



UWM's CTI builds cloud-based e-learning facilities with IBM and SAP

Overview

The need

To manage its fast-growing user base, the Center for Technology Innovation (CTI) at UWM needed a more powerful and flexible infrastructure for providing SAP software. The University also wanted to deliver SAP services faster and reduce costs.

The solution

Working with IBM®, CTI built a private cloud-ready computing solution based on IBM Power Systems™ and IBM BladeCenter® servers, with IBM DB2® and Tivoli Storage Manager software and an IBM XIV® Storage System.

The benefit

In addition to significantly improving SAP response times, the IBM cloud platform has cut backup time by more than 99 percent and client set-up time by 90 percent, and improved quality through reduced infrastructure complexity. SAP landscape provisioning that used to take five days now takes 12 hours.

University of Wisconsin-Milwaukee (UWM) is one of two public doctoral research institutions in the state, offering almost 31,000 students a comprehensive liberal arts and professional education through 180 majors and degree programs. The university's main 104-acre campus includes the recently acquired Columbia Hospital property, the 18.8-acre Downer Woods preserve and a 2.6-acre recreational area. Approximately 50 buildings support academic, administrative, athletic and student life operations at UWM.

Selected as one of just five global SAP University Competence Centers (UCC), the University of Wisconsin-Milwaukee's Center for Technology Innovation (CTI) in the Lubar School of Business acts as an education service provider to other academic institutions in North America. In return for an annual fee set by the SAP University Alliances Program, the non-profit CTI provides the hardware infrastructure, installs and supports current releases of SAP software, and provides fresh SAP landscapes to its clients each term, together with related backup and recovery services and a helpdesk for faculty. Each of these SAP landscapes represents a fictional company, enabling students to get hands-on experience that closely matches the reality of using SAP software in a business context.

Facing significant ongoing growth in the number of institutions it serves, as well as the number of courses it offers (currently 750 per term) and the number of students involved (currently 40,000), CTI needed to upgrade its IT infrastructure. The existing technologies – Sun and Dell servers, with Oracle database software – were no longer powerful or flexible enough to handle CTI's increasingly large and complex SAP software landscapes.

Professor Dave Haseman, Director of the CTI and IBM Professor of Information Technology Management at UWM, explains: "We just signed up our 111th member, and each of those 111 institutions might have four or five faculty members involved, each teaching one or two courses per term. For each of those courses, we need to create and deploy a new company instance in SAP. That's a very significant amount of work for us – it used to take up to two days to create a company from the golden copy – and we also need to ensure total reliability, or classes simply won't run."



Designed for Data

- CTI needed a solution capable of quickly provisioning and managing up to 750 SAP landscapes used by 111 academic institutions every term. Business-critical data is protected through the use of IBM Tivoli FlashCopy Manager, enabling near-instant snapshot backups.

Tuned to the Task

- With the introduction of its new three-tier environments – DB2 database, central instance and applications servers – managed in logical partitions on the IBM Power 750 servers, the Center has simplified its IT architecture and eliminated dozens of physical application servers. The migration to IBM Power systems and IBM DB2 has significantly improved the performance of SAP software at CTI.

Managed with Cloud Technologies

- CTI has created a private cloud-ready computing solution, based on IBM hardware and software. The PowerVM virtualization capabilities of the IBM Power Systems platform were the major enabler of the university's SAP education cloud.

Driving Innovation

- The new IBM hardware and software infrastructure will enable CTI to expand educational and research opportunities in its capacity as a global SAP University Competence Center. The Center will be equipped to provide educational services to an increasing number of users across institutions in North America.
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Adopting Cloud

CTI opted to replace its Sun, Dell and Oracle technologies with IBM hardware and software, automating and consolidating its data center operations to enable a cloud-based service for delivering SAP educational landscapes more quickly.

“We wanted a platform from a company that is a close partner with SAP, and that had a good reputation with our institution; on both counts, IBM was the winner,” says Haseman. “On the technical side, the key driver was the PowerVM virtualization capabilities of the IBM Power Systems platform, which is a major enabler of our SAP education cloud. Working with IBM as a single vendor for the entire infrastructure certainly makes life a whole lot easier, removing any potential for finger-pointing between vendors. We run a lean IT team, and having a single point of support helps them to make the most effective possible use of their time.”

CTI has developed a self-service website that enables member institutions to choose from a menu of 30 different model companies, each designed to highlight a particular aspect of using SAP software. The Center also runs a helpdesk for the approximately 800 faculty members. The SAP educational courses run by CTI range from accounting and information

systems to client configuration and supply chain management. Most of the curriculum was developed by University Alliance faculty members worldwide, and UWM runs ‘train the trainer’ workshops for external faculty.

“We are starting along the road to full cloud computing: currently, our members request a service, and we provide it over the internet,” says Haseman. “We plan to significantly increase automation so that members can assemble their own tailored services, which are then automatically orchestrated and delivered by the cloud. The highly virtualized and automated IBM infrastructure will give us the flexibility to enable this and deliver services faster with minimal administrative overhead.”

Powerful and efficient

With the migration completed, CTI has approximately 34 instances of SAP ERP split across two IBM Power 750 servers, each one of which has 32 IBM POWER7 processor cores. Each instance of SAP ERP supports 30 to 100 ‘companies’ in its own Logical Partition (LPAR), flexibly sharing the processing, memory and I/O resources of the physical server.

CTI previously ran its SAP ERP landscape across two different platforms: the Oracle database and central instance ran on Sun hardware, while the applications ran on Dell servers. The Center now runs complete three-tier environments – DB2 database, central instance and application servers – in LPARs on the IBM Power 750 servers. “We simplified the architecture dramatically,” says Haseman. “The migration from Sun and Oracle went flawlessly and ahead of schedule. With the new architecture, there are far fewer things that can go wrong, and it’s also far more efficient, as the IBM infrastructure enabled us to eliminate dozens of physical application servers.”

He adds: “In addition to extensive training, IBM has provided a great deal of valuable support in the area of scripting for AIX. We’re continuing to build our skills in the IBM PowerVM virtualization technology, and we’re looking forward to seeing how Live Partition Mobility could help us with load balancing and avoiding planned downtime. The main advantage of PowerVM is all of the flexibility it gives us: this will enable us to meet the challenges of the significant and unpredictable growth we face in the near future.”

CTI also has 12 SAP environments running on IBM BladeCenter servers, including SAP NetWeaver and SAP BusinessObjects Business Intelligence software.

Solution Components

Software

- IBM® AIX®
- IBM DB2®
- IBM PowerVM™
- IBM Tivoli® Storage FlashCopy® Manager
- SAP® ERP
- SAP NetWeaver®
- SAP BusinessObjects®
- Microsoft® Hyper-V®

Servers

- IBM Power® 750
- IBM BladeCenter® HS22
- IBM XIV® Storage System

Services

- IBM Systems Lab Services and Training

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— Professor Dave Haseman, Director of the CTI and IBM Professor of Information Technology Management, University of Wisconsin Milwaukee (UWM)

These are hosted on Microsoft Windows 2008 R2 on IBM BladeCenter HS22 blade servers, using Microsoft Hyper-V virtualization technology. “The IBM blades offer excellent performance, and they are also easy to manage,” says Haseman. “All in all, we now have much greater computing and storage capacity, yet the IBM infrastructure is physically much more compact and efficient. Everything fits into three racks.”

The Power Systems and BladeCenter servers are diskless; everything is stored on an IBM XIV Storage System, which provides high-speed virtualized storage based on an innovative grid architecture. “The XIV system is unbelievable in terms of flexibility,” says Dave Haseman. “In the old days, we’d carve out a chunk of storage and commit it to an activity. It would then be very hard and costly to recycle that capacity. With the XIV system, we can freely allocate and re-allocate storage, and the solution handles all the underlying

complexity. As a result, we spend a lot less time managing storage and have accelerated common administrative tasks.”

Dramatic performance gains

Migrating to IBM Power Systems and IBM DB2 has delivered significant performance improvements for SAP software at UWM. In addition to improving response times for the end users, the new IBM infrastructure is also providing significant benefits at the back end. In the past, backing up each individual SAP instance would require the system in question to be taken down for four hours. With 34 separate instances, this was hugely disruptive for users and IT staff alike, with the result that backups were not run as frequently as they should have been. “With Tivoli FlashCopy Manager, we simply freeze the SAP and DB2 instance for 15 to 20 seconds, copy everything to a virtual backup in a separate LPAR, then switch SAP and DB2 back on,” says Haseman. “The virtual backup is then written to tape non-disruptively. Even if a user is connected when we run the backup, at worst they will experience a delay of 20 seconds. Going from four hours to 20 seconds for backup is a very big deal for us!”

The new IBM infrastructure also has cut the time to create new SAP landscapes at the start of each term, addressing a critical performance issue with the previous infrastructure. “It previously took us around five days to create a fresh SAP landscape for use by one of our institutions, and it now takes 12 hours,” says Haseman. “Each fall, we have to create fresh versions of all 750 fictional companies in SAP, then in December we create another 750 for the spring, and a further 25 percent of the normal load before the summer term, so the overall time savings are very considerable.”

Partnership

CTI worked with a number of different IBM groups to create its new cloud solution, including the IBM Systems Lab Services and Training.

“Everyone who has come to help us from IBM has been terrific,” says Haseman. “I really can’t say enough good stuff about them – I get the impression that they make all clients feel like VIPs. We spent a lot of time explaining our business to IBM, and they spent an equal amount of time trying to understand how they might be able to support us. From the SAP point of view, we are a very unusual customer: we are a cloud computing center supporting 111 other institutions. Moreover, we have unique requirements in terms of the volume of SAP landscapes we run and the fact that we turn that volume over every term. IBM has worked diligently to look at a configuration that meets these very specific needs.

We view this as a very strong three-way relationship among CTI , IBM and SAP.”

UWM is the second SAP University Competence Center to migrate its infrastructure to IBM hardware and software. The University Competence Center at Technische Universitaet Muenchen (TUM) in Germany offers educational institutions and their students throughout Europe, the Middle East and Africa access to SAP applications and services for research and teaching assignments. The Center at TUM, led by Professor Krcmar, supports more than 28,000 students at 153 universities with IBM POWER7 servers, XIV Storage System and DB2 database software. TUM migrated in 2010 and the universities are collaborating to optimize technical performance and design innovative approaches to the curriculum.

The SAP University Alliances Program

The SAP University Alliances Program makes a key contribution to the development of a skilled global workforce for SAP software, meeting growing demands from businesses for experienced graduates. The Program has some 1,100 member institutions and reaches 220,000 students each year, offering the latest SAP software at effectively zero cost (for educational use only). Companies benefit from a steady stream of highly qualified and experienced graduates, while the graduates themselves benefit from better career prospects and a better understanding of modern business operations.

For more information

To learn more about smarter computing from IBM and how we can help you integrate, automate, protect and transform your IT, contact your IBM sales representative or IBM business partner, or visit: ibm.com/smartercomputing



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