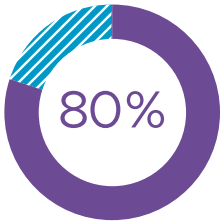
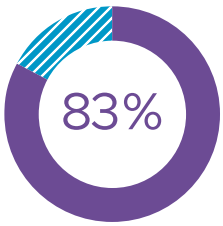
# Build and operate private cloud infrastructure on-premises or at the edge

## VMware Cloud Foundation makes it simple

### Today's organizations are embracing private cloud for building modern infrastructure




According to IDC, **more than 80%** of companies are expecting to undergo some repatriation of compute and storage resources to private cloud or non-cloud environments after one year of public cloud migrations.[1]




As per Barclay's CIO Survey 2024, **83% of enterprises** plan to move workloads back to private cloud from public cloud.[2]

In today's rapidly evolving technological landscape, your organization's IT infrastructure needs to be both secure and scalable to meet ever-changing demands. While public cloud offers scalability, it often comes with with significant risks and limitations. Security vulnerabilities from shared infrastructure put your sensitive data at risk, making privacy protection an ongoing concern. Costs can spiral out of control through hidden fees—from data transfer charges to unpredictable usage spikes. Critical operations face potential disruptions due to shared infrastructure, while vendor lock-in can limit your flexibility and control.

That's where private cloud comes into the picture. An optimal way to achieve the best of both the worlds is by building and operating private cloud infrastructure on-premises or at the edge. This approach enables you to maintain control over your organization's data, enhance security, and improve latency while leveraging the flexibility and scalability of cloud computing.

There are a number of ways to go about this. Some organizations opt to build and operate private cloud infrastructure on-premises by investing in a new data center or deploying within a co-location facility. Others choose to modernize their existing three-tier IT infrastructure with a cloud operating model to extract more value from their existing investments. Still others opt to build or modernize private cloud infrastructure at edge sites for real-time data processing, improved efficiency, and lower latency. Key use cases for this include smart manufacturing, industrial IoT, retail, remote offices, healthcare, smart cities, and fraud detection.

While all of these approaches are effective, they can also present significant difficulties.

### Building private cloud infrastructure can be challenging

Here are some of the common obstacles to building and operating private cloud infrastructure:

- High upfront investment in hardware, software and skilled personnel
- Lack of seamless integration into existing infrastructure
- Complex design, deployment and management of infrastructure
- Inability to scale to meet changing business needs

1. IDC, "Assessing the Scale of Workload Repatriation: Insights from IDC's Server and Storage Workloads Surveys." 1H23 and 2H23, doc #US50903124. June 2024.
2. Barclays. "IH24 CIO Survey: 2024 Outlook Sustained." 2024.

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## Key benefits

- Turnkey infrastructure for both traditional and modern workloads
- Reduced operational overhead
- Improved resiliency and availability
- Hardened security
- Enhanced cost efficiency

"I don't have people patching in the middle of the night. I'm not spending months trying to get a patch in place because we've got multiple dependencies to secure. We know maintenance windows in advance, and everything is much simpler."

Roger Joys
Vice President of Enterprise Cloud Platform at GCI Communications

"From concept to deployment, VMware Cloud Foundation allowed us to get up and running with Private AI in just a matter of days, giving us the agility we need to stay ahead."

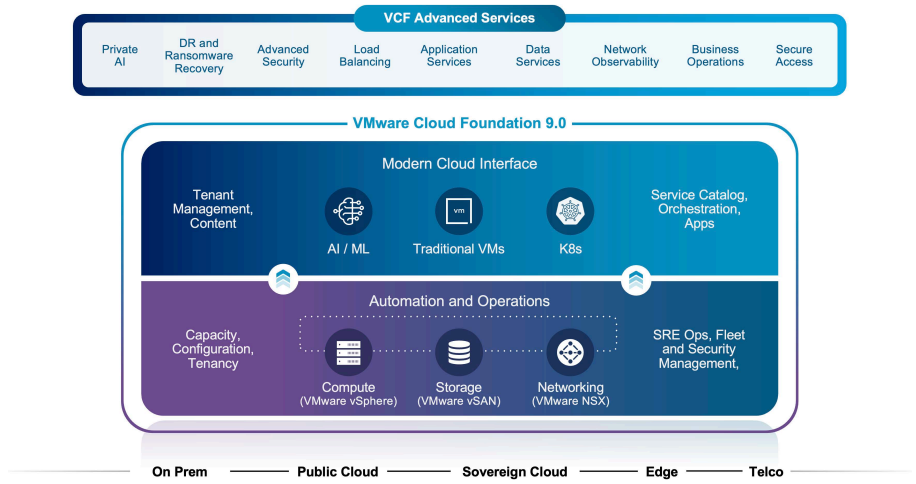
Michele Collauto
Senior Systems Engineer,
U.S. Senate Federal Credit Union

- Difficulty maintaining robust security and regulatory compliance
- Lack of efficient resource management, capacity planning and automation tools
- Difficulty maintaining high availability and reliability

VMware Cloud Foundation™ can help you overcome these challenges.

## The solution: VMware Cloud Foundation

VMware Cloud Foundation (VCF) is a comprehensive private cloud platform that delivers virtual infrastructure with integrated, enterprise-class compute, networking, storage, management, and security to dramatically simplify IT operations. VCF combines the scale and agility of public cloud with the security and performance of private cloud, enabling faster time to market, increased innovation, and lower TCO. Its automation and orchestration capabilities ensure improved operational efficiency and scalability, while built-in security and resiliency capabilities ensure a secure and highly available infrastructure. Whether supporting traditional or modern workloads in a data center or enabling real-time processing at the edge, VCF delivers the agility and control needed to optimize private cloud environments for modern enterprise demands.




Here are some key features and capabilities:

- **Powerful compute for traditional and modern workloads** – VMware vSphere, the enterprise workload engine, is an integral component of the VCF platform, and the latest version brings a host of powerful new features. VMware vSphere 9 combines industry-leading cloud infrastructure technology with DPU- and GPU-based acceleration to boost workload performance. It optimizes the IT environment, increases availability, and streamlines lifecycle management and maintenance to enhance operational efficiency. It provides an intrinsically secure infrastructure engine that's secure out-of the-box and features easy-to-implement hardening guidance for compliance. And it accelerates innovation with enterprise-ready Supervisor services that provide easy self-service access to infrastructure, along with a Kubernetes runtime to run containers alongside VMs, enabling developers and DevOps teams to easily build, run, manage, protect, and secure traditional and next-gen applications.

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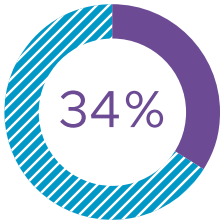
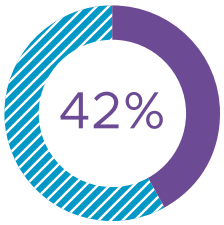
## Why VCF for building private cloud on-premises or at the edge?




lower infrastructure costs[3]



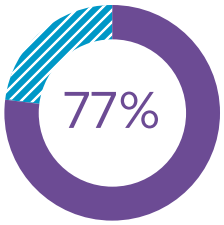

lower three-year cost of operations[3]

**564%**

three-year ROI with 10 months to payback[3]

**100%**

reduction in last minute hardware costs[4]




average operational efficiency gain[4]

- **Premier hyperconverged storage solution** – VMware vSAN, another integral component of the VCF platform, delivers software-defined, enterprise storage that integrates seamlessly with VMware vSphere and supports distributed private cloud infrastructure. It provides the performance, scalability, operational simplicity and lower costs that your enterprise requires to run today's demanding workloads. Innovations such as disaggregation, vSAN Express Storage Architecture and Storage Policy-Based Management set vSAN apart as a leading storage solution for VCF. VMware vSAN 8 u3 provides new levels of flexibility, data protection, and management for workloads running in VCF. With VCF 9, you can **lower storage costs by 34 percent** compared to traditional storage with global deduplication for vSAN, and simplify and accelerate data protection with vSAN-to-vSAN replication.[5]
- **Industry-leading software-defined networking** – VMware NSX, which is also a built-in component of the VCF platform, is a powerful network virtualization solution that enables network connectivity, operations, and scale. With features such as L2-L7 Network Stack and Overlay Services, multi-site networking, self-service VPCs, network automation, and comprehensive monitoring and troubleshooting, VCF Networking provides improved agility and operational efficiency with reduced total cost of ownership. Virtual Private Cloud (VPC) constructs in VMware NSX enable business units or project teams to provision and manage network resources independently, allowing for granular control over networking policies and resource allocation.
- **Automated infrastructure** – VCF automates the deployment of the entire SDDC stack, allowing you to deploy a private cloud infrastructure within hours instead of months or years. In addition, VCF automates the lifecycle management of vSphere, vSAN, NSX, VCF Automation, and VCF Operations components from bring-up and configuration to patching and upgrading, making it simple for the cloud admin to build and maintain infrastructure. VCF Automation allows users to create tenants, assign resources, maintain security, and configure policies for each tenant while ensuring all tenants receive isolated, dedicated environments tailored to their needs.
- **Intelligent operations** – With VCF Operations, VCF delivers comprehensive operational capabilities across compute, storage, and network including performance optimization, capacity management, cost efficiency management, visibility and observability of infrastructure and operations, global configuration management, compliance, monitoring, troubleshooting, log analytics, and end-to-end network monitoring. With the latest fleet management capabilities, it offers centralized control by providing streamlined management of licenses, certificate management, integrated identity management, centralized password management, unified configuration and tag management, and more.
- **A modern infrastructure at the edge** – VMware Cloud Foundation Edge delivers an optimized configuration of VCF tailored for edge use cases, providing a flexible platform that allows you to start small and scale later as needed. With automated edge infrastructure provisioning and lifecycle management, along with autonomous operations at the edge sites, VMware Cloud Foundation Edge reduces the operational burden of edge infrastructure. With consistent infrastructure and operations from core to edge, it helps minimize risks, complexities and skills gaps while integrating edge sites with central data center VCF instances.

3. IDC. "The Business Value of VMware Cloud Foundation." August 2024. Doc #US52312224. IDC white paper, sponsored by VMware by Broadcom.
4. Forrrester Research, Inc. "The Total Economic Impact™ Of VMware Cloud Foundation Operations." A commissioned study conducted by Forrester Consulting on behalf of VMware, April 2024.
5. VMware internal analysis of a VCF environment with 10K cores. November 2024.

## Resources to learn more

- VCF website
- VCF datasheet
- Private Cloud Modernization Program solution brief
- Total Cost of Ownership white paper and infographic
- VCF technical documentation
- VCF Getting Started Hands-on Lab and HoL Catalog
- VCF Blogs
- Follow us on X
- Follow us on LinkedIn
- Watch latest videos on YouTube

- **Robust security and compliance with high availability and resiliency** – VCF provides hardened security at every layer of an infrastructure with advanced security and compliance features such as microsegmentation, data-at-rest and data-in-transit encryption, identity and access management (RBAC), data governance, auditing and monitoring, advanced threat detection, and regulatory compliance checks and enforcement. In addition, VCF delivers a highly available, resilient platform with built-in features such as vSAN Data Protection, Stretched Clusters, and vSphere HA, ensuring minimal service disruption and data loss during unforeseen events.
- **Sustainable infrastructure** – Through VCF Operations, VCF enables IT to control your organization's energy footprint, reduce resource usage, and increase capacity and consumption visibility.

## How VCF addresses modern infrastructure challenges

Here are some ways VCF makes building private cloud infrastructure easier:

- **Reduced CapEx and OpEx** – VCF reduces CapEx by allowing more VMs per host, reducing the need for additional hosts and networking hardware. Infrastructure automation, sustainable infrastructure, and lower hardware support costs also cut down OpEx.
- **Seamless integration into existing infrastructure** – With VCF import capability, you can seamlessly convert and import existing vSphere, vSAN, and NSX environments into the VCF instance.
- **Simplified deployment and management** – With integrated compute, storage, and networking, plus VCF Installer, infrastructure teams can deploy their private cloud in hours, not months. VCF Operations provides a unified console for efficient Day 0, 1, and 2 management, enhancing resource optimization, cost efficiency, governance and control.
- **No need to invest in new skills** – VCF provides a consistent VMware environment across all your different endpoints, enabling you to leverage familiar and proven VMware skills, tools and processes.
- **Reliable infrastructure with robust security and resiliency** – VCF protects your data with advanced security features and ensures compliance with continuous compliance checks and alerts. It also offers reliable infrastructure with built-in high availability and resiliency for continuous uptime.

## Get started

Learn more about how VCF can help you build modern private cloud infrastructure on-premises or at edge sites. Whether you're looking to scale seamlessly, enhance security, or simplify your IT operations, VCF provides the flexibility and power you need.

Want help in your cloud journey? Our Private Cloud Modernization Program is designed to guide you through every step, no matter where you are in the process. Please contact your Broadcom representative to learn more, and start your journey toward a future-proof IT infrastructure.

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