FICO

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KEY HIGHLIGHTS

Challenge

Simplify management and reduce costs of a large network of hardware spread across 24 datacenters in four countries, while improving the speed and productivity of global product development organization.

Solution

Investment in VMware virtualization technology allowed the company to consolidate its sprawling IT infrastructure, automate system management tasks, boost availability and shrink energy consumption, while allowing it to deploy state-of-the-art cloud computing environment to speed product development worldwide.

Results

- $2.0 million CAPEX avoidance:

  Virtual Desktop Infrastructure, VMware vSphere cloud computing and VMware virtual machines
- $3.0 million in utility and space savings over three years:

  50% reduction in energy consumption from 8,050 watts to 4,000 watts

  65% reduction in the technology floor space—from 46,000 to 16,000 square feet
- $9.2 million in IT labor cost optimization over three years
- Increased server availability from approximately 98.5% to 99.99%
- Time to provision new servers cut by 83% (4-6 hours to less than one hour)
- 75% reduction in datacenters—from 16 to 4
- 60% reduction in physical servers—from 5,000 to less than 2,000
- Improved software development environment troubleshooting, debugging capabilities and security
- Aiming to achieve a consolidation ratio of 45:1

FICO controls costs, boosts flexibility with VMware virtualization technology.

Leader in analytics and credit-scoring services leverages VMware virtualization solutions to consolidate hardware and streamline IT services; independent study estimates net benefits of $7.9 million and 124 percent ROI.

Industry Innovator Leads In Virtualization

Widely known for its credit-scoring services, FICO is a world leader in decision management and predictive analytics. Clients in 80 countries work with FICO to increase customer loyalty and profitability, cut fraud losses, manage credit risk, and meet regulatory and competitive demands. Consumers use the company's FICO scores—the standard measure of credit risk—to manage their financial health. Minnesota-based FICO has grown steadily since its founding in 1956 and today employs 2,000 people in more than 20 offices worldwide.

In an industry that depends heavily on IT, FICO has earned a reputation as a technology innovator. The company consistently embraces new information technologies to gain a competitive edge, helping it outperform the industry in key benchmarks such as product innovation, financial health and corporate sustainability. FICO's investment in virtualization and cloud computing—a multi-year initiative that deployed VMware's virtualization solutions to streamline the company's IT footprint and service delivery model—is one of the latest examples of the company's innovation.

As this study shows, FICO's VMware investment is paying off, yielding tangible benefits ranging from lower capital and operating costs to faster product development and a smaller carbon footprint. FICO is a very innovative company and we were on the leading edge with testing and implementing vSphere," said Tom Grahek, director of platform engineering at FICO.

The company had a host of reasons for adopting VMware virtualization technology. Chief among them was to rein in (and simplify) a sprawling network of servers and other devices spread across 24 datacenters in four countries. Housing more than 5,000 servers, the capital and energy-intensive datacenters were the result of years of organic business growth as well as acquisitions.

The virtualization project, which allowed FICO to run its IT infrastructure and applications with 60 percent fewer machines, would eventually allow the company to consolidate 24 datacenters into four state-of-the-art facilities and put FICO on track to save about $3 million per year (over five years) in capital avoidance and operating costs, including significantly lower costs for real estate, utilities, and hardware maintenance. In addition, by cutting energy consumption, virtualization has helped FICO shrink its carbon footprint and meet corporate goals for sustainability. "The wins were significant both financially and environmentally," Grahek said.

DEPLOYMENT ENVIRONMENT

- 600 virtual machines running on VMware vSphere
- Applications: SQL, IBM DB2, IBM Development Suite, Business Objects, Microsoft Active Directory, Blackberry Enterprise Server, Microsoft Office Communications Server, IBM WebSphere, Microsoft Office SharePoint Server, AutosSys, Foglight, RSA

At the same time it was consolidating its server footprint, FICO leveraged VMware technology to establish an internal (private) cloud computing environment for its India-based software development group. Using VMware View technology, FICO provisioned each engineer with a "virtual workstation" running on VMware ESX® hosts located in Minnesota. Moving to the remote-access cloud environment enabled FICO to avoid the extra cost and security concerns of maintaining on-site servers and desktop applications. In addition, the move accelerated software development and product launches because virtual servers and workstations could be provisioned and de-commissioned in a fraction of the time (83% faster).

More recently, FICO has begun upgrading its virtualized infrastructure from VMware's earlier Virtual Infrastructure 3 product to VMware vSphere. The migration, which requires just 30 minutes per host machine, is helping FICO run up to 50 percent more virtual CPUs per machine and giving it additional operational flexibility and scalability.

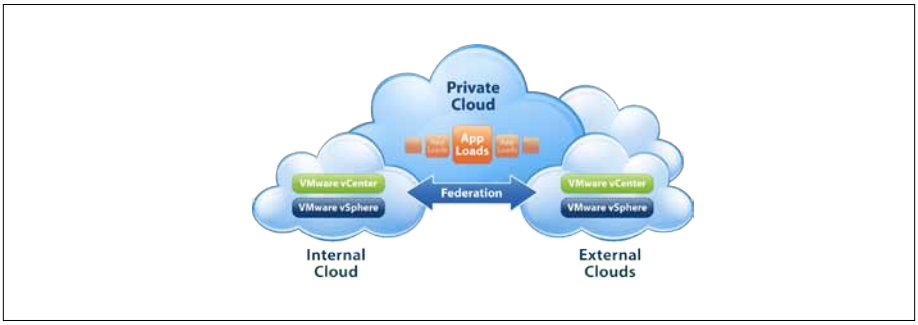
Overall, according to Mainstay's study, FICO is on track to realize net benefits (savings minus costs) of $7.9 million over five years, equating to a return on investment of 124 percent over the same period. FICO is expected to break even on its investment about 18 months after launching the project. Details of Mainstay's cost benefit analysis are presented below.

Building A Virtualized Infrastructure / Internal Cloud

FICO took its first steps toward virtualization and cloud computing in 2002, when Grahek's team [or: the IT group] began testing virtualized machines and VMware virtualization technology at its corporate IT lab. VMware vSphere technology increases server efficiency by adding a software management layer that enables one machine to act as many – up to several dozen machines, each supporting a different application. The technology is complemented by an architecture of shared network and storage devices. (FICO chose to outfit its new infrastructure with HP blade servers, which are designed to optimize virtualization processing and are easily scaled out.)

After becoming comfortable with VMware technology, the IT team began piloting the technology with business units outside the group, providing virtualized services for small teams of about 10. Around the same time, an internal "champion" – a software development manager – stepped forward to help build grass roots support for the concept. "We used that momentum to move on to the next team," Grahek said. "Before long we had a couple hundred employees working on virtual servers through our internal cloud." Since then, the concept has become easier to sell to FICO's business leaders. "We tell them that if it's been working for 500 employees for three or four years, why wouldn't it work for your application?" he said.

Christopher Rence, FICO's chief information officer, said that moving to a cloud computing environment provided clear technical and cost advantages. "It offers employees easy, scalable access to computing resources and IT services," he explained. "Long term, cloud computing will likely be the preferred product delivery mechanism for small, midsized and possibly even larger companies. It's been important to stay ahead of the curve, and build the infrastructure for our product development teams to eventually design and create products that fit that model."



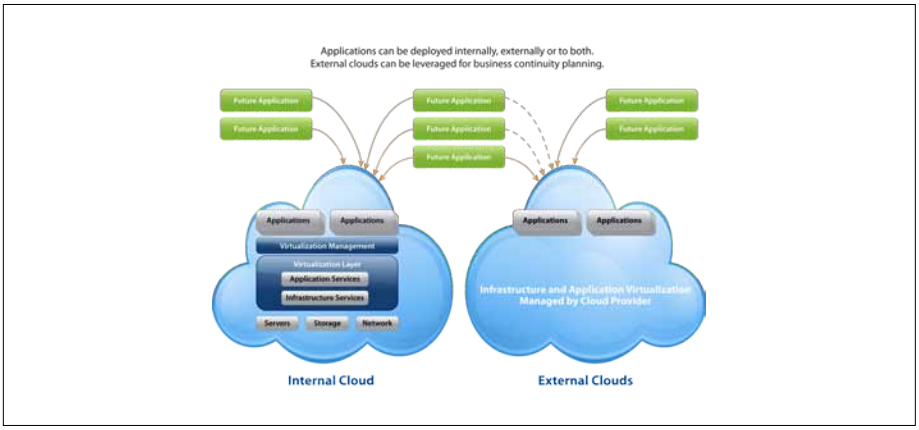
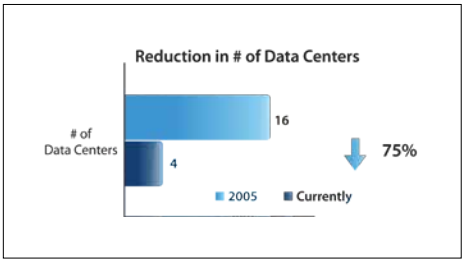


Fig 1. Cloud computing model

Datacenter And Server Consolidation

By allowing multiple operating systems and applications to run on a single machine, VMware virtualization technology enabled FICO to dramatically reduce the number of servers needed to run its business – from about 5,000 machines in 2005 to less than 2,000 today. At the same time, VMware vSphere enabled FICO to overhaul its global computing infrastructure by consolidating its legacy network of 16 datacenters – many inherited from acquisitions – into four state-of-the-art datacenters in the U.S. and U.K. "We consolidated down into a highly virtualized footprint," Grahek said.



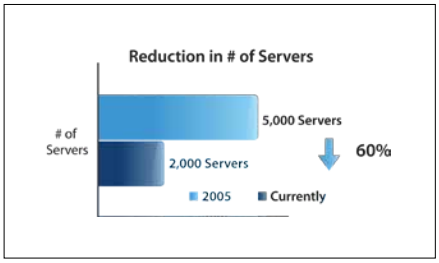


Fig 2. Data Center Consolidation

Fig 3. Server Consolidation

The consolidation project yielded significant cost savings, as FICO decommissioned scores of older machines, cut hardware maintenance requirements, shrank its facilities footprint, and reduced power consumption. It also reduced its storage device footprint and reduced the number disaster recover sites. Moreover, FICO avoided millions of dollars in expenditures on hardware it will no longer need. Details of these savings follow.

Operational Cost Savings

The study estimated operational savings in four areas: server maintenance, IT staffing, energy consumption and real estate.

Optimized IT Staffing

FICO's consolidated, virtualized IT environment—characterized by fewer servers, more automated system management, higher availability, less complexity, and greater resource sharing—allowed the company to streamline and optimize its IT organization. Over a period of three years, FICO reduced the number of fulltime IT employees by 48 percent—from 380 to 197. The reduction saved more than $9 million in payroll-related costs during this period and allowed the staff to shift its priorities to delivering new services rather than maintaining the sprawling legacy server network. The estimated cost of maintaining a typical server is $400 per month and includes labor assigned to break-fix projects, hardware monitoring, backups and incident management. Costs for older servers run even higher. "Some of the acquisitions had outdated technology, so we were paying a lot for hardware maintenance," Grahek said.

Floor Space and Energy Savings

As it consolidated its servers at four hubs and cut the number of machines by 60 percent, FICO has been steadily shrinking the size of its facilities footprint. In three years, FICO reduced its IT floor space by 65 ercent—from 46,000 square feet in 2007 to an estimated 16,000 square feet in 2009. (Today, FICO fits more servers into its new 4,000 square-foot facility than in one of its old 10,000 square-foot data centers.)

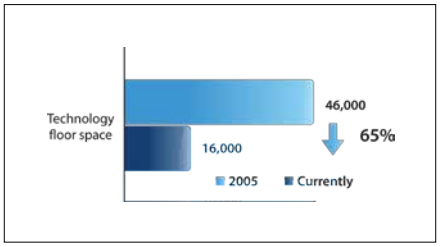


Fig 4. Floor Space Reductions

With a more compact facilities footprint and fewer machines to power and cool, FICO has cut its annual energy consumption by half—from 8,050 kilowatts in 2005 to approximately 4,000 kilowatts in 2009. Also contributing to the energy reduction is a VMware feature called VMware Distributed Power Management that monitors utilization across the datacenter and powers off unneeded physical servers without impacting applications and users. Lower energy consumption in IT is helping FICO's meet its corporate sustainability initiative that calls for shrinking the company's carbon footprint. FICO is on track to save approximately $3 million from the smaller footprint.

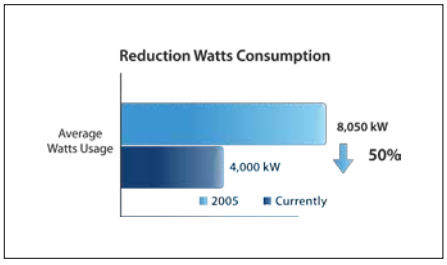


Fig 5. Lower Energy Consumption

Capital Cost Savings / Capex Savings

The VMware-enabled consolidation project helped FICO get control over a sprawling network of physical servers. The network had been expanding at a rate of about 10 percent a year for several years to serve the company's growing business and computing needs. At that rate, FICO would have needed to purchase an additional 500 servers between 2005 and 2009. However, the VMware-driven consolidation project reversed the server-growth trend and instead of adding servers, it cut the number from 5,000 to 2,000, contributing to a saving of $2 million in capital expenditures.

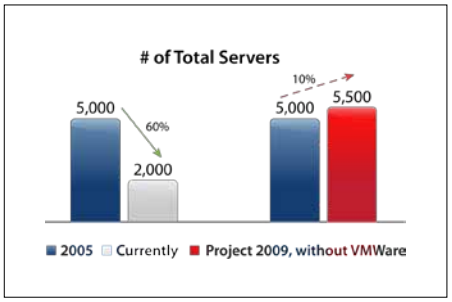


Fig 6. Consolidation Avoids CAPEX for New Servers

Streamlined Product Development

In one of its first large-scale deployments of VMware virtualization technology, FICO in 2005 built a cost-effective and secure cloud computing environment to serve hundreds of engineers at a new software development center in Bangalore, India. Rather than installing machines in India, FICO set up more than 1,000 virtual servers at its new VMware-enabled datacenter in Minneapolis and used VMware View (formerly VMware VDI) software to create some 500 "virtual workstations" for the India-based engineers, who access the environment over the Internet. Today FICO devotes approximately 70 percent of its server capacity to product development teams in India and around the world.

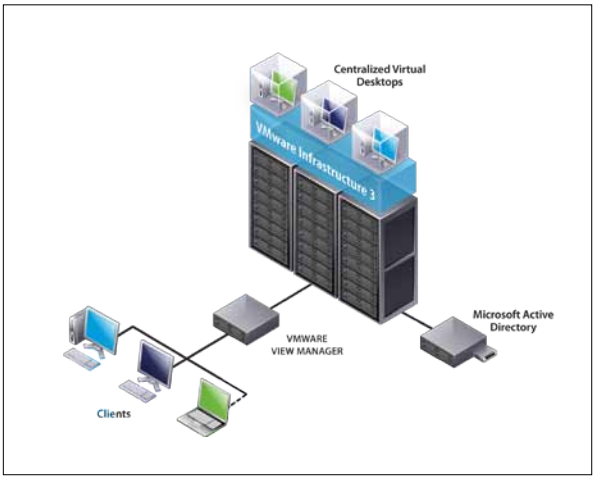


Fig 7. vSphere Software Development Environment

- Application can be accessed from any client device or operating system.
- Application executes entirely on central server; all data is maintained in the datacenter
- Users experience the application as though it were running on their own desktop (Key strokes and mouse clicks are sent over the internet).
- Performance optimized over wide area networks
- Client updates (hot-fixes, service packs) are no longer an issue.
- Application delivery and access is standardized, so employees leverage the technology they need for the client device, rather than choosing what the application supports
- All communications are encrypted.

The study found that FICO's move to a remotely accessed central development environment is yielding significant productivity savings, eliminating several hours of server set up and decommissioning time for each project and contributing to millions of dollars of labor savings a year. "The traditional build out would require utilizing physical servers, setting up a QA environment, and then duplicating it for a test environment," Grahek explained. The old provisioning process required between four and six hours, followed by an equally labor-intensive decommissioning and un-racking process once the development project ended. By contrast, FICO's IT team can set up virtual development servers in less than an hour—83 percent faster—and decommission them just as quickly.

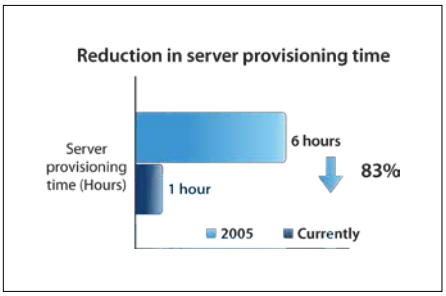


Fig 8. Faster server provisioning

The vSphere environment offered other system-management benefits as well, including automated load balancing (VMware Distributed Resource Scheduler), system restart (VMware High Availability) and storage migration (VMware Storage vMotion™) capabilities that have combined to boost server uptime from 98.5 percent to 99.99 percent. VMware also helped tighten security because the data—FICO's intellectual property—always stays within the secure confines of the central datacenter. "Our private cloud allows geographically dispersed software developers to work in one environment, whether they are in India, London, Minnesota or California," Grahek said. "That's one code repository, one test environment, and one datacenter for the entire effort."

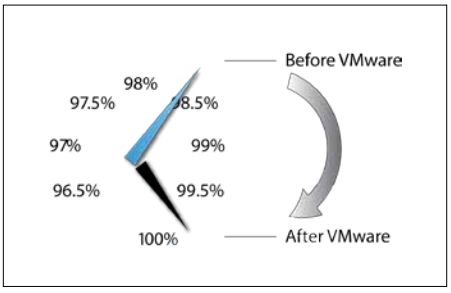


Fig 9. Higher Server Availability

Upgrading From Vmware Infrastructure To Vmware Vsphere

More recently, FICO has been upgrading its virtualized infrastructure from VMware Infrastructure 3 product to VMware vSphere, taking advantage of improved functionality, scalability and flexibility. In particular, VMware vSphere offered better monitoring capabilities made it possible to increase server consolidation ratios by as much as 50 percent per host machine – from 2 to 3 virtual CPUs per host to 4 to 6

CPUs. “Upgrading from VMware Infrastructure to VMware vSphere is increasing our capacity for no additional cost except for SAN disk consumption,” Grahek said.

Moving to VMware vSphere is an easy, straightforward process, Grahek said. “Currently we use Perl scripts and a kick-start server to build our hosts and we’re evaluating using HP/Altiris RDP so that we can standardize on a single server-build process.” When it migrates machines to VMware vSphere, FICO’s IT team prefers to build ESX hosts from scratch rather than implement upgrades. Installing and configuring a VMware ESX host from start to finish takes less than 30 minutes, Grahek said, compared to the 1-2 hours it takes to upgrade. In addition, Grahek said his team “finds comfort in knowing that we have a clean install.”

Investment Summary

Combining the operational and capital cost savings, the study estimates gross benefits of $14.2 million accruing to FICO over a five-year investment period. The benefits include savings from lower server management (and associated labor) costs, avoided capital expenditures, and lower utilities and real estate/floor space costs. Minus the company’s investment in software, hardware and consulting services, FICO is on track to realize net benefits of $7.9 million over five years, as shown in Figure 10, equating to a return on investment of 124 percent.

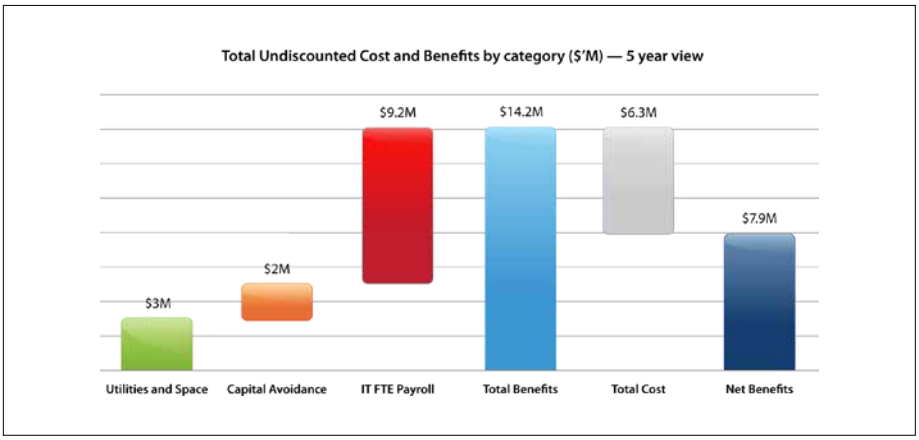


Fig 10. Investment Summary: Undiscounted Costs and Benefits over 5 Years

FICO broke even on the investment in the 18 months, as shown in Figure 11.

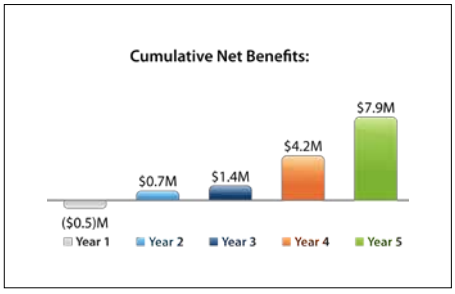


Fig 11. Cumulative Net Benefits Over 5 Years

The savings from the virtualization and consolidation initiative freed funds for additional technology investments, Grahek said. “We’ve been able to reinvest the savings into new

ABOUT THIS CASE STUDY

Research and analysis for this study were conducted by Mainstay Partners, an independent consulting firm, and were based on interviews with FICO executives, review of planning documents, industry literature, and other project materials. ROI calculations use industry standard assumptions regarding the time value of money.

Information contained in this publication has been obtained from sources considered reliable, but is not warranted by Mainstay Partners.

business endeavors without having to go back to the business and ask for additional capital," he said. "We've basically helped self fund some very large initiatives through the cost savings we've generated with our virtualization strategy."

Business units also benefited from the cost savings by allowing FICO to reduce the amount of costs it charges back to departments for IT services. "The macro-level costs we are allocating are much less than they would be prior to virtualization," Grahek said. Moreover, the cost allocation process itself became a lot easier after moving to the central virtualized infrastructure. "With virtualization and consolidation we moved from disparate datacenters with a wide variety of cost models and different makes, brands and size of servers, down to a consolidated model that is highly standardized," Grahek said. "So the allocation model is a lot easier to explain to the business and a lot easier for our finance team to compute and allocate."

Virtualization also helps FICO better adapt to a fast-evolving business climate marked by rapid strategy shifts and frequent acquisitions and divestitures. (Over the last decade, FICO has acquired more than 10 companies and divested four units.) Today it is significantly easier to integrate new businesses into FICO's IT infrastructure—as well as manage a separation of business units—because FICO can readily add or subtract virtual computing resources using VMware technology. "Virtualization not only helped us acquire companies, it also made the divestiture of certain businesses a lot cleaner," Grahek said. "When we had to go through the separation process, it was very easy to carve out the virtual machines relevant to a business that was sold and then work with the buyers to move that infrastructure over into their datacenter."

Future Plans

In the years ahead, FICO plans additional upgrades to both its physical and virtual server infrastructure, and expects to achieve further cost and labor productivity savings by continuing to increase the ratio of virtual-to-physical machines from 30:1 currently to 45:1. FICO is also looking to leverage virtualization technology to make it easier for teams to request and obtain computing power on the fly. For example, CIO Rence envisions the company building "virtual instances"—essentially server templates—that come pre-configured with a specified operating system, memory size, and other features. "Teams within FICO cold then select the type of server they need and press a button and the server would be dynamically created," he said.

All of these advances, Rence emphasizes, will be achieved at the same time it is meeting its corporate goals for reducing carbon emissions and energy consumption. "We achieved these gains without sacrificing performance for sustainability," says the CIO Rence. "In fact, with capabilities like virtualization and cloud computing in our toolbox, we're improving performance for both client and staff, and building a stronger IT infrastructure for the future.

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