

## VIRTUALIZATION HELPS BARNES BANK PREPARE FOR A SECOND CENTURY OF SUCCESS

A Case Study of an Intel® Modular Server and VMware Infrastructure Implementation

Headquartered in Kaysville, Utah, Barnes Banking Company (Barnes Bank) is a community commercial bank that has been in operation continuously for more than 117 years. Although the company's roots trace back to the 19th century, its IT infrastructure is decidedly more modern: As part of its overall IT strategy, Barnes Bank replaces the servers every four years. With a quickly growing customer base and steadily growing IT capacity needs, the bank is exploring server virtualization as a means of reducing its hardware footprint while providing higher levels of data protection for the services customers rely on. Lex Stanger, an Information Technology Engineer at Barnes Bank, leads the bank's efforts to find the most appropriate server hardware and server virtualization platforms to address those needs.

### The Road from Physical to Virtual

Early in 2008, Barnes Bank planned to add four new servers and replace several others at its Kaysville headquarters. The bank had a practice of replacing its physical servers every four years and adding servers to keep up with growing IT demands. Up to this point, each server had typically been dedicated to one application. Going forward, Stanger and his IT team knew they would either need to dedicate an unprecedented amount of physical space to keep up with "server sprawl," or they would need to implement server virtualization.

Intuitively, virtualization seemed like a preferable solution, but the bank was concerned about the costs and complexity of implementation. VMware® provided the software foundation for the kind of dynamic and automated data center the bank needed. VMware ESX™ would allow them to abstract server processor, memory, storage, and networking resources

into multiple virtual machines, while VMware vMotion™ would improve business continuity and decrease unplanned downtime.

However, server and storage hardware remained a problem. An external SAN was projected to cost the bank \$50,000-\$60,000 just for storage. Adding the required four new physical servers would layer on considerable incremental cost. The benefits of server virtualization seemed compelling enough, however, that Stanger pressed forward with plans to implement it, despite the large hardware investment required.

### Intel® Modular Server & VMware Infrastructure 3: The Perfect Solution

At about the time Stanger needed to approach the bank's executive management with a budget for server expansion and a proposal to implement virtualization, he learned about the Intel® Modular Server from his local Intel reseller. The Intel Modular Server offered Stanger an entirely new server and storage option: it is a "business-in-a-box" that incorporates up to six diskless, stateless compute modules, an integrated SAS-based SAN storage, and up to two managed Gigabit Ethernet switches into one unit.

The system would allow Stanger to add the needed four new servers at a savings of \$6,000 over traditional rack optimized servers. Most importantly, Stanger would have a robust server solution with enterprise level IT capabilities that was certified to work with the VMware ESX and would enable seamless integration with advanced VMware services and features like VMware vMotion and VMware High Availability (HA).

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Stanger immediately presented the Intel Modular Server for consideration to the bank's IT committee: A group consisting of Stanger, another IT Engineer, the Chief Risk Officer, two other IT Staff and four other bank officers. Once they learned of the system's capabilities, they proposed to bank executives that they replace the planned four-server purchase plus incremental server additions with one Intel Modular Server.

"Purchasing the Intel Modular Server to use with VMware Infrastructure 3 meant easier management, fewer pieces of hardware to worry about, and less money to spend. It was a pretty easy case to make," says Stanger.

A week after that presentation, the IT team received approval to purchase the Intel Modular Server. A week after that, the system was delivered to the bank and working the same day. Ultimately, the server cost only \$14,000, and the server, OS licenses, and VMware ESX together totaled \$40,000--a savings of more than \$20,000 over the solutions Stanger was considering previously.



### Two Technologies Working Together

When the Intel Modular Server was implemented, none of the Barnes Bank staff knew much about setting up the system or a VMware solution. According to Stanger, configuring the Intel Modular Server proved to be very simple to perform. "Every part of the system was incredibly easy to

set up, including the integrated SAN storage, which is normally a very complex component. I can see that growing our server count and adding more storage will be just as easy," said Stanger. "With the Intel Modular Server and VMware together, we have higher performance and greater data protection than any other one server has given us in the past. What's more, we can manage the whole thing from anywhere with the system's built-in remote management capability."

With four days of training on VMware ESX, Stanger became the resident expert. "VMware ESX on the Intel Modular Server was a breeze to set up and phase into production," says Stanger. "The migration was seamless to end users, and some even mentioned that they noticed a marked increase in server performance after the upgrade, even though they were unaware that it had taken place. Intel and VMware technologies really work together well to provide a stable platform."

### Increasing Performance While Lowering Costs

A critical Teller application now runs on the Intel Modular Server and VMware ESX. The application used to consistently hang in the middle of the day, making it impossible to process transactions for about 10 minutes while the server was rebooted. A regular, daily reboot was required to maintain Teller functionality on existing servers. The Teller software now runs flawlessly, ensuring a consistently high level of service to an important segment of the bank's customer base.

Stanger is also very pleased with the power and cooling savings afforded by the solution. When he took one of the old, displaced servers home and plugged it in, he noted that it took approximately \$72 per month to power that single server. By contrast, two compute modules in the Intel Modular Server at the bank are now being powered for less about \$35 per month.



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## Customer Case Study

### TECHNICAL DETAILS

The combination of the Intel Modular Server with VMware Infrastructure 3 is both powerful and simple to implement. It consists of the Intel Modular Server with two compute modules, each with two Intel® Xeon® Quad-Core 5410 Processors, and 24 GB of fully buffered DIMM. The bank also leverages VMware ESX with instances of Windows® 2003 on top. Thirteen virtual servers are currently running in production, but they have had up to 20 virtual machines running at a time per compute module. Each compute module has 20GB of dedicated storage for the VMware OS and 1000GB for virtual machine storage, shared across all virtual machines assigned to that compute module.

Of the servers that were replaced with the introduction of the Intel Modular Server, two servers were redeployed as replication points to a hot site in Orem, about 60 miles away, and the remaining servers will be sold. One of the Orem servers is now acting as a redundant domain controller and another as a third VMware ESX host. That host is also using an Intel 5000 series chipset. Using a 20MB dedicated leased line, all servers can be fully replicated over the weekend, with changes replicated nightly.

#### Simplifying IT Challenges

As with many banks, Barnes Bank has a core data processor that manages its customer database and processes individual transactions along with hosting checks, statements and other images. In October 2008, the bank converted to a new core processor and a newer version of the corresponding back-end and front-end software, and moved to a datacenter at a different physical site. This conversion required an upgrade to newer versions of the software, and the servers had to be reconfigured to point to the new core data processing site.

Using snapshots of existing servers, Stanger and his team were able to configure the servers and test them while still connected to the previous core data processor. According to Stanger, "Conversion day was literally just a press of a button. If we had not implemented the Intel Modular Server and VMware, the conversion would have involved each of our IT staff traveling to different sites to upgrade the software and then reconfigure the servers in the middle of the night. Thanks to VMware and the Intel Modular Server, we all slept comfortably in our own beds the night of conversion and came in to work at the usual hour without incident," he said. "Impact on bank employees was minimal."

For more information on how you can plan and implement this kind of robust, extremely cost-effective server hardware and virtualization solution, contact your local authorized Intel Reseller. For information on VMware Resellers in your area, please consult the Partner Locator at <http://www.vmware.com/partners/directory/>.

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