



EFI Reformats SAP Layout with VMware® Infrastructure 3 Environment



KEY HIGHLIGHTS

INDUSTRY: **TECHNOLOGY**

CHALLENGE

EFI planned to upgrade its SAP modules and at the same time move from a proprietary hardware and software environment to industry-standard x86-based hardware and Red Hat Linux operating system.

SOLUTION

EFI used VMware® Infrastructure 3 to minimize the complexity and reduce the cost of developing, testing, and deploying this multi-tiered environment.

VMWARE AT WORK

- VMware Infrastructure 3 Enterprise and VMware Infrastructure 3 Standard
- VMware® Server

DEPLOYMENT ENVIRONMENT

- VMware ESX Server and VMware® VirtualCenter™ on two- and four-way dual-core HP ProLiant 585 servers
- VMware Server on two-way single and dual-core HP ProLiant 385 servers
- Hitachi San
- Guest operating systems: Red Hat Linux 4 and Microsoft Windows® 2003 operating environments
- Applications: MySAP ERP 2005, SAP Exchange Infrastructure, SAP NetWeaver®, SAP Portal Server, SAP Product Lifecycle Management, Oracle 10g databases

"In any large multi-tier application deployment, you have to use resources such as consultants whose costs can add up if they have to wait for test and development systems to be set up. With VMware Infrastructure, we can add another compute block to the cluster or whip up new virtual machines quickly. As a result our developers have the resources they need, when they need them, and we've really mitigated 'budget creep.' That flexibility has to do with the functionality and responsiveness of VMware products, which enables us to serve our customer better and ultimately to save my company money."

Dave Swan, Senior Manager, IS&T Server Operations, EFI

EFI SAP

Leading Digital Print Server Provider Uses Virtualization to Save Time, Money and Energy on SAP Update

A Move to Industry Standards

EFI is a leading provider of color digital print servers, superwide format printers and inks, and business management software. The company's product portfolio includes Fiery® digital color print servers; superwide digital inkjet printers, UV and solvent inks; industrial inkjet printing systems; print production workflow and management information software; and corporate printing solutions.

EFI corporate culture values frugal, "lean and mean" operations to achieve cost and operational efficiency. To provide this efficiency as well as ensure data integrity, manage and control its business, and streamline business processes, the company runs SAP software as its primary business process platform. EFI employs several SAP modules including SAP ERP financials, HR, Sales Distribution, Materials Management, Costing, Production Planning, Portal, Operations, and Human Capital Management; SAP Product Lifecycle Management, and SAP NetWeaver to build integrated business solutions and services. In 2006, EFI planned to update its SAP suite to the latest version, MySAP ERP, along with a large number of other version updates. At the same time, it planned to change its primary data-center platform from a proprietary hardware and software combination to Red Hat Linux running on industry standard x86 architecture servers.

EFI's IS&T management knew the upgrade would require not only new production equipment, but also that each SAP environment in production would need some three additional environments of the same size on which to run development, testing, QA, and sandbox

functionality. “Our team had the responsibility to make sure the SAP application group, including consultants, had the environments they needed to build, test, and deploy, as well as deal with requirements changes and unforecasted requests for new servers on the fly. That is always a challenge,” says Dave Swan, senior manager of IS&T server operations for EFI. “That’s why EFI turned to virtual infrastructure.”

A Test Bed Solution Becomes the Whole Environment

“EFI already had some VMware software in house because some of our engineers were using it,” explains Swan, “So the SAP Infrastructure team knew it could be a solution to our test environment challenge. The one question the team had was whether it would work for SAP. SAP modules require two or more processors; they’re database-intensive, and so on. In other words, they take a lot of compute power. When we learned that SAP Labs runs its own hosted environments on VMware, though, we decided it would be safe to move ahead.”

As the project proceeded, VMware Infrastructure made it possible for just two EFI administrators to meet the application group’s compute resource requirements. Swan appreciates that VMware software gives him the ability to allocate more compute resources in the form of RAM, disk memory, or CPU to any virtual machine with just a few mouse clicks, not to mention the ease of creating new virtual machines when necessary.

As well, using virtualization allowed the project to proceed on time and on budget. “In any large multi-tier application deployment, you have to use resources such as consultants whose costs can add up if they have to wait for test and development systems to be set up,” he explains. “With VMware Infrastructure, I can add another compute block to the cluster or whip up new virtual machines quickly. As a result, our developers have the resources they need, when they need them, and we’ve really mitigated ‘budget creep.’ That flexibility has to do with the functionality and responsiveness of VMware products, which enables me to serve my customer better and ultimately to save my company lots of money.”

Swan and his colleagues were convinced, through their positive experience with the flexibility and performance of VMware Infrastructure for development and test environments, that it would make sense to run the SAP production environment in virtual machines. “We saw the flexibility it gave us, and the ways it allowed us to improve availability and performance, and we wanted to bring that to our production SAP server cluster,” says Swan.

The application group developers weren’t so sure, however. “For the applications group, servers are like dial tone,” says Swan. “They’re just supposed to be there, they’re just supposed to run, and they have to do that 99.9% of the time. That’s why the risk aversion popped up when we continued forward with the entire production environment into VMware Infrastructure.”

To help win them over, the infrastructure team proposed a test. “During stress testing,” says Swan, “Our senior director of operations made a bet with the senior director of applications that he wouldn’t notice when we used VMware VMotion to move the database from one machine to another to simulate a failover situation. We told them we’d do the move during the second half of the test – but we played a little trick on them and actually moved the database three times during the first half of the test. When we told them the truth, the fact that they hadn’t even noticed when the moves happened gave them a lot more confidence in virtualization for the production environment.”

An Evolving Strategy

At project completion, the EFI SAP infrastructure comprised 18 physical servers, reduced from several dozen. Twelve of the machines are used as for sandbox and development environments; the other six host QA/test and production virtual machines. Reflecting on the experience of building the infrastructure for EFI’s SAP environment, Swan sees a number of benefits:

- **Better customer service.** VMware Infrastructure has greatly improved service agility and provisioning abilities, enabling the infrastructure team to better serve its end user and application group customers. “End users care about availability and performance, and that’s what they get. In fact, they get better than what they had before. For the applications groups, it’s the same story: they see a server with a name and they get more functionality, higher availability and higher performance. Ultimately, as a service provider, I can provide a higher quality product at a better price.”
- **Avoiding project and budget creep.** One of the pitfalls of a complex project such as this one is incremental increases in cost due to delays and unanticipated requirements for equipment resources. With virtualization, the EFI project was kept very close to its original budget. “The only ‘project creep’ we had was the cost for more VMware licenses because we didn’t originally plan to run production in VMware Infrastructure,” says Swan.
- **Lower costs.** Swan believes that VMware Infrastructure has saved EFI about 30 percent on server hardware purchase costs, as well as reducing by a factor of two to one the overall cost for associated equipment such as SAN ports and “anything else used to provision a physical server.”
- **Less energy consumption.** With fewer machines, Swan estimates that the EFI datacenter is using one-third less power.
- **Less work during off-hours.** With the ability to move running virtual machines using VMotion, the infrastructure team can perform many routine maintenance tasks during regular work hours instead of late in the evening or on weekends. “We’ve probably cut our off-hours work in half since VMware Infrastructure,” says Swan.
- **Avoiding added headcount.** Just two administrators manage all of the VMware Infrastructure at EFI, according to Swan, and no additional headcount was needed even after the SAP project went live. The work of these two engineers on the new SAP/Red Hat/VMware infrastructure supports more than 1800 end-user employees at EFI.

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- **Disaster recovery of the future.** A virtual infrastructure offers a hardware-agnostic approach to disaster recovery, and simplifies DR procedures. Swan's team is now investigating ways they might use VMware Infrastructure in their disaster recovery environment. "We're finding ways to do DR better, and we're confident that VMware Infrastructure is going to be a key component to doing our SAP disaster recovery."

As well as investigating the possibilities for doing DR with VMware infrastructure, EFI is moving toward a "virtualize first" philosophy wherein all new requests for servers will be provisioned with a virtual machine unless there is a compelling reason to provide a physical box. Dave and his team are also moving many of their second-tier applications into virtual environments.

Swan sums up EFI's experience with VMware Infrastructure this way: "We've only started to realize the value of this product. What we wanted to use VMware Infrastructure for when we started the project is completely different from where we've ended up. As our understanding and our faith in what it could do grew, as we learned more, our whole concept of how to support SAP infrastructure changed. So we've ended up in a better place, serving the company much better."

Results

- Consolidation ratio averages 3:1 depending on environment
- Avoided budget creep on major SAP upgrade
- Reduced costs of new hardware by 50 percent
- Lower overall total cost of ownership
- Increased productivity and ability to meet user requirements without adding additional staff
- VMotion allows resource balancing, enhanced availability, and host maintenance with no downtime

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