

# Fulton Financial Corporation



*“We were up to about 125 patches per quarter with ESX. Now that we’re running ESXi, I guess we do about three patches per quarter. So that’s made a huge difference for us.”*

– Scott Arnold  
Engineering Manager,  
Fulton Financial Corporation

## KEY HIGHLIGHTS

### Challenge

Reduce the cost of hardware and system management, improve the security and availability of key financial applications, and augment existing disaster recovery strategy.

### Solution

A virtualized server infrastructure that’s 100 percent based on VMware ESXi, using its ultra-thin footprint to save on server costs, increase security, and mirror two datacenters for disaster recovery.

## Fulton Financial Corporation

Headquartered in Lancaster, PA, Fulton Financial Corporation offers its customers an extensive range of financial services. The corporation is a financial holding company with eight subsidiary community banks. These banks have approximately 270 locations and ATMs across five states. Information technology is the glue that connects Fulton’s various offices and services, and the VMware ESXi hypervisor is a vital part of their IT infrastructure. ESXi has the same underlying code base as VMware ESX, but it doesn’t have a general-purpose OS—making for an ultra-thin footprint and better security and reliability.

Fulton has two datacenters; one in Pennsylvania, and a second facility in New Jersey. “We have VMware vCenter Server at each location and we try to maintain an equal number of ESXi hosts at each site,” Arnold explains. “That way if the need arises, we can failover our virtual infrastructure to the other datacenter.” Fulton’s datacenters are currently about 60 percent virtualized, a number that’s rising rapidly thanks to the company’s “VMware First” policy for new applications and servers. And 100 percent of Fulton’s virtualized applications now run on ESXi hosts.

The shift from ESX to ESXi took place in August 2009, when the corporation upgraded from VMware Infrastructure to VMware vSphere. When the migration was complete a month later, Fulton had roughly 200 virtual machines running on 29 HP ProLiant BL465 blade servers in its Pennsylvania datacenter, and on 26 more in its New Jersey facility.

According to Arnold, the migration from ESX to ESXi was quick and easy. “Because our datacenters back each other up, we leave extra capacity at each site,” he explains. “So we were able to put a bunch of hosts into maintenance mode, repalce the hard drives with USB drives, and install ESXi. Once it was installed on one host, we used a PowerCLI script to configure all the hosts identically.”

It took Arnold and his team a week and a half to get their Windows PowerShell script written and tested for the migration. “We used the PowerCLI to write PowerShell scripts to automate our ESXi host configuration. It was easy to use and took us less than a week to write and test the script. We highly recommend it to other administrators looking to automate some aspects of their ESXi deployment,” he reports. “Of course, if you’re running VMware Host Profiles, you don’t have to worry about that at all. But without Host Profiles, I’d definitely recommend using PowerCLI with ESXi.”

### An Array of ESXi Benefits

The Service Console in the classic ESX architecture consumes approximately 2GB of disk space, which has been removed from the ESXi architecture, reducing its footprint to less than 100MB. “ESXi is architected so that it does not require local drives and is small enough to fit on a USB,” Arnold says. “We boot our ESXi images from USB keys and have gotten rid of our hard drives all together.

The fact that the ESXi architecture does not include a traditional OS increases security—a paramount concern at Fulton and other financial institutions. “We like the idea of getting away from installing an OS,” he says. “Since ESXi doesn’t have one, that means it’s a safer

*“We used the PowerCLI to write PowerShell scripts to automate our ESXi host configuration. It was easy to use and took us less than a week to write and test the script. We highly recommend it to other administrators looking to automate some aspects of their ESXi deployment.”*

— Scott Arnold  
Engineering Manager,  
Fulton Financial Corporation

#### VMWARE AT WORK

VMware vSphere™ 4 featuring:

- VMware ESXi™ 4
- VMware vCenter™ Server 4
- VMware vMotion™
- VMware Distributed Resource Scheduler (DRS)
- VMware High Availability (HA)
- VMware vSphere PowerCLI

#### DEPLOYMENT ENVIRONMENT

- VMware ESXi hosting approximately 200 virtual machines on 55 HP ProLiant BL465 blade servers connected to a NetApp FAS3070 SAN
- Guest operating systems: Windows Server 2000, 2003 and 2008; Windows 7, Windows Vista, Windows XP
- Application servers for the majority of line-of-business applications, including Microsoft SQL Server

hypervisor—more of a black box.” He also cites security benefits particular to heavily regulated industries like finance.

Another significant benefit of the move from ESX to ESXi is the need for far fewer patches. “We were up to about 125 patches per quarter with ESX,” Arnold reports. “Now that we’re running ESXi, I guess we do about three patches per quarter. So that’s made a huge difference for us.”

ESXi has also been a game changer when it comes to backup. “Believe it or not, we’re not backing up our ESXi hosts,” Arnold says. “We can rebuild them so quickly, there’s no need to. In fact, it would take longer to restore from the backup than it would to build a new one.” And when it comes to hardware monitoring, Arnold’s team uses the HP customized ESXi image with integrated CIM providers from HP. The CIM providers collect hardware health information visible through HP systems management products or through VMware vCenter.

## Results

- Fulton’s two datacenters are 60 percent virtualized with VMware vSphere and ESXi, with a VMware First policy for new servers and applications
- 100 percent of Fulton’s virtualized servers run on ESXi
- The smaller footprint of ESXi allows Fulton to buy less expensive servers without hard drives
- ESXi makes it easier to protect vital data and servers, and speeds up audits
- The number of patches has been slashed dramatically: from about 125 per quarter with ESX to just three with ESXi
- With ESXi, Fulton does not worry about backing up host configuration—if a host fails, a new one can be set up quickly and easily

