VMWARE CLOUD FOUNDATION: INTEGRATED HYBRID CLOUD PLATFORM

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Executive Summary

To respond to the ever-increasing demand for faster innovation, organizations are adapting technology trends and moving workloads to the public cloud. Although public cloud services can be a good fit for many applications, company-owned data center continues to play a critical role, with majority of the workloads live on-premises, especially those mission-critical applications that require greater control and security. As a result, organizations are looking to shift to a more agile, service-oriented IT model that leverages both private and public cloud. While customers recognize the need to complete the journey to the hybrid cloud, they are faced with significant roadblocks:

• Managing and controlling diverse infrastructure which creates operational complexity

• Improving security to face cyber security threats

• Delivering enterprise-level service-level agreements to mission critical apps while keeping cost under control

• Managing public cloud sprawl driven by shadow IT

• Managing risk and cost by avoiding vendor or cloud lock-in

To help customers accelerate the journey to a true hybrid cloud, VMware has introduced VMware Cloud Foundation™, the industry's most advanced hybrid cloud platform that provides a complete set of software-defined services for compute, storage, networking, security and cloud management to run enterprise applications—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 deploy and operate, enabled by the built-in automated lifecycle management.

A Single Architecture for Hybrid Cloud

Unlike legacy hardware-defined infrastructure, where services are tied to and dependent on physical devices, in a software-defined architecture, infrastructure services are abstracted and decoupled from the underlying hardware. In this sense, the infrastructure can be not only hardware agnostic, but also geography agnostic, because the logically defined infrastructure resources can span across data centers, including those owned by the organization in question and those of a cloud service provider.

Picture an organization using the exact same infrastructure architecture as its cloud service provider. Such design would allow said organization to shift to a more agile, service-oriented IT model that leverages both private and public cloud, ultimately implementing a true hybrid cloud.

VMware can bring this vision to reality, providing customers with the flexibility to run their cloud on premises or to consume it as a service through public cloud partners, leveraging a common foundation that delivers a consistent operational model across private and public cloud and can be managed using existing skill set and processes. (See Figure 1.)
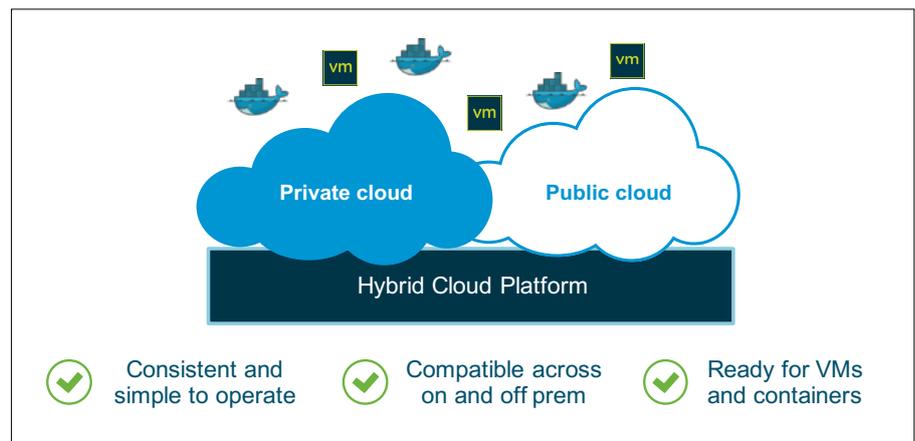

Figure 1: True Hybrid Cloud is Based on a Common Infrastructure Platform

Introducing VMware Cloud Foundation

VMware Cloud Foundation provides the simplest way to build an integrated hybrid cloud by providing a complete set of software defined services for compute, storage, network, security and cloud management to run enterprise apps—traditional or containerized—in private or public environments, and is easy to operate with built-in automated lifecycle management.

Cloud Foundation evolves the VMware market-leading server virtualization, VMware vSphere®, by extending the core hypervisor with integrated software-defined storage, network and security capabilities that can be consumed flexibly on premises or run as a service in the public cloud. Now with integrated cloud management capabilities, the end result is a hybrid cloud platform that can span private and public environments, offering a consistent operational model based on well-known vSphere tools and processes and freedom to run applications anywhere without the complexity of application re-writing. (See Figure 2.)
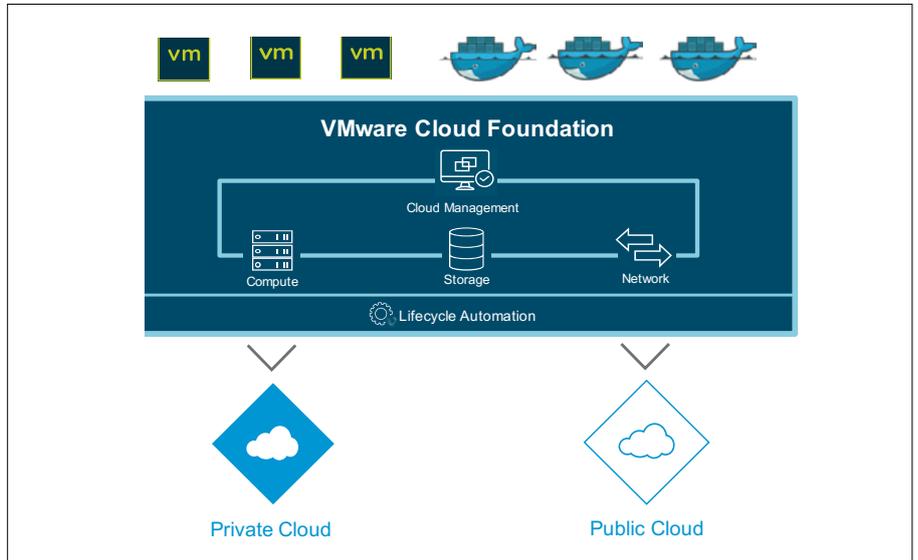
Figure 2: Overview of VMware Cloud Foundation

Cloud Foundation provides customers with the ultimate cloud flexibility and freedom. At one end of the spectrum, a customer can choose to maintain its private cloud on premises and expand it to the public cloud for select applications and workloads – like DevTest, disaster recovery, or seasonal spikes. Customers could also consider consolidating their on-premises data center and private clouds and migrate more apps and workloads to the public cloud. On the other end of the spectrum, customers could reduce the on-premises infrastructure and move their private cloud to the public cloud. (See Figure 3.)
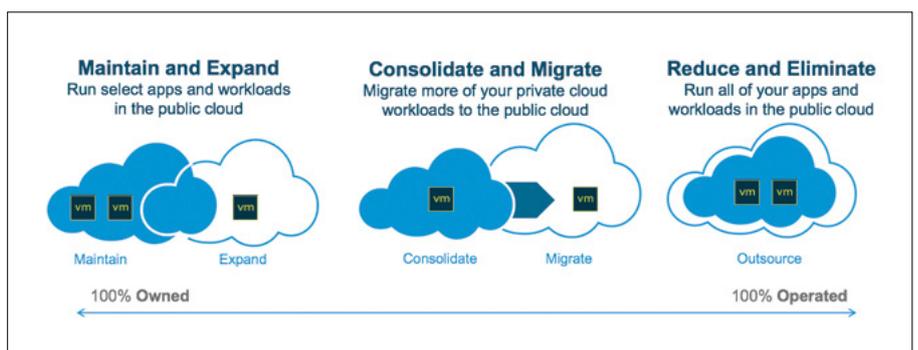

Figure 3: VMware Cloud Foundation Provides Cloud Flexibility

Deploying on Premises

Cloud Foundation provides maximum flexibility in choosing on-premises deployment options. Organizations can procure fully integrated systems from select OEM vendors that integrate software and hardware at the factory to deliver a turnkey customer experience. The following are integrated systems powered by Cloud Foundation: Dell EMC VxRack SDDC, Fujitsu PRIMEFLEX, Hitachi UCP RS and QCT QxStack.

Alternatively, customers can procure the Cloud Foundation software stack from VMware to deploy on Ready Nodes available from server hardware vendors. Cloud Foundation supports a wide range of certified vSAN™ ReadyNodes from a variety of server vendors, including Cisco, Dell EMC, Fujitsu, Hitachi Vantara, HPE, Lenovo and QCT in order to provide maximum choice and flexibility. To deploy Cloud Foundation on vSAN ReadyNodes, customers can undertake the deployment themselves, or they can obtain professional services from VMware PSO or their Solution Provider of choice in the VMware partner community.

Consuming as a Service from Public Cloud

Organizations looking to leverage the agility and economies of scale of the public cloud are no longer limited to deploying VMware infrastructure in their own private data centers. VMware partnered with select number of VMware Cloud Providers, including IBM Cloud, OVH, Rackspace, CenturyLink and Fujitsu to deliver infrastructure services based on Cloud Foundation through a subscription model. In addition, VMware Cloud™ on AWS, powered by VMware Cloud Foundation, is a new public cloud offering delivered, sold and supported by VMware as an on-demand, elastically scalable service for customers to leverage the global footprint and breadth of AWS with the VMware cloud infrastructure platform.

These partners deliver a common cloud infrastructure in the public cloud that natively integrates compute, storage, and network virtualization. Customers benefit from the ability to seamlessly extend their private cloud to these public clouds, while service providers offer differentiation and added value through the specifics of their own service consumption model. Companies are able to run apps and workloads anywhere, with the same people, same processes, and same tools, which saves them time, training, people, and money. (See Figure 4.)To learn in-depth details about third-party public cloud services powered by Cloud Foundation, please refer to the public documentation offered by each service provider.
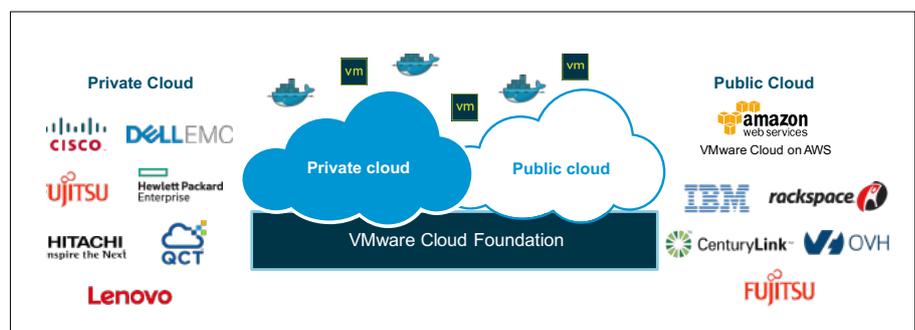

Figure 4: Broad Ecosystem of Compatible Solutions

Key Features and Capabilities

Natively Integrated Software-Defined Stack

Cloud Foundation provides a complete set of software-defined services for compute, storage, networking, security and cloud management to run enterprise applications—traditional or containerized—in private or public environments. Cloud Foundation simplifies the path to the hybrid cloud by delivering a natively integrated solution that is easy to deploy and operate thanks to unique, built-in automated lifecycle management capabilities.

Enterprise-Grade Services

Cloud Foundation is based on market-leading VMware technologies: VMware vSphere (compute), VMware vSAN (storage), VMware NSX® (networking and security), and vRealize® Suite (cloud management), delivering enterprise ready services for both traditional and containerized apps.

Storage Elasticity and High Performance

Cloud Foundation supports the latest version of VMware vSAN 6.6 with all flash performance and enterprise-class storage services including deduplication, compression and erasure coding. VMware vSAN implements a hyper-converged storage architecture, delivering elastic storage and drastically simplifying storage management.

Intelligent Operations

Cloud Foundation delivers intelligent operations (vRealize Operations™, vRealize Log Insight™) from applications to infrastructure to help organizations plan, manage and scale their SDDC. Users can perform application-aware monitoring and troubleshooting along with automated proactive workloads management, balancing and remediation.

IT Automation

Cloud Foundation delivers automation of IT service provisioning and day 2 operational capabilities across a hybrid cloud (VMware vRealize Automation). Customers can model a complete infrastructure stack in the form of blueprints (templates) that include compute, storage, networking and security resources along with all the relationships that bind them together. The blueprints embed both automation and policy, and when executed will automatically orchestrate the provisioning and lifecycle of all the components in the blueprint, and enforce access and security.

End to End Security

Cloud Foundation delivers end to end security for all applications by delivering network-level micro-segmentation, distributed firewalls and VPN, compute-level encryption for VM, hypervisor and vMotion and storage-agnostic data at rest encryption.

Automated Lifecycle Management

Cloud Foundation includes VMware SDDC Manager™, a new management software that automates day 0 to day 2 operations of the software platform.

• Rapid deployment - Cloud Foundation automates the bring-up process of the entire software platform, including deployment of infrastructure VMs, creation of the management cluster, configuration of VLANs, storage, physical network, and cluster creation and provisioning.

- Simplified patching and upgrades - Cloud Foundation enables a simplified patching/upgrading process of the software platform (including VMware vCenter Server®). Cloud admins have the flexibility to choose the timing and scope of the updates.
- Policy-based provisioning - Cloud Foundation simplifies resource allocation to individual workloads by automating cluster creation through policy.

Main Use Cases

Cloud Infrastructure

With Cloud Foundation, customers have a solution to run a fully virtualized infrastructure. Cloud administrators have the ability to expand and contract the underlying infrastructure to meet their changing business needs. With a cloud that is based on the market-leading virtualization platform, lines of business have the flexibility to deploy a wide variety of operating systems and application stacks within the tenant VMs.

IT Automation

By integrating cloud management services, customers can automate the infrastructure and application delivery with self-service capabilities and day 2 operational capabilities across private and public cloud. Cloud Foundation provides performance management, capacity optimization, and real-time log analytics and IT automation to accelerate the delivery and ongoing management of personalized, business-relevant infrastructure, application and custom services, while improving overall IT efficiency. Policy-based governance and logical application modeling assures that infrastructure services are delivered at the right size and service level for the task.

Hybrid Cloud

Cloud Foundation is the only solution in the market that gives customers the flexibility to run the same platform on premises and as a service through a public cloud provider. Organizations can build a true hybrid cloud with common infrastructure and consistent operational model, connecting on- and off-premises data centers to make them compatible, stretched and distributed.

Virtual Desktop

Cloud Foundation simplifies the design and implementation of a VDI environment based on VMware Horizon®, making VDI deployments faster and more secure. Private cloud administrators can focus on specifying the policies and needs of the VDI infrastructure instead of dealing with the details of deploying it. Cloud Foundation takes as input the logical capacity, service level agreements, and policy needs of target virtual desktops and automates provisioning of fully installed and configured Horizon VDI.

Conclusion

VMware Cloud Foundation makes it possible for organizations to benefit from the full power of VMware's market-leading software-defined architecture with enhanced operational efficiency across private and public clouds. As a result, Cloud Foundation dramatically shortens the path to a complete hybrid cloud, increasing admin productivity. Customers can achieve the following when compared to legacy hardware-defined data centers:

• Up to 15x faster time to market by eliminating complex processes around system design, testing, bring-up and configuration

• Increase admin productivity by up to 2x by automating day 2 operations such as patching, updates, and monitoring

• Risk-free repeatable deployment of IT footprint anytime, anywhere

• Up to 40 percent reduction in TCO of private cloud deployments

• Elimination of hardware cost when consuming as a service from the public cloud

• Portability of workloads between private and public clouds

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