



VMWARE CLOUD FOUNDATION BRINGS GREATER AGILITY AND LOWER COSTS TO VMWARE PRIVATE CLOUD

INDUSTRY TECHNOLOGY

LOCATION PALO ALTO, CALIFORNIA

KEY CHALLENGES

- Stand up new virtual environments easily and dynamically in response to business demands.
- Simplify operations and management of disparate compute, storage, and networking infrastructure.
- Reduce the costs associated with operating one of the world's largest private clouds.

SOLUTION

VMware Cloud Foundation, a unified SDDC platform for the private and public cloud, simplifies initial deployment and ongoing management of the large VMware internal private cloud, while providing elastic scalability and lower costs.

BUSINESS BENEFITS

- Deliver new cloud services faster by reducing deployment time from 60-plus days to fewer than 5 days.
- Significantly reduce capital and operating costs—lowering cost per VM by 50 percent.

With its private cloud infrastructure—already one of the largest in the world—growing quickly, VMware began to investigate ways to reduce deployment and management tasks for new services while improving application performance and lowering costs. The company found a solution in its own VMware Cloud Foundation, which provides the easiest way to deploy and run a Software-Defined Data Center (SDDC). Cloud Foundation leverages a next generation of hyper-convergence by bringing together VMware's market leading compute, storage, and network virtualization software into a natively integrated platform to deliver enterprise class capabilities with a simple operational model that can be consumed both on the private and public cloud.

Founded in 1998 and based in Palo Alto, California, VMware began with 20 employees, who delivered the company's first virtualization product—the VMware Workstation™ hypervisor—to the public in May 1999. Today, VMware is a global leader in cloud infrastructure and business mobility with more than 19,000 employees. The company's products and services accelerate digital transformation for customers by enabling them to master a software-defined approach to business.

The Challenge

VMware delivers infrastructure services and solutions to more than 500,000 organizations worldwide. Like many of the organizations it serves, VMware relies on a private cloud infrastructure to provide services to its internal business units. Since its inception, the VMware internal cloud has experienced rapid growth. Once confined to a single data center, the private cloud is now one of the world's largest—spanning six data centers and hosting approximately 90,000 virtual machines (VMs).

This growth has introduced some challenges, including management, cost containment, scalability, and the ability to deliver services in a timely fashion. "Any cloud that's as enormous as ours includes a great deal of software and hardware," says Anees Iqbal, senior director of cloud service operations for VMware. "Even with software that's as elegantly integrated as our own, there's still a lot of nuance and complexity involved in deploying, configuring, and then maintaining the full hardware and software stack throughout product life cycles."

The process required to design, build, and test the initial private cloud infrastructure service offering took roughly 60 person-days, leaving Iqbal and his 75-member

“In the past, things were very disjointed; now, with Cloud Foundation, there’s an intelligence throughout the entire stack that makes everything easier. Because these previously isolated areas are now joined at the hip, management overhead is hugely simplified.”

ANEES IQBAL
SENIOR DIRECTOR OF
CLOUD SERVICE OPERATIONS
VMWARE

TECHNICAL BENEFITS

- Provides simple private cloud solution through an integrated SDDC software stack that can be deployed on pre-validated hardware
- Simplifies management, thanks to a single integrated view of both virtual and physical infrastructure with VMware SDDC Manager
- Scales elastically in per-server increments with distributed hyper-converged architecture
- Removes complexities of network configuration, provisioning, and management through automation
- Uses VMware NSX micro-segmentation to provide firewall capabilities to each VM

APPLICATIONS VIRTUALIZED

- Virtual desktop infrastructure (VDI)
- Microsoft Exchange clusters
- Cloud capacity (with VMware vRealize Automation™ software and VMware vCloud Director® management tool)

team little time for more strategic tasks. And for an organization that has doubled its revenue and head count many times over the past decade, keeping pace with just the storage requirements alone had become cost-prohibitive, relying exclusively on expensive storage arrays it could only scale out in large increments.

Networking represented an additional challenge for the private cloud infrastructure. When a business unit requested a new service or application, Iqbal and team needed to carry out a series of configuration steps to prepare the physical and virtual network infrastructure. These manual tasks were time-consuming and error-prone, and coordination between two disparate groups, the network team and the virtualization team, caused delays in service delivery. In addition, internal security policies required the VMware security team to deploy a firewall for every workload. As the private cloud infrastructure began to scale, deploying traditional physical firewalls for each workload became cost-prohibitive and labor-intensive. As a result, the new security requirements began to delay the deployment of new workloads.

The cloud team knew that to address these challenges, the VMware private cloud would need to move beyond a traditional custom-built, vendor-specific, feature-rich infrastructure and adopt an approach that enables greater agility and flexibility.

The Solution

Iqbal and colleagues did not need to look far for a solution. Thanks to the cloud group’s tight integration with the VMware R&D team, they knew that the soon-to-be rollout of VMware Cloud Foundation could provide exactly what they were looking for. Just like that, the VMware private cloud became the first customer for VMware Cloud Foundation.

“As an internal cloud provider, we’re beholden to the business,” says Iqbal. “This means we need to be agile enough to address whatever business needs arise. However, we’re also beholden to a cost model, which means we must deliver that business value in the most cost-effective way possible. It was obvious to us that Cloud Foundation would allow us to succeed on both counts.”

As an integrated SDDC platform, VMware Cloud Foundation comes with all of the company’s leading virtualization solutions—including the VMware vSphere® platform, VMware Virtual SAN™ storage, and VMware NSX™ networking, — fully integrated and interoperable and deployable onto pre-validated hardware. The entire solution is managed by VMware SDDC Manager, a new management software that automates day 0 to day 2 operations of the entire software stack. For Brian Smith, senior director of cloud infrastructure operations for VMware, the value of the solution is clear. “VMware is trying to make its products as easy to consume as possible,” he says, “and VMware Cloud Foundation absolutely enables that. Now when I need to stand up a new virtualized environment, I literally pull up a rack, plug it in, and deploy it. Everything has been tuned to work together, and I get a single point of management for both my physical and logical infrastructures with the SDDC Manager, which provides a single centralized view into both parts of the infrastructure.”

And because Cloud Foundation is based on a distributed hyper-converged architecture, utilizing standard x86 servers and Software-Defined Storage (in the form of the Virtual SAN solution), which resides on the same layer as compute and networking, the team can add capacity incrementally and dynamically rather than in huge, expensive units. In addition, with the VMware NSX platform, Smith and team can automate previously labor-intensive and error-prone tasks associated with network configuration, provisioning, and management. Automation provides

the agility and speed needed to programmatically deliver entire application environments in minutes instead of weeks.

Cloud Foundation also enables VMware to meet company security requirements with micro-segmentation by using VMware NSX networking to provide firewall capabilities to each virtual machine, all the way down to the individual virtual network interface preventing the lateral spread of security threats—a level of granularity that isn't available with physical firewalls.

Smith and colleagues can now stand up an environment or workload domain and programmatically tell it to deploy the whole network with policies and automation, “which was not something we could do with a Cisco switch,” says Smith.

Business Benefits

With VMware Cloud Foundation, Iqbal and team are able to deliver services faster while increasing their own productivity. “Think about it,” says Iqbal. “When the time required to deploy and configure the full hardware and software stack of a virtualized environment goes from 60-plus days to fewer than 5—as it did when we deployed Cloud Foundation—you suddenly have a whole lot of time to focus on other things, such as responding to changing business needs and adopting to new technology faster.”

This agility gets a further boost with cost savings. Already, the private cloud has reduced the cost per VM by 50 percent compared to its traditional-infrastructure alternative. And by using a next generation hyper-converged architecture, the VMware internal cloud can now use commodity-based x86 hardware purchased incrementally per server rather than large storage units representing multimillion-dollar deployments. “This is not only a much better use of capital,” says Smith, “it leaves us much better positioned to invest in the technology and infrastructure that will take us into the future.”

The icing on the cake for Iqbal, Smith, and team comes from the flexibility, functionality, and control afforded by having network, compute, storage, and management resources reside in the same software layer. Says Iqbal, “In the past, things were very disjointed; now, with Cloud Foundation, there's an intelligence throughout the entire stack that makes everything easier. Because these previously isolated areas are now joined at the hip, management overhead is hugely simplified. That, in turn, allows us to focus on taking advantage of some of the individual features, like the micro-segmentation offered by VMware NSX and the lower latency associated with Virtual SAN—all of which help us deliver services at less cost to the business.”

Looking Ahead

Pleased as he is with the reduced costs that have resulted from deploying VMware Cloud Foundation, Smith is even more excited about the ongoing reduction in operational expenditures it promises. “Software and hardware continue to live and breathe long after their initial deployment,” he says. “The most difficult thing about operating a private cloud is not building it but rather feeding and caring for it over time. Right now, our team spends 50 percent of their time on maintenance chores such as patching and updating. With the life-cycle management feature in Cloud Foundation, we expect this time to be radically reduced because most of those tasks will be automated.”

