



## Financial Services Provider Chooses Hyper-V over VMware for Speed, \$1 Million Savings

### Overview

**Country or Region:** United States

**Industry:** Financial services—Banking

### Customer Profile

Based in Pittsburgh, Pennsylvania, Urban Lending provides real estate information products to the mortgage industry. It has processed more than 6 million mortgage modification analyses and has 1,100 employees.

### Business Situation

To succeed in the high-volume, fast-growing mortgage modification business, Urban Lending needed an infrastructure provider that could handle massive volumes of analyses quickly and reliably.

### Solution

Urban Lending turned to Mortgage Cadence, which, after considering a virtualization solution based on VMware, decided to base its infrastructure on Windows Server 2008 R2 with Hyper-V.

### Benefits

- Performance gains of up to 800 percent
- Uptime increases to 100 percent
- Faster, easier, more intuitive management, compared to VMware
- TCO savings of nearly U.S.\$1 million annually

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The record number of mortgage modifications over the past few years has meant record business for companies that service those modifications—if they can keep up with demand. Loan origination processor Urban Lending Solutions expanded into the modification field, only to find that neither its technology vendor nor hosting provider could support the increased business. So, Urban Lending turned to enterprise lending solution provider Mortgage Cadence. To expand capacity cost-effectively, Mortgage Cadence looked at virtualization solutions, choosing Windows Server 2008 R2 with Hyper-V over VMware. The result is performance that is 40 to 60 percent faster than VMware; uptime of 100 percent, which is up to 15 percentage points higher than it saw with VMware; faster and easier management; and savings on the total cost of ownership that approach U.S.\$1 million annually.



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## Situation

It used to be that the only times that most people would do business with a mortgage company were when they bought or sold their home, or paid off their mortgage. But with economic times tight, a growing number of people are finding another occasion to do business with their mortgage companies—to modify the terms of their mortgages to allow them to remain in those homes. Mortgage modifications are as diverse as the people seeking them, and can include any combination of loan forgiveness, deferral, temporary interest rate reductions, and more. As more people seek mortgage modifications, the business of analyzing and processing applications, and producing modification document packages, becomes an increasing challenge.

It's a challenge that Urban Lending Solutions was happy to accept. The 10-year-old company is a major force in the world of loan origination processing, providing appraisal, title, and settlement services to some of the nation's top lenders. Expanding its services from loan origination to loan modification seemed a natural step—and one that found a receptive audience.

As the demand for such services grew, banks and other lenders began to look to outsourcers to handle the load. Urban Lending stepped in and began servicing 25,000 loan modifications per month. Two years later, it was handling more than 400,000 modifications per month—an increase of 1500 percent. In those two years, it had processed more than 6 million modifications in all, of which half were ultimately implemented by borrowers and lenders. That made it one of the largest loan modification companies in the United States.

As the volume of the loan modification business grew, so did the technical challenges in handling that business. The company needed to run up to 200,000 loan modifications simultaneously. It had to process and print 600 versions of 60-page modification document packages in batches of thousands over a few hours. And it needed to operate with 100 percent uptime, since speed and reliability are highly competitive factors.

Because lenders could change their loan modification criteria at any time—and as frequently as hourly—the analysis engine that Urban Lending used had to be highly flexible. The company built its engine on Microsoft Office Excel 2007 spreadsheet software, which provided that flexibility—but which was never intended to provide the level of scalability that Urban Lending soon required. An external vendor provided the document management and printing services—but it too was stretched to its limits.

"We always knew we were on a temporary solution," says James Smith, President at Urban Lending Solutions. "But we needed to move quickly and put something in place while we looked for a long-term solution. We just didn't know what that long-term solution would be."

## Solution

Because the loan modification market was relatively young, off-the-shelf loan modification packages were unavailable. Urban Lending decided that its best option lay in a commercial loan origination package that could be easily reconfigured—with minimal coding—for loan modification. It decided to look only at packages written in the Microsoft .NET Framework 3.5, both because of its flexibility and because of in-house expertise with that framework at Urban Lending.

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The company considered two such packages and chose a product suite from Mortgage Cadence, a Microsoft Gold Certified Partner. The combination of Mortgage Cadence Reprise and Mortgage Cadence Finale provides an integrated solution for the processing and evaluation of loan requests, as well as the preparation and delivery of loan documents. Because it is based on .NET and the Windows Server 2008 R2 operating system, it could easily be adapted with Urban Lending application logic to deliver the custom loan modification solution that Urban Lending sought.

But could Mortgage Cadence provide the extreme scalability and 100 percent uptime that Urban Lending also required?

#### **Seeking a Virtualization Solution**

Even before Urban Lending came calling, Mortgage Cadence was looking for an infrastructure that it could use to deliver a hosted environment to its clients with just such scalability and reliability. The company’s planning centered on a virtualization solution, in which application and database would run in virtual machines that could be brought up or down and load balanced far more quickly than physical machines. Because of the potential cost-effectiveness of the solution, Mortgage Cadence would be more able to deliver the scalability and reliability that companies like Urban Lending required.

Mortgage Cadence managers focused on VMware ESX for their virtualization solution. To test the performance of VMware, the company put it on the same configuration it was using for a physical deployment. That is, where the company originally ran its Loss Mitigation and Finale software on two physical application servers and one physical database server, it now put one virtual machine on each physical machine,

and tested the Mortgage Cadence software with the same two servers/one server configuration. The physical hardware was a trio of HP ProLiant DL385 dual-core, dual-processor computers. Any loss or gain in performance could therefore be attributed to the virtualization software.

The result was appalling, according to Jeff Gelina, Vice President of Technology at Mortgage Cadence. “We saw a 40 to 60 percent degradation of performance on VMware,” he says. “Since it was the same solution running on the same servers, with a one-to-one correspondence between physical servers and virtual machines, we could attribute the difference to VMware. It wasn’t acceptable.”

#### **Gaining Performance over a Hardware Solution**

Fortunately, Mortgage Cadence had options. Microsoft had recently introduced its Hyper-V virtualization solution, part of the Windows Server 2008 R2 operating system. Mortgage Cadence tested it in the same configuration it had tested VMware—one virtual machine on each of three physical servers. “With Hyper-V, we regained the 40 to 60 percent performance we’d lost with VMware,” says Gelina. “In some functions, we actually gained performance over the physical-only configuration.”

The test convinced Mortgage Cadence to build its virtualization architecture for Urban Lending around Hyper-V. That architecture now includes four physical servers (three for production and one for testing) hosting about 10 virtual machines, supported by a storage-area network. For added availability and reliability, that configuration is repeated in a second data center, with jobs load-balanced between the two. Each data center provides seamless continuity for users when one or

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more physical servers are taken down for either planned or unplanned maintenance; the dual data centers also provide disaster recovery service for each other.

#### **Virtualizing the Database Software**

Mortgage Cadence engineers who'd been disappointed by the results of the VMware test were reluctant to virtualize the solution's Microsoft SQL Server 2008 Web database, for fear of incurring a similar performance hit. The compromise with their colleagues was to virtualize SQL Server on a single virtual machine running alone on a physical host. When that configuration proved successful, Mortgage Cadence went on to run the SQL Server virtual machines together with other virtual machines.

"We've proved that SQL Server runs fine in a virtualized environment," says Gelina. "Now, we don't much care where SQL Server runs in the environment. We just pool it with the other virtual machines, and it's fine."

The majority of guest machines are devoted to the assembly and printing of tens of thousands of loan modification documents at a time. Mortgage Cadence uses the Live Migration feature in Hyper-V to move virtual machines from one physical server to another, for optimal use of resources as needs change. It also uses Microsoft System Center Virtual Machine Manager 2008 R2 and Microsoft System Center Configuration Manager 2007 R2 to bring machines up and down, and to monitor and manage them from a single System Center management console.

#### **Benefits**

By adopting Windows Server 2008 R2 with Hyper-V technology, Mortgage Cadence has seen both performance and availability soar, enabling it to meet its demanding

service level agreement (SLA) with Urban Lending Solutions, while reducing the total cost of ownership (TCO) for itself and its customers.

#### **Performance Gains of up to 800 Percent**

The 40 to 60 percent performance gain for Hyper-V relative to VMware only begins to show what Hyper-V can do, according to Gelina. Mortgage Cadence finds it can quickly bring up to 30 virtual machines onto a physical server to meet peaks in demand—and to increase the rate of performance by 800 percent over a physical environment.

At that rate, the Mortgage Cadence software can produce more than 100,000 sets of mortgage modification documents at a time, more than enough to meet its SLA with Urban Lending, and to support up to 40 additional customers. The total throughput that Urban Lending's former provider could produce in four to five hours is now produced by Mortgage Cadence, using Hyper-V, in 11 minutes. And the Mortgage Cadence architecture generally runs at only 20 percent of capacity, giving the architecture a tremendous amount of additional capacity to use before Mortgage Cadence needs to consider an expansion.

"By using Hyper-V, we're meeting extremely demanding SLAs with our customer, which we couldn't do with VMware, let alone with a physical environment," says Gelina. "We're operating at a level that would be impossible with any other technology."

#### **Uptime Increases of 10 to 15 Points, to 100 Percent**

Faster throughput is only part of the advantage that Mortgage Cadence and Urban Lending get with Hyper-V. Another is availability. The 100 percent uptime that the companies see with Hyper-V contrasts

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with the Mortgage Cadence experience with VMware, which Gelina estimates provided 85 to 90 percent availability.

"On VMware, our application would go down every day," says Gelina. "It might be down for an hour, it might be down for just five minutes. But just the fact that it was down was a big issue from the customer perspective."

That's because availability is the second factor that, along with throughput, determines the ability to meet SLAs. "Speed alone is insufficient if you can't depend on it to be there when you need it," says Gelina. "We know we can depend on this system, and on the throughput it delivers. Companies like Urban Lending depend on us, and we depend on Hyper-V."

Smith, the president of Urban Lending, agrees. "We don't get involved in how Mortgage Cadence delivers their solution to us," he says. "We don't have to. We just know that it runs as fast as we need it to, and that it's always there. No problems, no excuses. What more do we need to know?"

#### **Faster, Easier, More Intuitive Management, Compared to VMware**

Gelina attributes the greater availability of Hyper-V in part to the easier, more streamlined ability to monitor, manage, reconfigure, and troubleshoot the virtualization solution, compared to VMware.

"System Center Virtual Machine Manager and System Center Configuration Manager interoperate fully with each other and with Hyper-V," he says. "That gives us a more robust management environment than we had with VMware. The results are awesome."

He notes that the System Center tools work together to enable Mortgage Cadence to bring virtual machines up and down automatically in response to preset system parameters. Monitoring and troubleshooting are more in-depth and effective thanks to System Center management packs that each focus on key components of the Mortgage Cadence solution, including networking and routing, SQL Server, Windows Server, Active Directory Domain Services, Hyper-V, and more.


Mortgage Cadence also makes substantial use of System Center management packs for compliance. "All of our clients are banks, or others, like Urban Lending, are in the banking and financial services industry," says Brad Thompson, Executive Vice President of Professional Services. "Audit functionality is a huge issue for them—and we use this technology to demonstrate that we can meet their needs in this area, as well."

Part of the greater manageability of Hyper-V is simply due to the fact that it is part of Windows Server. "Our people already know Windows, so they know most of what they need to know to manage Hyper-V," says Gelina. "It's so much more intuitive for our systems engineers. They're so glad they don't have to deal with Linux or another operating system."

#### **TCO Savings Approaching \$1 Million Annually**

Mortgage Cadence moved from VMware to Hyper-V for a platform that met its needs and the needs of its customers—not to save money. Yet, it has achieved that benefit as well, according to Gelina.

He notes that the licensing fee for VMware was 10 times the cost of licensing Hyper-V. "Sure, it was a lot cheaper to go with



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Hyper-V,” he says. “But that was a side benefit; we went with it because it’s the better virtualization solution.”

That side benefit is continuing to grow for Mortgage Cadence. The 12-fold increased throughput that Mortgage Cadence sees with Hyper-V compared to VMware, on the same resources, means that it’s far more cost-effective for the company to operate on the Microsoft virtualization technology. Mortgage Cadence already sees annual savings of U.S.\$300,000 by operating on Hyper-V compared to VMware, and, as its business continues to expand, it expects that savings to grow quickly to about \$1 million.

The company measures its cost savings in other ways, too. For example, its business, as measured by revenues, has grown 50 percent in the 18 months since switching to Hyper V—without having to add hardware resources. “We’re scaling up, taking on more customers, and serving them without more hardware or more personnel—because of the capabilities in Hyper-V,” says Thompson.

Those savings are passed along to the company’s customers, such as Urban Lending. Smith notes that his company now has the option to reassign 50 percent of its processing staff to other functions, or to take on more business without increasing headcount.

“Whichever way we choose to go, we’re doing more with less,” he says, “And that has to be good for business.”

## For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers in the United States and Canada who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to:

[www.microsoft.com](http://www.microsoft.com)

For more information about Mortgage Cadence products and services, call (888) 462-2336 or visit the website at:

[www.mortgagecadence.com](http://www.mortgagecadence.com)

For more information about Urban Lending Solutions products and services, call (303) 996-8900 or visit the website at:

[www.urbanlendingsolutions.com](http://www.urbanlendingsolutions.com)

## Microsoft Virtualization

Microsoft virtualization is an end-to-end strategy that can profoundly affect nearly every aspect of the IT infrastructure management lifecycle. It can drive greater efficiencies, flexibility, and cost effectiveness throughout your organization. From accelerating application deployments; to ensuring systems, applications, and data are always available; to taking the hassle out of rebuilding and shutting down servers and desktops for testing and development; to reducing risk, slashing costs, and improving the agility of your entire environment—virtualization has the power to transform your infrastructure, from the data center to the desktop.

For more information about Microsoft virtualization solutions, go to:

[www.microsoft.com/virtualization](http://www.microsoft.com/virtualization)

### Software and Services

- Microsoft Server Product Portfolio
  - Microsoft System Center Configuration Manager 2007 R2
  - Microsoft System Center Virtual Machine Manager 2008 R2
  - Windows Server 2008 R2 Enterprise
- Technologies
  - Hyper-V

### Hardware

- HP ProLiant DL385 computers

### Partner

- Mortgage Cadence