VMware Special Edition

Modern Infrastructure

For dummies®

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Simplify application complexity

Reduce costs and protect investments

Accelerate time-to-market

Applications are key to successful digital transformation initiatives in the enterprise. These applications drive revenue, create competitive differentiation, and empower employees and decision makers with advanced analytics and essential insights to connect and engage with customers in real time.

To be successful, enterprise IT must proactively manage an ever-growing portfolio of business applications, matching the needs of each application to the underlying resources that support that application. The public cloud offers new opportunities to deliver an optimal environment for individual applications in the enterprise application portfolio, but not every application can, or should, run in the public cloud.

A modern infrastructure enables organizations to operate their software-defined data centers (SDDCs) as private clouds and extend the benefits of the cloud to their on-premises applications to help IT meet specific goals for their entire application portfolio.

REMEMBER **A traditional, unvirtualized enterprise infrastructure typically consists of physical compute, storage, and network resources running in an on-premises data center. This legacy infrastructure is managed by different teams using various tools operating in disparate silos. This complex operating model results in a lack of cooperation and more friction across teams, costly redundant resourcing, and greater risk in maintaining governance and policies of the different parts of the stack.**

In this guide, you learn how a modern infrastructure can help your organization achieve the agility, flexibility, and scalability to run your enterprise application portfolio in a hybrid cloud.

Application Needs Have Changed — Can Your Infrastructure Deliver?

Modern applications are complex: they're built on virtual machines, containers, Kubernetes clusters, and microservices connecting to enterprise data warehouses and data lakes spanning multiple public cloud environments. Legacy infrastructure based on traditional three-tier architectures adds complexity and gets in the way — it slows the business down and limits flexibility and innovation. And now is not the time to be slow or limited — both the pace of delivery and our increased dependence on applications are accelerating. According to the *VMware Cloud Market Study* (January 2018), from 2018 to 2023 — with new tools and platforms, more developers, Agile and DevOps practices, and lots of code reuse — more than 500 million new logical applications will be created, equal to the number built over the past 40 years.

Whether deploying advanced analytics to customize product and service offerings to consumer behaviors and preferences, standing up next-generation storefronts to sell goods online and at the edge, or driving self-service experiences to deliver a superior customer experience while reducing labor costs, businesses are driven by applications. The range of applications is broad and serves a variety of purposes throughout the organization, from building revenue and customer relationships to increasing employee productivity and effectiveness.

The applications themselves are vast and include traditional enterprise applications such as email, database management systems, enterprise resource planning (ERP) systems, and big data, as well as more specialized application such as electronic medical records (EMRs), e-commerce, point-of-sale (POS), directory services, and security software tools.

These applications are increasingly being deployed and operated across a diverse infrastructure landscape. The range of deployment options — from on-premises data centers and public clouds to remote or branch locations — can present unique challenges.

TIP

Increasingly the decision to run an application in an on-premises data center or move it to the cloud is a business decision that is based on the value of the application, the impact it will have on the business, the cost and complexity of migrating an application or data center, and the benefits that can be achieved in the cloud. Organizations need to answer the following questions to help them decide how to optimize, manage, and support their application portfolios across on-premises data centers and cloud environments:

- **What are the requirements of the application?**

- **How will the application be managed and scaled?**

- **What is the business value of the application?**

- **What kind of environment does the application need to maximize its business impact?**

- **Can the application be migrated to a public cloud, and is the cost of rebuilding or refactoring the application for the cloud warranted?**

A modern infrastructure provides organizations with options so that the answers to these questions don't necessarily limit the organization to an either/or choice.

Using Hyperconverged Infrastructure as a Building Block

Hyperconverged infrastructure (HCI) is the basic IT building block in a SDDC that eliminates the complexity of traditional data center infrastructure. HCI natively integrates all data center functions — including compute, storage, and networking — in a virtualized platform that is operated and monitored through a unified management console. Powerful automation and orchestration tools enable you to build on your HCI foundation, extending the capabilities and benefits of both the SDDC and the public cloud to deliver a complete hybrid cloud infrastructure that addresses current and future application and infrastructure needs.

Key benefits of HCI in the SDDC include the following:

- **Simplicity:** Eliminate the complexity of managing different hardware components and infrastructure silos found in legacy data center environments.

- **Cost:** Reduce capital hardware investments, improve cost and storage efficiency, leverage existing in-house technical expertise, and take advantage of flexible "pay-as-you-grow" scalability.

- **Agility:** Proactively address dynamic business needs with broad deployment choices (no vendor lock-in), on-demand scalability (both "up" and "out"), and support for traditional and modern applications (including cloud-native, containerized, and microservices-based).

Adopting a Cloud Operating Model

Building a modern infrastructure with HCI as the basic building block enables significant freedom, flexibility, and cost advantages for the enterprise. Next, IT organizations must adopt a hybrid cloud platform that enables them to unlock new levels of efficiency, agility, and intrinsic security in order to deliver long-term value by adopting a cloud operating model.

Without a modern infrastructure and consistent operations across their on-premises data centers and public, private, and edge cloud environments, organizations may experience challenges managing these heterogeneous environments, including the following:

- Increased risk while managing infrastructure and the applications with different operations teams, tools, and processes in the data center and cloud

- Slower time to market as different IT processes for different environments

negatively impact responsiveness and agility

- Higher cost due to less flexibility and inability to quickly migrate and scale to meet infrastructure demands

- Limited visibility across all environments, causing higher security risk and service-level agreement (SLA) violations due to multiple disparate management tools and processes

- Skills shortages as organizations need to build competence with multiple environment-specific tools and processes

To get the most out of full-stack HCI, organizations need to adopt a cloud operating model that is service oriented and policy driven. It must also offer robust automation and orchestration, rapid elasticity and scalability, and on-demand self-service capabilities for both traditional workloads and cloud-native applications currently in development.

Achieving this cloud operating model requires a modern infrastructure delivered in a holistic, software-defined, and integrated platform. A modern infrastructure enables enterprise IT organizations to unify and manage infrastructure silos together to deliver cloud-compatible services by reducing complexity, controlling costs, and increasing agility. A modern infrastructure for the cloud supports traditional and modern applications running in diverse environments spanning from the data center to the edge to the cloud with a universal hybrid cloud platform that delivers consistent infrastructure and operations anywhere.

Running Modern Applications on VMware Cloud Foundation

Applications are changing, so the platform that they run on must change, too. A cloud platform must support both traditional and modern applications side-by-side, with native container support, application programming interface (API) consumable services, and built-in Kubernetes orchestration.

VMware Cloud Foundation is a next-generation hybrid cloud platform. It provides a complete set of software-defined services for compute, storage, networking, security, and cloud management to run enterprise apps — traditional or containerized — in private or public environments. Cloud Foundation drastically simplifies the path to the hybrid cloud by delivering a single integrated solution that is easy to operate, thanks to built-in automated life-cycle management. Now with the integrated cloud management capabilities, the end result is a hybrid cloud platform than can span private and public environments,

offering a consistent operational model based on well-known VMware vSphere tools and processes, and freedom to run applications anywhere without the complexity of application rewriting.

Cloud Foundation uniquely provides the following capabilities and benefits:

- **Integrated stack:** Cloud Foundation is an engineered solution that integrates the entire VMware software-defined stack with guaranteed interoperability, freeing organizations from dealing with complex interoperability matrixes.

- **Automated life-cycle management:** Includes unique life-cycle management services that automate day 0 to day 2 operations, from bring up to configuration, resources provisioning, and patching/upgrades.

- **Simple path to hybrid cloud:** Dramatically simplifies the path to the hybrid cloud by delivering a common platform for private and public clouds, enabling a consistent operational experience that leverages existing tools, processes, and people.

- **Broad ecosystem:** Can be flexibly deployed on-premises on certified hardware from major original equipment manufacturer (OEM) vendors or run as a service from VMware's own VMware Cloud on Amazon Web Services (AWS) or from a select number of VMware Cloud Providers.

Expanding to Hybrid Cloud

Given the dynamic needs of applications across the enterprise application portfolio, it comes as no surprise that hybrid cloud is the new normal — in fact, two-thirds of organizations are looking for a hybrid cloud solution according to the VMware Cloud Market Study (January 2018). They need a strategy that supports the modern applications they need to compete, and those applications need the freedom and flexibility to move, scale, and support developer-friendly next-generation technologies across diverse environments.

Within a hybrid cloud environment, organizations have the ability to move applications freely across environments with consistent infrastructure and operations. This model eliminates the unnecessary cost, complexity, and risk of refactoring applications simply to move to a new environment. If your organization is ready to build a modern infrastructure foundation for hybrid cloud, look no further. VMware Cloud Foundation™ is the ideal hybrid cloud platform for managing VMs and orchestrating containers, built on full-stack hyperconverged infrastructure (HCI) technology. With a single architecture that's easy to deploy, VMware Cloud Foundation enables consistent, secure infrastructure and operations across private and public cloud environments.

VMware Cloud Foundation accelerates development of modern applications and automates the deployment and life-cycle management of complex Kubernetes environments alongside mission-critical enterprise applications. Take advantage of a complete set of software-defined services for compute, storage, networking, security, and cloud management to run enterprise apps — traditional or containerized — in private or public environments. VMware Cloud Foundation drastically simplifies the path to the hybrid cloud by delivering a single integrated solution that is easy to operate, thanks to built-in automated life-cycle management.

Prepare for tomorrow, today — with a modern, future-proofed hyperconverged infrastructure solution. Realize the benefits of VMware vSAN and VMware Cloud Foundation, including: simplified management, flexible deployment options, enhanced application performance, standardized architecture, maximized scale and IT efficiency, intrinsic security, and more.

TIP

Check out the following resources from VMware to help you transform your data center with a modern infrastructure:

- [VMware Modernized Data Center Solution Overview](#)

- [VMware Cloud Foundation: Integrated Hybrid Cloud Platform datasheet](#)

- [VMware Cloud Foundation Hands-on Lab](#)

- [Hyper-Converged Infrastructure For Dummies, VMware 2nd Special Edition](#)

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