



# VMware Cloud Foundation

## Hybrid cloud platform for modern apps

### Features and benefits

- Hybrid cloud platform that integrates an open source aligned Kubernetes runtime with a global control plane.
- Ability to quickly and easily provision VMs and containers using virtual Graphics Processing Units (vGPUs) as resources within VMware Cloud Foundation. Enhanced AI/ML workload support with NVIDIA GPUs and ability to share vGPUs across multiple users.
- Latest vSphere innovations, including multi-instance GPUs (MIG), NVIDIA GPU support, simplified cluster management with desired vLCM image.
- Advanced workload placement and non-disruptive operations by utilizing DRS for optimal resource consumption and mobility via vMotion.
- Deliver compute, storage networking and advanced security resources with self-service private cloud automation, efficiency and scale.
- Cloud-scale networking with NSX-T based federation to enable consistent policy-based networking across sites, including enhanced multicast capabilities.
- Integration with VMware vCenter® Lifecycle Manager™ (vRSLCM), including flexible upgrades support.

### VMware Cloud Foundation with VMware Tanzu

VMware Cloud Foundation™ is the hybrid cloud platform for modernizing data centers and deploying modern apps. VMware Cloud Foundation delivers enterprise agility, reliability, and efficiency for customers seeking to deploy private and hybrid clouds. VMware Cloud Foundation is based on VMware's proven and comprehensive software-defined stack including VMware vSphere®, VMware vSAN™, VMware NSX®, and VMware vRealize® Suite, providing a complete set of software-defined services for compute, storage, networking, security, and cloud management to run enterprise apps—traditional or containerized—across hybrid clouds.

### Accelerate infrastructure delivery and scale

VMware Cloud Foundation's automation brings true cloud agility to enterprise applications on-premises, significantly simplifying management and freeing resources for new projects. It simplifies the hybrid cloud by delivering a single integrated solution that is easy to deploy and operate through automation of the Day 0 and Day 1 steps, but also by simplifying ongoing operations through built-in automated lifecycle management.

Because VMware Cloud Foundation delivers automated lifecycle management through SDDC Manager, available updates for all underlying components are validated for interoperability to consistently determine proper installation order and to maintain compliance with best practices and compatibility matrices. The updates can also be scheduled for automatic installation on a per-cluster or workload domain basis to maximize flexibility without impacting system availability. This allows the infrastructure admin to target specific workloads or environments (development vs. test vs. production) to execute updates independently and maximize productivity.

### Deliver developer-ready infrastructure

To keep continuous development pipelines running at peak efficiencies, it's critical to ensure that developers have frictionless access to application code, infrastructure services, runtime environments, system tools, libraries and registries. Through the innovations introduced with VMware Tanzu™, resources are available through a set of VMware Cloud Foundation Services that are surfaced via Kubernetes and RESTful APIs, as shown in Figure 1.

## VMware Cloud Foundation editions

### Starter

Automate infrastructure deployment and provisioning; includes lifecycle management for VMware’s core hyperconverged stack for traditional VM workloads.

### Standard

Adopt cloud management capabilities in an on-premises data center with integrated Tanzu Standard and VM management.

### Advanced

Evolve the VMware-based cloud operating model with advanced cloud management tools and integrated Tanzu Standard and VM workload automation.

### Enterprise

Implement a full enterprise cloud operating model with advanced management, networking, and storage, optimized with integrated Tanzu Standard and VM workload automation.

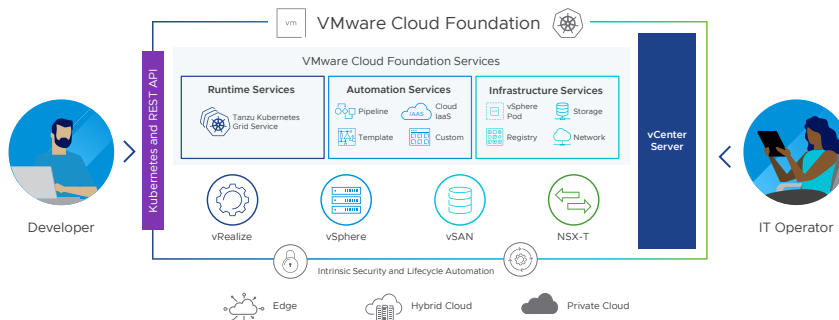


Figure 1: VMware Cloud Foundation Services architecture

VMware Cloud Foundation Services consist of an upstream compliant Kubernetes runtime via VMware Tanzu™ Kubernetes Grid™ Services combined with a set of Infrastructure and Automation Services, including infrastructure as code, software configuration management, and infrastructure pipelines that provide frictionless access to the resources needed to support non-stop continuous integration and continuous delivery (CI/CD) pipelines to foster healthy DevOps ecosystems. By managing resources at the namespace level through vCenter Server, admins can define security policies, quota, and role-based access to a namespace, then developers always access the namespace within the pre-defined properties of that namespace, always maintaining compliance with corporate mandates.

VMware Cloud Foundation with Tanzu enables developers to consume cloud resources such as Kubernetes clusters, disks and networks using familiar Kubernetes CLI and API tools, while the admins can manage systems at scale through vCenter Server. VMware Cloud Foundation automates infrastructure provisioning and scaling so that developers can focus on building and deploying apps while infrastructure teams become more strategic, maintaining centralized visibility and control of their global infrastructure and operations.

### Scale without compromise

VMware Cloud Foundation enables IT administrators and self-service enabled business units to rapidly deploy full stack enterprise HCI with fully integrated compute, storage, networking and management—utilizing automation and lifecycle management for agility, reduced complexity and lower TCO. This results in a cloud operating model that facilitates rapid deployment, automation and lifecycle management for customer deployments of all sizes, enabling the ability to dynamically scale infrastructure, resulting in better utilization and efficiency to meet the ever-changing needs of the business. This consistent cloud operating model lowers capital and operational expenses, delivering up to 28% TCO savings over traditional 3 tier systems.

## Deployment options

VMware Cloud Foundation can be consumed in five ways:

### vSAN ReadyNodes

Cloud Foundation software can be deployed on any vSAN ReadyNode and networking switches of your choice; to learn more, visit [VMware Compatibility Guide](#)

### Jointly engineered systems

VMware Cloud Foundation software can be delivered as a jointly-engineered, integrated system via [Dell EMC VxRail](#)

### As a service on-premises

Consume Cloud Foundation as a service in your on-prem data centers through [Dell Technologies APEX Cloud Services](#), [Lenovo TruScale Infrastructure Services](#), or [HPE Greenlake](#).

### As a service from the public cloud

[VMware Cloud on AWS](#), [Azure VMware Solution](#), [Google Cloud VMware Solution](#), [Oracle Cloud VMware Solution](#) or from other VMware Cloud Providers.

### VMware Cloud Foundation subscription

As part of VMware Cloud Universal, VMware Cloud Foundation Subscription delivers a flexible, cost-effective and agile consumption model for deploying on-premises infrastructure for traditional and modern applications.

## Simplify operations

Automation and lifecycle management, along with intrinsic security built into the platform, help IT administrators to secure networking operations and deliver enterprise-class Day 0, Day 1, and Day 2 operations. For example, VMware Cloud Foundation administrators can simplify the creation and maintenance of a clusters desired-state vSphere Lifecycle Manager image by replicating a reference host configuration to streamline and reduce time for host upgrades.

With policy-based administration of compute, storage, networking and cloud management capabilities, administrators can easily assign security, performance, redundancy, and recovery policies to workloads. Cloud administrators can use project-based policies, governance, and costing to manage resource access and utilization centrally. Automating the management of IT services across its lifecycle with approval policies, provisioning through APIs, declarative state enforcement, workflow orchestration, Day 2 automation, and automated configuration remediation helps further simplify operations.

## Accelerate AI/ML workloads with GPUs

VMware Cloud Foundation 4.4 introduces support for GPU-enabled workloads running in both virtual machines and containers. By bringing together the automation capabilities of VMware Cloud Foundation with GPU support, IT admins can rapidly configure and deploy AI workloads with maximized resource utilization and improved performance while simultaneously enabling data scientists and DevOps teams to quickly and easily provision infrastructure capacity and workloads via Cloud Foundation's self-service capabilities while building AI/ML data pipelines that consume vGPUs as resources.

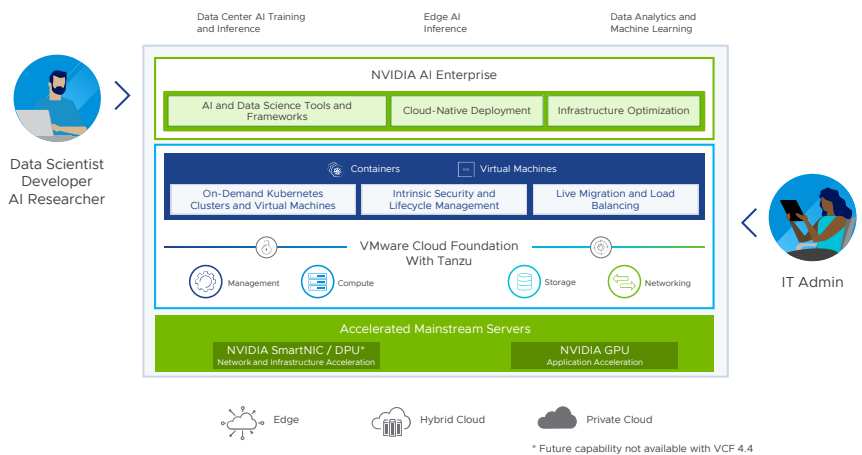


Figure 2: VMware Cloud Foundation with NVIDIA AI Enterprise

## NVIDIA integration

VMware Cloud Foundation, when used together with NVIDIA certified systems and software, delivers an end-to-end AI / ML platform. With the latest NVIDIA Ampere family of GPUs and the NVIDIA AI Enterprise Suite, multi-instance GPU capabilities in VMware Cloud Foundation allows a physical GPU to be partitioned into multiple instances, shared across multiple workloads. This leads to increased scalability of GPU-enabled infrastructure as well as improved utilization and reduced cost.

### For more information or to purchase VMware products

Call 877-4-VMWARE (outside North America, +1-650-427-5000)

Visit product page: [vmware.com/go/cloudfoundation](https://vmware.com/go/cloudfoundation)

Discover VMware Cloud Universal: [vmware.com/products/cloud-universal](https://vmware.com/products/cloud-universal)

Join the Cloud Foundation Community: [vmware.com/go/cloudfoundation-community](https://vmware.com/go/cloudfoundation-community)

### How to get started

Getting started with VMware Cloud Foundation is simple. For a quick hands-on experience, try the VMware Cloud Foundation Hands-on Lab. When you are ready to purchase, there are five ways to purchase VMware Cloud Foundation: (1) directly from VMware (perpetual licensing or subscription through VMware Cloud Universal); (2) from VMware channel partners; (3) as part of an integrated system from OEM vendors; (4) as a subscription service from a public cloud service provider; and (5) as a subscription service through VMware Cloud Universal.

### Introducing VMware Cloud Universal

Our new multi-cloud offering includes VMware Cloud Foundation-Subscription (includes Tanzu Standard), which adds a flexible term-based licensing option for on-premises deployments.

VMware Cloud Foundation benefits	
Simplified management	Optimize performance, resilience, and availability for both VMs and Kubernetes clusters with integrated container orchestration, delivered by VMware Cloud Foundation with Tanzu.
Consistent architecture	Simplify operations with standardized, full stack hyperconverged infrastructure and deliver developer ready infrastructure with enterprise-grade Kubernetes.
Lower cost	Achieve reduced CapEx and OpEx and lower TCO with consistent operations and the broadest range of deployment options.
Consolidated VM and container management	Run workloads at scale without compromise with consistent infrastructure for both existing enterprises applications and modern containerized applications.

### Summary

#### VMware Cloud Foundation: Platform for multi-cloud and modern apps

VMware Cloud Foundation supports both traditional enterprise and modern apps and provides a complete set of highly secure software-defined services for compute, storage, network, security, Kubernetes and cloud management. Increase enterprise agility and flexibility with consistent infrastructure and operations across private and public clouds.

For more information on cloud computing and VMware Cloud Foundation, please visit [vmware.com/products/cloud-foundation.html](https://vmware.com/products/cloud-foundation.html).