ESK cuts SAP application operating costs with IBM System x and VMware

Overview

■ The Challenge

With 31 servers in its data center and seven more hosted by an external company, ESK had a complex IT landscape that was time-consuming and expensive to manage and support. The company wanted a more flexible, compact and energy-efficient infrastructure that would reduce operational costs – particularly for its business-critical SAP applications.

■ The Solution

ESK worked with IBM to replace its existing servers with five IBM System x3650 servers with quad-core Intel® Xeon® X5450 processors, running VMware Infrastructure Enterprise to enable server virtualization. Two of the x3650s now run virtual servers for all seven SAP application environments including the supporting IBM DB2 database.

■ The Benefits

Using VMware technology to virtualize 38 servers to just five System x machines has simplified management and increased flexibility. Data center floor-space requirements have been reduced by 80 percent, and power and cooling costs by a similar amount. DB2 Deep Compression has reduced the database size by more than 50 percent, reducing storage costs. Batch processes can now be completed up to 50 percent faster.

■ Key Solution Components

Industry: Industrial products
Applications: SAP® ERP 6.0, SAP Solution Manager, SAP Global Trade Services
Hardware: IBM® System x® 3650
Software: Microsoft® Windows®, IBM DB2® 9, VMware Infrastructure Enterprise
Services: IBM Global Technology Services, IBM Business Partner Concat

ESK Ceramics GmbH & Co. KG (ESK) in Kempten, Germany, is one of the world's leading manufacturers of advanced ceramic products and materials for industrial applications, and a specialist in the field of nickel dispersion coatings.

Since 2004, ESK has been a wholly owned subsidiary of Ceradyne Inc. based in Costa Mesa, California. The Ceradyne group employs more than 2,350 people at a total of 14 sites worldwide, and achieved sales of $680 million in 2008.

Founded in 1922, ESK now employs over 700 people and serves over 30 industries around the world, including automotive, aluminum industry, mechanical and plant engineering, chemicals and petroleum, energy, shipbuilding and textiles.

ESK had been running SAP ERP applications for some years, first with an IBM Informix database and later with an IBM DB2 database, paying an external company to host these systems on seven physical servers.

"Both SAP and IBM fully support production environments for SAP and IBM DB2 that use VMware. This made it a relatively easy decision for us, because the potential benefits of VMware virtualization were enormous."

Jochen Kappler
Head of Data Center at ESK

The company's own data center hosted many other business systems, running on 31 servers from various vendors. Utilizing a variety of operating systems and administrative interfaces, these servers were complicated and costly to maintain and manage.

It was clear that standardizing to a single hardware platform and operating system would simplify administration and reduce operational costs. However, simply replacing each existing physical server with a new one would not generate sufficient savings to justify the upgrade cost and disruption, so ESK set out also to reduce the total number of servers.

Choosing a new infrastructure
ESK considered various solutions. One option was to consolidate physical servers by migrating to an infrastructure based on blade servers. This would reduce space requirements in the company's data center, but would not actually reduce the number of physical processors

required to run all systems. The company did not want to end up running a large number of under-utilized blades.

A second option was to implement a small number of powerful rack-mounted servers, running all the company's business systems on just a few processors by leveraging virtualization technologies. For ESK, the virtualization option proved to be more attractive.

"Both SAP and IBM fully support production environments for SAP and IBM DB2 that use VMware," comments Jochen Kappler, Head of Data Center at ESK. "This made it a relatively easy decision for us, because the potential benefits of VMware virtualization were enormous."

IBM System x and VMware
ESK chose to migrate its 31 older physical servers to three IBM System x3650 servers with quad-core Intel Xeon X5450 processors, which were supplied by Concat, an IBM Business Partner.

To enable its existing applications to run in distinct, secure Microsoft Windows environments on the three new servers, ESK worked with IBM to implement a suite of VMware products that provide a virtualization layer between the Windows operating system and the physical hardware.

The virtualization layer makes it possible for multiple application environments to run on the same physical server without risk: if one application server crashes, the others will not be affected. Equally, it enables new environments to be created much

more quickly: there is no need to purchase and install a new machine every time a new application needs to be introduced, as a new virtual server can be created in minutes. Scalability is therefore much improved.

Bringing SAP ERP back in-house

The results of this migration were so impressive that ESK subsequently chose to end the hosting contract for its SAP ERP applications and IBM DB2 databases, and bring these seven servers back into its own data center, using VMware Infrastructure Enterprise to run them on two additional System x3650 servers.

The seven virtualized SAP application servers and DB2 9 databases (which include production, development and test environments for SAP ERP, production and development environments for SAP Solution Manager, and production and development environments for SAP Global Trade Services) are load balanced by VMware Distributed Resource Scheduler (DRS) on two x3650 servers.

As part of the migration, ESK upgraded to DB2 version 9, and leveraged the new Deep Compression feature to reduce the size of the SAP database by 52 percent.

"DB2 has been part of our IT landscape for many years now, and we are confident that it is the best database platform for our needs," says Jochen Kappler. "Deep Compression is a huge advantage, because a smaller database delivers better performance and reduces the need to invest in additional storage capacity."

Clustering for easy management

The two x3650s are configured as a VMware cluster, and the company can use VMware VMotion to move virtual servers from one machine to the other seamlessly and with no disruption to users or processes. This greatly simplifies hardware maintenance, allowing all workloads to be moved onto one of the x3650s while the other is serviced.

The same technology can be used to move systems between the company's two data centers, enabling systems to be recovered with almost no downtime in the event of a major failure at the primary data center.

"In the SAP environment we have used VMware to consolidate seven physical machines onto just two IBM System x3650 servers with powerful and efficient Intel Xeon processors," comments Florian Christ, Project Manager at ESK. "They are now part of our standard VMware environment, so we can manage them easily and we no longer need to pay an external company to host and maintain them. The cost savings are considerable."

Space and energy-efficiency

The initial migration from 31 physical servers to three x3650s dramatically reduced rack-space requirements in the ESK data center. Even taking into account the later addition of two x3560s to run the SAP applications, rack-space requirements have decreased by approximately 80 percent.

The IBM System x3650 servers are also significantly more energy-efficient than the old servers, thanks in part to their advanced Intel Xeon X5450

processors, and power and cooling costs have been reduced proportionately. This not only delivers financial benefits – it also helps the company align itself with current and future regulations on environmental sustainability and corporate CO_2 emissions.

Easier management, better performance
In theory, bringing the infrastructure for the SAP applications back in-house should have created additional workload for the ESK IT team, as they are now responsible for backups, patching and so on. However, in practice, the team has been able to reduce its administrative workload, because VMware and the System x servers provide highly advanced and intuitive management tools, making it easy to manage the whole environment and eliminates workload to outsourcing partners.

Apart from saving time for IT staff, the new solution has delivered performance improvements. For example, the batch processes that generate financial reports now run up to 50 percent faster, and end-users are very happy with accelerated SAP application response speeds.

Florian Christ concludes: "Running SAP ERP and DB2 on VMware and the System x platform is an excellent combination for our business. The solution was easy to implement and is simple to manage; moreover, it will continue to minimize our expenditure on server and storage hardware, electricity, and hosting services for several years to come."

"In the SAP environment we have used VMware to consolidate seven physical machines onto just two IBM System x3650 servers with powerful and efficient Intel Xeon processors… We can manage them easily and we no longer need to pay an external company to host and maintain them. The savings are considerable."

Florian Christ
Project Manager at ESK

HARDWARE CONFIGURATION
5 IBM System x3650 servers with Intel Xeon X5450 processors, running SAP ERP, IBM DB2 and other applications in a VMware environment for 700 users. These IBM servers replaced 25 older machines from a number of different manufacturers.

IBM

SAP