

Government Food Safety Agency

PROFILE

Industry

Government

Employees

Over 7,000

Annual Revenue

Over \$50 million

THE NUMBERS

- 160 physical servers
- 350 virtual machines
- Approximately \$2 million in savings through consolidation and virtualization

IN BRIEF

Objective

The government organization required a complete test and development environment that is reliable, resilient and secure, but also allows its developers to quickly self-provision resources when they need them.

Solution

This organization worked with VMware channel partner Integra Networks to design a new multitenant test and development infrastructure that leverages VMware vCloud Director to support automated provisioning.

Business Impact

- Provisioning of test and development environments takes minutes, instead of days or weeks.
- Developers can provision resources when needed; no more waiting for operations to process requisitions.
- Virtualized architecture makes efficient use of server and storage resources.
- NetApp snapshots ensure frequent backups, transparent to users.
- NetApp de-duplication reduces disk storage requirements by 80 percent.

Government Organization Boosts Safety Development Efforts with Innovative Test and Development Datacenter

“The VMware vCloud Director infrastructure we’ve designed for our test and development datacenter lets us automate provisioning to create secure replicas of our production systems for use by our development engineers. It truly demonstrates that the future is today.”

In today’s global, mass-market economy, the food production and distribution infrastructure is more complex than ever before. Ensuring food safety is therefore a growing challenge. Governments must monitor livestock, produce and processed food items from source to supermarket. They must maintain records so that they can trace individual items if needed, to pinpoint the source of issues such as foodborne pathogens or contaminants. The import and export of food items must also be tracked, which requires coordinating efforts with governmental agencies from other countries.

So while the public might envision food safety as field inspectors in lab coats, collecting test samples or investigating breaches in safety regulations, much of the business of this government agency is actually IT-based. It develops and runs roughly 100+ software applications, including tools to track compliance verification, analyze animal health risks, and track export certifications, to name only a few. Data is input via agency desktop and laptop systems, as well as handheld devices such as RFID scanners. They manage 40+ Oracle databases and the numerous front-end Web and middleware applications required to knit the infrastructure together.

These IT systems can also be expensive. However, government funds are often targeted to increase inspections, because this is a more visible way to respond to public concerns about food safety, rather than beefing up behind-the-scenes technology. This agency must therefore find creative ways to stretch its technology budget without impacting the quality of its IT infrastructure.

One way it did this was by implementing VMware virtualization technology to consolidate its datacenter servers and reduce their associated costs. But recently, it has taken a new step by leveraging VMware vCloud® Director™ to design an automated Infrastructure-as-a-Service model for its test and development server environment.

Savings of \$2 Million by Virtualizing

The agency first implemented VMware technology several years ago, when it moved into a new datacenter. “Our old datacenter was essentially a glorified closet,” says their IT Director. “Then we moved into a complex and built a completely new IT infrastructure, with redundant networks, integrated voice and data, and a state-of-the-art datacenter.”

The agency’s move to a new datacenter was an ideal time to implement a VMware environment. “In our old datacenter, we were running out of space, power and cooling,” says their Project Manager. “And we had only a small group of people to manage it. We knew we had to get a handle on our server sprawl.” Virtualizing allowed the agency to retire approximately 78 of the

“VMware vCloud Director is more than a VMware environment. It allows us to architect a multitenant environment so that we can support the vertical segmentation within our test and development organization.”

120 physical machines it was running at the time. “We ended up saving over 46 percent of our total cost of ownership by virtualizing.” Savings came from reduced software licensing, power, server hardware acquisitions and hardware maintenance costs.”

And since that time, virtualization has allowed the agency to support its growing need for IT systems without increasing its physical infrastructure. “There’s such a huge push to enhance food safety today,” says the Project Manager. “We are continually adding new projects to our list of operational activities. VMware virtualization lets us support this growth more cost-effectively, because we’re making more efficient use of our hardware capacity.” In the first two years after moving to the new datacenter, for example, the agency went from 78 virtual machines to 250—but it added only 20 new physical servers.

But while consolidating its servers and moving into a state-of-the-art datacenter was a significant step forward for them, they faced another issue as well: Their production environment was co-located with their test and development systems.

This was a less-than-ideal architecture, and played a role in a 2009 incident that idled the agency’s development organization for over a week. “It was a case of human error, but its impact was magnified, we believe, because we were housing our test and development systems in our production datacenter.” Fortunately, no test and development data was lost—only the data index files—but while the indexes were forensically restored and rebuilt, approximately 80 engineers were left with no way to work.

Creating a Multitenant Environment

In response, the CIO mandated that its test and development environments be moved out of the production datacenter and into a separate datacenter located elsewhere in their facility.

The agency responded by inviting VMware channel partner Integra Networks Corporation to perform a requirements analysis. Integra Networks interviewed users from seven different constituencies within the agency’s testing, QA, and operations groups to determine what architecture would best meet their respective needs.

Based on user input, Integra Networks recommended that the test and development datacenter be configured as a multitenant environment, with the ability to share as well as isolate development environments. Another key finding was a strong need to automate provisioning. “In the production environment, operational stability is a top priority,” notes the IT director. “But developers want fast provisioning. They need a solid, reliable, resilient architecture, but one that also lets us allocate test resources quickly.”

As it happened, around the time Integra Networks was completing its analysis, VMware launched vCloud Director. “The technology offers exactly what we need to facilitate the day-to-day activities of our developers and testers,” the IT Director says. “With vCloud Director, they can self-provision development environments that are tailored to their needs from both a configuration and scheduling perspective.”

Once the agency had decided to use vCloud Director technology, it worked with Integra Networks to blueprint a test and development environment. Built on the VMware vSphere® platform, the new datacenter will leverage vCloud Director to enable physical-to-virtual replication of live production systems. VMware vShield™ security technologies ensure replicas will be isolated from one another while permitting the use of shared resources such as file repositories. The architecture also uses VMware vCenter Chargeback™ software. This gives a granular view into how the infrastructure’s resources are being consumed, so they can properly size resources to meet users’ needs.

The hardware will eventually include at least 16 physical HP blade servers.

Because reliable backups and restores were another critical requirement, the datacenter incorporates a NetApp diskless storage virtualization system. The NetApp system is configured to grab snapshots of the environment at least four times a day and replicate to secondary

storage daily. One advantage of the NetApp system is that it does not require backup agents, so backups will not impact system performance or availability, and developers do not have to be concerned with scheduling backups for every new virtual machine. The NetApp solution will also leverage de-duplication technology that, for VMware environments, can provide on average a reduction of capacity requirements by 70 percent.

Successful Pilot Validates Design

The agency’s next step was to perform a pilot. The team identified a test group within the agency’s solutions development organization, and created copies of its production system Oracle databases and Web-based applications. “We replicated the environments using vCloud Director to create discrete, isolated development environments.”

The users who participated in the pilot were very happy with the results. “From their point of view, it was highly successful,” notes the Project Manager. The vCloud Director environment delivered on its promise: providing the developers with secure replicas of the agency’s production systems that they could use for application testing.

Because the technology automates provisioning, users didn’t have to manage infrastructure-related details such as IP configuration and domain membership. And creating test and development systems within the vCloud Director environment is automated. Developers testing the system didn’t have to requisition resources through the operations team, so provisioning took minutes instead of days or weeks.

Today, based on the success of the pilot, the agency is moving forward with plans to implement the new environment as funding becomes available.

This government agency continues to partner with Integra Networks as it proceeds. “Integra Networks ranks as one of the top solution providers in VMware virtualization technology in North America. They’ve demonstrated their expertise time and again, not only through working with us, but by helping other government organizations virtualize their datacenters.”

Future plans include extending access to the vCloud Director environment to the agency’s QA group. The agency also hopes to adopt VMware View desktop virtualization. This will drive cost reductions and efficiencies within its desktop environment.

“We’re looking for as much automation and self-management as possible,” says their IT Director.

“The reality is that funding is limited,” the Project Manager adds. “But at the same time, demand for improvements to food safety processes continues to grow. VMware virtualization technology helps us to cope with the increased workload by allowing us to do more with less.”

IMPLEMENTATION OVERVIEW		
<p>VMware Products:</p> <ul style="list-style-type: none"> VMware vCloud Director VMware vCenter Chargeback VMware vShield VMware vSphere 4 VMware Server 3.5 (production data center) VMware vSphere Hypervisor VMware vSphere High Availability 	<p>Applications:</p> <ul style="list-style-type: none"> Oracle databases Custom-developed industry applications Trend Micro antivirus <p>Partner:</p> <ul style="list-style-type: none"> Integra Networks 	<p>Platform</p> <ul style="list-style-type: none"> HP BL460c G7 blade servers HP EVA8400 and EVA6000 storage arrays HP Virtual Connect Flex-10 Cisco Nexus 5000 Series Switches NetApp V-Series diskless storage system

