



*“VMware View with PCoIP protocol delivers a LAN-like end-user experience to employees in Costa Rica accessing datacenter resources in Michigan.”*

–Josiah Becker,  
Systems Support Analyst, Amway

#### KEY HIGHLIGHTS

##### Challenge

Consumer products company Amway wished to gain economies of scale by aggregating finance operations spread across the Americas into a single enterprise process center in Costa Rica. The challenge was to provide end users with high-performance desktop access to applications residing in Amway's datacenter in Ada, Michigan.

##### Solution

Amway worked with VMware partner Teradici to design and implement a desktop infrastructure using VMware View with PCoIP zero clients.

- Up to 250 desktops to be deployed in Costa Rica
- Fast, high-performance access to IT resources in Michigan
- Amway uses VMware ThinApp to package applications

##### Results

- Aggregation of financial operations cuts costs; Costa Rica project serves as test case for Amway operations worldwide
- Desktop end users access IT resources over WAN with LAN-like experience
- Centralization of data and applications simplifies IT management and enhances

## VMware View with PCoIP Protocol Enables Amway to Aggregate Americas Operations for Economies of Scale

End Users in Costa Rica Gain High-Performance Access to Michigan Datacenter over WAN

### Teradici Assists Amway to Leverage VMware View with PCoIP, Samsung Zero-Client Monitors for Excellent Performance over WAN

The words “Costa Rica” mean “Rich Coast.” Executives of the global direct selling company Amway might have held that translation in mind recently when they decided to consolidate the finance processes of the company's Americas operations—formerly spread across dozens of countries—into one enterprise process center in this Central American nation. The efficiencies gained would slash costs and swell productivity. But first, technical problems had to be solved. Costa Rican employees would have to link with Amway's Michigan datacenter. How could the company deliver great desktop performance over a wide area network? How could it ensure information security?

When Amway System Support Specialist Josiah Becker took on these challenges, the project came with a tight 16 week deadline. No problem. Already aware of the advantages Amway gains from datacenter virtualization, Becker knew that VMware's desktop virtualization solution, VMware View, would be key. With support from VMware partner Teradici Corp., inventor of the PC-over-IP (PCoIP) display protocol, Becker created a virtual desktop infrastructure that makes accessing Michigan from Costa Rica seem like tapping a LAN from the workstation under your desk.

“You can't tell that it's not running locally,” Becker says. “VMware View with PCoIP protocol delivers a high-performance end-user experience over the wide area network. That enables Amway to consolidate the finance processes of the Americas—which previously were decentralized—into one location, without building a datacenter there.”

“Because of the efficiency gains this brings, there's buzz about this technology in all our offices around the world,” he adds. “Amway operations from Europe to China are watching this project as a test case.”

### Global Firm Builds on Virtualization Success

Based in Ada, Michigan, Amway offers leading nutrition, wellness, beauty and home care products through a network of more than three million individual business owners worldwide. Amway brands include ARTISTRY® skin care products and NUTRILITE®, the world's leading brand of vitamin and mineral supplements. The company also markets home cleaning products, personal care products, cookware and water purifiers. Amway's innovative direct selling business model creates opportunities for millions of people worldwide. The company also employs some 13,500 persons in more than 50

## VMWARE AT WORK

**VMware View™ 4****VMware vSphere™ 4**

- VMware vMotion®
- VMware Storage vMotion
- VMware High Availability
- VMware Fault Tolerance
- VMware Distributed Resource Scheduler

**VMware vCenter™ Server****VMware vCenter Site Recovery Manager****VMware ThinApp**

## DEPLOYMENT ENVIRONMENT

**Primary application**

- VMware View 4

**Primary hardware**

- HP ProLiant Servers
- EMC CLARiiON Storage
- Metrix Storage System
- Samsung NC190-1/NC240 PCoIP monitors

Guest operating systems: Microsoft® Windows Server 2000, Windows Server 2003 (32 and 64 bit), Windows Server 2008 (32 and 64 bit), Windows XP Professional, SUSE Linux Enterprise Server 9 and 10 (64 bit).

**Primary software**

- Oracle databases and software
- ViewStar in-house viewing application
- Microsoft SQL
- Mission-critical applications running in production on virtual machines include Hyperion; EMC Documentum; DC Link, which controls wireless devices in manufacturing plants; middleware; and Internet servers.

**Number of end users:**

- 20,000 employees worldwide
- Up to 250 in Costa Rica

affiliate offices. Amway's commitment to good global corporate citizenship is most visible in the Amway One by One Campaign for Children, which has helped more than seven million children since it was launched in 2003.

Amway started virtualizing its datacenters in 2004, and today pursues a virtualization-first policy. Its IT environment uses HP ProLiant Servers and EMC storage, running Microsoft Windows and Linux operating systems. Amway's virtualization infrastructure is VMware vSphere, with rich use of the platform's built-in availability and load-balancing features including vMotion, High Availability (HA) and Distributed Resource Scheduler (DRS). The company also uses VMware Site Recovery Manager, VMware vCenter management, and Storage vMotion. Virtualized applications include Microsoft Windows-based applications and the Amway website. Several core applications still run on physical servers.

Applications used by the Costa Rica center include financial and reporting software; ViewStar, an in-house document scanning and viewing application; and Oracle and Microsoft SQL databases. Roughly 250 employees ultimately will work at the site, handling functions such as accounts payable, accounts receivable, treasury, procurement, financial analysis, forecasting and taxes. Previously, each country had its own site and used its own processes. Along with centralizing, Amway intends to standardize and digitize. In its push to go paperless, the company developed an in-house viewing application for scanning vendor documents into a document management system for electronic distribution and processing. Problem is, those kinds of image-intensive applications don't traditionally perform well over high-latency connections.

"Amway wanted to give employees in the Costa Rica location access to our line-of-business applications based in Michigan, with similar to local performance characteristics," Becker explains. "We didn't want to build a datacenter in Costa Rica—there was no time, and for security reasons Amway executives didn't want data stored there locally."

### Teradici PCoIP Technology and VMware View Deliver Desktops Seamlessly over WAN

VMware partner Teradici brought to Amway the technology and expertise to overcome project challenges. PC-over-IP technology, which comes integrated into VMware View, allows enterprise desktop devices to be centrally managed in a datacenter while providing full quality, responsive desktops, locally over a LAN or remotely over a high-latency WAN. It also eliminates the security risks associated with transmitting data across a network or having data reside in remote PCs.

"Amway needed the ability to centralize their financial services operations while providing a solid user experience and being able to quickly and securely deploy a remote solution to users without having to manage standalone PCs," says Ziad Lammam, senior product manager at Teradici. "The PCoIP protocol delivered sharp text and high quality video and audio, especially when using certain latency sensitive applications – something that was not possible when Amway used RDP previously. Amway's deployment in Costa Rica was a true test of the performance of VMware View and PCoIP zero clients on a long distance WAN. Even with over 100ms of latency and an average bandwidth utilization of 100Kbps per user, users were not able tell that they were connected thousands of miles away from the datacenter."

The solution deploys VMware View with PCoIP in conjunction with Samsung Integrated PCoIP Monitors. Amway uses dual monitors—making it easier for workers to view documents on one screen while entering data on another. As plug-and-play zero clients, the Samsung devices have no CPU, operating system or device drivers; the keyboard, mouse, network cable, USB and audio devices plug directly into the monitor. This virtually eliminates desktop maintenance, and strengthens security because the devices store no data. What's more,

USB security built into the zero-client architecture gives system administrators control over authorization to use USB ports.

“We don’t have to manage standalone desktops,” Becker says. “With zero clients down in Costa Rica we don’t have to worry about reimaging their machines, or patch management.”

Amway uses VMware ThinApp to accelerate and simplify application deployment. Virtual Profiles solutions, integrated into VMware View, allow system administrators to dynamically provision users, applications and data, across networks and devices. Use of non-persistent pools starts desktops fresh every day.

“The desktops are deleted after the user logs off, and we’re constantly creating new machines using linked-clone technology. We have a very low threat footprint. Our users don’t have admin rights. All our applications are packaged with VMware ThinApp and delivered dynamically based on the Microsoft Active Directory group access level of the user,” Becker says. “Since we’ve been up with this system, we’ve had no spyware and no blue screens of death. We don’t have to do any application installs anymore. We simply add a user to a group and they get the application. If a virus infection occurs, we can deal with it in minutes instead of spending days cleaning every individual device.”

During the evaluation stage, Amway saw performance improvements over that of Remote Desktop Protocol (RDP). PCoIP technology is a server-centric protocol, meaning that all graphics rendering and processing are done on datacenter servers. Compressed, encrypted bitmaps or frames are transmitted to the remote client. Therefore, the protocol can adjust in real time to account for the available bandwidth and latency of the communication channel.

“We have a 45 Mbps DS3 point-to-point connection from Ada, Michigan to Costa Rica, and latency around 100 to 110 milliseconds, with average utilization of less than 100 kilobits per session,” Becker says. “We found better performance from the PCoIP protocol compared side-to-side with RDP. It’s an intelligent protocol that’s able to meter itself. We don’t have bandwidth limitations set up on it. It manages the user experience, uses the bandwidth available but doesn’t fight itself.”

## A World of Possibility

At first, end users were reluctant to lose the control one normally associates with PCs. Then one day, when Becker was at Amway’s Costa Rica center, the power went out—a common occurrence because of weaknesses in the country’s electric grid. Employees were sure they had lost all the data they had been working on. Not so. The information was still safe in the Michigan datacenter, and when the power came back on workers could resume work on their desktops exactly where they had left off. Even Costa Rica executives, who have their own laptops, tend to use the View desktop on the Samsung zero client monitors because it’s faster.

“We’ve seen some pretty amazing stuff in this country,” Becker says. “You would expect some degradation in how fast you can work just based on the speed of light if you’re accessing information from Michigan. However, anecdotally we’re hearing that the transaction volume is actually up. We’ve been able to build a system that is completely dynamic, manageable and scalable, and deliver it thousands of miles away.”

Costa Rica is Amway’s first project to centralize regional finance processes. Since the company operates globally, business managers around the world are watching what happens in Costa Rica. In Japan, Amway is interested in work-at-home capabilities in the event of a pandemic. Executives in China, Europe, Southeast Asia and Australia

all grapple with the same business drivers to reduce costs, increase security and raise productivity. As Amway's virtualized infrastructure evolves, the company continually advances its ability to deliver IT as a Service (ITaaS) through a private cloud.

"Amway executives around the world are awaiting status reports on the Costa Rica implementation," Becker says. "Costa Rica is the flagship."

