing and flexibility. With VMware Aria 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™ enables IT organizations to deliver a modern self-service private cloud in an on-premises data center or on any supported public cloud. Providers of IT Services, such as Cloud Admins, can deliver a true cloud consumption experience to Consumers, including developers, DevOps teams, and Platform Engineering teams, through the solution's modern IaaS consumption surface. VMware Cloud Foundation empowers IT organizations through DevOps-based iterative development with Infrastructure as Code (IaC) and by delivering virtually anything as a service including Kubernetes, Load Balancers, Private AI Automation, and more. It accomplishes this in a secure private cloud environment, complete with governance and workload lifecycle management.

Accelerating data center modernization

As organizations navigate a complex world of geopolitical tensions, inflation, and potential recession risks, emerging technologies like generative AI and spatial computing have triggered an urgency for many to accelerate the transformation of apps 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many cases, IT organizations are simply not ready to benefit from these emerging technologies and opportunities due to outdated infrastructure and processes.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 development 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.

Delivering a self-service cloud consumption experience

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:

- Make self-service private cloud easy with a consistent operating, governance, and consumption model across clouds and workload types.
- Provide quick time to value by enabling consumption of the software-defined data center (SDDC) in a private cloud with existing skillsets.
- Enable the adoption of modern use cases, such as DevOps for infrastructure, network automation, and Private AI for business and IT agility, productivity, and efficiency.
- Deliver a private cloud operating model that runs across both on-premises data centers and VMware supported public cloud providers, with license portability.
- Help organizations modernize their 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 private cloud environment is challenging, costly to maintain, and complex to operate, not to mention keeping up with the latest and modern cloud native 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 virtual machine (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 Aria Automation™, the industry's leading modern infrastructure automation solution included with VMware Cloud Foundation.

VMware Cloud Foundation delivers the software-defined private cloud with compute by VMware vSphere®, networking by VMware NSX®, storage by VMware vSAN™, and cloud management by VMware Aria. As a core component of VMware Cloud Foundation, VMware Aria Automation provides self-service consumption and the private cloud's resource delivery layer, transforming any data center infrastructure based on VMware Cloud Foundation into a modern, self-service private cloud.

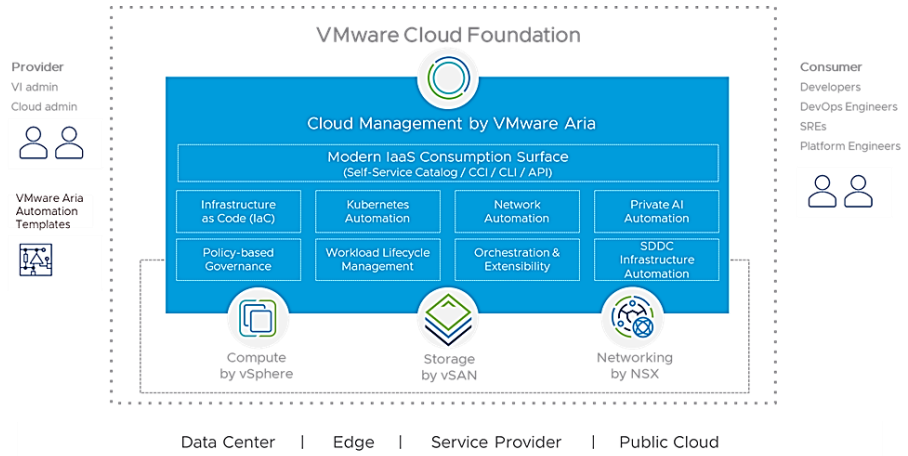

FIGURE 1. VMware Cloud Foundation enables the Providers (e.g. cloud admins) to deliver a true self-service cloud consumption experience to the Consumer (e.g. developers) via a modern IaaS consumption surface and infrastructure automation capabilities in a private cloud environment.

Key capabilities

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

- Modern IaaS Consumption Surface – Quickly stand up a self-service catalog and populate with content from various sources. Rapidly provision new resources via VMware Aria Automation Templates, VMware Aria Automation Orchestrator™ workflows, infrastructure and application pipelines, serverless extensibility actions, and Cloud Consumption Interface (CCI).
- Policy-based Governance - Use project-based policies, governance and costing to manage resource access and utilization centrally. Design policies, such as approvals, permissions, resource quotas and customizable role-based access control. Allocate cloud resources predictably, contain risks and costs and establish visibility. Establish unified control across clouds and workload types (VM- or Kubernetes-based).
- Workload Lifecycle Management – (1) Take action on insights to automate response to alerts, check deployment health status, and leverage flavor mappings to optimize cost and improve performance. (2) Optimally place deployment workloads, by continuously following the application intent model and its related constraints to filter for target placement. Then, from within those results, further refine placement based on VMware Aria Operations recommendations. (3) Apply changes to deployed resources with out of the box Day 2 Actions (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).
- Orchestration and Extensibility - Apply powerful custom extensibility frameworks, including the serverless function Action-Based Extensibility (ABX), VMware Aria Automation Orchestrator workflows, and event-broker subscriptions.

RESOURCES:

- Visit the VMware Cloud Foundation and VMware Aria Automation product pages 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.
- Visit the VMware Cloud Management blog to read more about VMware Aria Automation.
- Follow us on X @vmwarevcf and @vmwarearia.

- SDDC infrastructure automation – Configure a VMware Cloud Foundation cloud account as an endpoint to use workload domains and set up catalog items. With a single click, users can apply the appropriate security groups and storage policies and proceed to deploying a VM. The platform automates the underlying VMware Cloud infrastructure constructs, abstracting the complexity away. Automate management of IT services across their lifecycle with approval policies, provisioning through APIs, declarative state enforcement, workflow orchestration, and Day 2 automation.
- Infrastructure as Code – Define machines, applications, and services created on VMware Cloud Foundation infrastructure resources. Standardized, reusable templates can be designed and deployed on any supported endpoint based on inputs and variables that define the placement logic. Admins can also add ecosystem constructs, including VMware NSX networking and security objects, Kubernetes clusters and namespaces, and custom resources.
- Kubernetes Automation – Abstract and expose Kubernetes infrastructure to enable Kubernetes as a Service. Empower DevOps teams to self-service provision VMware Tanzu Kubernetes Grid clusters and Supervisor Namespaces with choice of preferred interface (service catalog with reusable templates and/or Cloud Consumption Interface (Tanzu Kubernetes Grid IaaS service UI / K8s CLI / APIs for projects)).
- Network Automation - Automate VMware NSX to enable faster deployment and complete lifecycle automation of traditional and modern applications with networking and security services. Offer application teams self-service access to software-defined networking, such as L4-L7 load balancing services with the VMware Avi Load Balancer add-on (i.e., LBaaS).
- Private AI Automation Services - Automate private AI service setup and provisioning of GPU-enabled machines for ML workloads, leveraging the VMware Private AI Foundation with NVIDIA add-on.

Discover self-service private cloud from VMware

VMware Cloud Foundation makes self-service private cloud easy with a consistent operating, governance, and consumption model. Powered by VMware Aria Automation, VMware Cloud Foundation provides quick time to value by enabling self-service consumption and delivery of private cloud resources, providing users and developers with a unified and consistent self-service layer.

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 self-service consumption and delivery layer on VMware's software-defined infrastructure 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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