



## IT Visibility Vital for Optimized System Performance

Founded in 1988, Cornerstone Home Lending, Inc. ([www.houseloan.com](http://www.houseloan.com)) is a privately owned mortgage bank that funds over \$5 billion in annual loans. In-house processing, underwriting and funding enable Cornerstone's mortgage advisors to deliver competitive, streamlined financing and on-time closings with best-in-class customer service. The company currently has 122 branch locations in 22 states and almost 1,500 employees.

### Challenge

Cornerstone required a solid technology platform to support growth ambitions of up to USD \$10 billion in annual loans in the next few years. Despite virtualizing almost 10 years ago, Cornerstone had developed a large footprint of physical servers that required substantial resources and investments to manage and maintain.

"We got to a point where we had a lot of servers and not enough room, power, or cooling to accommodate them. We expanded our data center, knowing that at some point we would need to continue virtualizing," said Cornerstone's Server Operations Project Lead, Stan Thampi.

Cornerstone began virtualizing with VMware. According to Archie Bradburn, Cornerstone's Server Operations and Infrastructure Team Lead, "the move from physical to virtual with VMware was pretty effortless, and we continued on with VMware up until VMware® ESX® 3.5 Update 4, at which point, the company decided not to implement any more changes. They said it seemed like a stable product, and to leave it alone, which we have. The ESX 3.5 Update 4 environment has been running ever since."

In addition, Cornerstone wanted to maximize use of its Microsoft enterprise license agreement and began implementing Hyper-V. "It was thought that Hyper-V could be a good fit for us in the virtualization arena. The company brought in an outside vendor to implement the solution and it never quite panned out the way that we expected it to. The virtual servers were bouncing around from one host to the other. The Failover Cluster Manager in Hyper-V never could find a home that it was happy with and it was constantly moving around. It soon became a nightmare for us. We had moved several of our production servers into this environment and it was completely unstable. Working with Microsoft, they kept throwing hot fix after hot fix at us until we threw our hands up. We moved everything back to either a standalone Hyper-V host without a cluster, or just re-enabled the machines that we had running in the old VMware environment ESX 3.5 Update 4."

Due to the poor Hyper-V experience, Cornerstone launched a thorough investigation into competitive virtualization offerings that would provide a stable and reliable architecture. In the end, the team chose VMware.

### INDUSTRY

Finance

### LOCATION

Houston, Texas

### VMWARE SOLUTION

VMware vSphere® with Operations Management™

### HARDWARE VENDORS

EMC VNXe, HP, EMC, Citrix, Brocade

### HARDWARE

2 VNX 5500 SANs, 2 HP 3PAR P4500, 6 HP C7000 Chassis, 40 HP BL485G8 Blade Servers (AMD dual proc, 32 cores, 256G RAM)

### TECHNOLOGY PARTNER

Computex, Inc.™

### KEY CHALLENGES

- Improve agility and scalability of IT platform to support growth
- Drive down IT costs
- Optimize previous investment in technologies
- Implement stable, reliable infrastructure

### SOLUTION

Cornerstone implemented VMware vSphere with Operations Management, deploying 45 hosts and almost 100 virtual machines to provide visibility into past and present asset health through a unique, centralized console, and enable superior platform-wide management.

### BENEFITS

- Comprehensive visibility into IT
- Improved resource planning to better inform IT investments and decision making
- 70 percent reduction in hardware costs
- Ensured uptime with reliable virtualized infrastructure
- Reduced time spent on identifying and resolving system issues

### Solution

“When we brought VMware into the fold, we went through several tests that included building servers and a cluster, in order to make sure everything worked for us and that it performed as well as in the past, and as well as they now claimed,” noted Ricky Caldwell, Cornerstone’s Director of Server Operations, Architecture and Infrastructure. “What we found was that VMware exceeded those expectations every single time.”

As the team tested competitive virtualization offerings to meet technological and business requirements, Cornerstone discovered that vSphere with Operations Management offered better usability with a more intuitive interface. vSphere with Operations Management provided unprecedented visibility into past and present asset health through its unique, centralized console, and enabled superior platform-wide management.

Cornerstone realized that vSphere with Operations Management could greatly improve capacity planning. Currently, the team had few capacity planning practices in place, resulting in storage being quickly depleted and leading to frequent orders of additional servers that would require precious administrative time to configure on the network – a process that took several weeks to complete.

“Having a forecast model to help us plan out the next three to five years enables us to give the business a good prediction of when we are going to run out of storage space. We never had this kind of capability before,” said Caldwell.

“It was important to take the time to deliberate between products and find one that fit our industry, and that met our stability and performance requirements. We found that VMware could give our company what it needs to meet our overall business objectives.”

### Implementation

With the help of partner Computex, Inc., Cornerstone was able to implement 45 hosts and close to 100 virtual machines within a very short timeframe.

“We were pretty hands-on during the implementation,” said Thampi. “We ran some tests and took some of the VMs that we provisioned out initially and moved them around between hosts just to demonstrate that we could lose some hosts and still keep the VM’s up and running. Some of the SQL team members also wanted to see it in action, so they had their apps up and were writing data to it as we moved our VMs around between hosts and between clusters. They were very excited.”

According to Caldwell, getting the team trained on vSphere with Operations Management was fairly easy, further shortening the time to value. “There wasn’t a lot of time dedicated training,” he said. “We already had an old existing VMware farm in place, so it was easy for the team to learn the new system, to learn the nuances and find out where the new features were. Training is a great tool, but sometimes the business expands so rapidly that we need to just jump in with both feet. We were able to do that with VMware.”

### Benefits

Caldwell sees the capacity planning and performance monitoring offered by vSphere with Operations Management as vital to his organization. “I’m able to open up VMware® vCenter™ and with everything in a common console; it gives me one full view to my entire environment. I’m not required to open up five different management consoles in order to see my server, my storage, my network. It’s all in one location which makes it very easy.”

“With vSphere with Operations Management, we get a very in-depth view of what’s happening on various levels, on a day-to-day basis, a weekly basis, or a monthly basis,” added Thampi. “Alerts tell me right away if I have any emerging performance issues that need to be looked at, before they impact the business.”

***“For the first time ever we’re able to capacity plan, to look ahead and forecast what we’re going to need for the next one, three, or five years. This allows us to act proactively and give the business a clear model of projected costs along with a timeline. Ability to forecast capacity usage has changed the way Cornerstone calculates IT budgets. It gives us the ability to invest in IT the proper way.”***

Ricky Caldwell  
Director of Server Operations  
Cornerstone Home Lending, Inc.

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Cornerstone uses vSphere with Operations Management to provision storage more accurately. The dashboard informs the team on whether a server has been over-provisioned and needs to be dialed back, or when storage is going to run out.

To maximize system performance, Cornerstone utilizes vSphere Distributed Resource Scheduler™ (DRS) provided within the vSphere with Operations Management platform. With DRS, Cornerstone can load balance resources to virtual machines by deploying new capacity to a cluster or automatically migrating virtual machines at any time without any service disruptions.

### **Comprehensive visibility into IT**

vSphere with Operations Management collects the metrics from vCenter to provide a holistic view of Cornerstone’s IT infrastructure. The comprehensive dashboard includes health, risk, and efficiency scores, so managers quickly understand IT service levels and workload capacities.

Director of Server Operations Ricky Caldwell noted the value Cornerstone has received from the new reporting capabilities. “For the first time, we’re able to actually present a cost model to show our ability to be profitable from an IT perspective. Our executives and shareholders can also see when we’re going to need to add to our current environment, along with the justification.”

### **Improved resource planning to better inform IT investments and decision making**

Since implementing vSphere with Operations Management, Cornerstone can now better identify capacity shortfalls, stressed workloads, and over-provisioned servers.

“For the first time ever we’re able to capacity plan, to look ahead and forecast what we’re going to need for the next one, three, or five years. This allows us to act proactively and give the business a clear model of projected costs along with a timeline,” said Caldwell. Ability to forecast capacity usage has changed the way Cornerstone calculates IT budgets. “It gives us the ability to invest in IT the proper way.”

Mark Belanger, CIO of Cornerstone, summarizes their new capabilities as being able to look into the past, as well as into the future in order to make decisions with certainty, and with a click of a button. Such decisions would previously have taken hours of calculations and deliberation.

### **70 percent reduction in hardware costs**

Cornerstone can scale quickly with virtualized servers, which can be deployed more rapidly than physical servers, and do not require the procurement and logistics involved with hardware.

“If we needed five new servers, we could have them up and running that same day, whereas it used to take three to four weeks to get servers in,” said Caldwell. “We’re in a more agile position now where we can provide a new server with just a few clicks.”

The switch from physical to virtual servers has resulted in hardware cost savings close to 70 percent. “We’re no longer spending four or five thousand dollars per physical server. We can now leverage the virtual hardware we have in place for a third of the cost,” added Caldwell.

In addition, Cornerstone has also reduced operating expenses since virtualized infrastructure require less power and cooling.

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Director of Server Operations  
Cornerstone Home Lending, Inc.

### Ensured uptime with reliable virtualized infrastructure

For CIO Mark Belanger, the greatest benefits of vSphere with Operations Management are its dependability, fault tolerance, and resilience.

“In the mortgage industry, we have to turn loans in certain number of days. When a client or a customer is sitting at a bank or in one of our offices and they’re trying to close, it’s very important that it happens on that particular day, and the last thing that we need is a system failure to keep it from happening. Otherwise, our loan officers don’t make money, the company doesn’t make money, and the client doesn’t get their house. There are also banks and title companies involved, so there are multiple entities to support. We want to make sure our systems are stable, up and running, and that we can guarantee the uptime that we promise.”

“I’ll get an email or even a phone call automatically if something were to go wrong,” added Bradburn, “so I can focus on growing the company and growing the IT department, while having the knowledge that vSphere is going to remain reliable, resilient and effective.”

### Reduced time spent identifying and resolving system issues

Cornerstone IT can now identify issues quickly and isolate problems in order to find root causes that can be systematically remediated to restore service levels. The amount of time spent on managing the consolidated virtual environment has been significantly reduced.

“The time savings that we have achieved through the console visibility is quite large. We can log-in to one single pane and see everything we need. Before, we needed to log into different consoles to check the server, the networking performance, and the SAN. Now, all of that information in one easy spot for us and that allows us to manage our systems and run our business more efficiently. I would estimate that we have gone from 15 to 20 minutes a day spent logging into something, down to just a few seconds,” said Caldwell.

### Future Plans

Cornerstone continues to expand virtualization, aiming to be fully virtualized on VMware in the next 12 to 18 months.

“Business is changing and technology is changing, but at some point there needs to be a place that feels like home, that’s stable. For us, VMware is that stable product,” Caldwell concluded. “When we look at our virtual technologies, we’re not concerned whether or not this product is going to be stable in the long term. We know that the stability is there, the product’s been around for a long time and it’s continuously being improved.”

“At the end of the day, success for our virtual environment means that we’ve given our business the ability to fund loans in a way that we know to be safe, secure, and stable, and when I go home at night, I have a good feeling knowing that VMware now runs our virtual infrastructure environment,” finished Caldwell.

