



## Manufacturer Gets Lower Total Cost of Ownership Moving SAP from Oracle SQL Server

### Overview

**Country or Region:** United States

**Industry:** Manufacturing – Durable

Consumer Goods / High Tech & Electronics

### Customer Profile

Based in Jasper, Indiana, Kimball International is a diversified manufacturer of furniture and electronics.

### Business Situation

Kimball wanted to achieve a lower total cost of ownership of its 10-terabyte SAP production infrastructure while enhancing performance.

### Solution

Kimball worked with Microsoft® Gold Certified partner RealTech to migrate its SAP BW and SAP ECC 5.0 ERP systems from the Oracle/UNIX stack to the Microsoft Application Platform including SQL Server® 2005 Enterprise Edition (64-bit) database software.

### Benefits

- Lower total cost of ownership
- Greater processing power
- Easier systems management
- Ease of migration
- Enterprise ready

“The savings from moving from Oracle to SQL Server were so significant—easily exceeding \$500,000 a year and providing an ROI of less than 12 months—that at first the numbers weren’t believed.”

Ken Kemker, Director of Enterprise Architecture, Kimball International

Diversified manufacturer Kimball International wanted to reduce the total cost of ownership of its 10-terabyte SAP BW and ECC 5.0 systems. An analysis showed it could reduce overhead by more than \$500,000 a year in ongoing software licensing and hardware servicing costs by migrating from the Oracle/UNIX stack to the Microsoft® Application Platform. But the migration would have to be seamless not to disrupt its operations. Working with Microsoft Gold Certified partner RealTech, Kimball migrated each of its three SAP systems in three separate projects. All three migrations were completed over weekends, and Kimball is enjoying a lower total cost of ownership while gaining 30 percent to 50 percent faster processing. Migrating from Oracle/UNIX to Microsoft SQL Server® 2005 and the rest of the Microsoft Application Platform has also helped the company achieve easier systems management.



#### Fast Facts

SAP BW data warehouse	2.6 terabytes
SAP ECC 5.0 ERP for Electronics segment	2.8 terabytes
SAP ECC 5.0 ERP for Furniture segment	5.3 terabytes
Largest table	493 million rows
Estimated ongoing software licensing savings	\$300,000 per year
Estimated ongoing hardware servicing savings	\$200,000 per year
Estimated ROI on migration project	Less than 12 months

### Situation

Kimball International is a diversified furniture and electronics manufacturer, with operating locations throughout the United States and other countries. The company traces its roots back to the 1857 founding of the W.W. Kimball Piano Company. Today the Furniture segment serves the commercial office and hospitality furnishings industries with its three distinct brand names: Kimball Office, National, and Kimball Hospitality. Kimball Electronics Group is a leading contract manufacturer of durable goods electronics and serves a variety of industries on a global scale. Together the Kimball International family of companies generates annual revenue of more than U.S.\$1 billion.

The company, which has more than 8,000 employees worldwide, uses SAP for enterprise resource planning (ERP), with one SAP deployment to support the Furniture segment, a second SAP deployment to support Kimball Electronics Group, and a third deployment, SAP BW, to provide a data warehouse which collects information from both Furniture and Electronics to provide consolidated information for Kimball International.

Kimball has long been happy with its SAP solutions, but as the company prepared for a hardware refresh, it wanted to find a platform that would provide enhanced performance as

well as a lower total cost of ownership than what it had experienced using Oracle 10 database software running on a UNIX operating system and hosted on RISC-based computers. Over the years the company had steadily increased its use of the Microsoft® Application Platform, to the point where the SAP infrastructure represented nearly the only remaining use of the Oracle/UNIX stack.

As Kimball compared software licensing and hardware acquisition and servicing costs, it found significant financial benefits for moving to the Microsoft Application Platform, including Microsoft SQL Server® 2005 Enterprise Edition. "We could see that the Microsoft Application Platform hosted on Intel®-based servers provided a huge performance per dollar improvement for us," says Ken Kemker, Director of Enterprise Architecture at Kimball International. "From our other operations, we knew SQL Server and the rest of the Microsoft Application Platform were enterprise-grade, but we had to deal with the migration question and determine if we could move to the new platform without disrupting our mission-critical operations."

### Solution

Kimball engaged Microsoft Certified Gold partner RealTech to assist in the migration. RealTech is a SAP-certified migration consultancy that was formed in 1994 by four SAP consultants, and has grown into a worldwide organization with 650 employees and headquarters in Waldorf, Germany. Kimball decided on a three-step migration strategy. Working with RealTech it would first migrate the SAP BW data warehouse. It would next migrate the SAP ECC 5.0 ERP system for the Kimball Electronics Group, and then complete the process by migrating the Kimball Furniture segment ERP system.

Migration architecture for the three systems included:

Furniture - Kimball's Furniture segment serves the commercial office and hospitality markets.



■ **Data Warehouse.** The SAP BW migration was accomplished within a weekend, moving the SAP infrastructure and its 2.6 terabyte database from the Oracle/UNIX stack on a RISC-based computer to Microsoft SQL Server 2005 Enterprise Edition (64-bit) SP2 database software running on the Windows Server® 2003 Enterprise Edition for 64-bit Systems R2 operating system. The central instance and database server is hosted on an HP ProLiant DL585 G1 server with 4 Dual-Core AMD Opteron® 880 processors and 64 gigabytes (GB) of RAM. The application server is hosted on a separate similarly configured HP ProLiant DL585 G1 server.

■ **Electronics segment ERP.** The Kimball Electronics SAP ECC 5.0 ERP migration was accomplished within a weekend, moving the SAP infrastructure and its 2.8-terabyte database from the Oracle/UNIX stack to the Microsoft Application Platform. The central instance and database server is hosted on an HP ProLiant DL580 G5 server with 4 Intel Quad-Core Xeon® processors and 64 GB of RAM. The application server

is hosted on a separate similarly configured HP ProLiant DL580 G5 server.

■ **Furniture segment ERP.** The Kimball Furniture ECC 5.0 ERP Unicode migration was accomplished within a weekend, moving the SAP infrastructure and its 5.3-terabyte database from the Oracle/UNIX stack to the Microsoft Application Platform. The central instance and database server is hosted on a two-node, active/active cluster using HP ProLiant DL580 G5 servers, each with 4 Intel Quad-Core Xeon processors and 64 GB of RAM. The application server is hosted on a separate, similarly configured two-node cluster with HP ProLiant DL DL580 G5 servers.

All three migrations went promptly and smoothly, and Kimball saw immediate savings. It found that AMD and Intel-based servers were less expensive to purchase and maintain than what it would have purchased to support the UNIX operating system; considerable savings in software licensing costs and servicing were achieved.

Kimball was so impressed with RealTech's work that it used the consultancy for all three migrations, which were executed as separate projects. The Furniture SAP system was the last migration because of the complexity of its database, with a COEP table with 493 million rows, and a GLPCA table with 345 million rows, and because Kimball's factories are tightly integrated using the SAP Variant Configuration feature to help ensure product needs are automatically populated from electronic orders and propagated throughout the supply chain.

As with the SAP BW migration, and the Electronics Group ECC 5.0 migration before it, the 5.3-terabyte SAP ECC migration was completed easily over a weekend, minimally impacting the manufacturing facilities around the world. The company enjoyed significant savings in hardware acquisition and ongoing

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Ken Kemker, Director of Enterprise Architecture, Kimball International

savings in software licensing and hardware servicing costs. Kimball also gained the additional processing power it needed and has found the new infrastructure easier to manage. The company has also enhanced availability by using Windows Server clustering technology to deploy each of its SAP systems on two-node, active/active clusters.

### Benefits

Migrating from the Oracle/UNIX stack to the Microsoft Application Platform enabled Kimball International to achieve the lower total cost of ownership it sought while also providing greater processing power and easier systems management. The company benefitted from the ease of migration to the enterprise-ready Microsoft Application Platform. Kimball is looking ahead to SQL Server 2008 to gain additional benefits.

#### Lower Total Cost of Ownership

Kimball International has achieved lower total cost of ownership, including an estimated ongoing yearly savings of \$300,000 on software licensing costs and an additional ongoing yearly savings of \$200,000 a year in hardware maintenance services.

In addition to the ongoing yearly savings, the company found immediate savings in hardware purchases. “The UNIX-based hardware was considerably more expensive than the servers we purchased to host SQL Server,” says Christopher Neu, Manager ERP Systems at Kimball. “Since moving off the UNIX-based hardware, we’re getting twice the SAPS [the measure of processing power in an SAP system] at a quarter of the cost.”

Additional savings were realized through easier systems administration.

“We performed a cost analysis between the two platforms and were amazed by the differences we found,” says Kemker. “The

savings from moving from Oracle to SQL Server were so significant, easily exceeding \$500,000 a year, that a positive ROI would be achieved in less than 12 months. Initially, we thought we might have overlooked something. But the deeper we looked, the better was the value proposition we found in moving to SQL Server and the rest of the Microsoft Application Platform.”

Even with documented numbers, Kemker says it was difficult to convince some colleagues to move SAP off of the Oracle/UNIX platform. “Oracle and UNIX had provided us with excellent uptime and there was a reluctance to change,” Kemker says. “We decided to start with the data warehouse. The migration went very smoothly. RealTech did a tremendous job for us. The platform proved to be stable, the performance was excellent, and the savings were too great to ignore. We needed to migrate the rest of our SAP infrastructure.”

The SAP BW migration made for a convincing demonstration. “There were a lot of us in the IT group that really had to see this to believe it,” Neu says. “Once we did see it, we jumped on board. SQL Server 2005 is definitely ready for big enterprise, multi-terabyte deployments. We’ve gained great performance, and the stability has been outstanding.”

Asked to describe the significance of saving \$500,000 a year by migrating SAP to the Microsoft Application Platform, Kemker framed it in terms of what it takes to earn half a million dollars.

“Whether on the furniture side or the electronics side, we are manufacturing products for a very competitive marketplace,” says Kemker. “For us to take \$500,000 out of our cost structure does the same thing to our bottom line as adding millions of dollars in sales.”

“All of our SAP deployments are multi-terabyte, so we like the idea of having data compression built into the database with SQL Server 2008.”

Sam Mason, Engineer, SAP Basis Infrastructure, Kimball International

#### **Greater Processing Power**

Migrating its SAP infrastructure to the Microsoft Application Platform has provided Kimball with greater processing power. This has been especially evident in its two ECC 5.0 ERP systems. “We made a number of measurements before and after the migration, and have seen a 30 percent to 50 percent increase in processing speeds,” says Sam Mason, Engineer, SAP Basis Infrastructure at Kimball International. “Some gains are even greater. We had a batch job that used to run for 64 hours before the migration that is now completed in 13 hours, so processing time in some cases has been reduced by more than 75 percent.”

The performance enhancements were noticeable by internal users, some of whom contacted IT after the migration to ask about the faster processing times they were seeing.

“The ECC ERP system supporting the Furniture group is our largest database at more than 5 terabytes,” Kemker says. “We were impressed that after the migration we saw significant performance improvements in 13 of 14 measured metrics.”

#### **Easier Systems Management**

Kimball International IT manages 410 servers running the Windows Server operating system, including 118 instances of Microsoft SQL Server hosting 460 system databases and 488 user databases for a total disk footprint of 23.5 terabytes. Migrating its SAP infrastructure, which totals more than 10 terabytes across the three systems, has helped Kimball in its efforts to reduce complexity and gain easier systems management.

“If you have different operating systems and different database solutions, you need to have on-staff multiple skill sets to keep everything up and running,” says Kemker.

“We’ve long used HP ProLiant servers for Microsoft Exchange Server and other enterprise solutions, so the environment becomes easier to manage if you eliminate the UNIX boxes and host SAP on ProLiant servers as well. Reducing infrastructure complexity provides another way of reducing costs.”

The company has found that the ease of managing the Microsoft Application Platform has enabled it to manage more servers without adding staff. “Over the last several years our number of servers in the organization has continued to climb, but we haven’t added server administrators to staff,” Matt Weisensteiner, Engineer, Windows Infrastructure says. “We’ve taken advantage of management tools such as [Microsoft System Center] Configuration Manager for managing updates and other chores. The result is that we can grow our infrastructure without having to increase headcount.”

On the hardware side, Kimball was impressed to find that its HP ProLiant servers had features normally seen on the more expensive UNIX computers. “In the UNIX world, we enjoyed features like self monitoring and phone-home support, but we’ve now got those same features in our Intel-based servers at substantially less cost,” says Kemker. “We refer to our ProLiant servers as being commodity boxes because they are inexpensive, yet these computers are also very much enterprise-grade.”

#### **Ease of Migration**

Kimball, with the help of partner RealTech, was able to prove the ease of migrating from an Oracle/UNIX stack to the Microsoft Application Platform—on three separate occasions. RealTech engineers began each project with a test migration using a copy of the complete database, and then worked with Kimball IT to accomplish each migration over a weekend.

"There was no interruption of the business, whatsoever," says Neu. "People left work at the end of the week and returned Monday, with everything up and running—with better performance."

Mason was impressed with the expertise that RealTech provided during the migration. "We handled the migrations as three separate projects, with three different contracts, performed during different quarters of the year," says Mason. "We had a different RealTech technician for each project, and all produced the same great results."

Kemker agrees: "The best testament of RealTech's value to us is that we hired them three different times and would do so again."

#### **Enterprise Ready**

SQL Server and the rest of the Microsoft Application Platform proved it was enterprise-ready for Kimball through the seamless support it provided for SAP Variant Configuration functionality. The Furniture group is especially dependent on Variant Configuration because of the overwhelming number of option variables within the world of furniture.

While on the electronics side of the business, Kimball might produce hundreds of thousands of identical circuit boards, the furniture factories deal with near-constant variations in terms of design, finishes, and accessories. Variant Configuration uses data from electronic order forms to ensure that all parts and materials are brought together at the proper time for assembly, including automated parts ordering.

"Our Furniture group is a heavy user of SAP's Variant Configurator," says Neu. "Variant Configuration is used aggressively because we have a tremendous number of options—from edge moldings, laminates, wood types,

shapes, bases, handles, locksets, colors, fabric, from chairs to desks to cubicles. The options roll into literally billions of different possibilities. Variant Configuration requires a lot of processing power, and we knew that if anything was wrong with it on Monday morning production would be impacted."

"Deeply threaded throughout operations, Variant Configuration has been perfected over the years," says Neu. "SQL Server would have to be ready for the huge amount of data Variant Configuration generates, so we were working under some pressure. But on the Monday after migration, our Variant Configurator was up and running faster than ever."

#### **Looking Ahead to SQL Server 2008**

Kimball has begun upgrading computers within its infrastructure to SQL Server 2008 Enterprise, including one test instance within its SAP environment. "We are particularly interested in the new Database Compression feature of SQL Server 2008," says Mason. "All of our SAP deployments are multi-terabyte, so we like the idea of having data compression built into the database with SQL Server 2008."

#### **Summary**

In summary, Kimball International was able to achieve savings of more than \$500,000 a year by migrating its SAP BW and SAP ECC 5.0 infrastructures from an Oracle/UNIX stack to the Microsoft Application Platform. The migrations were easily accomplished as weekend projects, and the company has enjoyed 30 percent to 50 percent faster processing speeds.

## For More Information

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## Microsoft Server Product Portfolio

For more information about the Microsoft server product portfolio, go to:  
[www.microsoft.com/servers/default.aspx](http://www.microsoft.com/servers/default.aspx)

## Microsoft SQL Server 2005

Microsoft SQL Server 2005 is comprehensive, integrated data management and analysis software that enables organizations to reliably manage mission-critical information and confidently run today's increasingly complex business applications. By providing high availability, security enhancements, and embedded reporting and data analysis tools, SQL Server 2005 helps companies gain greater insight from their business information and achieve faster results for a competitive advantage. And, because it's part of the Microsoft server product portfolio, SQL Server 2005 is designed to integrate seamlessly with your other server infrastructure investments.

For more information about SQL Server 2005, go to:

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

## Software and Services

- Microsoft Server Product Portfolio
  - Windows Server 2003 Enterprise Edition for 64-Bit Systems R2
  - Microsoft SQL Server 2005 Enterprise Edition (64-bit) SP2
  - Microsoft System Center Configuration Manager 2007

## Hardware

- HP ProLiant DL585 G1 computer with 4 Dual-Core AMD Opteron 880 processors and 64 GB of RAM for SAP BW
- HP ProLiant DL580 G5 servers with 4 Intel Quad-Core Xeon® processors and 64 GB of RAM for SAP ECC 5.0 ERP

## Partners

- RealTech