Dynamic Infrastructure

Client Success Stories for Enterprise Businesses

July 2009

Volume Two

IBM's Strategy for a Dynamic Infrastructure

Delivering Superior Business and IT Services with Agility and Speed

Recently, IBM unveiled our Smarter Planet initiative. Simply put, IBM understands that as the planet becomes smarter – more interconnected, instrumented, and intelligent – businesses, governments and institutions have the potential to link all the resources together with unprecedented freedom.

What this means is that, for the first time in history, the digital and physical infrastructures of the world are converging. Computational power is being put into things we wouldn't recognize as computers. Indeed, almost anything can now become digitally aware and networked.

As we see the true potential of a smarter planet, we see that the IT infrastructure moves beyond the data center to include much more. We're a part of a world in which real-time intelligence requires something more dynamic from the infrastructure. And the infrastructure goes beyond the data center into every aspect of the way people, businesses, and governments work – across industries -- and how they interact with technology in that process.

A dynamic infrastructure brings together both the **business and IT infrastructure** to better converge and manage the information generated to create new possibilities across the business.

A dynamic infrastructure is designed for today's **instrumented, interconnected and intelligent world,** transforming physical and digital assets into higher valued services. A dynamic infrastructure is highly optimized to achieve greater results with end to end service management, and leverages new technologies and strategies to reduce costs, improve service and manage risk while **delivering superior business and IT services with agility and speed.**

A dynamic infrastructure helps our clients address **higher service expectations, rising cost pressures and new risks and threats**, while also laying a foundation for **breakthrough productivity, accelerated value creation and the increased velocity** needed to achieve the faster pace that business and society demand.

A Dynamic Infrastructure –

Benefits:

- **Improve service** - Internal and external customers and employees expect 24 x 7 access to superior service – not only regarding the high availability and quality of existing services, but for real-time, dynamic access to innovative new services.

  In an effective business-driven service delivery model, all assets—and the people who support them—are integrated, optimized and managed holistically to respond with agility and speed to changing business needs. For organizations seeking to deliver differentiated service, it is possible to see, control and automate the contributions of individual assets thereby increasing operational efficiencies, and accelerating delivery of innovative services.

- **Reduce cost** - Bottom-line cost reduction is important, but a dynamic infrastructure can also help achieve breakthroughs in productivity gains through virtualization, optimization, energy stewardship and flexible sourcing, allowing for better use of funds. An integrated approach can help create a cost-effective dynamic infrastructure that is highly optimized to get more out of existing assets and be highly responsive to ongoing demands of the business and the marketplace.

- **Manage risk** - Security, resiliency and compliance are already expectations in today's environment, but dynamic organizations need to prepare for the new risks posed by an even more connected and collaborative world.
  In today's fast-paced world, an integrated end-to-end infrastructure resiliency and security approach is needed to instill trust with users who require real-time access to confidential, critical data. By enhancing security and resiliency, the business and IT underpinnings become more responsive and better prepared to provide information and data protection, and a plan for meeting and responding to regulatory requirements for security and business resiliency.

Dynamic Infrastructure Initiatives

7 Ways to Accelerate Development of a Dynamic Infrastructure:

Implementing a dynamic infrastructure is comprised of seven key initiatives that address specific client pain points. The initiatives are not sequential steps for building a dynamic infrastructure; rather, each initiative can help start a dynamic infrastructure conversation with clients, facilitate their understanding of a dynamic infrastructure, and accelerate their migration to it. Together, the initiatives represent IBM's holistic approach toward enabling clients with an infrastructure that is intelligent, secure, cost-effective, and just as dynamic as today's business climate.

Each of the initiatives is defined below.

Service management

Siloed management capabilities inhibit the flow of information required to manage a dynamic infrastructure. Service management provides the visibility, control and automation that helps organizations manage across all business and IT assets to deliver higher value services.

Service management delivers the solutions and expertise needed to design, build and manage a dynamic infrastructure that leverages and integrates physical and digital assets to deliver next-generation services. Through real-time infrastructure management, monitoring, process automation and security, service management helps organizations fully leverage their dynamic infrastructure.

Asset management

Achieving the highest “return on assets” is a balancing act. Asset managers must focus on four major drivers: achieving highest reliability and lowest cost within a compliance framework and with limited resource. Asset management helps maximize the value of critical assets over their lifecycles with powerful workflows by enforcing best practices that yield the highest benefits of all types of assets, including transportation, production, delivery, facilities, communications and IT. This is especially true in the asset-intensive industries of utilities, oil, gas, chemicals, mining, manufacturing and other process industries.

For example, electric power utilities are moving to “smart meters” – devices that are part of an intelligent two-way communication network between customers on the grid and the central office. These new meters send readings every 15 minutes, allowing users to control energy utilization and enabling the power company to make smart business decisions with respect to new power plant construction and the reduction of environmental impacts.

Virtualization

Consolidating resources through virtualization can increase utilization far beyond the inefficient 10 to 15 percent rates often seen in data centers today. Advances in the technology—along with higher degrees of automation—offer more opportunities for consolidation than ever before. Getting to a highly virtualized and shared infrastructure provides a foundation for automated and rapid service delivery with the benefits of economies of scale.

Virtualizing an infrastructure can help enable the flexible and dynamic delivery of shared IT resources as services. Increased utilization of IT resources, along with highly virtualized systems, helps give customers improved service delivery speed, TCO, resiliency and flexibility.

Energy efficiency

Issues and opportunities around energy, the environment and sustainability impact every individual and every business worldwide. Every boardroom faces a dilemma on how to generate more business, lower costs and demonstrate environmentally responsible practices to its customers and stakeholders.

Optimizing the energy efficiency of the business and IT infrastructure can demonstrate the value in “green.” To meet the needs of the business, a holistic approach is required that encompasses energy management, virtualization, IT and data center facility services and server and storage products that are designed to be green. Energy efficient dynamic infrastructures can reduce costs, resolve space, power and cooling constraints that impact growth, improve flexibility and responsiveness, and achieve green strategy objectives.

Business Resiliency

Maintaining continuous business operations while rapidly adapting and responding to risks and opportunities has elevated to the C-level suite the need to ensure a resilient and recoverable business environment. Organizations require an infrastructure that has agility, is resilient to risks, allows the business to respond quickly to demands, meets compliance requirements, and not only ensures that the business can continue operations, but also helps the IT infrastructure become more integrated and responsive to business needs.

While each organization will have unique requirements, resilient infrastructures must include strategies for facilities, technology, applications and data, processes and the needs of the organization to provide the correct level of resilience for each business process and to meet increasing end user demands for 24/7/365 availability.

Security

Globalization has forced organizations to take an end-to-end, business-driven approach to security, compliance and risk management in alignment with an IT governance framework. The vast interconnectivity of resources brings access and collaboration, but also opens additional risks and exposures to loss and theft.

An integrated security strategy within a dynamic infrastructure can empower organizations to monitor and quantify security risks to better understand threats and vulnerabilities in terms of business impact, to better respond to security events with security controls that optimize business results, and to better quantify and prioritize their security investments.

Information Infrastructure

Today, information has become the lifeline for business sustainability and firms of all size are searching for practical ways to manage and utilize their information. Without a cohesive information management strategy, organizations will find themselves facing higher IT operational costs and greater exposure to business risk as information grows.

A dynamic infrastructure helps address the specific challenges of ensuring information availability, securing information, supporting compliance efforts and efficiently retaining information throughout its lifecycle.

Table of Contents

Table of Contents

Aberdeen Proving Ground saves millions of dollars with IBM and MCFA Energy Management initiative

Overview

Aberdeen Proving Ground
Harford County, Maryland
apg.army.mil

Industry
- Government

IBM Service Management Solution
- Energy Management Center, Enterprise Asset Management

Solution Components
- IBM Maximo® Asset Management 6.2
- IBM Maximo Mobile
- MCFA Integrated Facilities Operations

For more information, visit:
www.ibm.com/tivoli

As a center for Army material testing, laboratory research and military training and the Northeast Region U.S. Army Installation Management Command, Aberdeen Proving Ground (APG) is a key element in the nation's defense. It occupies more than 72,500 acres in Harford County, Maryland and is home to 66 tenants.

Challenge

APG faces an enormous balancing act in running an active installation and coordinating construction of new facilities and unit movements. Virtually all APG's space is undergoing renovation and expansion by 2012. The Base Realignment and Closure Act (BRAC) of 2005 is moving the Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) mission from Ft. Monmouth to APG, adding 2 million square feet to installation operations. An aged infrastructure needs to be replaced. Executive Order 13423 requires improved energy management and the investment in renewable energy sources. And in just four years, the installation's energy bill increased 20 million USD.

Solution

The Garrison's planning team realized that meeting these challenges required a single management platform that integrates building automation, asset management and energy metering information. For nearly 10 years, APG has used IBM Maximo Asset Management software to reduce the time and cost of asset maintenance for more than 15,000 equipment assets valued at 8 billion USD. Now, working with IBM and MCFA (www.mcfaplanning.com), APG is transforming its asset management program into a Directorate of Public Works (DPW) initiative that helps staff maintain mission-ready status and control energy costs.

Through this green initiative, MCFA Integrated Facilities Operations and IBM Maximo software provide APG with a sophisticated Building Operations Command Center (BOCC) where DPW management, operations staff, energy management professionals and space managers can address potential problems before they impact operations or energy costs spiral out of control. As a result, operators can immediately see if a system is malfunctioning, if current conditions could lead to a problem, and if any mission-critical assets are not mission-ready. They can also understand the energy impact of maintenance delays, viewing the daily cost associated when an asset, such as a boiler, is not serviced on schedule. Maintenance staff has rapid access to information from any location through the IBM Maximo Mobile solution,

"The IBM and MCFA Building Operations Command Center platform gives us complete visibility and control of our operation so we can fix problems before they spin out of control, run at peak efficiency and effectively support our missions. This has contributed to millions of dollars in savings."

– Harry Greveris, Director of Public Works, Aberdeen Proving Ground

helping to reduce downtime. IBM Maximo software was selected over competitive products from Datastream and other vendors for its end-to-end visibility and ability to integrate data from legacy Army systems, including the Army's Installation Status Report (ISR), which assesses installation readiness, and the Army's Integrated Facilities System, which maintains records for the installation's real property.

With accurate information at its fingertips, the APG operations staff has improved efficiency to support the garrison's expansion to 20 million square feet. This increased visibility, control and automation has also improved decision making, driving a 10 percent reduction in year-over-year spending for millions of dollars in savings. For example, with greater insight into operations, the installation reduced its natural gas bill by more than 1 million USD from 2006 to 2007. It has also optimized when to run costly boilers and improved the throughput of less costly steam from a biomass renewable energy facility on post. This has reduced consumption of fossil fuel by more than 700,000 USD a year and improved reliability. Soon, energy managers will be able to track and bill energy consumption by tenant, enabling the installation to redirect this spending to other critical areas.

Benefits

- Reduced year-over-year spend by 10 percent, driving more than 4 million USD in savings
- Improved decision making to help installation maintain mission-ready status
- Deferred capital investments by extending asset life
- Increased efficiency to avoid staffing increases
- Reduced consumption of fossil fuel by more than 700,000 USD a year

"With IBM Service Management solutions, we can provide government installations with a detailed understanding of what needs to get done and when it needs to get done to reduce costs, improve the quality of service and optimize existing space and assets."

– Michael Fuhrman, Managing Director, MCFA

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Allied Irish Banks strengthens its position in Europe through core bank transformation

Overview

- ***Business Challenge***
  With competition and regulation increasing, Allied Irish Banks—Ireland's largest bank—needed to become more agile and cost-effective in serving its retail customers to remain a major player in the European banking market. Its aging and rigid core banking systems posed a significant barrier.
- ***Solution***
  AIB embarked on a complete transformation of its retail banking platform, with impacts extending from the heart of the bank's core processes out to hundreds of branches. The new system provides a quantum improvement in speed to market and fundamentally changes the bank's cost model.
- ***Key Benefits***
  - *Faster time to market with new banking products and services*
  - *Major reduction in time required and cost of regulatory compliance*
  - *Improved ability to offer targeted services through a portfolio view of the customer (not account-centric)*
  - *Improved cost/income ratio through lower computing and IT support costs*
  - *Improved ability to support rapid organic and acquisition-driven growth with a scalable, low-cost core banking infrastructure*
  - *Faster and lower-cost integration of acquired banks*

Headquartered in Dublin, Allied Irish Banks (AIB) offers a wide range of personal banking services, including loans, credit cards and mortgages; insurance products, such as home, travel and health insurance; life assurance and pension plans; and corporate banking services. With operations in Ireland, Poland, UK and the United States, AIB employs more than 25,000 people worldwide in more than 750 offices.

Over the past several years, the European banking market has been in various stages of flux, driven by changing economic, political and regulatory structures, as well as the forces of competition. The result has been a gradual yet steady change in the market's structure, with consolidation and cross-border expansion becoming the rule. Today, however, European banks stand on the threshold of a new phase of this evolution, with the pace of change accelerating. The catalysts are many. One is an increasing tide of regulation within the European Union, exemplified by Basel II, which addresses

Business Benefits

- Faster time to market with new banking products and services
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- Improved cost/income ratio through lower computing and IT support costs
- Improved ability to support rapid organic and acquisition-driven growth with a scalable, low-cost core banking infrastructure
- Faster and lower-cost integration of acquired banks

> *"We expect 80 percent of the project's payback to come from faster speed-to-market and the ability to respond rapidly to regulatory changes. The remaining 20 percent will come from reductions in cost, increased efficiency and enhancements to straight-through processing."*
>
> – *Steve Meadows, COO and Director of Operations and Technology, Allied Irish Banks*

banks' risk management practices, and SEPA (Single Euro Payments Area), which creates a common, borderless zone in the EU for electronic payments. Another is the broad trend toward banking market liberalization, which is changing the nature of competition in Europe by encouraging banks to expand outside their borders while at the same time strengthening their home market operations. The opening of markets is also spurring the ongoing consolidation of the European banking sector, with a good deal more consolidation—especially through cross-border mergers—expected in the future.

As with any market in transition, Europe's evolution will produce winners and losers, with the main discriminating factor being the ability to adapt rapidly to this changing landscape. This means having the agility to keep up with not only the challenges of changing regulatory requirements, but also the opportunities created by changes in the marketplace—with the turnaround interval measured in days, not months. Ultimately, survival and success in the evolving European banking market will depend on the ability to sustain profitable growth, a theme reflected in the edict "grow or die." Moreover, since acquisitions will play an important part in this growth, the ability to rapidly integrate by acquiring banks—therefore speeding the realization of operational efficiencies—will also be increasingly important.

The flexibility deficit

For the larger global and regional banks most affected by these changes, however, few have achieved anything close to the level of business and technological flexibility they will need to thrive. The reality is that nearly all major banks are hobbled with old, inflexible and increasingly costly core banking systems, which control nearly every aspect of banking operations. In the years—and sometimes decades—they've been in service, core banking systems tend to become highly customized and "brittle," making it difficult, time-consuming and costly to implement changes across them. Such was the challenge facing Allied Irish Banks (www.aibgroup.ie), Ireland's largest bank. Having expanded from its base in Ireland to Poland, the United Kingdom and the United States through acquisition, Dublin-based AIB in many ways epitomizes the increasing importance of cross-border growth for European banks. What makes AIB stand out from other banks is its willingness to take bold action to enable profitable growth in the future.

A longtime user of the IBM System z9® for its core banking systems, AIB reaffirmed its commitment to the platform when, with the help of IBM, it put a consolidated, yet even more scalable infrastructure in place to handle the substantial

growth in the number of retail accounts managed by 2009. However, AIB realized that while gaining scalability was necessary, it was not sufficient. To achieve the level of business agility it needed to compete in the long term, AIB knew it needed to fundamentally transform its core retail banking systems. One of the most important elements of the transformation strategy it laid out was to completely replace its existing core bank system with the FLEXCUBE retail banking package. While a number of other European banks had taken incremental steps to address their core banking systems, AIB has the distinction of being the first to target its entire banking platform in its core market. AIB realized that adopting such a comprehensive approach to transformation positioned it to make a major leap in competitive strength.

A commitment to success

But AIB was also fully aware of the risks and was committed to doing everything it would take to succeed. This included making sure that it had the right underlying infrastructure in place to get the most out of the new core banking solution, as measured by performance, scalability, reliability and total cost of ownership. A detailed examination confirmed what the bank already suspected, that implementing the new solution on the IBM System z™ platform running z/OS®—and employing IBM DB2® as the solution's core database—would produce far and away better results for the bank.

Demonstrating its commitment to putting the strongest possible solution in place, AIB engaged IBM Global Services to accelerate the porting of FLEXCUBE onto the IBM mainframe platform and to provide comprehensive implementation support. To maximize the performance of FLEXCUBE on the platform, IBM brought together specialists from a range of product areas—including IBM WebSphere® Application Server (on which the FLEXCUBE solution runs) and DB2—to assist In code optimization and otherwise tune the system. IBM technology also plays a critical role in enabling full channel integration and the realignment of the bank's processes around the customer experience. Key enabling products include the IBM WebSphere Enterprise Service Bus appliances, which are used to integrate the bank's applications and processes, and IBM WebSphere MQ, which is used to transport data between the bank's applications. Within the new solution, AIB also employs a full range of IBM Tivoli® systems management products and utilities to manage the new retail solution as well as the wider infrastructure.

Broadly speaking, the biggest benefit of AIB's new retail platform is that it will give the bank the flexibility, scalability and efficiency it needs to compete in the dynamic European marketplace. On the revenue front, the out-of-the-box functionality of

Key Components

Software

- IBM WebSphere Application Server
- IBM DB2
- IBM Tivoli product suite
- IBM WebSphere MQ
- IBM z/OS

Hardware

- IBM System z9
- IBM WebSphere Data Power Enterprise Service Bus appliances

Services

- IBM Global Services

Business Partner(s)

- FLEXCUBE by Oracle Financial Services

Why it matters

By becoming the first large European bank to replace its entire retail core bank platform with an off-the-shelf package in its home market, AIB is positioning itself to thrive in the competitive and regulatory dynamism of the European banking market. By leveraging the scalability and lower cost of its mainframe environment, the new core bank system gives AIB a means to significantly improve its cost income ratio as the bank grows.

FLEXCUBE—combined with the flexible and easy to manage infrastructure provided by IBM—gives AIB a huge boost in business agility, enabling it to seize opportunities fast, through all of its channels.

This same flexibility also gives AIB the capacity to respond far more quickly and cost-effectively to changing regulations than its competitors, effectively providing AIB with the means to turn a challenge into an opportunity. The underlying change that makes this flexibility possible is the reorientation of AIB's systems from a more limited "account-centric" view of the customer to a more holistic "portfolio" view—a profound shift because it also enables AIB to transform the way it interacts with customers through personalization and targeted cross selling.

Zipping down costs

AIB was also motivated by the knowledge that future competitiveness depended not only on top-line growth, but also on fundamentally changing the cost equation—and that's what the new platform does. Running the new solution on the System z delivers not only unmatched scalability and reliability, but also a significantly lower cost per transaction by virtue of the ability to offload transaction processing workloads to specialty processors known as zIIPs (z9 Integrated Information Processors) and zAAPs (System z Application Assist Processors). In addition to optimizing resource utilization, zIIP and zAAP also optimize software costs. The bank's most fundamental architectural decision—to centralize application serving on the Systems z—has also produced some of the most fundamental benefits, most notably the ability to make one change and roll it out across all of the bank's branches and channels at very low cost. AIB has already achieved another industry milestone by being among the first banks to remove all the servers in its branch network and deploy Linux® desktops served by applications on the System z, in the process reducing branch support costs by millions of euro.

With a scalable and low-cost infrastructure in place and retail transformation well under way, Steve Meadows, Chief Operations Officer and sponsor of the project, believes that AIB is well positioned to thrive in the challenging environment that is European banking. "Our embrace of a bold transformation strategy is a measure of both the challenges we face and our commitment to success," says Meadows. "By working with IBM, we're gaining the agility and efficiency that are becoming essential for success—and we're doing it today."

For more information

Contact your IBM sales representative or IBM Business Partner.

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IBM Case Study

ARBURG GmbH + Co KG reduces the number of physical servers from a total of 80 to 9 using virtualization technologies from IBM

Overview

The challenge
Flexible IT infrastructure
Greater availability in the server landscape
Increase in both server capacities and energy efficiency

The solution
Consolidation and virtualization of the existing server landscape
due to the virtualization function of IBM system p, IBM System z, IBM System x and IBM System storage

The benefits
Flexible systems enable the new business processes to be implemented faster
Savings in procurement and energy costs as well as resources

With its own subsidiaries at 31 locations in 23 countries worldwide, the German machine manufacturing company ARBURG GmbH + Co KG ranks among the leading manufacturers of injection molding machines that meet any need.

Over 2,000 employees worldwide work for ARBURG. Of those, 1,700 employees work at the company's headquarters in Loßburg in Germany's Black Forest. Customer satisfaction and proximity are part of ARBURG's corporate strategy.

"Our core processes are development, procurement, production, sales, and service. These processes accumulate a large amount of data," explained Andreas Dümmler, Department Manager of Information Systems at ARBURG.
In order to be able to manage this amount of data, a broadly positioned IT infrastructure is necessary. The IT infrastructure at ARBURG was becoming more and more complex because the need for additional computer capacities rose due to the growing order volume.

"Since we are now better utilizing the servers, we have doubled our output overall."
-- Andreas Dümmler, Department Manager of Information Systems, ARBURG

Flexible IT infrastructure thanks to virtualization

The existing server environment was too heterogeneous to implement new business processes cost effectively within the shortest period of time. Administration costs and expenses were rising. Before introducing the IBM components, it would take one day to install a new server. That is why ARBURG decided to introduce the virtualization technologies from IBM.

"As part of the overall IBM package, we received all components from a single source. In addition to the impressive quality, the long-term experience and strategic alignment in the field of virtualization, this was the definitive reason for deciding in favor of IBM," explained Andreas Dümmler.

Reduction of the number of servers in the shortest time

With the help of the company PROFI AG, an IBM Business Partner, ARBURG implemented the project last year. Thanks to the optimal know-how transfer, time-consuming training was not necessary. Therefore, the team installed the virtualization function from IBM System p as well as IBM System x and IBM System Storage within an overall project time frame of only 8 weeks. The result was that 20 real servers were reduced down to 3 System p servers. Today, six System x servers with Vmware indicate 60 virtual computers. Through this consolidation and thanks to virtualization, the servers are now considerably more available.

"Since we are now better utilizing servers, we have doubled our output overall." At the same time, the number of physical computers has been reduced by 75 percent," said Andreas Dümmler, putting it in a nutshell.

Optimized and rapid introduction of new business processes

Added to that is the fact that server installation nowadays only takes a few hours. This saves time and allows employees to more rapidly implement new business processes that are optimally adapted to business needs and to respond faster to current requirements. In this way, ARBURG can further expand its service with less hardware.

Furthermore, it results in a lot of cost savings. Because, instead of purchasing new servers and acquiring licenses for security software, for example, employees are able to quickly integrate the virtualized computers into the infrastructure. The IBM solution means that the tedious procurement processes for the hardware required for installing new applications are no longer necessary.

"Our corporate goal was to let the IT landscape grow without additional infrastructure. We have exceeded this goal."
-- Andreas Dümmler, Department Manager of Information Systems, ARBURG

High availability through homogenous storage systems

During the course of the project, the IBM storage systems were reduced from six to two. This means that in case of a possible disaster situation, the homogenous systems start up again faster. In addition, IBM supports the German machine manufacturer with remote maintenance and 24/7 telephone service. Thanks to this service, ARBURG can immediately respond to outages and malfunctions. Because IBM's expert consultants are immediately on the spot and are able to issue clear guidance and instruction. This results in the data being better secured.

Energy efficiency up, costs down

In addition to the considerably higher security and performance of the systems, ARBURG was particularly impressed by the drop in energy costs. According to the manufacturer information, the company has saved about 50 percent in energy costs. Furthermore, the company was also spared space problems for new servers so that resources dedicated for this purpose were also spared. That is why Andreas Dümmler sums up the virtualization project as very positive: "Our corporate goal was to let the IT landscape grow without additional infrastructure. We have exceeded this goal."

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Banca Nazionale del Lavoro, Gruppo BNP Paribas virtualizes its SAP application landscape on IBM Power Systems servers

Overview

■ ***The Challenge***

Growing regulatory requirements were increasing the reporting workload at BNL. Only by using a very high degree of automation – and two new SAP applications – could the bank easily meet the demands for financial information. BNL seized the opportunity to seek new ways to consolidate and improve the business performance of its IT infrastructure.

■ ***The Solution***

BNL implemented two IBM Power 595 servers, taking advantage of advanced virtualization capabilities to consolidate workload from both SAP and other applications. The servers are linked using IBM PowerHA to provide a very high-resilience service, and an IBM System Storage DS8300 is used to store 15TB of associated SAP application data.

■ ***The Benefits***

By using virtual servers on Power 595 servers, BNL is able to meet the very high workload requirements of the SAP General Ledger and Bank Analyzer applications by re-assigning system resources exactly as required. Virtualization and Micro-Partitioning allow the Power 595 servers to be sub-divided into numerous virtual servers, creating a compact and highly efficient computing platform.

■ ***Key Solution Components***

Industry: Banking
Applications: SAP® R/3® Enterprise, SAP ERP Human Capital Management, SAP NetWeaver® Business Intelligence, SAP Bank Analyzer, SAP Basel II
Hardware: IBM Power 595, IBM System Storage™ DS8300
Software: IBM AIX® 5.3, IBM DB2®

Banca Nazionale del Lavoro (BNL) is part of the international BNP Paribas Group. BNL offers both retail and corporate banking services, principally in Italy, serving millions of customers since 1913. The bank was one of the first in Italy to adopt SAP applications, starting with human resources and procurement functions, and subsequently introducing SAP NetWeaver Business Intelligence (SAP NetWeaver BI).

More recently, BNL needed to implement general ledger and SAP Bank Analyzer applications to meet growing regulatory and control requirements. With the new applications came the requirement to add new compute capacity to the existing infrastructure, particularly for the very high peak workload created by SAP Bank Analyzer.

SAP Bank Analyzer supports overall bank control functions by calculating, evaluating, and analyzing financial products. The system takes data from source systems and provides a consistent view of a bank's operational data, designed to enable management assessment of

"IBM virtualization allows us to set automated policies that assign capacity exactly as required, so that we make more efficient use of our total compute power, and are able to provide an efficient, cost-effective service to the business."

Leopoldo Palombini
Head of BNL IT Central Systems Management

current financial and risk information, specifically for compliance with Basel II and IAS regulations.

Leopoldo Palombini, Head of BNL IT Central Systems Management, explains that one possibility was adding a number of new Intel processor-based servers. However, individual standalone servers would be under-utilized for much of the time, representing a wasted investment in compute capacity.

After meticulous analysis among different vendors, BNL selected and purchased two IBM Power 595 servers, each with 48 processors.

"This hugely powerful platform offers excellent server virtualization capabilities, allowing us to run the new SAP applications, existing SAP and other applications, all within the same physical server," says Leopoldo Palombini. "It guarantees us flexibility, strength and the required performance standard, as well as providing a simple IT infrastructure."

Virtualizing the infrastructure

BNL realized that the most cost-efficient way to introduce the new general ledger and SAP Bank Analyzer applications would be if they could be consolidated to the same physical server as non-SAP applications. When the compute-intensive SAP Bank Analyzer was running, resources could be re-assigned from non-critical applications to ensure that agreed performance targets were achieved.

The virtualization capabilities of IBM AIX on the IBM POWER5 processor architecture allows BNL to run SAP Bank Analyzer, SAP General Ledger, and standard banking applications such as trade finance, credit and treasury in appropriately-sized virtual servers on a single physical machine. Because the times of peak workload for each application do not coincide, BNL is able to set performance priorities that automatically allocate a suitable share of the processing, memory and I/O capacity to each application.

Leopoldo Palombini comments, "While managing large numbers of servers was never a difficulty for us, being able to run SAP Bank Analyzer, the general ledger, and other line-of-business

applications on virtual servers on the Power 595 servers is a great business advantage. IBM virtualization allows us to set automated policies that assign capacity exactly as required, so that we make more efficient use of our total compute power, and are able to provide an efficient, cost-effective service to the business."

Resilience against failure

BNL not only runs both SAP and other applications in logical partitions on each server, it also runs separate production, development and test environments on the same Power 595 servers. Resources from these non-critical areas are transferred to the live environments automatically by the priority-based virtualization rules.

The two servers are linked using IBM PowerHA, in an active stand-by. Should one server fail, through disaster or power outage, the remaining server is able to support the complete workload. Using the active stand-by arrangement, service downtime is reduced to less than 15 minutes.

Completing the picture, the two servers are in separate data centers some 12km apart. Some 5.2TB of production and 7.1TB of development and test data is stored on IBM System Storage DS8300 storage servers. If one data center is out of action, the remaining location has both full data and active applications, which can be used as a complete disaster recovery solution.

Advantages of IBM System p

The Power 595 running AIX is able to create virtual servers in logical partitions (LPARs) using as little as one-tenth of a processor. Each LPAR may be increased increments of one per cent of a processor, allowing very close matching between workload and CPU allocation. Each virtual server's resources may be dynamically adjusted, automatically, as workload varies, controlled by policies determined by service level agreement.

"The Power 595 servers offer excellent stability and performance combined with relatively low operational costs," says Leopoldo Palombini. "The build-quality from IBM is superb, as is the quality of its support, so in our opinion the Power 595 represented the best and most cost-effective platform for our new business-critical SAP applications."

Leopoldo Palombini says, "Our investments in IBM hardware and SAP software continue to produce excellent results for the company. Smooth, reliable data flow is of strategic importance to every bank, and the combination of IBM and SAP technologies enable us to achieve this goal without high operational costs or complexity."

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Leopoldo Palombini
Head of BNL IT Central Systems Management

Strategic benefits of DB2

BNL has deployed IBM DB2 information management software to support the high-volume workload generated by the SAP Bank Analyzer application. DB2 offers both excellent performance and ease of use, with autonomic features that reduce the administration requirements.

"We are using DB2 to support SAP Bank Analyzer because it offers performance and scalability needed to handle large volumes of data. DB2 is very easy to use with comprehensive autonomic features that reduce the administration workload," says Leopoldo Palombini.

"The alignment of the product maintenance schedules for DB2 and the SAP 5-1-2 gives the freedom to run the current DB2 release alongside the corresponding SAP software release. This matching of cycles allows us to upgrade if we want to use the new functionality of the latest DB2 release, but does not require it – freeing us from enforced system work. We feel that the strategic partnership between SAP and IBM gives BNL the right solution both for today and in the future."

Great results from SAP and IBM

With the Power 595 servers in place, BNL has a more scalable and flexible platform for its SAP and other applications. As regulatory and reporting requirements change and grow, BNL can use the virtualization capabilities to ensure that performance levels continue to be met without requiring additional investments in physical server hardware.

> *"Though we cannot quantify the results, reliability and service delivery are paramount to BNL, and SAP applications on the IBM Power 595 produce great results."*
>
> Leopoldo Palombini
> Head of BNL IT Central Systems Management

Leopoldo Palombini concludes, "Both SAP and IBM represent quality and reliability, and we knew from the beginning that the new servers would deliver outstanding SAP application performance. Though we cannot quantify the results, reliability and service delivery are paramount to BNL, and SAP applications distributed using advanced virtualization on the IBM Power 595 servers produce great results."

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SPC03040-ITEN-00 (05/08)

Bancaja improves resiliency with GDPS-based business continuity solution

Highlights

- ***The Challenge***
  Minimize the effects of a site outage while also complying with new international banking regulations

- ***The Solution***
  Two IBM® System z™ servers configured with IBM Parallel Sysplex™ and IBM Geographically Dispersed Parallel Sysplex™ (IBM GDPS®) technology to ensure near-continuous availability of banking applications, even in the case of the loss of a data center; two IBM TotalStorage® Enterprise Storage Server® systems linked by the Peer-to-Peer Remote Copy feature to ensure data synchronization between sites

- ***The Benefit***
  The GDPS-based disaster recovery configuration helps the bank avoid ill effects due to planned downtime, equipment failures or the complete loss of a data center—including fines from regulators, loss of reputation and reduced business

Since its founding in 1878, Bancaja has grown to be one of the largest financial institutions in Spain. Today, the Valencia-based savings bank is active internationally with operations in China and the United States. Key to the longevity, stability and growth of the bank is its ability to manage risk successfully. Pending changes in international banking regulations—the Basel II Accord—required the bank to reduce operational risks, including the potential for loss of business. The alternative for Bancaja was to increase the funding of reserves to cover such a loss, but that would have left less capital available for business purposes, which could reduce earnings.

Bancaja operated two data centers, each hosting separate applications to support the nearly 1,000 branches the bank has throughout Spain. An outage at either facility could make it impossible to conduct branch operations. In addition to the potential loss of business due to downtime, an outage leaving branches unable to handle customer transactions could hurt the bank's reputation with the public and even lead customers to transfer their accounts to another bank.

"We selected System z servers for our most critical applications and are quite pleased with the results. IBM mainframes are the de facto standard in the financial sector in Spain. Changing platforms would have increased risk for us at a time when we were trying to reduce it. We simply needed to enhance our configuration to reduce the risk of downtime."

–Fernando Fons, Systems Engineering Manager, Bancaja

In light of these vulnerabilities, the introduction of the new regulations led the management of the bank to reevaluate the resiliency of their IT infrastructure. After a careful review, management decided it was time to move to an IT architecture that could provide nearly continuous availability and help banking operations resist disruptions due to planned maintenance or even the complete loss of a data center.

Upgrading to IBM GDPS fortifies the existing environment

A long-time IBM customer, Bancaja already operated two System z servers—one IBM zSeries® 890 server and one zSeries 990 server—each at its own data center. There was no desire to change this environment, which supports the bank's core applications along with infrastructure including the IBM z/OS® operating system and IBM DB2 Universal Database™ V7, IBM CICS® V3.1 and IBM WebSphere® MQSeries® V5.2 software. "We selected System z servers for our most critical applications and are quite pleased with the results. IBM mainframes are the de facto standard in the financial sector in Spain," says Fernando Fons, systems engineering manager at Bancaja. "Changing platforms would have increased risk for us at a time when we were trying to reduce it. We simply needed to enhance our configuration to reduce the risk of downtime."

Bancaja IT management turned to IBM for assistance in finding the best way to accomplish their business continuity goals. IBM suggested utilizing Parallel Sysplex and GDPS between the two zSeries servers. Parallel Sysplex is an end-to-end, high-availability feature that can present up to 32 z/OS servers as a single computing facility to applications, administrators and users. IBM GDPS technology, an IBM Global Services offering, is a combination of system software and tools to help automate IBM Parallel Sysplex tasks and enable administrators to perform failure recovery tasks from a single point of control. Using GDPS in the Parallel Sysplex environment between the two data centers could help Bancaja ensure nearly continuous availability for its core banking applications.

The compelling benefits of near-continuous availability, a strong business continuity plan and compliance with Basel II regulations convinced Bancaja management to proceed with the upgrade. An additional TotalStorage ESS system was added, giving each zSeries server access to an ESS with 2TB of storage. The ESS units were linked by the Peer-to-Peer Remote Copy feature, which maintains the same

data on both storage servers. PPRC operates within the ESS so it does not take away any processing capacity from the zSeries server. Because PPRC maintains the same data in two different locations, the bank can always recover, even if one site is unavailable for an extended period of time.

Elimination of planned and unplanned downtime enables high availability

The new business continuity configuration dramatically reduces the bank's exposure to unplanned downtime—from equipment or software failures as well as a complete loss of a data center, such as from a fire. In case of an outage, the bank can restart the lost applications in the other data center in about an hour and a half. In addition, planned maintenance can now be performed on equipment and applications without any impact on banking operations.

IBM business continuity approach eliminates the need to increase funding of reserves

By reducing operational risk, the bank does not have to increase funds in reserve to comply with the Basel II accord. With money being the engine of profitability for banks, this capital is available for other business purposes. "As a result of this project, the Basel II rules will have no adverse impact on our earnings," says Fons.

Tivoli software helps control operations costs and manage complexity

Extensive use of IBM Tivoli® systems management software tools helps Bancaja IT management control administrative costs in the GDPS environment. The bank uses Tivoli Systems Automation for z/OS software to help automate systems management, improve administrator productivity and maximize application availability. "In a distributed environment like ours with two hosts, many partitions and more on the way, using Tivoli software is an efficient way to manage the zSeries infrastructure," Fons explains.

Bancaja's IT infrastructure ready for business around the clock

Fons thinks that Bancaja's IT infrastructure is now ready for anything. "The banking business is all about protecting assets and minimizing risk. Now that we have done that with our IT infrastructure, we have a much stronger business. Our customers may never know what we have done—and that is OK. But with these new IBM products in place, it is business as usual for us—all the time."

"The banking business is all about protecting assets and minimizing risk. Now that we have done that with our IT infrastructure, we have a much stronger business. Our customers may never know what we have done—and that is OK. But with these new IBM products in place, it is business as usual for us—all the time."

—Fernando Fons, Systems Engineering Manager, Bancaja

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Bank of Montreal enables rapid recovery with high availability technology from IBM

"Bank of Montreal Photo by Matthew Plexman"

Overview

- ***Challenge***
  To increase the Bank's operational resiliency by extending the distance between data center sites
- ***Solution***
  Implementing a high availability solution that includes IBM Geographically Dispersed Parallel Sysplex™ (GDPS®) and Server Time Protocol (STP)
- ***Key Benefits***
  Enables disaster recovery in less than two hours, enables a recovery point objective of zero over a distance of 100 km, and helps the Bank meet regulatory requirements

One of the five largest banks in Canada, Bank of Montreal (BMO) is a highly diversified financial services organization with assets that totaled over US$366 billion in 2007. BMO utilizes a wide array of technologies to support the processing of financial data, including a significant investment in IBM systems and software. Bank of Montreal serves the U.S. market through Chicago-based Harris N.A., which has the third largest number of branches in the Chicago area and over $42 billion in assets.

For financial institutions like BMO, the ability to recover from major system failures is critical. When the events of September 11, 2001, highlighted significant deficiencies in the disaster preparedness of many companies, the U.S. government issued a series of new regulations and industry-specific guidelines designed to address this problem. The "Interagency White Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System" and other guidelines provide numerous recommendations for improving the recovery capabilities of financial institutions, including locating the disaster recovery center beyond the immediate region of a primary facility, and delivering zero percent data loss up to the point of disaster.

"That white paper definitely had a strong influence on our plans," explains Malcolm Sanderson, a senior technical architect at BMO. BMO responded to the challenge by implementing an ambitious program of improvements to its disaster recovery strategy, beginning with the development of a new data center location.

BMO's Operational Resiliency Program

The original backup and disaster recovery (DR) site was located less than 10 km from the primary data center, an inadequate distance to be considered "out-of-region." To solve this problem, BMO set up a new site—one that was

100 km away. This effort, part of BMO's Operational Resiliency Program (ORP), had several important goals: to increase the distance between the primary and backup sites, to achieve a recovery point objective of zero, to establish two control points for operations, and to enable system and workload restoration within a two-hour timeframe.

IBM helped supply BMO with the technologies necessary to achieve these resiliency goals and supported the project throughout the implementation. Says Sanderson, "We have a very strong IBM team locally that's been involved in the project. We've had them engaged all the way through."

Early adopters of STP

Critical to the success of the new data center was the ability to synchronize transactions between the Bank's primary and backup servers—10 IBM System z™ mainframes in all. Peer-to-peer remote copy (PPRC) was used to achieve data mirroring between sites, effectively synchronizing transactional data between the servers. Geographically Dispersed Parallel Sysplex (GDPS), a multi-site end-to-end application availability solution, was used to automate the recovery process and manage the PPRC environment.

But the primary challenge of the BMO implementation was the increased distance between the two sites. GDPS has typically relied on Sysplex Timer® technology, which could only support distances of up to 40 km without intermediate sites. The Bank's two sites are linked through nearly 100 km of fiber optic cable, a length that far exceeds that limit. To meet this challenge, BMO became an early adopter of a newly developed IBM timing technology known as Server Time Protocol (STP).

STP, which keeps multiple processor clocks at different locations in sync with each other, was designed to enhance the capabilities of GDPS/PPRC. STP supports a multi-site Coordinated Timing Network (CTN) that allows clock synchronization between System z mainframe servers up to 100 km apart. BMO was the first IBM customer to implement GDPS/PPRC via STP at this distance.

In order to implement the solution, BMO had to expand capacity of their storage subsystem, which consists of an IBM System Storage™ DS8300 at the primary data center and an IBM Enterprise Storage Server® 2105 at the backup site. They also had to upgrade their IBM z/OS® version on an accelerated timeline.

As an early adopter through the IBM Implementation Assistance Program (IAP), BMO gained advance access to cutting-edge STP technology, and they had the opportunity to give specific feedback about their needs early in the development process, ensuring a more timely and personalized response.

Measurable successes

The IBM solution has fulfilled BMO's requirement for longer-distance recovery, and it has enabled a recovery point objective of zero. "Prior to this implementation, if we had a disaster we would lose an entire day's transactions for some applications," says Sanderson. "We wanted to get to the point where we could recover all transactions up to the point of disaster."

Reaching that goal was a team effort, and one that required aggressive testing before, during and after the implementation. "We did an enormous amount of testing on all of this technology prior to implementation," says Sanderson, "And IBM was at the table throughout this process." Even before testing began at the new site, a variety of tests were conducted in a lab environment, including tests on a 100-km spool of fiber cabling so GDPS and STP could be tested thoroughly at the full distance.

> *"IBM was at the table throughout this process."*
>
> – *Malcolm Sanderson, Bank of Montreal*

Now that the solution is in production, BMO continues to conduct recovery tests several times a year, a process that also measures how long the recovery process takes. "Our goal is to recover services within two hours from the time we initiate the recovery process," says Sanderson. A recent BMO test showed a recovery time of just one hour and 54 minutes, surpassing the goal by six minutes.

"What GDPS brings to the table is the automation necessary to allow us to recover within a two-hour timeframe," Sanderson explains. "It automates a lot of manual processes, and with automation you get speed. It also detects conditions that might cause the recovery to fail. With our new GDPS system, once we make the decision to do a site takeover, we simply tell the system, and the system completes the recovery automatically."

Reducing operational risk

BMO and Harris N.A. have benefited from this implementation in other ways as well. By bringing their disaster recovery strategy into compliance with federal guidance, they have significantly reduced their risk of data loss when recovering from a system failure. And although this improvement in operational resiliency is largely invisible to the Bank's customers, it helps to ensure that institutional trust will be maintained in the event of a catastrophe. As Sanderson says, "The real benefit to the business is a reduction in risk. We have a better insurance policy now than we had before."

> *"The real benefit to the business is a reduction in risk. We have a better insurance policy now than we had before."*
>
> – *Malcolm Sanderson, Bank of Montreal*

"Data protection and reputational risk are our critical success factors," says Lee Dunn, vice president of BMO's Operational Resiliency Program. "Businesses have evolved from paper-based transactions to electronic transactions through a number of channels and are heavily reliant on technology. The implementation of PPRC, GDPS and STP technologies has enabled BMO to provide the right level of resiliency to our internal lines of business."

"Part of the team"

Sanderson says that the IBM GDPS High Availability Team provided excellent service and support to the BMO staff throughout the project. "IBM has been an integral part of the team," reports Sanderson. "They've been living side-by-side with our system programmers—attending meetings, helping with planning, coming in at midnight when we're testing."

"They've also done a lot of the integration prep work," he continues. "For example, IBM has a partnership with Nortel, so they were able to test the GDPS solution with Nortel to make sure everything was going to work properly."

Extending the solution

With the BMO implementation, GDPS has been proven to operate at greater distances than previously possible, helping BMO achieve its disaster recovery objectives for Harris N.A. The Bank's Operational Resiliency Program has since moved into its next phase, which includes applying these same technologies to applications for Bank of Montreal.

For more information

Contact your IBM sales representative or IBM Business Partner. Visit us at: **ibm.com**/systems/z

For more information about Bank of Montreal and Harris N.A. of Chicago, visit: www.bmo.com

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IBM XIV Storage System

xiv Storage Reinvented

Success Story: Bezeq International

Bezeq International

Bezeq International Drives Cutting-Edge Competitiveness with IBM XIV Storage

> *"We started using the IBM XIV® Storage System with our peripheral applications, gained confidence, and quickly extended its use to our most business-critical applications."*
>
> Eyal Zafrir, CIO, Bezeq International

At a Glance: Bezeq International's XIV solution

Customer	Bezeq International, Israel's leading Internet & telecom services provider
Industry	Internet, global telephony services, and business comprehensive communication solutions
Environment	Windows®, Linux®, VMWare™, SUN
XIV Systems	4
Challenge	Empower the company to offer complex services reliably and cost-effectively
Features Used	Snapshots—for physical and logical backup
Results	• Top performance with the organization's hungriest applications • Effortless scaling • Great savings in administrative overhead • Easy-to-use snapshots for extensive logical and physical backup

IBM

IBM XIV Storage System

Overview

Bezeq International is Israel's leading provider of broadband Internet services and global telecommunication solutions, enjoying over 36% share of the local Internet market. Bezeq International provides customers with comprehensive communication solutions in International and Organizational Telephony, Internet, Business Integration, Hosting, Data Communication, and Information Security Solutions. Founded in 1996 as a subsidiary of Bezeq, Israel's incumbent telecom provider, Bezeq International is a technology trailblazer, bringing cutting-edge Internet, telecom, and infrastructure services to its rapidly growing customer base.

Bezeq International launched its XIV® storage solution by deploying a single system for peripheral enterprise storage needs. Within a year and a half, it had expanded the solution to four systems—and 300 TB of single-tier storage—and extended its scope to business-critical applications. Today, Bezeq International considers its XIV system a cornerstone of its day-to-day activities and core enabler of its ability to provide a competitive service offering. Its IT team has determined the system to be a solid alternative to tiered storage hierarchy, fully validated with regard to performance, reliability, and cost. They have found it adds further value through high scalability, availability, and manageability.

> *"The XIV system's simple and friendly management is a real advantage over all the other user interfaces that we were accustomed to."*
>
> Kobi Holzer, Storage Administrator, Bezeq International

Rapid ramp-up to business-critical needs

For the Bezeq Interational IT team, as with their industry counterparts, the most pressing challenges lie in ensuring that their storage solutions keep pace with the huge surge in complex services needed to keep the company competitive. And they need to do so while keeping operational expenses in check. Upon adding the XIV system to its storage assets, the Bezeq International team took an enthusiastic but cautious approach, tasking its storage newcomer with just a few small file systems. Within months, the system had successfully met the department's criteria for performance, reliability, and manageability. The team then expanded the system's responsibilities to include the company's Microsoft® Exchange email server, with 1500 mailboxes. The move to this mission-critical system, whose downtime is tantamount to an organizational showstopper, was a bold step—and a vote of confidence for the XIV system. It proved to be the first in a rapid succession of milestones, each expanding their XIV solution's role. "We started off using XIV storage for peripheral applications only, but quickly extended it to our most business-critical applications," said Eyal Zafrir, CIO, Bezeq International. Within one year, the company was tapping the XIV system's strengths for diverse applications and needs, including:

- Leveraging its performance to run the data warehouse, one of its most IO-hungry applications
- Calling upon the XIV system's high reliability and availability for its CDR (Call Description Record) collection system
- Using the XIV system for a VMWARE implementation of 100 virtual machines
- Supporting backup services to business and private customers
- Storing data from video recording systems
- Relying on the XIV system's cost-economies for multiple TBs of storage hosting

Bezeq International's experience in applying the XIV system broadly—to these uses and others—enabled the telecommunications giant to validate the system for any kind of storage need.

Winning with ease of management

Bezeq International's storage assets consisted of most of the mid-range and high-end systems on the market. As expert users in so many systems, the IT team was practically bowled over by the XIV system's outstanding management simplicity. "The XIV system's simple and friendly management has proven a real advantage over all the other user interfaces we were accustomed to," said Kobi Holzer, storage administrator, Bezeq International. "The system's built-in virtualization capabilities let us define volumes and snapshots very easily, and without requiring us to plan for performance optimization." The GUI is exceptionally intuitive; delivered on top of virtualization, it lets users configure the system almost effortlessly, with a near-zero learning curve.

100% backup through unlimited snapshots

Of the XIV system's diverse functionality, Bezeq International has so far put snapshots into use, creating a comprehensive backup net for system protection. Its snapshot-based backup scheme covers:

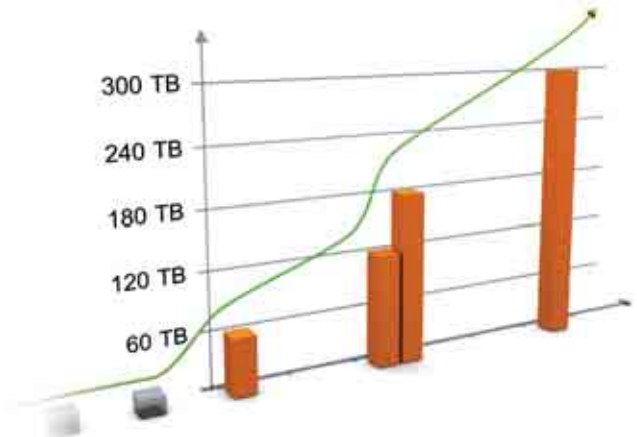
- Physical backup, through a consistent image of the data
- Multi-generation, logical backup, through multiple snapshots

Bezeq International simplified its physical backup processes by leveraging the XIV system's ability to create snapshots instantly and without interruption of system activities. The team was further able to maximize the strength of its logical backup due to the system's support of unlimited snapshots without performance overhead. The XIV system's unflinching levels of high performance even during multiple snapshots help make the organization's logical backup scheme an everyday reality.

A real solution for single-tier storage

Its reliance on a multitude of storage solutions generated substantial administrative overhead for the Bezeq International IT team. Then, just one year after implementing the XIV system, the team reached a startling conclusion: it made sense to apply the XIV system to its full range of needs. Specifically, the system's proven high-performance and ample features validated its use with the most demanding applications, while total cost of ownership justified its use for other needs. "The XIV system provides a real solution to a full range of our storage needs, giving us a first-time-ever alternative to tiered storage hierarchy," explained Eyal Harel, Director of System & Development, Bezeq International. Facing a fiercely competitive business environment, Bezeq International found the XIV system to be a win-win solution for meeting high performing yet cost-effective storage needs while simplifying day-to-day operations. Bezeq International's XIV solution is a solid case of IT empowering a company's ability to survive and thrive.

The XIV system provides an exceptionally intuitive, state-of-the-art user environment



Bezeq International grew its XIV solution to four systems—a total of 300 TB—in just 1-1/2 years

IBM XIV Storage System

Storage Reinvented

> *"The XIV system provides a real solution to a full range of our storage needs, giving us a first-time-ever alternative to tiered storage hierarchy."*
>
> Eyal Harel, Director of System & Development, Bezeq International

Benefits: Getting more with the XIV system

IBM XIV Storage System	Business Value to Bezeq International
Exceptional performance	• Optimal 24/365 workflow across all applications
Easy and unlimited scaling	• Expansion to 300 TB in one-and-a-half years
Powerful snapshots	• First-time-ever multi-generation logical backup
Ease of management	• Much less administrative overhead
Single-tier solution	• Simplified operations • Freedom to grow its competitive offering

For more information

To learn more about the IBM XIV Storage System, contact your IBM representative or IBM Business Partner, or visit: www.xivstorage.com

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Tivoli software

Birlasoft taps its own ITIL-based processes with IBM asset and service management software.

Overview

- ***Challenge***
  Optimize IT processes to enable service and support staff to keep pace with meteoric corporate growth
- ***Why IBM?***
  A one-stop solution that not only handles IT asset and service management, but also procurement, contracts and enterprise assets
- ***Solution***
  An integrated IT asset and service management model based on IT Infrastructure Library (ITIL) best practices that helps strengthen service delivery and improve response times
- ***Key Benefits***
  Nearly 80 percent decrease in number of help desk calls each day; 22 percent reduction in number of service tickets; 10 percent decrease in incident resolution times; six month return on investment

Birlasoft gains real-time visibility into all aspects of its service and support operations with IBM software.

Birlasoft is one of the fastest growing IT services companies providing both onshore and offshore business models. The company is on track to become a quarter-billion dollar company by 2008, driven by a growing client base of Fortune-listed companies in manufacturing, retail, finance, healthcare, independent software vendor and high-tech sectors.

Many of the world's corporate giants outsource their IT support to Birlasoft due in part to the company's heavy use of IT Infrastructure Library® (ITIL®) processes to optimize IT operations and keep technology ultra-reliable. ITIL is a framework of globally accepted best practices for IT service management.

"We were able to integrate our entire ITIL framework and automate our service and support delivery capabilities through the IBM asset and service management solutions."

– Sharad Joshi, Assistant Vice President, Enterprise Services Group, Birlasoft

"We measure not only the averages for all the response and resolution times, but also the span or the percentage of tickets resolved within a range for the target SLA period. For example, if 98 percent of service tickets are resolved within their specified SLA period, we still have a problem because 2 percent of service requests didn't meet expectations."

–Sharad Joshi

So when the 3,800-employee company needed to upgrade its own internal IT service and support operations to keep pace with its meteoric growth, a practice-what-you-preach approach was its guiding principle. The company sought an IT asset and service management system that best supported its own ITIL-based service delivery model. After evaluating leading vendor offerings, Birlasoft chose IBM Tivoli® Asset Management for IT and IBM Tivoli Service Desk, part of a unified platform, and Maximo® Discovery.

"We wanted an IT service management platform that best reflected our own processes," says Sharad Joshi, assistant vice president of Enterprise Services Group, Birlasoft. "IBM Tivoli Service Desk was by far the most ITIL compliant. We were able to integrate our entire ITIL framework and automate our service and support delivery capabilities through the IBM asset and service management solutions."

Today, the company has deployed IBM asset and service management software in two of six global delivery centers, with plans to eventually roll it out to its other centers. The system supports more than 800 IT assets—primarily desktops, laptops and servers—for 650 users.

In addition to implementing ITIL best practices, the company had three key business objectives for its new IT asset and service management system:

- *Real-time visibility into all aspects of its service and support operations*
- *Easy and accurate compliance with auditing requirements for its technology licensing and regulatory obligations*
- *Easy integration into other business systems*

Real-time visibility cuts incident response time

Real-time visibility is critical because much of the company's stellar reputation depends on the availability of the mission-critical IT assets that support its customers' businesses. Consequently, Birlasoft employees expect fast response and resolution times to their service calls. The company's IT department has put in place aggressive service-level agreements (SLAs) to meet their expectations.

With Tivoli Service Desk, users can now get detailed information on all service requests, including real-time status of service tickets as well as historical measures of resolution times. "We measure not only the averages for all the response and resolution times, but also the span or the percentage of tickets resolved within a range for the target SLA period. For example, if 98 percent of service tickets are resolved within their specified SLA period, we still have a problem because 2 percent of service requests didn't meet expectations." says Joshi.

Birlasoft also leverages full asset management capabilities to support proactive maintenance of IT assets. Consequently, in addition to cutting incident resolution times by 10 percent, IBM asset and service management software has helped Birlasoft reduce the number of service tickets by 22 percent and the number of calls to the help desk from 110 to 20 a day. The payback period on the investment (product and services) in this system was six months; and through operational efficiencies, substantial cost savings were achieved.

Key Components

Software

- IBM Tivoli Asset Management for IT
- IBM Tivoli Service Desk
- Maximo Discovery

Streamlined processes smoothes audits

IBM asset management software also lets Birlasoft accurately see all its IT assets, including their location, ownership, configuration and other details. The company used to rely on huge spreadsheets and home-grown databases to track all IT assets and the associated vendor information. Maximo Discovery software automatically harvests most of the asset details, which the IT staff updates and verifies within a centralized, integrated CMDB (configuration management database).

This asset visibility greatly helps with auditing process for license and regulatory requirements as well. Being in the IT business, Birlasoft wanted to confirm that it adhered to software and hardware licenses it had procured from its many technology partners. Moreover, it wanted to assess that it wasn't underutilizing software by buying more licenses than were being used.

"There's often a huge mismatch between what was bought and what is actually deployed in the field," says Joshi. "It's critical to be able to manage licenses in real time across the organization. We can do that with Tivoli Asset Management for IT software, including having it automatically deliver alerts advising us to renew expiring licenses, or not renew underutilized licenses."

Integration simplifies IT management

The IBM asset and service management solutions address Birlasoft integration objectives on several levels. First, IBM software integrates IT asset management with service management functions, which is essential for any service desk to be successful. Secondly, the solution is integrated with the company's PeopleSoft (now Oracle) human resources application, allowing IT staff to manage any asset from the moment it is procured. When a new employee is hired, IBM asset and service management software automatically pulls the pertinent information from PeopleSoft HR and alerts the staff to procure and configure the IT resources before the employee's first day at work.

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– Sharad Joshi

The IBM solution also gives Birlasoft an integration capability no other IT asset and service management system offers: the ability to manage both IT and traditional enterprise assets within the same platform. The company is already using IBM Maximo Asset Management technology to manage some of its facilities and their associated assets, such as backup generators and environmental control equipment. In the future, it intends to extend the Maximo implementation to manage the procurement processes of enterprise assets as well as managing its many vendor contracts. "We wanted a one-stop-shop solution that not only handled our IT asset and service management, but also handled facilities, procurement, contracts and other enterprise asset needs," says Joshi. "The fact is, industry-accepted enterprise asset management processes closely resemble ITIL processes in many ways. The Maximo enterprise asset management heritage is a huge advantage for achieving our long term goals."

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit our Web site at:
ibm.com/tivoli

For more information on IBM Maximo solutions visit:
www.maximo.com

You can get even more out of Tivoli software by participating in independently run Tivoli User Groups around the world. Learn about opportunities near you at: **www.tivoli-ug.org**

For more information about Birlasoft, visit:
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SWC10066-USEN-01

BP: Validating the safety benefits of real-time personnel location monitoring

Overview

- ***Business Challenge***
  Instead of simply complying with more stringent regulations on emergency, BP sought a quantum improvement in the way it accounted for and protected its employees.
- ***Solution***
  BP engaged IBM to develop a first-of-a-kind emergency mustering solution that translates real-time RFID data into actionable, visual information that serves as the cornerstone of new safety procedures. Flexible design enables BP to extend the solution to other key parts of its operations.
- ***Key Benefits***
  - *Major improvement in emergency evacuation preparedness and employee safety*
  - *Improved ability to support compliance with future Homeland Security directives*
  - *Expected reduction in lost or stolen assets*
  - *Reduction in production downtime caused by the delivery of the wrong spare parts*
  - *Increased accuracy in spare parts inventory reporting*

BP is the second-largest petroleum refiner in North America.

Refineries, whose job is to transform crude oil into such final products as gasoline, lubricants and jet fuel, are the last, and arguably most important, stage in the production of petroleum related products. A dense network of pipelines, valves, gauges, storage tanks and production equipment, petroleum refineries can process as much as a quarter million barrels of oil a day over a single square mile of production facilities. This complexity – combined with the inherent volatility of petroleum products at all stages of the refining process – makes refineries one of the riskiest occupational sites.

> *"Our goal was to use technology to raise the bar on how we protected our employees and the public. With IBM's help, we've developed a solution that is true to our commitment to safety."*
>
> – Curt Smith, applications director for the Chief Technology Office, Information Technology & Services, BP

Business Benefits

- Major improvement in emergency evacuation preparedness and employee safety
- Compliance with state occupational safety guidelines
- Ability to support compliance with future Homeland Security directives
- Expected reduction in lost or stolen assets
- Reduction in production downtime caused by the delivery of the wrong spare parts
- Increased accuracy in spare parts inventory reporting

As such, safety is always a critical issue for petroleum refinery operators, and no one is more concerned about safety than BP (www.bp.com). There is ample evidence of how deeply ingrained safety is within BP's culture. It's seen in the small things, like the way BP company meetings always start with a "safety moment," and in the ubiquitous signage promoting safe practices down to the most routine actions. More importantly, though, it's seen in the lengths to which BP routinely goes to protect its employees and the public.

Accounting for all

One of the most important safety issues for petroleum refineries is the safe evacuation of employees in the event of a disaster, such as a fire or explosion. A key element of disaster planning is the process by which employees are located and accounted for. The accuracy of the emergency mustering process, as it is known, has a direct bearing on the actions of emergency personnel, who may put themselves at great risk in their efforts to rescue missing employees. One of the initial proposals called for the use of kiosks placed around a refinery, which would enable employees to account for themselves electronically by swiping a magnetic card. The glaring problem of this approach, however, was that it provided no certainty as to the whereabouts of a missing person, leaving open the possibility of emergency personnel launching a hazardous search operation for an employee who may have left the facility hours before.

"When it comes to employee and public safety, we're not trying to simply meet minimum requirements. BP is going to do whatever is necessary to make people safe."

– Curt Smith

As part of the search for a provider to develop a solution, IBM staff met with BP to propose a design that would bridge what had been technical obstacles to building a positive accounting system. The gist of the plan involved employees wearing RFID tags that would send location information at frequent intervals, with the data uploaded to a control center. Where IBM's plan – and capabilities – stood out, however, was in the all-important handling of the vast quantities of data generated by the RFID system. In essence, BP's system needed to not only track employee locations, but also use that data to trigger events within specific business processes. Business rules would provide this linkage. To achieve this, the solution required an advanced middleware layer with a highly flexible means of changing the underlying business rules to suit different situations and requirements. Equally important to BP's safety managers was an advanced visualization capability to display this data. IBM integrated all these capabilities into a solution known as the Location Awareness and Safety Solution.

Passing muster in a challenging environment

For IBM, the breadth of the Location Awareness and Safety Solution ensured that its development would be a team effort. The core of the solution is IBM WebSphere® RFID Premises Server, a middleware product that provides a platform to integrate data from sensory devices (i.e., RFID tags) into business applications. For the RFID devices themselves, IBM employed the Sapphire DART Precision Asset Location System from RFID leader and IBM Business Partner Multispectral Solutions, Inc. (MSSI). One key factor in MSSI's selection was its strength in ultra-wideband RFID solutions, which provided a high degree of accuracy in highly metallic, interference-prone environments such as refineries. Another was the quality of its active ID tags, which are unique in their ability to support the high "blink rate" necessary to have a real-time view of employee location, without the rapid loss of battery power. The final major component, custom developed by IBM Research, is a real-time visualization engine that provides a rich graphical view of employee locations and associated metrics. IBM Software Group was responsible for assembling these components into a discrete solution, while IBM Global Business Services provided guidance on how the solution should integrate with BP's business processes. The system runs on a pair of IBM System x™ servers.

In the event of an emergency or disaster, the Location Awareness and Safety Solution presents a real-time, three-dimensional view of the location of employees in and around the refinery. Having this view drastically reduces the need for rescuers to conduct sweeps of a particular area in search of unaccounted for employees. The Location Awareness and Safety Solution platform itself is poised to address a far wider range of safety and security issues – due in large measure to the flexibility of the software framework. For instance, through the solution's easy-to-use interface, staff can configure the solution any number of ways to create new or temporary security zones along with conditional business rules that apply to the zones. By integrating the solution with security clearance data within its HR systems, the system can identify unauthorized personnel within a zone and automatically notify safety personnel, who can take fast corrective action to ensure the safety of the employees. BP is testing a variation of this approach to reduce accidents associated with the movement of overhead cranes, which represent one of the biggest causes of injury in the oil business. By integrating RFID position information, the crane safety initiative is designed to provide a collision avoidance warning to alert crane operators.

Key Components

Software

- IBM WebSphere RFID Premises Server
- IBM WebSphere Application Server
- IBM mySpace visualization software

Servers

- IBM System x

Services

- IBM Software Group
- IBM Global Business Services
- IBM Research

IBM Business Partner

- Multispectral Solutions, Inc.

Timeframe

- Development of Location Awareness and Safety Solution prototype: 1 month
- General rollout: 6 months

Why it matters

By integrating active RFID technology with its business processes, a refinery gains a graphical, real-time view of all employees – wherever they are. Flexible business rules enable a refinery to extend the benefits of real-time RFID into such key operational areas as asset management and workplace safety.

Extending a real-time view

The other major use envisioned for the Location Awareness and Safety Solution is real-time asset tracking and management. The two biggest factors driving this are the high degree of wear and tear that oil production equipment experiences – which necessitates the extensive stockpiling of spare parts such as wellheads – and the high cost of these parts, routinely exceeding $100,000 per item. By applying the solution to a spare parts management operation, BP would be able to track the location of each part in real time, saving potentially millions by drastically reducing the incidence of lost or stolen parts. RFID-based inventory tracking also has the potential to reduce the cost and time required to manually check inventory within BP's parts storage facilities, saving hundreds of thousands of dollars annually and ensuring that parts-in-stock records are continually up-to-date and accurate.

Curt Smith, applications director for the Chief Technology Office, Information Technology & Services, and a key driver of the project, sees the largest potential benefit of real-time parts tracking as improved accuracy and efficiency in the way BP supports its oil production operations in the Gulf of Mexico. The return on investment is driven by the cost in lost production of sending out the wrong parts to fix a problem. With high production costs and volumes, the solution's benefits build up fast. "We view the solution's real-time tracking potential as an important tool to improve our performance and substantially reduce the down-time associated with parts delivery errors," he explains.

While Smith expects the solution's benefits to extend deeply into BP's operations, he points to improved safety as the ultimate benchmark of success. "Our goal was to use technology to raise the bar on how we protected our employees and the public," says Smith. "With IBM's help, we've developed a solution that is true to our commitment to safety."

For more information

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Tivoli software

Bryant University aligns energy usage with server workloads to reduce energy costs by 15 percent

Overview

Bryant University
Smithfield, Rhode Island
www.bryant.edu

Industry

- Education

Products

- IBM® BladeCenter®
- IBM Director
- IBM Scalable Modular Data Center
- IBM Tivoli® Monitoring for Energy Management

Services

- IBM Global Technology Services

IBM Business Partner

- American Power Conversion (APC), *www.apc.com*

For more information

ibm.com/tivoli

"IBM software gives us the ability to actively manage and reduce power usage in our datacenter. Our current work with IBM will help us realize an estimated 15 percent savings in energy consumption."

— Rich Siedzik, Director of Computer and Telecommunications Services, Bryant University

Based in Smithfield, Rhode Island, Bryant University serves 3,200 undergraduate students and 400 graduate students from 31 U.S. states and 32 countries. The university has a proud history of excellence and innovation and was named one of the "Top 25 Most Connected Campuses" in *The Princeton Review.*

Challenge

At Bryant University, technology is an integral part of teaching and learning. In fact, according to Bryant staff, the institution's use of technology has helped differentiate it from other colleges and universities and helped to provide students with a market advantage. However, in the face of tight economic times and a growing demand from parents and students to support "green initiatives," Bryant IT staff must find ways to reduce costs while delivering high-quality, environmentally friendly services.

Solution

Working with IBM Alliance Partner APC and IBM Global Technology Services, Bryant optimized its data center efficiency through standardization, consolidation and virtualization. In phase one of its project, Bryant implemented IBM® BladeCenter® servers and the IBM Scalable Modular Data Center solution with the APC InfraStruXure architecture to create an energy- and space-efficient solution. The university was able to cut the number of physical servers almost in half, from 75 to just 40, and turned nearly 50 percent of its IT floor space back into classrooms. What's more, this modular datacenter helped drive a 30 percent savings in operational expenses and a 21 percent reduction in capital expenditures.

With IBM Tivoli® Monitoring for Energy Management software as part of its service management solution, Bryant IT staff members can now gain visibility into the energy consumption of their server environment and compare it to workload requirements. Power, thermal and IT resource utilization are displayed on a single screen, helping staff to identify and address inefficiencies, such as capping power on underutilized servers. Comprehensive reporting capabilities allow staff to estimate the potential power and cost savings of proposed energy optimization recommendations. The insight into energy consumption and the energy management tools complements the server consolidation and virtualization initiatives and enabled Bryant to realize a 15 percent reduction in energy consumption.

Benefits

- 15 percent reduction in energy consumption
- 30 percent savings in operational expenses
- 50 percent reduction in IT floor space requirement, helping to reduce carbon footprint

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Carrefour strengthens customer loyalty and its brand with a new promotions strategy

Overview

- ***Business Challenge***
  To maintain its leadership in the increasingly competitive retail grocery industry, Carrefour sought to gain more control over its marketing processes and more effectively leverage its business intelligence—with the ultimate aim of strengthening customer loyalty.
- ***Solution***
  Carrefour teamed with IBM and its partners to put in place a groundbreaking in-store promotion system across its supermarket and hypermarket stores—operated entirely by Carrefour—that enables the planning and execution of more targeted campaigns, with more rapid feedback as to their effectiveness.
- ***Key Benefits***
  - *Greater control over marketing strategy and customer relationships resulting in stronger customer loyalty and a stronger brand*
  - *Faster and more profitable growth through more effective, targeted and personalized promotional campaigns*
  - *Deeper knowledge of customers via analytics and segmentation*

Over the past 40 years, the Carrefour Group has grown to become one of the world's leading distribution groups. The world's second-largest retailer and the largest in Europe, Carrefour operates four main grocery store formats: hypermarkets, supermarkets, hard discount and convenience stores.

As grocery retailers battle for market share, the competitive landscape is changing. While the traditional supermarket retail format still accounts for the largest share of grocery purchases, consumers are increasingly turning to multiple retail formats. Foremost among these are hypermarkets, whose broad selection of groceries and general merchandise provide consumers with the added benefit of one-stop shopping as well as low prices. Within both retail formats, a different kind of shift is playing out on the shelves. In an effort to sustain growth and strengthen their brand, grocery retailers are increasingly offering their own private label brands alongside branded products. These examples demonstrate that the battle for the grocery wallet share is intensifying, and the rules of the game are changing.

> *"Our new model for managing promotional campaigns gets us closer to our customers, gives us greater control and vastly improves our overall effectiveness."*
>
> – *Hervé Thoumyre, Chief Information Officer, Carrefour Group*

Business Benefits

- Increased revenue through more targeted promotional campaigns
- Greater control over marketing strategy and customer relationships resulting in stronger customer loyalty and a stronger Carrefour brand
- Deeper knowledge of customers via analytics and segmentation
- Shorter campaign planning to execution cycle
- Faster feedback on promotional effectiveness and more detailed feedback to suppliers
- Closer supplier relationships
- Lower marketing costs

"With this solution, we have a unique opportunity to be both customer- and product-centric in the way we manage our marketing campaigns in our different store formats."

– *Hervé Thoumyre*

A fresh look at promotion

Retail grocery chains realized that to sustain their profitable growth in an increasingly competitive environment, sustaining—and indeed strengthening—customer loyalty is a top strategic priority. To engender maximum satisfaction and loyalty, grocery retailers have traditionally focused on the most visible and high-profile elements of the customer experience, from the products they stock, to the look, feel and layout of the stores, to the courtesy of their employees. Equally important to customer experience, though less visible, is the value customers derive from their relationship to the retailer through such promotional activities as points-based loyalty programs and couponing, through which retailers reinforce the value of their ongoing relationship with the customer. While couponing and promotional practices are well established, the reliance of retailers on third-party service providers to administer them has made it harder for retail grocers to apply them with precision, measure their effectiveness and feed that information back to their key suppliers. That's because this traditional paradigm keeps retailers one step removed from the information they need to create and execute smart promotional campaigns to their customers—those which support the retailer's more targeted strategies and goals.

Carrefour (www.carrefour.com), the world's second-largest retailer and the largest in Europe, saw the opportunity to enhance its business performance—and become an even stronger competitor—by embracing a new promotional paradigm. Carrefour recognized the growing importance of customer loyalty to its future growth, and how leveraging the strength of the Carrefour brand across its supermarket, hypermarket and convenience store formats would help to achieve a competitive advantage by creating a common customer experience. As part of this strategy, Carrefour sought to enable smarter, more effective and more personalized promotions and campaigns that—instead of being unique to a particular Carrefour store format—would span them all, thus enhancing loyalty to the Carrefour brand across all formats. Achieving this would require Carrefour to redefine its processes, leverage information as a strategic asset, and transform the systems that supported them—all without disrupting its in-store operations. It saw IBM, with its retail track record and expertise, as the best qualified to help it reach this vision.

The solution Carrefour conceived is predicated on the idea that loyalty sales and profitability can be enhanced by compelling promotional offers that reflect each consumers individual purchasing patterns. Providing Carrefour's marketers with a means of designing and executing these offers presented another set of challenges. In defining its needs, one of Carrefour's most important attributes was flexibility—both in terms of the system's ability to configure highly tailored offers for specific customer segments, and in its ability to creatively integrate its promotional activities with its existing loyalty programs.

Guided by this vision, IBM Global Business Services and IBM Business Partner Mapping designed an end-to-end solution—the first of its kind in the retail grocery business—that integrates all the key components of Carrefour's core retail systems, from point-of-sale terminals to back-office systems and all points between. On top of this infrastructure, IBM defined a new process flow that leverages real-time business intelligence to create more effective, dynamic and profitable promotion programs. In addition to enabling smarter programs, the solution also delivers a quantum increase in the degree of flexibility and control Carrefour can exercise in creating, monitoring and managing these programs. In the same way, the seamless quality of the solution that makes this possible also enables Carrefour to develop a deeper understanding of—and relationship with—its customer base.

Opportunity through insight

By tracking transaction history, Carrefour can leverage its in-house analytics capability to determine not only which products customers buy, but which promotions they are most likely to respond to. From this information, Carrefour's marketers can further glean such insights as to who its most profitable customers are, what products they buy now, and—perhaps most importantly—what products they would be willing to buy if the incentive was right. A good example is a customer segment that may purchase organic food products, but has yet to try organic health and beauty aids. To target this opportunity, Carrefour's campaign management system enables company marketers to craft a sophisticated and targeted promotional program to get this subset of customers to try this or any other mix of products.

But in the big picture, it is campaign execution capabilities that make the Carrefour solution truly stand out as first of a kind. It isn't just that Carrefour is the first grocery retailer to perform its own targeted couponing—it's also the unprecedented flexibility the solution gives Carrefour in executing promotional campaigns within its stores. The key is a process called offer arbitration; IBM and Mapping were its key architects. When Carrefour wants to promote, for example, a particular brand of soft drink to a particular group of customers (based on their history of purchasing specific products), available promotional tools include coupons for current use, coupons for use in later transactions, and point-based incentives related to its loyalty program. Once Carrefour's marketers determine the optimal mix to achieve the desired goal, these rules are defined centrally in a promotional management application developed by Mapping, and then propagated out to each of Carrefour's stores, where the Mapping application runs on IBM System x® servers; Mapping's customer and transaction data is stored in IBM DB2®. IBM DB2 data server provides the high-performance, resilient information infrastructure needed to help Carrefour to manage data over its lifecycle and as part of these critical business processes.

Solution Components

Software

- IBM DB2
- IBM Supermarket Application

Hardware

- IBM System x servers
- IBM SurePOS terminals

Services

- IBM Global Business Services
- IBM Global Technology Services
- IBM Global Finance

IBM Business Partner

- Mapping Suite, SAS

Smarter solutions for Retail

Carrefour broke new ground in the retail grocery industry by taking full control of its end-to-end couponing and promotion systems. By relying on its own business intelligence and analytics—instead of third parties—Carrefour can craft highly targeted campaigns, execute them more rapidly and gauge their impact instantaneously. This new model also provides more direct support for Carrefour's efforts to strengthen customer loyalty by creating a common customer experience across all of its retail formats.

Mapping is central to the solution because it automatically orchestrates the presentation of offers on a customer-by-customer basis. Triggered by the customer's purchases and the scanning of the loyalty card during the checkout process, Mapping first applies its rules to determine which offers are available to the customer, then goes out to Carrefour's customer loyalty application to determine point balances. Combining and processing this information, Mapping then determines the optimal offer incentive and sends it back to IBM SurePOS terminals at the point of sale. The solution then fulfills the offer by printing out the coupon, issuing the discount and/or updating the customer's loyalty account. The solution's ability to distribute promotions through kiosks, mobile phones, Web sites, and hand-held devices attests to the flexibility of its architecture.

Taking control

With the system deployed across its French supermarket and hypermarket grocery stores (with implementation assistance from IBM Global Technology Services), Carrefour has gained control over—and dramatically improved—the effectiveness of its marketing capabilities. Strategic agility is another key result, evidenced by the significant reduction in the time required from campaign planning to execution, which in turn enables Carrefour to undertake more campaigns. This is reinforced by Carrefour's ability to monitor the effectiveness of its campaigns almost instantaneously and share that information with its partners. Most importantly, notes CIO Hervé Thoumyre, its new capability enables Carrefour to create a common experience across all of its stores that strengthens the company's brand and the loyalty of its customers. "Our new model for managing promotional campaigns gets us closer to our customers, gives us greater control and vastly improves our overall effectiveness," says Hervé Thoumyre. "We see the success of our retail grocery solution as a testament to IBM's unique mix of technology, industry expertise and thought leadership."

For more information

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CenterPoint Energy breaks new ground in grid reliability through the power of automation

Overview

- ***Business Challenge***
  Like the rest of the electric transmission and distribution industry, CenterPoint Energy needs to deliver power more efficiently and reliably in the face of growing consumer expectations, environmental concerns and increasing costs. The company also saw the opportunity to break new ground in grid management practices.
- ***Solution***
  Subject to approval by its regulators, CenterPoint Energy plans to leverage a mix of leading edge communication technologies, smart meters and first-of-a-kind process innovations to create one of the industry's first intelligent utility networks. This mix of advanced technologies, which utilizes a service-oriented architecture (SOA) foundation, will enable near real-time data access and automated processes for a new level of grid reliability, fewer outages and faster response.

CenterPoint Energy's electric operations unit delivers electricity to 2 million customers in a 5,000-square-mile area that includes Houston, the nation's fourth largest city. CenterPoint Energy (NYSE: CNP) owns and maintains 3,766 miles of transmission lines and 46,376 miles of distribution lines—enough to go around the world twice—and delivers over 76 million Megawatt hours of electricity annually.

- ***Key Benefits***
  - *Reduction in the frequency and duration of power outages through proactive management and automated response*
  - *Overall increase in meter reading and grid management efficiency*
  - *Near real-time electric use data provided by smart meters to the utility and to the consumer*
  - *Extended asset life for distribution and substation equipment through remote monitoring and diagnostics*

When it comes to the electricity that powers homes, schools, businesses and hospitals, most people have little more than a fuzzy idea of what's involved to get it there. This ambiguity disappears when it comes to their expectations, however. They expect the power to be there when they need it, and if it's not, they want the problem fixed as fast as possible—period. In the greater Houston area, it's the responsibility of CenterPoint Energy's (www.CenterPointEnergy.com) electric transmission and distribution business unit to meet this expectation for 2 million customers. The company

Potential Market Benefits

- Greater electric reliability—reduction in the frequency and duration of power outages through proactive management and automated response
- Potential for retail energy providers to increase new time-of-use rate structures and additional services
- Increase in customers' ability to manage their own demand for power, which may encourage greater energy conservation

owns and maintains the grid of power lines that connect electric generators to users. One of the outcomes of electric restructuring in Texas in 2002 was the creation of a new layer in the market, comprised of competitive retail electric providers that sell power and services directly to customers and, in effect, pay CenterPoint Energy (CNP) for the use of its power lines.

While a new electricity market in Texas was perhaps the most visible outcome, a changing regulatory environment—both at the state and federal level—also intensified the challenges that CNP faced as a business. Like other transmission and distribution providers around the country following the Northeast blackout in 2003 and the severe hurricane seasons in 2004 and 2005, CNP was looking for ways to "harden" the grid by making it better able to resist outages and fluctuations in power quality.

As envisioned in the U.S. Department of Energy's "Grid 2030" plan, the goal was to bring many of the defining attributes of the information superhighway—such as resiliency and intelligence—to the nation's electrical grid. Regulators were also encouraging changes on the demand side, most notably giving electricity consumers the means to change their consumption patterns based on near real-time usage data, transparency and time-of-day pricing—all of which will allow the consumer to be an interactive participant in the electric market. While the future vision was clear, the best way to implement it was anything but.

CenterPoint Energy's business challenges

CNP faced a series of operational challenges. For one, material costs—driven by the growing demand for transformers, cables and conductors, as well as increases in the costs of the copper, aluminum and steel they are made of—continue to rise, along with franchising fees and taxes.

> *"We expect that the Intelligent Grid will improve electric power line grid planning, operations, and maintenance, enabling us to deliver power more efficiently. We also expect the technology to contribute to fewer and shorter outages."*
>
> – *Tom Standish, Group President, Regulated Operations, CenterPoint Energy*

CenterPoint Energy also realized that only a fundamental change in its business and operational structure would provide a viable, long-term answer. What makes this story stand apart, however, is that CNP opted for revolution over evolution by resolving to comprehensively change the way it operates. Looking beyond short-term strategies, the company saw its challenge as an opportunity to provide much-needed leadership for an industry in flux, and saw IBM as the ideal organization to help it articulate and realize its vision of a next generation power grid.

Drawing upon expertise and technology from nearly every part of IBM, CenterPoint Energy established a roadmap for building an Intelligent Utility Network, or IUN. Traditional grid management systems provide only the most basic information on operational status and have no way to gather information from—or deliver information to—the homes and businesses they serve. As such, they enable only a limited

"top-down" view, with essentially no rapid view from the "bottom up." Today, field crews must be on site to identify the location and cause of power outages. In the future, technology will pinpoint the outage location. The core premise of IUN is that by improving the transparency of the entire grid—to the meter and beyond—energy delivery companies like CenterPoint Energy will have a more granular, real-time view of conditions on the grid. This will vastly improve the ability to leverage information, make the grid more reliable and operations more efficient.

While the broad goals embodied by IUN are not new, their realization has been held back by technological barriers, the most fundamental being the lack of a viable communications infrastructure that spans the distance from a utility's backend systems to its customers' meters. While utilities may be able to detect a problem using their current systems, they are often unable to ascertain the nature of the problem until crews arrive on-site. It is because of this gap that utilities like CenterPoint Energy are forced to rely on physical visits by field staff to diagnose and fix problems, as well as to activate/deactivate service and read meters.

The solution

Designed in collaboration with IBM, CenterPoint Energy's proposed IUN solution will address these issues through the innovative application of leading-edge technologies—including broadband over power line (BPL)—and its work with IBM Research to develop first-of-the-kind failure detection capabilities that go beyond what was previously thought possible. The fact that BPL, which sends a broadband signal over distribution wires (utilizing solutions from IBM Business Partners Corinex and Arteche), leverages CNP's existing assets is just one benefit. The bigger story is how the company's future BPL infrastructure, when deployed by IBM Global Technology Services, will provide a single conduit for a wide range of grid-related activities, with advanced meter services, the use of the meter as a sensor on the grid (with its own address), and the deployment of home area network monitoring and control representing prime examples.

Using meters from IBM Business Partner Itron that have two-way communications capability, CNP has successfully tested automated meter reading as well as more advanced capabilities such as remote connection and disconnection of service, both of which promise to reduce the incidence of costly "truck rolls" to the customer's premises. Meter data management software from IBM Business Partner eMeter (running on IBM BladeCenter® servers and managed by IBM Global Services Strategic Outsourcing) will control the flow of meter data to and from CNP's backend systems. The fact that these meters have the built-in capability to wirelessly send and receive data with everything from individual appliances to thermostats within customers' homes and businesses opens up a range of new service opportunities down the road.

Solution Components

Software

- IBM WebSphere® Message Broker

Servers

- IBM BladeCenter

Services

- IBM Global Business Services
- IBM Global Services Strategic Outsourcing
- IBM Global Technology Services
- IBM Research

IBM Business Partners

- Itron, Inc., eMeter, Corinex, Arteche

> *"While we see this initiative as helping to transform us as a company, many of the results and innovations that come out of it will help to transform the energy transmission and distribution industry as a whole."*
>
> – *Don Cortez, Division VP, Operations Technology, CenterPoint Energy*

Smarter power

As part of its pioneering deployment of an intelligent utility network, CenterPoint Energy will be putting in place an SOA framework that will better enable a wave of innovations, including a first-of-a-kind outage detection capability that features self-healing within the grid and fully automated dispatching.

One of the key insights in the project was that simply having a communication infrastructure wasn't enough when it came to supporting its future service requirements. Instead, CenterPoint Energy needed an architecture with the inherent flexibility to support a growing number of services and thus fully leverage its communication backbone. To that end, IBM Global Business Services will be designing a service-oriented architecture (SOA)-based service delivery framework that employs IBM WebSphere Message Broker as an enterprise service bus to enable different services to share grid data in real time. Using this framework as a foundation, the IBM-CNP team will be able to redesign and automate many of the core processes used to manage the grid. The most revolutionary improvement will be in the area of fault detection. Using data gathered from first-of-a kind analytical techniques developed by IBM Global Business Services and IBM Research, CNP will be able to not only detect problems, but also to diagnose faults and their precise location so it can send the right crew with the right equipment to fix the problem.

Complementing this quantum increase in grid transparency are process automation efforts designed to drastically cut the duration of outages and to mitigate their effects on customers. Automation will not only let the company operate more efficiently, but will also provide the basis for a self-healing capability within the grid. The proposed solution, when approved by the company's regulators, will detect outages the moment they happen—enabling the system to reroute grid traffic around the problem automatically to minimize its impact.

As a storm-prone city situated on the Gulf Coast—and the home to a large base of energy-hungry businesses—Houston is the ideal testing ground for one of the world's first true IUN solutions. Don Cortez, Division VP, Operations Technology, and a driving force behind the IUN project, sees CenterPoint Energy's work with IBM as strengthening the foundations of its business and providing leadership for other transmission and distribution service providers around the world. "We're working to implement all those things that people dream about in a newly deregulated energy market—all very new ideas," says Cortez. "With its unparalleled track record in translating technology innovation to sustainable market success, we saw IBM as the right kind of partner to help us succeed."

For more information

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Centrinet launches UK's first operational zero carbon data centre with help from IBM

Overview

■ ***Customer challenge***

To help companies reduce the carbon footprint of their business-critical IT systems.

■ ***Solution***

- *Centrinet launched an innovative business service – Smartbunker – based on renewable energy and energy-efficient technology*
- *UK's first managed data centre service committed to zero carbon energy*
- *Powered by renewable energy from Ecotricity*
- *Based on energy-efficient IBM BladeCenter servers and Cisco networking hardware*
- *Secure and scalable.*

■ ***Customer benefits***

- *Drastically reduces environmental impact – power consumption cut by around 60%*
- *Unique proposition, offering high-performance data centre services powered by renewable energy*
- *Highly-scalable IT infrastructure provides business flexibility.*

With the current legislative, economic and social backdrop, many companies are reviewing their energy use and looking at ways to cut power consumption. CIOs, meanwhile, are trying to balance the increasing desire to be more environmentally friendly with the need for extra computing power to drive business transformation initiatives.

Centrinet, a Lincoln-based organisation that provides IT management services, recognised that most UK data centres were designed with business needs in mind, rather than the environment. It also recognised that reversing the emphasis was neither straightforward nor inexpensive and set out to devise a new solution.

Its unique idea was to build a data centre, designed to run efficiently on entirely renewable energy, and to offer this as a hosting service to clients. Named Smartbunker, the facility was built in a remote nuclear bunker that had undergone a £15m Home Office refit in the early 90s, and then stood empty for a decade before being bought by Centrinet.

Centrinet's business strategy was to power their 30,000sq ft purpose-built data centre entirely from renewable energy. They brought in Ecotricity, the wind turbine specialist that offers clients a zero carbon tariff.

Ecotricity has operated since 1996 and is the only independent green electricity company that builds its own renewable energy sources. It supplies many large organisations and its customer numbers have doubled each year for the past three years. Ecotricity builds and operates wind turbines on partner sites, and these partners then receive a dedicated supply of green power at reduced rates. The company has ambitious plans to change the way electricity is generated in the UK.

Having established the power supply, Centrinet, which supports more than 24,000 end-user organisations in 65 countries, looked for an IT platform to offer a green alternative to clients.

"Right from our first dealings with IBM, we were very impressed," says Kelly Smith, Managing Director at Smartbunker. "We were not an IBM customer prior to this, but we were aware of its green credentials, and that undoubtedly helped.

"The products put forward by the other companies could not match IBM's in terms of performance, energy efficiency or reliability. The solution we chose will also enable us to expand the business very quickly, without any concerns about overloading our IT infrastructure."

IBM has been committed to reducing waste and minimising its impact on the environment for decades, and its green heritage adds credibility to its client offerings – from hardware to consultancy. The solution proposed for Centrinet was based on the IBM Blade system. This takes up much less space and uses less energy for the same computing tasks, which is important given the physical size and environmental aims of Smartbunker's operational base.

"We now have an innovative proposal to take to our target market, which can be any size of company from a web-design agency to a Blue Chip enterprise," says Kelly Smith. "Our unique offering is based on three key aspects. First, we're environmentally efficient through both our power supply and the fact that the IBM computers are helping us to cut our energy usage by about 60%. Second, our base is underground within three-metre thick walls in the depths of Lincolnshire, so our physical security levels are exceptionally high.

And third, we provide high-performance, highly-resilient managed hosting services with year round, 24x7 support."

Over the next 18 months, Smartbunker intends to expand rapidly and IBM's flexible infrastructure will enable the company to scale up its operations. "We were impressed right from the very first call we put into IBM, in terms of both the product and the levels of service," concludes Kelly. "It was a competitive bid, and IBM was head and shoulders above the competition."

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Cheshire County Council brings its social service agencies together to deliver person-centric care

Overview

- ***Business Challenge***
  Driven by growing resource constraints and a government mandate, Cheshire County Council sought to coordinate the way its various agencies served its growing senior population. Manual, unconnected processes within its agencies stood in the way.
- ***Solution***
  Cheshire County Council built a new needs assessment solution that enabled its agencies to function as a single, "virtual" community of providers—and served as the nucleus of a process automation effort that has drastically improved the efficiency and quality of senior care.
- ***Key Benefits***
  - *20 percent reduction in time and cost required to perform in-home senior visits*
  - *Improved ability to proactively manage the course of health and social care for senior citizens*
  - *Reduced administrative costs through improved coordination between healthcare providers and social agencies*

Cheshire County Council, in the UK, was one of the first local authorities to address the government's requirement of a uniform, standardized way to assess the healthcare and social services needs of its senior citizens, known as the Single Assessment Process. The solution it created now has a thousand users and is expected to add thousands more in the coming months.

Within any given community, the social service agencies that serve it have two very important things in common—first, that they promote citizens' best interests through their services, and second, that they rely on public funds to achieve it. But by and large, that's where the commonality ends. Like the needs of the citizens they serve, public agencies—whether it's home health services or the fire department, to name a few—are a highly diverse and specialised lot. It is seen in the unique mission that drives each of them, down to the mix of resources, expertise and practices they bring to bear in their day-to-day activities. Not surprisingly, the notion of specialisation has become deeply embedded in both the culture of

> *"We're not only helping Cheshire to be at the leading edge in the way it provides services to its older citizens. With IBM's help and insight, we've also developed a whole new model of how local government can provide services to citizens in an innovative and joined-up way."*
>
> – *Alan Allman, Senior Manager for Business Strategy, Planning and Performance, Cheshire County Council*

Business Benefits

- 20 percent reduction in time and cost required to perform in-home senior visits
- Improved quality and continuity of care by gaining a single seamless view of a citizen's case history
- Improved ability to proactively manage the course of health and social care for senior citizens
- Lessened burden for senior citizens to fill gaps in provider or agency records
- Improved utilisation of health and social care resources
- Reduced administrative costs through improved coordination between healthcare providers and social agencies

social service agencies and in what citizens have come to expect in dealing with them. Put simply, the requirement that local social services be delivered and received through a series of parallel—but unconnected—channels has long been seen as a fact of life.

However, important changes in the social services landscape are causing governments to reassess the need to change their practices. One of the most basic drivers is resource availability, with demand for social services growing as a result of demographic changes and government funding struggling to keep up. In the realm of health and human services, an equally important factor is a growing awareness of the need for continuity to maximise the quality of care that aged, infirm or vulnerable citizens receive. When agencies deliver services to a given citizen independently of one another, there's no way to get a comprehensive picture of that citizen's care history. This at best deprives caregivers of the information they need to provide a seamless, coordinated course of care going forward, and at worst makes elderly patients vulnerable to not receiving the follow-up care they need.

Leading the way

Calling for a better way to handle case management for senior citizens, national government laid the groundwork by providing a general framework for local authorities to streamline the way they collect, manage and communicate case information between agencies—a set of activities known collectively as Single Assessment Process. Cheshire (www.cheshire.gov.uk), a county of just under a million residents located in North West England, has emerged as an early leader implementing the Single Assessment Process. Working with IBM and IBM Business Partner Esprit Ltd., Cheshire County Council developed and implemented a collaborative case management platform and an accompanying set of process improvements that have proven to be highly successful. The following is an example of how achieving this success required fresh thinking along a number of dimensions, not least of which was the practical challenge of making a solution flexible enough to accommodate the needs of multiple agencies.

> *"We needed a provider that could offer us access to broad and deep resources and expertise. IBM's edge was that it had this while at the same time giving us the focus, flexibility and attention you would normally only get from a smaller provider."*
>
> – *Alan Allman*

Cheshire County Council's "before" state typified the shortcomings of disconnected social service delivery channels. Each time an agency worker visited a senior citizen at his or her home, the worker was required to fill out his agency's paper-based assessment form in full—from demographic information to that citizen's specific health or mobility needs. That paper form was then stored in a file folder within the agency. If, for any reason, another agency working in Cheshire visited the home—say the fire brigade or emergency medical services—the same process would unfold. In pinpointing the disadvantages of this process, wasted time and effort for both the citizen and the agency employees were only the most obvious. More insidious and costly were the lost opportunities to use existing information to deliver

services more intelligently and effectively. Achieving such an ideal state would require all of the County Council's departments and collaborating agencies to function as a single virtual entity, capable of viewing all aspects of a particular citizen's requirements in its totality, and responding to the citizen in a coordinated, integrated fashion.

Enabling process change

Cheshire County Council realised that as long as senior citizen case assessment information remained compartmentalised within each agency, its vision of coordinated service delivery would be impossible to achieve. It also realised that while having the technological capacity for sharing this data was essential, changes at the business process level—enabled by technology—would play a bigger role in making the council's vision a reality. The solution designed by IBM and Esprit directly embodied this view. Its foundation is Esprit's ShareCare for e-Enabled Single Assessment Process platform, which combines tight security, flexible device access and advanced forms technology to enable agency workers to create, access and change assessments remotely. The solution runs on IBM WebSphere® Application Server and employs IBM Tivoli® Access Manager for end user authentication.

Leveraging the system's powerful workflow capabilities, Cheshire County Council worked closely with IBM and Esprit to design a whole new set of standardised assessment processes that are employed by all agencies using the system. Automation is a strong point—not only for efficiency's sake—but because it facilitates the kind of seamless, cross-agency coverage that prevents individuals from "falling through the cracks" because of undetected needs. When agency employees make their initial visit, they populate a standardised electronic form, which (if the citizen gives approval to share the data) becomes the core of that citizen's profile. On each subsequent visit, from any agency, employees can retrieve and modify that profile as necessary, instead of having to rebuild it from scratch. The automation comes in on the backend. Based on changes in the profile—such as a recent medical procedure or change in mobility status—the solution automatically flags a citizen as potentially needing one or more additional social services and sends a notification to the appropriate agency for follow-up. Built-in confirmation tools ensure that all agencies and providers fulfill their respective roles.

Among the biggest barriers to small government projects even getting off the ground are the issues of funding and accountability; Cheshire County Council's single assessment process initiative was no exception. IBM was instrumental in resolving this issue by proposing that the solution be deployed as a shared service, hosted and managed by IBM e-business Hosting Services and paid for based on usage levels. The advantages are many. First and foremost, hosting the service

Solution Components

Software

- IBM WebSphere Application Server
- IBM Tivoli Access Manager
- Esprit ShareCare for e-Enabled Single Assessment Process

Servers

- IBM System x™

Services

- IBM Global Technology Services e-business Hosting™ Services

Business Partner(s)

- Esprit Ltd.

Timeframe

- Deployment: 8 Months
- End-User Training: Ongoing

Transformation at a glance

To better coordinate the activities of its social service agencies, Cheshire County Council created a single shared service delivery platform that enabled its agencies to form a virtual community of providers. This, in turn, enabled the council to create a series of standardized and automated processes that not only lowered costs but also tightened the social safety net for the council's senior citizens.

means that each of the council's agencies can focus on its mission instead of worrying about the technology. Moreover, since it is based on usage, hosting also provides an inherently flexible framework for resolving and managing budget issues across different agencies.

Built for growth

Then there's scalability. As new agencies are brought on board, the solution's modular architecture (built on IBM System x servers running in IBM's Warwick data center) enables low-cost, incremental capacity growth as needed. With the solution having grown to a thousand users in the year plus since it went live—and thousands of new users expected to come on board in the next several months—the benefits of scalable growth have already become apparent. So, indeed, has the inherent flexibility of the shared services model. Based on the success of the Cheshire County Council solution, the counties of Devon and Cornwall—located in South West England—are deploying their own solutions using the same scalable IBM infrastructure.

Cheshire County Council expects the solution to ultimately save an estimated 20 percent in the time and cost of delivering in-home social services to seniors. The planned introduction of a self-service solution—which will enable service users to create and maintain their own assessment profiles online—will enable the county to stretch its social service resources even further. With its population of seniors growing, Cheshire, and any other county using the system, is able to provide the most efficient and high quality care to them. Perhaps the strongest vote of confidence in the solution came from England's National Health Service (NHS), which selected it and three others from a large pool of applicants to connect to the NHS Spine, a key part of the NHS's nationwide Care Records Service initiative. Alan Allman, Senior Manager for Business Strategy, Planning and Performance, expects the solution to add momentum and provide direction to similar efforts nationwide. "We're not only helping Cheshire to be at the leading edge in the way it provides services to older citizens," says Allman. "With IBM's help and insight, we've also developed a whole new model of how local government can provide services to citizens in an innovative and joined-up way."

For more information

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Tivoli software

City of Corpus Christi dramatically improves customer service with IBM Maximo software

Overview

- ***Challenge***
  Establish an organization-wide framework to define, measure and improve services while concurrently improving efficiency
- ***Solution***
  A comprehensive work and asset management system that can adapt to changing business requirements and easily connects with enterprise systems
- ***Key Benefits***
  Improved efficiency and customer satisfaction; increased percentage of customers experiencing continuous utility service; established a City One-Call Center; inducted into Kaplan and Norton's "Balanced Scorecard Hall of Fame"; recognized by Public Technology Inc. as the winner in the GIS Technology Solutions category for "Using a Computerized Work and Asset Management System Interfaced with GIS to Improve Utility Infrastructure and Customer Service"

Like most municipal governments, the City of Corpus Christi, Texas—which is the largest city on the Texas coast with more than 280,000 residents—strives to improve the quality of life for citizens while keeping operating costs low. As a result, when City staff reviewed its management of water, wastewater, utility and storm water services, it decided to make some improvements in its management systems, with a view towards implementing improvements citywide.

Previously, citizen calls were routed to the appropriate department and recorded on index cards before being entered into a spreadsheet. Each utility department used its own separate system and procedures, with no citywide standards or procedures. Given the manual nature of this process, staff could not accurately track how long it took

"Improved customer service is the biggest benefit of Maximo. Maximo software has been vital in helping us meet our SLAs, plan work and determine labor requirements to provide a timely response."

– Stephen Klepper, Administrative Superintendent, City of Corpus Christi, Texas

"With Maximo, we established a framework to define, measure and deliver 'good' service. This includes providing timely response to citizen calls, delivering continuous service and ensuring job completion."

–Stephen Klepper

to respond to and fix problems. Additionally, staff had no way to view the work history for each site, making it difficult to identify recurring problems.

Although the City had already established a geographic information system (GIS), work orders were not interfaced with the geographic information system. Therefore the City lacked the ability to spatially analyze work requests. As a result, departments couldn't easily determine whether a customer request represented a site-specific problem or an area-wide issue that would require more extensive support.

"We had some customer service measures and some targets, but without a centralized system we didn't really know how we were doing and couldn't plan appropriately," says Stephen Klepper, administrative superintendent, City of Corpus Christi, Texas.

Leveraging technology for organizational change

In response, the City sought to reengineer its work and asset management processes so that it could:

- *Establish and manage its success against citywide standards.*
- *Spatially analyze work to improve resource utilization and enhance response times.*
- *Clearly define and measure actual service levels provided.*
- *Accurately track costs.*
- *Tie performance measures to City strategy.*

Working with IBM Business Partner EMA, the City of Corpus Christi implemented IBM Maximo Asset Management software to gain the visibility, control and automation it needed to achieve these goals. The City regarded Maximo as a tool that could be used to accomplish the organizational changes needed to better plan and manage work. Throughout the Maximo implementation process, City leaders emphasized what drove the need for change rather than the details of the underlying technology. "We viewed the Maximo implementation as a management project rather than a technology project," says Klepper. "With Maximo, we established a framework to define, measure and deliver 'good' service. This includes providing timely response to citizen calls, delivering continuous service and ensuring job completion. Our initial focus was directed towards improving customer service rather than first focusing on the more traditional aspects of maintenance and asset management."

Greater visibility, control and automation improves service

Today, Maximo Asset Management software supports all City public works and utility departments plus other areas of the City including Park Operations, Airport, and Traffic Engineering. This includes management of the following:

- *Approximately 1,250 miles of wastewater gravity mains*
- *Six wastewater treatment plants*
- *A water treatment plant with 170 million gallons a day capacity*
- *1,500 miles of water mains*
- *1,100 miles of streets*
- *80,000 utility customers and a gas distribution system.*

Citizen calls are now routed to a citywide call center where service staff can immediately record and track work orders and view work histories using Maximo software. Standardized location and priority codes help staff deploy resources based on urgency and service level requirements (e.g., maintenance crews must respond to gas leaks within 30 minutes, wastewater backup calls within four hours and water main breaks within one hour).

Leveraging the process automation capabilities of Maximo software, the City can efficiently manage each job to completion. If the Water Department tears up a street to fix a water main, a "child" work order is automatically created for the Streets Department to patch the street.

Additionally, staff can accurately measure the elapsed time for each job and associated work order and track it against the City's service level agreements (SLAs). Automated notifications are sent to City managers via their BlackBerrys so they can keep an eye on critical issues such as wastewater manhole overflows or water main breaks.

Identifying serious infrastructure problems

Because Maximo software is integrated with the City's geographic information system from ESRI, City staff can spatially view problem areas and planned work. This has helped service staff to avoid creating duplicate requests and better inform citizens of work in their area.

It has also enabled departmental staff to proactively identify areas with serious infrastructure problems. For example, using Maximo software, the Wastewater Department found that many wastewater backups were not caused by rain, signaling an issue with the pipes themselves. Staff members then used the spatial analysis capabilities to pinpoint which areas experienced problems in dry weather and implement a repair strategy.

The approach is setting a standard for other government organizations. During 2008 Public Technology Inc. (PTI) recognized the City as a winner in the GIS Technology Solutions category for "Using a Computerized Work and Asset Management System Interfaced with GIS to Improve Utility Infrastructure and Customer Service."

"The spatial analysis is very exciting," says Klepper. "For the first time, it enables us to really understand where service levels are not being met and why."

Improved fiscal management

As part of its implementation, the City also integrated Maximo software with its financial accounting system from PeopleSoft. This integration helps staff accurately track departmental costs as well as staffing needs.

For example, previously, when the City provided flood assistance to neighboring towns, the cost was simply rolled into the Water Department's overall operating costs. Now, with Maximo software, staff can track these costs separately and use the information to apply for federal funding when available. The City is now establishing cost standards for various categories of work, and is better able to track costs of performing core business.

Key Components

Software

- IBM Maximo® Asset Management

IBM Business Partner

- EMA, Inc.

"Balanced Scorecard (BSC) helps us see the entire picture of our operations so we can evaluate the consequences of every action. Maximo is vital to this process and the majority of metrics used for customer service and process efficiency are drawn directly from Maximo work orders."

– Saundra Thaxton, Balanced Scorecard Manager, City of Corpus Christi

Identifying trends for improved performance

Greater insight into operations has also helped the City identify trends to improve service and optimize efficiency. For example, Wastewater staff found in reviewing Maximo reports that nearly 33 percent of the department's effort was spent resolving problems at just 1.4 percent of customer sites. With this information, the City developed and implemented a repair plan to help resolve these ongoing issues and ultimately reduce costs.

"Improved customer service is the biggest benefit of Maximo," says Klepper. "Maximo software has been vital in helping us meet our SLAs, plan work and determine labor requirements to provide a timely response."

Measuring success

Supporting a skills-based pay model can be difficult without the right information. However, since implementation of Maximo software, the City's human resource staff has the data it needs to track employee training—including the skills learned, the number of training hours and the associated costs—and compensate employees based on their skill levels. Maximo was customized to provide a separate field on work orders used to track on-the-job training efforts.

What's more, the City can assess its own success effectively as well. Maximo software provides a significant portion of the data required to rate services against the City's Balanced Scorecard (BSC) initiative. This program measures City operations in four areas: customer service, financial management, process efficiency and sustainability.

The program received national recognition in 2008 when the City was inducted into Kaplan and Norton's "Balanced Scorecard Hall of Fame". The City of Corpus Christi is only the second city in the United States to be recognized for its Balanced Scorecard.

"BSC helps us see the entire picture of our operations so we can evaluate the consequences of every action," says Saundra Thaxton, the City's Balanced Scorecard Manager. "Maximo is vital to this process and the majority of metrics used for customer service and process efficiency are drawn directly from Maximo work orders."

For more information

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You can get even more out of Tivoli® software by participating in independently run Tivoli User Groups around the world. Learn about opportunities near you at:
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For more information about EMA, Inc., visit:
www.ema-inc.com

For more information about the City of Corpus Christi, Texas, visit:
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City of Syracuse: Police and schools collaborating for the benefit of the community

Overview

- ***Business Challenge***
  The City of Syracuse Police Department (SPD) wanted to give its officers wireless connectivity across the city so that they could access the IT network at police headquarters from the field to file reports, obtain data, such as mug shots and building floor plans, and exchange e-mail. Budgetary constraints, however, posed a challenge.
- ***Solution***
  By teaming with IBM, the SPD was able to leverage IT investments already made by the Syracuse School District. A secure link was established between the school district's high-speed fiber optic network and that of the SPD, so that police could access the network wirelessly, through hotspots at school buildings.
- ***Key Benefits***
  - *Leverages human and infrastructure IT resources*
  - *Fosters collaboration and sharing of resources*
  - *Gives SPD officers wireless access to their own network from the field*
  - *Provides school district with guaranteed police presence near schools*

Making the most of scarce resources

The public sector has always had to work under tight budgets. There is never enough money available to do all that officials wish to accomplish. But on occasion, two very different organizations align in such a way that they can leverage investments and resources to achieve something that neither could on its own.

That's what has happened in the City of Syracuse. The Syracuse Police Department (SPD) and the City of Syracuse School District have collaborated on an IT connectivity project that is a winning proposition for all concerned: the police, the schools, and most importantly, the public.

> *"This benefits the schools, the police department, the whole city government…and the community itself.*
>
> – Anita Murphy, Deputy Superintendent, Syracuse School District

Business Benefits

- Leverages human and infrastructure IT resources belonging to both the Syracuse School District and the SPD so that limited budgets are optimized
- Enhances collaboration and sharing of resources between the SPD and Syracuse School District, avoiding wasteful bureaucratic procedures
- Increases police presence near schools, enhancing security and public safety
- Enhances police officers' capabilities by giving them wireless access to the police department's own network from the field, direct access to surveillance video feeds from anywhere in the school system and dynamically managed physical access to school buildings

The project got its start when the SPD identified a need to give its officers wireless connectivity to its network from their patrol cars. The primary driving force was the need for the officers to download and send completed electronic police reports without having to come back to police headquarters. Once the link was established officers would also be able to take advantage of resources that were normally available only from the wired network. These included booking mug shot photos, access to state and federal law enforcement databases, law enforcement records management information, school emergency plans and floor plans, e-mail, New York State inmate corrections data and the department's policy management system, among others.

The SPD had been talking with IBM about the requirement, and had also been meeting with the school district and other city organizations to implement the idea of installing wireless hotspots at various public buildings around the city. The primary challenge to moving forward was a lack of available resources – mostly monetary – to make the entire vision a reality.

As it happened, the Syracuse School District had recently installed its own highly robust fiber optic network. Aware of the budgetary constraints, IBM suggested that the police department leverage the school district's investments by linking the existing school network to that of the police department. All that would be needed to provide WiFi access was to install the hotspot hardware itself.

This would help fulfill the police department's requirements while avoiding the installation of redundant infrastructure and the need to use a commercial network provider. That initial concept rapidly grew into the larger idea of more extensive resource sharing, in which not just networks, but IT personnel are shared by both departments.

> *"We share common needs, and we're able to work together to get our jobs done very effectively."*
>
> – Richard Trudell, lieutenant, Syracuse Police Department

A simple idea that enhances capabilities

Linking the school and police networks and enabling officer access to the school network through WiFi was the key idea that opened up a whole range of other capabilities. The school district had already been working on pilot projects for digital video surveillance and electronic access systems (door locks). The link to the police department has taken those projects and enhanced their capabilities dramatically, in ways that would not otherwise have been possible.

For example, police can now pull up to a school and, from inside the car, watch a video feed from any security camera located at that school. Police can also use the system to enable access to the school's electronic door locks and gain entry, as well as also manage those entry privileges should it prove necessary.

Serendipity: one department helping another

While the enhanced technical capabilities that the synergistic relationship gives to the school district and police department are highly significant, collaboration has a much more practical benefit: the optimal use of scarce resources.

By leveraging each other's human and IT resources, both departments are able to do more with less. "The thought of resource sharing was very exciting to us," says Lieutenant Richard Trudell of the SPD. "The police department's budget to get this kind of thing done is significantly smaller than that of the school district. Since we've started working together, we've been able to accomplish things we never would have been able to do on our own, and it goes beyond just our day-to-day projects. If I have an IT issue at the SPD, I'm able to call on the school district's IT department for help, and vice versa."

This kind of relationship between governmental organizations is highly unusual, notes Trudell. "Police departments are, by their nature, insular. It's really rare for us to work this closely with other agencies." He says that what put the resource sharing initiative over the top was the strong collaborative relationship that evolved during the solution's pilot at Fowler High School. "We had been talking to all of the city IT departments about these projects, but the police department and the school district developed this very close relationship that worked really well. The environment and the personalities all meshed."

School district Deputy Superintendent, Anita Murphy, concurs. "The school district has a lot more IT people than the police department does," she says. "It just makes sense for us to share that resource. It makes sense for the leaders of all the city's organizations to agree that we shouldn't have redundant resources."

A winning proposition for all concerned

"This has been of tremendous benefit for all parties," adds Murphy. "On a very basic level, the police get their hotspot connectivity without having to go and install a whole new infrastructure, while the school district, in turn, gets guaranteed police presence near the schools, which enhances public safety. But it's about much more than that. Because of the link that we have, we've been able to move forward with all of our other projects, such as digital video surveillance at all of our schools."

Key Components

Services

- IBM Global Business Services

Why it matters

By leveraging existing investments in IT infrastructure made by the City of Syracuse School District, the Syracuse Police Department has been able to gain wireless access to its own network from the field without having to install a costly, redundant infrastructure. Moreover, the police and school IT departments share human and IT resources, further extending their budgets and enhancing their capabilities. This collaboration helps to improve public safety by keeping officers out in the community and also gives the police new capabilities, such as direct access to school surveillance video and electronic door locking systems.

A significant driver of the resource sharing initiative was the availability of a substantial amount of money for school security. “This was a really strong motivator,” Murphy says. “We had to do this security project anyway and we wanted to do it right. We knew that the police department was doing things over on their side as well. So working together was an obvious step to take.”

IBM, facilitating innovation

IBM Global Business Services provided solution and architecture design, planning out the infrastructure for the various projects and helping to implement them. But, according to Trudell, a critical IBM contribution didn’t come in the form of formal service contracts. “IBM had the foresight to introduce us to one another and suggest that we work together in the first place. That’s something that doesn’t really fit with the culture of these two kinds of organizations. But, surprisingly enough, it works really well. We have a relationship that doesn’t involve a lot of turf conflicts or bureaucracy. We share common needs, and we’re able to work together to get our jobs done very effectively.”

While resource sharing has allowed the two organizations to stretch their budgets, Murphy notes that collaborating is more important than just saving money. “We’re all resource-scarce. Collaborating, and having the two organizations working as one, lets us make the most of what we’ve got IT-wise,” she says. “But the bottom line is that we’re all working for the public here. At the end of the day we can go to our bosses and say, ‘This benefits the schools, the police department, the whole city government…and the community itself.’”

For more information

To learn more about how IBM can help transform your business and help you innovate, please contact your IBM representative or IBM Business Partner.

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Con Edison drives demand reduction by promoting energy efficient IT.

Overview

- ***Business Challenge***
  Companies are facing an increasing challenge in getting enough power into—and heat out of—their data centers, even as computing volume is growing. Coupled with the growing need for sustainable energy practices, companies are looking to gain more control over one of their biggest sources of consumption—their data centers—but have been stymied by a lack of transparency.
- ***Solution***
  IBM, in partnership with Con Edison, is developing new energy demand management programs aimed at helping businesses of all sizes reduce energy consumption. Major elements include educating IT departments on energy consumption, targeting specific projects that offer immediate energy reduction, helping customers monitor and verify progress, and applying for incentives that reward energy reduction.

Consolidated Edison Company of New York (Con Edison), a regulated utility, provides electric service in New York City and most of Westchester County, and uses IBM technologies and services for its data centers.

- ***Key Benefits***
  - *Average achievable energy savings of 40 percent or more*
  - *Average payback period of less than two years*
  - *Ability to earn verified energy credits*
  - *Deferral of new data center investments*

Environmental responsibility has emerged as one of those rare issues whose impact is felt across businesses of all sizes and in all industries. Companies are taking a fresh, top-to-bottom look at their operations with an eye toward reducing their carbon footprint and following more environmentally sustainable practices. What is perhaps most noteworthy about the rise in carbon consciousness is how serious companies are taking it. By and large, the embrace of pro-green practices is neither symbolic nor an afterthought—but a top strategic priority that has an impact on most every

Business Benefits

- Ability to accurately assess existing IT infrastructure
- Lower data center deployment costs through the use of pre-architected data center designs
- Improved efficiency through server consolidation and application virtualization
- Lower cooling costs through the use of innovative new cooling technology
- Ability to monitor, control, report, cap, cost, and allocate energy consumption

part of the business. This rapid and continuing rise in importance is being driven by both strategic and operational factors, not least of which is the growing societal consensus that environmental sustainability is simply "the smart thing to do."

While important, that's only part of the story. Though the drive for corporate social responsibility provides a guiding framework for companies to implement environmentally friendly practices that will pay off in the years to come, companies are also acting with a clear eye on today's bottom line. As the global appetite for power has steadily grown, the cost of producing and distributing it has grown along with it. For companies, the rising cost of energy has an across-the-board impact on the ongoing cost of operations. Nowhere is this more evident than the power costs associated with IT. With computing volume increasing, data center power costs have become one of the fastest-growing expense line items, threatening to place an increasing drain on long-term profitability. Even more pernicious is the potential for IT power requirements to spill into—and ultimately distort—business decision-making. That's exactly what happens when companies put off initiatives because they can't get enough power into their data centers, or when they can't meet the mushrooming cooling requirements that typically come with heavy data center processing.

Improving the posture of energy efficiency

In addition to recognizing the need to reduce emissions, utilities also face mandates from state governments to improve energy efficiency. In 2008, the New York Public Service Commission established New York's Energy Efficiency Portfolio Standard (EEPS). This statewide program has a goal of reducing New Yorkers' electricity usage 15 percent of forecast levels by the year 2015. But for energy efficiency to work, customers need a granular, timely way to measure actual consumption. While Con Edison (www.coned.com) saw a tremendous payoff for implementing energy efficiency in New York City's many data centers, it faces the barrier that only one in four IT managers has visibility into their data center's energy consumption. To bring energy efficiency into its customers' data center operations, Con Edison needed a way to provide customers with both visibility into consumption and expertise in designing data centers for maximum efficiency.

> *"The ability to accurately monitor and verify the efficiencies gained is especially important as environmental regulations emerge, which could have a significant effect on our large and small data center customers."*
>
> – *Rebecca Craft, Director of Energy Efficiency Programs, Consolidated Edison Company of New York*

In a good team, each member possesses a unique capability that enables the group to accomplish more collectively than the individual members could alone. To assist Con Edison, IBM has partnered with Neuwing Energy Ventures, a private, New York-based company that provides total energy management solutions. As the leading third-party verification expert in the burgeoning field of Energy Efficiency Certificates, Neuwing was selected to help IBM pave the way toward the greening of the data center in the New York metropolitan area.

The more complex challenge for the partnership, however, was in constructing a value proposition that would directly address the "green" side of the benefits equation, which is broader and harder to define and—in many ways—more strategically important. Put simply, while corporate environmental responsibility clearly has a strategic and economic value, there is a diversity of preferences among companies as to how that value is expressed. By tapping Neuwing's expertise, IBM and Con Edison customers can enhance the already substantial benefits of projects designed to upgrade their data centers, reduce energy costs and simultaneously decrease carbon emissions associated with the electrical use of their data centers. Energy Efficiency Certificates (EECs) enable these companies to validate their energy conservation accomplishments and potentially hasten the payback on energy-saving projects. EECs are generated through a defined, third-party verified process to quantify electricity use before and after the implementation of energy conservation projects. The potential monetary value derives from the presence of mandated (in some state or regional jurisdictions) and voluntary markets where EECs can be traded.

The energy efficiency partnership between IBM and Con Edison stands out for a number of reasons. One is the way it combines the complementary skill sets of an IT provider and one of the largest investor-owned energy companies in the United States. Another is the partnership's emphasis on sustained efficiency improvements, which are certified by an independent third party, Neuwing Energy Ventures, a leading verifier of energy efficiency projects. Each project begins by conducting a thorough energy audit of a customer's data center energy use and overall power and cooling profiles of the data center. This establishes a baseline to be used for subsequent comparison.

Teaming up to help customers conserve

Under the proposed program, IBM's role is twofold. First and foremost, IBM works with the customer to optimize the design of the data center in a way that is consistent with the customer's business process and IT architectural roadmap, while delivering optimal energy efficiency. In addition to its expertise in such critical domains as data center energy efficiency and virtualization, IBM is able to leverage its industry-leading line of energy efficient servers and storage devices. IBM's other critical technology contribution is a range of advanced energy management products that includes IBM Systems Director Active Energy Manager™ software, which enables customers to measure and control all the key hardware components of a data center, from servers and storage to air conditioning and power management systems. Developed as part of IBM's Project Big Green initiative, Active Energy Manager monitors devices through both smart power strips and wireless devices that may extend beyond traditional data center walls.

Solution Components

Software

- IBM Systems Director Active Energy Manager
- IBM Tivoli® Usage and Accounting Manager

Hardware

- IBM System p®
- IBM System x®
- IBM BladeCenter®
- IBM TotalStorage®

Services

- IBM Global Business Services
- IBM Global Technology Services—Data Center Assessments and Design Services

Partner

- Neuwing Energy Ventures

Smarter Utilities

Pressures from customers, regulators, stockholders, employees and other groups mean you need to take action today to become more efficient. "Going green" can yield real and immediate costs savings. Beyond just cost savings, there are very compelling reasons to be ahead of societal shifts and be viewed as a leader in the new sustainable economy.

At the completion of a project, Neuwing Energy conducts a follow up energy audit and from that, calculates the increase in energy efficiency on an annualized basis. Customers are then issued one certificate for each megawatt hour per year in reduced energy consumption. Of the customers that have taken part in the proposed program thus far, the average gain in energy efficiency has been 42 percent. Through server virtualization, customers have also been able to increase utilization levels of their servers and storage devices, while at the same time freeing up valuable floor space in their data centers.

Helping to meet the goal

Given the large share of consumption that data centers represent in New York City, Con Edison expects the proposed partnership to play an important role in helping it meet its corporate goal of reducing overall power consumption by 500 megawatt hours by 2015. Such reductions will enable Con Edison to not only avoid the major capital costs of capacity build out—but ultimately to reduce or "deload" a portion of its capacity, and thereby reduce future costs. The other key benefit of Con Edison's involvement in the partnership is its ability to work closely with its customers to achieve energy cost savings in other parts of their operations.

Rebecca Craft, Director of Energy Efficiency Programs for Con Edison, believes that the partnership brings the most essential elements for sustainable energy efficiency improvements. "Con Edison is committed to helping its customers reduce data center energy consumption by leveraging the kind of new technologies and best practices that IBM brings to bear," says Craft. "We think verification is critical to ensure that businesses are achieving real energy reductions, and these certificates could provide the kind of verification we believe is important. We support IBM in its efforts on this front."

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit us at:

ibm.com/energy

ibm.com/green

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CLS transforms worldwide foreign exchange trading with IBM

Overview

■ ***Business challenge***

- *To eliminate the risk of default on foreign exchange dealings caused by time zone differences between global banks*
- *Leading financial institutions needed to transform foreign exchange settlement processes to enable simultaneous and real-time settlement of payment instructions associated with foreign exchange transactions, while accommodating growth and service expansion.*

■ ***Solution***

- *Leading global banks set up CLS Bank to design a unique, innovative real-time process for the settlement of payment instructions associated with foreign exchange transactions*
- *CLS partnered with IBM to design, develop and manage the IT applications and infrastructure needed to support the uniquely secure new process*
- *The solution is delivered by IBM Global Technology Services Worldwide Strategic Outsourcing.*

■ ***Key benefits***

- *Provides a streamlined, resilient, innovative service, processing more than 50% of global foreign exchange transactions, peaking at $5.4 trillion a day and growing*
- *Eliminates the foreign exchange settlement risk caused by time-zone differences*
- *A real-time uniquely secure global system able to flex to meet the demands of a growing market.*

CLS Group has worked closely with leading international banks to eradicate settlement risk in foreign exchange trades due to time zone delays. The company has created a unique end-to-end process that integrates with the operations of the global banking community and provides the world's only system for the simultaneous and irrevocable settlement of payment instructions associated with FX trades.

The global foreign exchange market trades several trillion US dollars each day in multiple currencies, involving central banks such as the Federal Reserve, the European Central Bank, the Bank of England and almost all of the world's leading commercial banks.

Foreign exchange (FX) transactions used to be settled directly between banks often in different time zones. Due to the temporal nature of cross border settlement, the exchange of payments related to FX transactions was not simultaneous, setting up the possibility of counterparty default (also known as settlement risk). The challenge was to eliminate this risk or face being charged for providing some form of security for the risk.

Radical rethink

This was the trigger that led 60 of the world's leading financial institutions to create CLS Group (CLS) - a new business incorporating a single-purpose FX bank, CLS Bank International (CLS Bank). CLS had the mission to radically rethink the way FX markets work and eliminate settlement risk.

CLS analysed the operations of the FX market and designed an innovative straight-through process called 'continuous linked settlement'. CLS Bank links the local central bank Real Time Gross Settlement (RTGS) systems during a five-hour window of overlapping business hours and facilitates the simultaneous and irrevocable settlement of payment instructions associated with FX trades.

> *"It would have been difficult to have established and extended this resilient settlement system for one of the world's major financial markets without the commitment, skills and capabilities of IBM,"*
>
> *– Rob Close, Chief Executive Officer of CLS Group and President and CEO of CLS Bank.*

Business benefits

- Provides a streamlined, resilient, innovative service, processing more than 50% of global foreign exchange transactions, peaking at $5.4 trillion a day and growing
- Eliminates the foreign exchange settlement risk caused by time-zone differences
- A real-time uniquely secure global system able to flex to meet the demands of a growing market
- Multilateral netting process improves liquidity and frees funds for further investment
- A standard legal framework for finality
- Conforms to the regulatory requirements of the Federal Reserve Bank of New York
- Mirrored environments in multiple data centres to deliver the highest levels of resilience and business continuity
- Reduced reconciliation costs and increased efficiency of foreign exchange operations
- Reduced complexity based on a single supplier for a full-scope IT solution: design, build and run.

Continuous linked settlement is enormously complex to deliver. Nothing of this scale had previously been tackled and a sophisticated technology environment was needed to facilitate the unique same-day settlement process.

A global partner for innovative systems design

After evaluating a number of candidates, CLS chose IBM as strategic partner for business application consultancy and to provide and manage CLS's entire IT infrastructure.

IBM Global Business Services worked closely with CLS experts to translate the requirements of the continuous linked settlement processes into a secure, high availability IT and communications infrastructure. The relationship between CLS and IBM has continued and developed beyond the launch to cope with a significant expansion in FX business and to handle the forthcoming launch of new products.

The original application development undertaken by IBM required the development of 200 main and 6000 individual programmes incorporating approximately 2 million lines of code. A secure messaging system was constructed to provide total reliability in communicating high volume daily online transactions to and from the SWIFT network.

Expanding the technical infrastructure to match business growth

The CLS service went live in 2002, and has proved immensely successful since that date. The system was designed to handle a maximum daily average of 240,000 trades, but growth has significantly exceeded expectations and IBM has recently implemented enhancements to allow a daily average of 350,000 trades with plans in place to take this to 500,000 during 2007.

To accommodate this unexpected business expansion, it was critical that the systems infrastructure developed by IBM could evolve to keep pace.

"Our relationship with IBM has developed into a strong, co-operative partnership. IBM has been quick to extend and enhance our technical infrastructure, and it has reacted very positively and flexibly in supporting our response to the huge increase in demand."

– Rob Close, Chief Executive Officer of CLS Group and President and CEO of CLS Bank

"Since the launch of CLS, we have moved into a period of growth as we take on more settlement members, increase trading volumes and add more currencies," commented Rob Close, Chief Executive Officer of CLS Group and President and CEO of CLS Bank. "Our relationship with IBM has developed into a strong, co-operative partnership. IBM has been quick to extend and enhance our technical infrastructure, and it has reacted very positively and flexibly in supporting our response to the huge increase in demand."

A broad set of skills to address complex challenges

The systems that underpin CLS's operations are complex and involve a wide range of technologies. Extending this infrastructure to accommodate the rapid growth in transaction volumes, presented some serious technical challenges.

The original rationale for choosing IBM as the strategic partner to design and build the IT infrastructure has really come into play since the launch of the CLS service. IBM has a global presence, skills in the complete range of computer and network technologies, and a good understanding of the workings of global financial markets. Its integration skills have proved important in linking CLS with banks around the world through global communication networks. Banks communicate with CLS Bank via the secure messaging services provided by the Society for Worldwide Interbank Financial Telecommunication (SWIFT).

"It has been extremely valuable to be able to draw on the resources of the world's largest services and technology company to support our business growth," Close added.

High availability infrastructure

Performance, resilience and security are all of paramount importance. IBM's strategic outsourcing services provide a fully resilient computer and communications infrastructure, with full network and systems management services. The infrastructure comprises ultra-reliable, ultra-high performance IBM System p servers hosted in two IBM data centres, providing assured business continuity with data mirroring of transactions for rapid switchover. The hosted service gives CLS total flexibility to scale operations as the number of participating banks and the volume of FX transactions grows.

The entire CLS global foreign exchange settlement system is audited and the IBM hosted service routinely satisfies the rigorous security, availability and reliability standards imposed by the Federal Bank of New York (the Fed) which regulates CLS's operations.

Following events such as 9/11, the Fed has imposed additional requirements on CLS to provide increased resilience in its FX settlement systems. In response, IBM has constructed a second command centre in the USA to mirror processes 24*7 from the principal UK facility, and is in the process of constructing a third data centre in continental Europe.

The speed, volume and complexity of FX trades mean that complete regional resilience is essential. Continuity measures specified by CLS and implemented by IBM will ensure that FX markets continue to function uninterrupted, should a major disruption occur in any one country.

"It would have been difficult to have established and extended this resilient settlement system for one of the world's major financial markets without the commitment, skills and capabilities of IBM," Close added.

Key components

Software

- IBM DB2
- IBM AIX
- IBM Tivoli Systems Management
- HotScan OFAC filter from Logica CMG
- FED gateway using the Fundtech PayPlus$package
- CTS

Servers

- IBM System p
- IBM System x
- IBM ESS (Shark) storage

Services

- IBM Global Technology Services – Worldwide Strategic Outsourcing
- IBM Global Business Services – Application Management Services
- IBM Global Financing

Why it matters

The irrevocable settlement of FX trades in 15 currencies via the resultant transfer of multilaterally netted central bank funds.
Global banks needed a safe and secure means of settling foreign exchange trades to eradicate settlement risk due to time zone differences. CLS designed an innovative straight-through process called 'continuous linked settlement' and partnered with IBM to translate the business requirements into a secure, high performance technical infrastructure. CLS now handles volumes which peak at over 500,000 transactions a day involving currency trades valued at up to $5.4 trillion, and is now the preferred way of settling global FX payments. CLS in partnership with IBM has created the world's only system for the simultaneous and irrevocable settlement of payment instructions associated with FX trades.

Successful FX settlement process

Since the launch of CLS, from anywhere in the world, banks are able to settle foreign exchange trades simultaneously and irrevocably through CLS Bank International via the IBM hosted service. The service has proved flexible and resilient in coping with the growing volume of business, which peaked at 502,000 transactions in one day.

To have achieved such rapid, wide-scale acceptance of a completely new on-line settlement process in one of the world's most critical financial markets is impressive. CLS Bank International has rapidly become the preferred way to settle currency transactions.

Banks have greater liquidity and are able to make their foreign exchange funds work harder. Same day settlements mean that there is less need for intraday credit, and a higher volume of trading can be conducted without increasing credit limits.

Foreign exchange settlements through CLS

Daily value of instructions	US $2.7 trillion – Peak day $5.4 trillion
Average daily instructions	250,000 (1 for each side of a trade) – Peak day 502,000
Currencies settled	15 (increased from an original 7 currencies)
Settlement Members (shareholders in CLS)	55
Participants trading daily through CLS	750 banks, corporates, non-bank financial institutions and investment funds
% of global currency traded through CLS	Over 50%

Errors are minimised and resources devoted to transaction matching and reconciliations vastly reduced. This has generated significant cost savings for CLS Bank's Settlement Members.

Rob Close concluded: "Volumes continue to grow ahead of expectations. The coming year will see CLS Bank extend its product portfolio for non-deliverable forwards (NDFs) and FX option premiums, encouraging greater participation and volume growth. IBM continues to work closely with us and will play an important role in increasing regional resilience and supporting our extended product range."

For more information

Please contact your IBM representative or IBM Business Partner.

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ACEE3525-00

Corenet relies on IBM Tivoli Netcool software to help it deliver competitive service levels.

Overview

Corenet Oy
Helsinki, Finland
www.corenet.fi

Industry
- Computer services

Products and services
- IBM Tivoli Network Manager IP Edition
- IBM Tivoli Netcool/OMNIbus
- IBM Tivoli Netcool/Impact
- IBM Tivoli Netcool/Proviso

"IBM Tivoli Netcool provides us with a state-of-the-art system to help Corenet be the leading network management service provider in Finland."

— Mikko Tepponen, Corenet Oy

Corenet Oy specializes in network monitoring and management services, as well as data communications solutions for enterprises, government bodies and Information and Communication Technology (ICT) integrators. Corenet's services include planning, design, building and maintenance of telecom networks and telematic systems.

Challenge

Corenet monitors different kinds of IT infrastructure components from several of its customers' networks. It needed to consolidate management information so its Network Operation Center (NOC) could resolve problems faster. A state-of-the-art system was needed to manage Corenet's and its customers' infrastructures.

Solution

Corenet chose to deploy IBM Tivoli® Netcool® software to help address its service management requirements. The entire solution, except IBM Netcool/Proviso software, runs on a Red Hat Enterprise Linux® operating system. The Tivoli Netcool software consolidates, correlates, filters and enriches events so that Corenet's NOC staff can focus only on relevant events.

IBM Tivoli Network Manager IP Edition software performs automatic root-cause analysis based on network topology. The Tivoli Netcool/Proviso software runs on a Sun Solaris operating system and, with selected application packs, is used for performance management activities.

Corenet also deployed IBM Tivoli Netcool/Impact software, which was used to enhance actions in the IBM Tivoli Netcool/OMNIbus application with information, such as device location and device type, from Corenet's Configuration Management Database. The Tivoli Netcool/Impact software does this in realtime and provides Corenet's NOC with more meaningful information so that staff may resolve network problems faster and reduce their mean time to repair.

Benefits

- Enables quicker information retrieval with a single, consolidated browser-based interface
- Avoids heavy software modifications with off-the-shelf type functionality
- Cost-effectively and quickly develops solutions to address customer needs and integrate with external systems
- Helps Corenet provide faster services to customers

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Tivoli software

Detroit Media Partnership speeds service delivery and support with IBM asset and service management solutions.

Overview

- ***Challenge***
  Automate highly manual and inefficient service delivery processes to more quickly respond to staff and customer needs
- ***Solution***
  An asset and service management solution that provides visibility and control across the service delivery and support life cycle
- ***Key Benefits***
  Reduced service request approval time from several days to less than an hour; cut time to compile reports from days to minutes; enhanced compliance with governance requirements

Photo courtesy of Detroit Free Press.

In the newspaper business, deadlines are critical. That's why the Detroit Media Partnership—which manages the business operations for the Detroit Free Press and The Detroit News, leading southeast Michigan newspapers—must ensure that it can rapidly respond to employee service requests. Any delays can hurt staff productivity and hinder business operations.

However, as IT staff examined the company's service management approach, it found that a reliance on highly manual, paper-based processes were slowing response times and affecting compliance efforts.

"By leveraging IBM Service Management solutions, our existing staff can support the organization as it grows. This is vital in enabling Detroit Media Partnership to maximize revenue and remain competitive."

–Eva Krol, Director, Systems Services, Information Technology, Detroit Media Partnership

"We selected IBM asset and service management software due to ease of customization and integration as well as pricing. With IBM software, we can easily manage all types of assets, workflows and service management processes from a single platform."

–Eva Krol

Employees had to fax any IT request—whether requisitioning a new computer or requesting access to applications—to the Systems Services Department. The staff would then walk from office to office obtaining the appropriate approvals. If an approver was on vacation, Systems Services staff would have to track down his or her backup. Often, it could take several days until the paperwork was completed and someone was assigned to fulfill the request. Occasionally, faxes were lost in transit, further delaying response times.

When employees contacted the help desk regarding an IT issue, staff would have to manually enter and track the incident. With more than 80 calls a day being placed by employees, this process was becoming a burden on staff.

IT asset management was equally as cumbersome as IT staff had to physically visit each of the company's two main buildings and 18 distribution centers to inventory more than 1,500 PCs, servers, printers and cell phones.

"Manual processes affected every level of service management, from problem management to change management to inventory management," says Eva Krol, director, Systems Services, Information Technology, Detroit Media Partnership. "It impacted efficiency at every level of the organization."

Adds Penelope Maples, security compliance administrator within Systems Services, "These processes also made it more difficult to provide relevant reporting for auditing, licensing and other governance requirements, such as Sarbanes-Oxley."

Improving service delivery through automation

To streamline service delivery and gain greater visibility and control of its environment, Detroit Media Partnership staff sought to automate and integrate asset and service management processes. Doing so would help reduce the time and cost of IT service management processes, improve staff productivity and enhance compliance with regulatory requirements.

After reviewing solutions from several vendors, including IBM and CA, Detroit Media Partnership selected IBM Tivoli® Asset Management for IT and IBM Tivoli Service Request Manager.

"We selected IBM asset and service management software due to ease of customization and integration as well as pricing," says Krol. "With IBM software, we can easily manage all types of assets, workflows and service management processes from a single platform."

Additionally, according to Krol, as the organization works to implement IT Infrastructure Library® (ITIL®) best practices, IBM Tivoli software is ideally suited to make ITIL recommendations actionable.

With Tivoli Service Request Manager, authorized employees can now submit service requests online. The software's workflows automatically route requests to the appropriate managers for approval. If a manager is on vacation, the software can then forward the request to his or her backup.

Employees can log into the Web-based application at any time to check on the status of their service requests. There's no need to fax forms or physically route paperwork for approvals. As a result, service requests can be approved in hours as opposed to days.

"The elimination of manual processes is improving both service availability and staff productivity," says Maples. "Employees are no longer waiting unnecessarily for us to complete the paperwork before we can address their needs. And our users are very pleased that they can easily input and check on the status of their service requests."

Tivoli Service Request Manager is also helping staff to compile required reports in minutes instead of days. As a result, the organization can quickly pinpoint trends, such as if a particular printer is constantly breaking down, and easily pass this information through workflow and escalations to the IT Asset Management group for action. Also, the Service Desk organization can easily view key service statistics, such as the number of open issues and the number of requests completed each month, to help better manage staffing levels and budgets.

The software will soon help Detroit Media Partnership streamline incident management processes so that as employees report incidents, the appropriate IT team is immediately paged. Additionally, with Tivoli Service Request Manager, IT staff can save information about the resolution in a knowledgebase so that employees can resolve common problems themselves.

The company plans to leverage the software's workflows to simplify a host of other core service management processes, from processing application changes to managing personnel actions so that all necessary requisition forms can be completed, routed and approved online.

Key Components

Software

- IBM Tivoli Asset Management for IT
- IBM Tivoli Service Request Manager

"By automating change management processes, our divisions can input and obtain approvals faster. This helps us more quickly adapt to changing business needs and customer requirements."

–Penelope Maples, Security Compliance Administrator, Systems Services, Information Technology, Detroit Media Partnership

"By automating change management processes, our divisions can input and obtain approvals faster so our project teams can modify applications sooner," says Maples. "This helps us more quickly adapt to changing business needs and customer requirements."

Enhancing compliance through greater visibility

Because Tivoli Service Request Manager helps staff ensure that individuals have appropriate access to services and enables them to manage access levels within applications, it has helped the organization improve compliance efforts.

"IBM Tivoli software helps us meet Sarbanes-Oxley requirements by enabling us to effectively track and manage user access to services," says Maples. "We can easily prove to an auditor that someone gaining access to a particular service is authorized to access that service."

Soon the organization will complete implementation of Tivoli Asset Management for IT, which will help staff track and manage hardware, software and related information throughout their life cycle. Because Tivoli Asset Management for IT integrates with Microsoft® System Management Server (SMS), which the newspaper group uses, staff can easily locate any IT asset across the Detroit Media Partnership offices. This is critical for auditing, licensing and warranty tracking, and eliminates the need for IT staff to travel from building to building in search of equipment.

This information will also help staff ensure that preventative maintenance is performed on key pieces of equipment at regular intervals to keep news operations up and running and reduce maintenance costs.

"We like IBM's vision," says Krol. "By leveraging IBM Service Management solutions, our existing staff can support the organization as it grows. This is vital in enabling Detroit Media Partnership to maximize revenue and remain competitive."

For More Information

Please contact your IBM sales representative or IBM Business Partner.

Visit our Web site at:
ibm.com/tivoli

You can get even more out of Tivoli software by participating in independently run Tivoli User Groups around the world. Learn about opportunities near you at **www.tivoli-ug.org**

For more information about Detroit Media Partnership, visit:
www.detroitnewspapers.com

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02-08

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IBM Helps Provide High-Availability Telepayment for the Direction Générale des Finances Publiques

Overview

- ***The Challenge***
  Secure the telepayment system for taxes and duties and provide virtually uninterrupted performance 24/7
- ***The Solution***
  Implement a Geographically Dispersed Open Clusters (GDOC) solution that integrates with Symantec's Veritas Cluster Server software
- ***The Benefit***
  Automatic failover for the "SATELIT" application to a remote mirror site, following administrator validation. Continuity and quick recovery in the event of a serious incident: failover within one hour, not four hours as was the case previously

Responsible for collecting taxes (such as income taxes, property taxes, habitation taxes, and business taxes), the Direction Générale des Finances Publiques (DGFiP) leads the French Treasury. It is also involved in handling public spending and accounting for state and local authorities. Through its deep involvement in modernizing procedures for both revenues and expenses, it has implemented electronic payment methods. This is why, for the DGFiP, continuity of service and rapid recovery after an incident are more than just needs… they are obligations.

Helping to ensure the availability of the telepayment application

The current online system for paying taxes, managing monthly contracts and setting up direct debits was made available to individuals in 2001. In the following years, the scope of tax revenues that could be handled by telepayment expanded, along with the population using this payment method. Businesses have also been encouraged or required to use them. Although this service was launched earlier on the Internet and on Minitel, its "full Web" format has been available for two years at www.impot.gouv.fr.

"Thanks to the Geographically Dispersed Open Clusters solution from IBM, failover to the remote site can be done in less than one hour."

–Frédéric Brégier, Technical Architecture Manager at the DGFiP

In 2001, 30,000 telepayments were carried out. Just three years later, the DGFiP's SATELIT application processed 100,000 such payments. Today, this figure is approximately 500,000, and it is expected to reach several million by 2010, by which time tens of billions of euros will have been collected.

William Favot, project manager for the SATELIT application, and Frédéric Brégier, technical architecture manager, both with the DGFiP, ensure that: "After several enhancements, the technical platform has been designed to support this goal." But the extension to include online VAT payments for all professionals along with the growing use of this system have led the DGFiP to strengthen the application environment's availability to better ensure the system's essential continuity.

A nearly automatic failover for the application

Frédéric Brégier, the Recette Générale des Finances production team, and William Favot completed this project with IBM. They are pleased with the new solution for high availability and quick recovery after an incident, which has been in place since September 2007. "Thanks to the Geographically Dispersed Open Clusters solution from IBM, failover to the remote site can be done in less than one hour. The local solution we had before required four times as much time for system recovery," emphasizes Frédéric Brégier. The IBM solution is the result of a partnership with Symantec, whose Veritas Cluster Server (VCS) was implemented at the DGFiP. Its architecture allows synchronous data duplication between two remote sites located 15 km apart within the Paris area as well as the very quick failover for the application:

- The GDOC backup solution is installed on a cluster of two IBM System p595 application servers in different locations. The SATELIT application is active on both servers, which also supports load balancing among users.
- Data is replicated synchronously (Metro Mirror function) from rack to rack. Both IBM System Storage DS8300 models are interconnected using Fibre Channel for a very high transfer rate.
- The Oracle database is active on only one site, but it can use VCS to failover to another site.

A successful collaboration

The GDOC solution and the VCS software automate the recovery of applications to a remote site after an incident, and they ensure that the recovery system is tested regularly. This ability, which sets them apart from traditional solutions, considerably reduces recovery times. First, to phase in the system, the Direction Générale des Finances Publiques technical team decided that, if the situation were to arise, the application should failover only after authorization from the database administrator. By the end of 2008, manual intervention will no longer be required. The cluster will determine when to failover.

Frédéric Brégier states, "We've reached and even exceeded our performance objective. The solution is intuitive and easy to use, despite having to interface with existing components. The preliminary study and the project approach with implementation assistance have made our collaboration with IBM and Symantec a success." Everything is in place to support widespread online VAT payments by the end of 2008.

"We've reached and even exceeded our performance objective. The solution is intuitive and easy to use."

–Frédéric Brégier, Technical Architecture Manager at the DGFiP

For more information

To learn more about Geographically Dispersed Open Clusters solutions, contact your IBM representative, or visit:
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September 2008

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Harnessing the power of IBM System z and SAP for Retail at dm-drogerie markt

Overview

■ ***The Challenge***

Pharmacy, health and beauty retail chain dm-drogerie markt operates in an intensely competitive environment. Central to success is squeezing costs out of logistics and related business processes, which depends in turn on rapid analysis of data. To enable this, dm-drogerie markt continuously develops its SAP applications. As the sophistication of the software increased, its existing hardware platform was struggling to keep up – hindering the company's growth.

■ ***The Solution***

Working with IBM Global Technology Services, dm-drogerie markt's in-house team performed a seamless migration of the DB2 databases supporting its SAP for Retail environment to two IBM System z9 Enterprise Class mainframes – mirrored between two data centers for high availability and disaster recovery.

■ ***The Benefits***

Performance in the SAP application environment has improved considerably, resulting in response times faster than 500ms – giving users the performance they need to manage and analyze business data. Standardized virtual environment makes it simpler to add new SAP applications or development environments quickly. Robust and fully redundant infrastructure bolsters business resilience. Workload-based pricing model helps to control costs and plan IT budgeting.

■ ***Key Solution Components***

Industry: Retail
Applications: SAP® ERP 6.0, SAP for Retail, SAP Supply Chain Management, SAP ERP Human Capital Management, SAP NetWeaver® Business Intelligence, SAP Netweaver Portal, SAP Solution Manager
Hardware: IBM® System z9® Enterprise Class, IBM Power Systems™ servers (models p5-550, p5-520 and p690), IBM System Storage® DS8300 and DS8100
Software: IBM AIX®, IBM DB2®, IBM Tivoli® NetView, IBM Tivoli System Automation, IBM z/OS®
Services: IBM Global Technology Services

Headquartered in Karlsruhe, dm-drogerie markt GmbH + Co. KG (dm-drogerie markt) is one of Germany's leading pharmacy and health and beauty retail chains, with annual revenues of more than four billion Euros and a network of 2,000 stores. The company employs 17,000 people in Germany, with a further 10,000 in Austria and other Central European countries. Its subsidiary, FILIADATA GmbH, provides IT services for the company.

Like many retailers, dm-drogerie markt relies on the SAP for Retail solution portfolio to manage business-critical financial, logistics and human resources processes, as well as interfacing with point-of-sale (POS) systems in the stores. Since the initial implementation, the company has introduced numerous additional SAP applications, including SAP Supply Chain Management, SAP Solution Manager, and the SAP NetWeaver Business Intelligence component.

"SAP for Retail is at the heart of our business and we are constantly enhancing and extending the environment," says Christian

"The performance of the new environment is superb… we have response times of less than 500ms, which is a distinct improvement over the previous infrastructure."

Mr. Christian Stäblein
IT Production Manager
FILIADATA GmbH

Stäblein, IT Production Manager at FILIADATA GmbH. "As the landscape evolved, we found that our hardware requirements were increasing. In order to keep upgrading and adding applications and functionalities, we needed to invest in new infrastructure capable of meeting our needs."

Supporting major upgrades

The company planned to update all its SAP applications, including moving to SAP ERP 6.0. It also has a long-term aim to integrate its POS systems more closely into the SAP for Retail environment. To support these plans, dm-drogerie markt decided to replace its existing IBM System z 900 mainframes with a pair of System z9 Enterprise Class (EC) machines. These would run the DB2 database platform to support the SAP applications under IBM z/OS, while the applications themselves run under IBM AIX on IBM Power Systems servers.

"We have a lot of in-house experience with both the System z and Power Systems platforms, so it was natural for us to consider these solutions when we evaluated the new requirements," explains Christian Stäblein. "We believe in giving our teams a lot of input into the decision-making process, so that they reach a high level of identification with the solution that is ultimately chosen and implemented."

Innovative implementation methodology

The dm-drogerie markt team came up with an innovative way to perform the z9 hardware upgrade without causing any downtime in the SAP application environment. All workload was transferred onto one of the existing z900 mainframes, while the other was switched off and decommissioned. Next, one of the new z9 EC machines was set up and configured to run in parallel with the remaining z900. All the workload was then transferred to the new z9 EC, while the remaining z900 was taken offline and replaced with the second z9 EC.

Customers running SAP software on System z are accustomed to performing hardware upgrades while keeping their applications online, but the movement of the database from one hardware box to the other while the connected SAP system is up and running provides a completely new level of service.

"We consulted IBM Global Technology Services about our implementation plan, and the IBM team was very enthusiastic and really helped us to make it work," comments Christian Stäblein. "Naturally there were a few issues, but we worked with IBM to resolve them quickly. Overall, the migration was very successful – there was no downtime or impact on user productivity. In fact, the IBM team said that they might consider using this upgrade methodology with their other customers, too."

The dm-drogerie markt team has many years' experience of the IBM System z platform, and was able to play an active part in the creation of the solution. IBM Global Technology Services provided design,

implementation and optimization services, working closely with the in-house team to develop the new infrastructure to meet dm-drogerie markt's business needs precisely.

The two new z9 EC mainframes have been installed at separate locations, 500 meters apart, to provide a recovery capability in case disaster strikes one of the data centers. Each machine is linked by FICON to an IBM System Storage DS8300 disk system, and the two environments are mirrored using IBM GDPS/PPRC HyperSwap Manager. Combining this technology with IBM Tivoli System Automation and Tivoli NetView makes it possible for dm-drogerie markt to switch from one environment to the other in case of failure, without any impact on production systems.

"The IBM System z hardware is incredibly reliable and robust, which is one of the main reasons we chose it," explains Christian Stäblein. "Nevertheless, our SAP ERP environment is business-critical, so it would be a big mistake not to have a plan in place in case of disaster. If we ever need to fail over, all our applications and users can be transferred seamlessly from one data center to the other, and we can use the IBM On/Off Capacity on Demand feature to activate additional processors in the working mainframe to ensure that we have enough performance for the whole environment."

The company takes a similar approach with the SAP application servers in its AIX environment; each application runs on at least two IBM Power Systems servers, distributed between the two data centers. In some cases, the applications run in virtualized logical partitions (LPARs) on p5-550 machines; in other cases, smaller standalone p5-520s are used.

Approximately 40 DB2 databases for the SAP applications (not including the SAP NetWeaver Business Intelligence environment) run on the System z mainframes, while the applications themselves run on the System p machines. The SAP Central Services (SCS) – including the enqueue and message servers – run on System z, using the UNIX System Services (USS) element of z/OS. SCS is critical for the proper functioning of the SAP environment, so the ability to leverage the highly reliable System z infrastructure with its automatic failover capabilities is a major advantage in terms of availability.

"If our central SAP instance went off-line for a day, the effects on our business would be significant – the logistics and planning for store replenishment would be affected, and it could potentially cost us a lot of money," says Christian Stäblein. "So it is absolutely vital that we have a highly available infrastructure, and the combination of System z and Power Systems servers gives us the level of protection we need. System z is still second-to-none in terms of reliability, and IBM is good at ensuring that the advances made in mainframe technology are passed down to the mid-range Power Systems servers, so these are very good as well."

Moving to SAP ERP 6.0

Following the completion of the hardware refresh, dm-drogerie markt performed an upgrade of its ERP applications to SAP ERP 6.0. The upgrades of the two production retail systems were completed during two weekends, with just 12 hours downtime for each system. There were no technical issues and the upgrades were completed on schedule.

"Moving from our existing version to SAP ERP 6.0 was a very smooth transition, and we easily accomplished

"The solution that we have built is perfect for our needs, and could only have been supplied by IBM. The maturity and technical sophistication of the System z platform is second to none, and IBM is the only supplier with the expertise to unite SAP applications with mainframe technologies."

Mr. Christian Stäblein
IT Production Manager
FILIADATA GmbH

it within the weekend maintenance periods," says Christian Stäblein. "Now that we have the new application up and running, we are beginning to explore the new capabilities of the software,and we expect to activate many new features and achieve even better response speeds."

Having completed this project successfully, FILIADATA now plans to renew dm-drogerie markt's existing data warehouse environment (based on Power Systems servers, AIX and DB2) to fulfil further performance and availability demands.

Boosting performance

"The performance of the new environment is superb – even with 1,300 users in the central system and 1,400 in the store systems, we still have response times of less than 500ms, which is a distinct improvement over the previous infrastructure," explains Christian Stäblein.

Benefits of variable pricing

Another advantage of the solution is the IBM variable pricing model. The mainframe workload is monitored, and dm-drogerie markt only pays for the resources it uses – no money is wasted on unused capacity.

Equally, the model makes it easier for the company to budget for internal projects and systems. Using z/OS Workload Manager (WLM), it is easy to find out how much capacity is used by each user, transaction and system in the SAP application environment, and therefore costs can be controlled on a very detailed level.

WLM support for SAP on user, transaction and program level is a unique feature of the IBM System z mainframe platform, enabling highly granular control and measurement of workload by continually collecting data on system resources and the work assigned to them. Through close cooperation between WLM and the applications, middleware and subsystems operating within z/OS, WLM can track a unit of work throughout the system and assign attributes that helps system administrators classify it.

Looking to the future

Upgrading to DB2 9 and introducing Unicode support is the next priority for the IT department. When the upgrade is complete, dm-drogerie markt will have the opportunity to leverage the new DB2 for z/OS Index Compression feature, in addition to normal hardware data compression. The index compression feature will reduce storage needs – and costs – by a further 30-50 per cent, on top of the 70-90 per cent that can be achieved by hardware compression for Unicode data.

Reviewing the success of the implementation to date, Christian Stäblein concludes: "The solution that we have built is perfect for our needs, and could only have been supplied by IBM. System z is a highly mature and technically sophisticated platform, and IBM is the only supplier with the expertise to unite SAP applications with mainframe technologies.

"Our philosophy is to empower our colleagues to play an active role in decision-making processes and take responsibility. In this case, it meant that the choice of hardware was prepared by the intensive cooperation of the teams responsible for this environment. So we can really offer an expert opinion that using System z and Power Systems servers to run SAP ERP and DB2 for z/OS is an excellent option, providing the high availability and performance that businesses need to operate successfully in a competitive environment."

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SPC03068-DEEN-00 (January 2009)

DTE Energy unlocks synergy and gains flexibility with common, integrated business processes

Overview

- ***Business Challenge***
  With the utility business becoming more competitive by the day, Midwestern energy giant DTE Energy needed to position itself for the future. Disparate systems and process fragmentation across nearly 200 different business units prevented the company from realizing all of the underlying synergies from acquisitions.
- ***Solution***
  With the help of IBM, DTE Energy undertook a massive consolidation of its business systems, which made possible the complete redesign and standardization of its business processes across all business units. DTE Energy chose IBM's Maximo Asset Management integrated with SAP, Advantex, ESRI, and Primavera. DTE Energy can now drive optimization efforts as an enterprise—not a collection of business units.

DTE Energy is a 150-year-old company with $9B in revenues and manages $23B in assets. These include Detroit Edison with 2.2 million electric customers, nine fossil units, and the Fermi 2 nuclear power station, generating 11,000 megawatts, as well as MichCon, serving 1.3 million gas customers in Michigan. DTE Energy operates non-regulated businesses in 38 states.

- ***Key Benefits***
  - *Projected $75 million in annual operating cost savings*
  - *Improved decision-making through increased transparency across business units*
  - *Unified access to inventory availability across all businesses*
  - *Improved ability to share and implement best practices across the enterprise*

Over the years, much has been said about the pros and cons of diversification and vertical integration. In today's increasingly globalized economy, the prevailing view of the "right" business model stresses the importance of maintaining a single strategic focus and remaining flexible to adapt to a dynamic marketplace. Utilities, however, stand as a notable exception to this maxim. Indeed, some of the most effective utility business models combine distinctly different lines of business—whether it's

Business Benefits

- Projected $75 million in annual operating cost savings
- Improved decision-making through increased transparency across business units
- Unified access to inventory availability across all businesses
- Elimination of mainframe
- Reduction of interfaces
- Improved ability to share and implement best practices across the enterprise
- Consistent integration of acquired companies, enabling faster realization of operational synergies

> *"Our goal was to establish a platform for DTE Energy to thrive in a dynamic and challenging environment. We achieved our key objectives of integration and modernized our technology. We think IBM products and their integration were keys to our project's success."*
>
> – *Ron May, Senior Vice President, Major Enterprise Projects, DTE Energy*

natural gas and electric power, generation and distribution, or nuclear and non-utility businesses. That's because despite obvious differences, these lines of business have much in common below the surface in such competency areas as effective work planning, common processes based on best practices, and inventory optimization.

Orchestrating optimization

Unlocking the potential efficiencies embedded in utility business models requires a level of operational orchestration across the entire business, whether it's common processes, common resources or supply-chain integration. In the wake of industry consolidation, many utilities have assembled a business portfolio that looks synergistic on paper, but still faces tremendous challenges in aligning with their acquired or merged businesses. DTE Energy, comprising Detroit Edison and Michigan Consolidated (MichCon) Gas, is one company that has risen to the challenge. Complementing its regulated electric and gas utility businesses are a highly diverse array of non-regulated businesses, ranging from coal transportation to energy trading.

Like most utilities that have grown through acquisition, DTE Energy's efforts to consolidate the business were constrained by a proliferation of systems, which—by keeping information confined to pockets within business units—made it difficult to gain insight required to make critical business decisions. Though the problem was not new, it reached a new level of intensity in the immediate aftermath of the MichCon merger. Disparate systems across the organization provided difficulties with a number of activities, from financial reporting to spare parts inventories. Such were the challenges that led DTE Energy, a company with 2007 revenue of $9 billion, to rebuild the foundation of its business from the ground up, and to choose IBM as a partner to help it get there. DTE Energy wanted to improve the management of all business units and functions, link them together and make them best-in-class.

New and improved

The focus of DTE Energy's transformation efforts is an innovative project named "DTE2," which delivered an ERP called "Enterprise Business Systems (EBS)." As the name connotes, its aim is to position DTE Energy to meet a new set of challenges by fundamentally changing nearly all of its core business processes. Part and parcel of this effort was the need to establish a common, standardized set of business applications that could be employed across the company's business units, a task whose complexity—based on a wide variety of business models and processes at work within the company—cannot be overstated. To address the company's more general finance, human resources and supply chain requirements,

DTE Energy selected SAP. The other major application area—more specialized and in some ways more operation-critical—was asset management and work management. DTE Energy wanted to be able to manage "all types of assets" on one common system, including fossil, nuclear, gas and electric distribution, facilities, vehicle fleets, and, even—in the future—rail cars used to transport coal across the Midwest.

Among its many uses, asset management is critical for utilities seeking to proactively service and maintain their $23 billion base of plant and equipment in order to minimize downtime and thus deliver the highest quality service to customers. With the utility workforce aging, asset management systems have become an increasingly important way for utilities to do more with less. Work management systems work hand in glove with asset management by helping utilities control the resources—human and material—required to get these critical jobs done. DTE Energy selected the IBM Maximo® Asset Management as its assets and work management platform and selected IBM Global Business Services to not only design and deploy the overall EBS solution, but to help integrate it deeply into the fabric of the business.

It's not every day that a utility with operations in 38 states has the opportunity to build a clean slate IT infrastructure for the future, and DTE Energy was determined to make the most of it. While the best-of-breed applications it selected provided solid building blocks, the company realized that integration was the essential ingredient needed to achieve the flexibility, efficiency and transparency it sought. IBM helped advance this vision by designing the EBS architecture to employ service oriented architecture (SOA) components—most notably IBM WebSphere® Enterprise Service Bus—to link processes and applications across all of DTE Energy's business units. IBM System p™ servers provide the hardware platform for EBS, while IBM DB2® provides a common data repository for all applications. With this as a foundation, the IBM team then supported DTE Energy to optimize business processes in a way that took maximum advantage of its SOA-based integration capabilities.

By running all of its business processes on a consolidated platform, DTE Energy now has a way to unleash the potential synergies and operational efficiencies that were difficult to achieve due to the fragmentation of systems and information. The DTE2 project eliminated more than 400 legacy systems and interfaces. Consider, for example, the highly specialized spare parts required to fix and maintain power generation equipment, whose importance to plant operations is the ability to view all parts inventory levels. Because the new system enables employees to view parts inventory levels across all plants—not just their own—they have the ability to find a part within another DTE Energy facility.

Key Components

Software

- IBM WebSphere Enterprise Service Bus
- IBM DB2
- IBM Maximo

Servers

- IBM System p

Services

- IBM Global Business Services

Timeframe

• Selected IBM	3Q 2003
• Phase 1 – Go live Fossil Generation	3Q 2005
• Phase 2 – Go live Enterprise	2Q 2007
• Expanded Deployment	Ongoing

Why it matters

In an industry where diversity reigns, Midwestern energy giant DTE Energy is more diversified than most, with operations that range from coal transportation to appliance repair services and nuclear power. Using SOA technology, DTE Energy was able to consolidate all of its highly diverse businesses under one core business platform—enabling the realization of operational synergies that would have otherwise been difficult to achieve.

In terms of what's important to any utility, nothing comes before safety and reliability—and no application has any greater impact on these outcomes than asset management. A key part of asset management is the ability to perform preventative maintenance (PM) on key assets, not just because it catches problems before they happen, but because it enables utilities to plan and execute PM in a way that optimizes the use of their human and financial resources. Because EBS provides a single window onto all PM requirements, DTE Energy can now manage PM holistically instead of on a plant-by-plant basis. DTE Energy also stands to gain more flexibility in prioritizing plant maintenance work. The centralization of asset management reporting means that DTE Energy can conform more rapidly to any new financial reporting requirements.

Sharing the best

The broad theme of the DTE Energy story is how flexibility and integration enable even the most complex companies to think, act and optimize as a single company. It's seen in the way process standardization and flexible, SOA-based integration enables DTE Energy's business units to share and adopt best practices for the benefit of all, and how these same attributes enable DTE Energy to rapidly and fully integrate future acquisitions. Ron May, Senior Vice President, Major Enterprise Projects, expects EBS to elevate the company to a whole new level of operational efficiency.

For more information

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Dundee City Council builds an energy-efficient infrastructure with IBM

Overview

■ ***The Challenge***

To meet its environmental objectives, reduce operational costs and save data centre space, the IT department at Dundee City Council wanted to revolutionise its infrastructure through the use of server virtualisation and thin-client architectures.

■ ***The Solution***

IBM helped Dundee consolidate more than 50 application servers to a pair of energy-efficient IBM System z9 Business Class mainframes with IBM System Storage DS6800 storage, and introduced thin-client devices using Windows terminal services software running on IBM BladeCenter server farms.

■ ***The Benefits***

System z9 mainframes, thin-client devices and BladeCenter servers are designed to increase Dundee's computing resources while decreasing electricity and air-conditioning requirements – reducing operational costs and carbon footprint. Server consolidation to compact mainframe and BladeCenter architectures saves space in the data centre and should facilitate the Council's move to a new location in 2010.

Glamis Castle, Dundee, Scotland

Dundee is Scotland's fourth largest city, home to 145,000 people. A former industrial centre, Dundee has transformed itself into a UK centre for life sciences and digital media. As a result, the city has been named one of the world's top seven intelligent communities for two years running (www.intelligentcommunity.org), and has just been chosen to become Scotland's first "Fibre City". Fibre optic cables will be installed in Dundee sewers beginning early next year, which will provide high-speed Internet access, clocking in around 100 Mbps (megabits per second), to homes, businesses and organisations throughout the city. Dundee City Council provides a wide range of municipal services for citizens, many of which rely on IT support. The council runs numerous applications to support both internal processes and public-facing systems, such as its Web portal, which provides information and online services.

"Like all local government organisations, Dundee is committed to a number of environmental objectives," says Tim Simpson, IT Support Manager. "In the IT department, we are increasingly interested in finding ways to reduce our carbon footprint by creating a more energy-efficient infrastructure. If we can reduce the amount of power and cooling required by our systems, it's not only good for the environment – it can also save serious amounts of public money on the Council's electricity bill."

Several years ago, Dundee took an important first step in its move towards a greener IT environment by consolidating more than 50 application servers to the IBM System z mainframe platform. The Council now runs these applications and databases on two System z9 Business Class servers, supported by virtualised IBM System Storage DS6800 disk systems.

With its proven ability to run hundreds of virtual servers side-by-side in a single physical footprint, the IBM System z platform is ideally positioned as a solution to shrinking space, power and air conditioning capacity in the typical data centre.

"The z9 mainframes give us a significant increase in processing power and scalability, while reducing the amount of electricity and air conditioning we require," explains Simpson. "Instead of 50 under-utilised boxes, all with their own power supplies and air conditioning requirements, we have two physical machines hosting 50 virtual servers – making optimal use of our resources.

"Storage virtualisation makes a big difference too, helping us to make the optimal use of the available capacity and limit the 'white space'. With help from IBM, we are making sure we are using every system to its full potential, which makes both economic and environmental sense."

Slimming down the desktop environment

Dundee has also committed to a thin-client strategy for its estate of desktop devices. Multiple IBM BladeCenter servers provide desktop applications to thousands of highly efficient thin-client terminals using Windows terminal services and Softgrid application virtualisation software.

"The thin-client approach is a tremendous improvement in terms of power consumption," says Simpson. "Most standard desktop PCs are very under-utilised and spend most of their time heating the office rather than handling workload. Instead, we concentrate all the processing power in the BladeCenter servers, which is a much more efficient solution. We have in excess of 2,000 thin client devices, which have half the carbon footprint of traditional PCs – they also have a lifetime of seven years as opposed to the four or five years of a standard PC."

The thin-client approach also ensures that all information is held centrally, helping the Council to satisfy the requirements of the Freedom of Information Act, and minimises the need for engineers and support staff to travel between sites.

A greener future

Dundee's next project will be to rationalise a number of outlying Intel-based servers and consolidate them onto a virtualised IBM System x3650 platform, using Parallels Virtuozzo software.

"The primary driver for this new virtualisation exercise is to create a clustered environment split across our two data centres, so that we can fail over in case of disaster," says Simpson. "But as a secondary advantage, the improvement in utilisation and the reduction in the number of servers will help us increase efficiency even further."

He concludes: "IBM has been involved in promoting Green IT for many years, and its credentials in the fields of energy efficiency and virtualisation are second to none. By building an energy-efficient IT infrastructure on leading-edge IBM hardware technologies, Dundee is taking its place in the front rank of local authorities that are proactive on environmental issues – while also making more effective use of taxpayers' money."

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École Polytechnique Fédérale de Lausanne builds the first biologically accurate, functional model of the human brain.

Overview

École Polytechnique Fédérale de Lausanne (EPFL)
Lausanne, Switzerland
www.epfl.ch

Industry
- Education and life sciences

Products and services
- IBM Blue Gene

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

"A few seconds of computer simulation could replace days, even weeks, of wet lab research."

—Henry Markram, project head and founder, Brain and Mind Institute, EPFL

One of two higher-learning polytechnic schools in Switzerland, the EPFL has three missions: education, research and technology transfer at the highest international level. The 10,000-person campus, which is situated in an idyllic location on the shores of Lake Geneva, stimulates collaboration between students, professors, researchers and entrepreneurs.

Challenge

Scientists are advancing each year in their understanding of how the brain works, and many of their discoveries are the result of high-resolution computer modeling. Modeling the brain at the cellular level is a massive undertaking because of the hundreds of thousands of parameters that need to be taken into account. Launched in 2005, EPFL's Blue Brain project is working to develop the first biologically accurate, functional model of the human brain, with molecular-level models of neurons and cellular-level models of brain circuitry. And the school plans to do this by 2015.

Solution

An IBM Blue Gene® supercomputer running simulations of the brain down to the molecular level is helping EPFL researchers gain new insights into internal processes such as thought, perception and memory. The Blue Brain model can be thought of as a three-dimensional database receiving data about various brain regions from networked researchers around the world. Much of the pretesting and planning normally required for a major experiment can now be done "in silico" rather than in the laboratory, greatly speeding the research on brain function.

Benefits

As a result of these high-level supercomputing sessions, EPFL scientists will have the tools they need to understand brain function and advance research into neurological and psychiatric disorders. They expect to advance brain research rapidly by running simulations of the brain in close to real time.

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Edwards achieves better SAP ERP service levels at half the cost with IBM Applications on Demand

Overview

■ ***The Challenge***

Following its acquisition by CCMP Capital, Edwards needed to separate its core IT systems from those of its previous owner, Linde Group. With 16 SAP application instances running at the Linde Group data center, operational costs and focus were aligned with the needs of a much larger corporation; separation would give Edwards the opportunity to substantially improve availability, performance and cost.

■ ***The Solution***

Edwards chose IBM Global Technology Services – Applications on Demand to host its systems at the IBM Warwick data center in the UK. Edwards' SAP applications now run under IBM AIX on IBM Power Systems servers, supported by IBM DB2 and a SAN based on IBM System Storage hardware.

■ ***The Benefits***

Total cost of operation for the SAP application environment has been reduced by 50 per cent within the first five months. IBM provides 24x7x365 support using follow-the-sun services, and is consistently meeting 100 per cent of its service level agreements for performance, availability and response to service requests. High-performance IBM Power Systems hardware is delivering 50 to 75 per cent improvements in batch processing speeds.

■ ***Key Solution Components***

Industry: Manufacturing
Applications: SAP® R/3® 4.6c, SAP Customer Relationship Management, SAP Advanced Planning and Optimization, SAP NetWeaver® Business Intelligence
Hardware: IBM® Power Systems™ servers (models p5-550 and p5-520), IBM System Storage™ DS8000
Software: IBM AIX®, IBM DB2®, IBM Tivoli® Storage Manager, IBM Tivoli System Automation
Services: IBM Global Technology Services

Edwards Ltd. is one of the world's leading manufacturers of vacuum pump technologies for precision engineering, supplying a range of industries such as microelectronics and the emerging solar energy market. Based in the UK, the company employs around 3,600 people worldwide, and has facilities across Europe, the USA and the Asia Pacific region.

As a global business, Edwards relies on its core IT systems and requires 24x7x365 availability. For several years, its main systems – including a suite of ERP applications from SAP – were hosted at a data center owned by its parent company, the Linde Group. However, when Edwards was acquired by CCMP Capital in 2007, the company needed to extricate these systems from BOC and decide on a new strategy for its IT environment.

"The Linde Group is an industrial gas company, not a hosting services provider, so although the support we got from them was adequate, we saw the need to detach ourselves from them as an opportunity to improve IT performance, availability and service

"With the new IBM Power Systems hardware, we are seeing a marked improvement in performance. Average run-times have been reduced by between 50 and 75 per cent, and some of our more complex batch jobs are astonishingly fast now."

Alan Blockley
Programme Manager
Edwards Ltd.

levels," comments Alan Blockley, Programme Manager at Edwards Ltd.

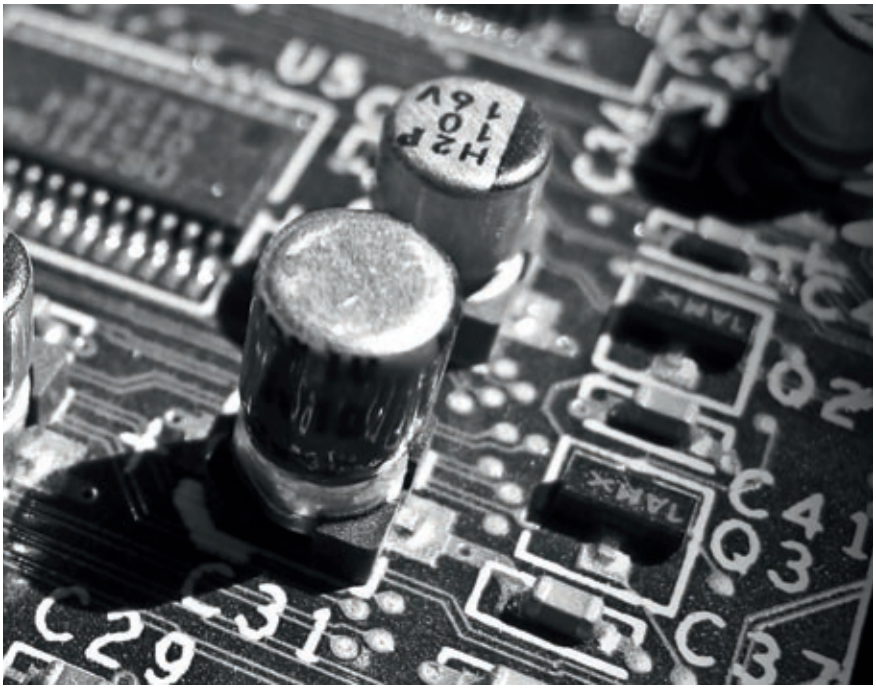
"We considered taking the network and infrastructure management in-house, but this would have meant building a new tier-three data center and taking on more staff – which would have been an expensive option. There was a much better business case for finding an outsourcing partner that could host our SAP applications and other systems more effectively."

Finding a partner

Edwards issued a Request for Information to 12 suppliers regarding the hosting of its SAP applications, and soon had a shortlist of four SAP-certified hosting partners, including IBM.

"We have our own ABAP and functional teams, so it was important to find a supplier that could handle everything from the low-level infrastructure up to and including the SAP Basis level, and that would also be flexible enough to work closely with our in-house teams for application management," says Alan Blockley.

After an in-depth evaluation, Edwards had narrowed the field down to two suppliers: IBM Global Technology Services – Applications on Demand, and a smaller specialist hosting supplier.



Alan Blockley recalls: "At the start of the process, I thought we might decide to work with a tier-two partner because we thought it would be beneficial to be a bigger fish in a smaller pond – we felt that the large tier-one partners like IBM might not give us enough priority, and that they might be too expensive.

"When we actually saw what IBM had to offer, we were very impressed. The Applications on Demand offering breaks down SAP application hosting into a list of fixed-price components, and we soon realized that we could get tier-one support at a tier-two price point. As we got to know the IBM team, we quickly became convinced that they had the resources, expertise and dedication to offer the committed 24x7x365 service that our business needs."

IBM Applications on Demand

The IBM Applications on Demand offering can provide comprehensive support for SAP environments from infrastructure up through operating system and SAP Basis management to ABAP and Functional support, according to the client's requirements. Hosting is priced according to a simple system-sizing methodology based on number of SAPS required, and additional components such as disaster recovery, database administration and so on can be chosen from a 'menu' of services.

Since IBM can source the majority of the hardware and infrastructure internally, new hosted environments can be built and extended rapidly, and there is no need for up-front investment. IBM also draws on its global resources to provide 24x7x365 support using a follow-the-sun

methodology, with dedicated teams in Europe, India and the USA working in eight hour shifts around the clock.

In addition, the IBM Applications on Demand service is fully compliant with ITIL and Sarbanes-Oxley standards, and the resources at its disposal mean that it can deploy tools for monitoring and automation that would be beyond the budget of smaller hosting providers. For example, IBM not only uses a suite of IBM Tivoli monitoring and infrastructure management software, but also the enterprise-class Kintana Suite (now HP Project and Portfolio Management), which provides automated scripts that simplify management and reduce the risk of human error.

"IBM had the right resources to meet our needs, in terms of both technology and expertise – and the Applications on Demand offering made financial sense too," says Anil Patel, IT Director at Edwards Ltd. "By choosing IBM, our maintenance and support costs have been reduced by 50 per cent within five months."

Smooth and timely migration

IBM and Edwards worked together to move the company's 16 SAP application instances – SAP R/3, SAP Customer Relationship Management, SAP Advanced Planning and Optimization and SAP NetWeaver Business Intelligence, each with separate production, training, test and development environments – to the IBM data center at Warwick in the UK.

"As a global operation, the main challenge was to migrate all the SAP databases without affecting the productivity of our users," explains Alan Blockley. "We had a 50-hour window over one weekend, and it was vital to get the new environment up and running before the users came in on the Monday morning."

The Edwards team exported several hundred gigabytes of data from the BOC data center and loaded it onto portable hard drives, which were sent by courier to IBM Warwick. They also sent the data by FTP as insurance in case something went wrong. When the data arrived, the IBM team uploaded and imported it into DB2, performed post-processing and testing, and put the new environment online. The whole process took just 42 hours.

"The migration went without a hitch, thanks to the teamwork between IBM and Edwards and to the reliability of the DB2 database platform," says Mike Donnelly, Development and Operations Manager at Edwards Ltd. "Another advantage of DB2 version 9 is that it enables us to perform backups without taking the system offline – there is no need to wait for the Saturday night maintenance slot."

The SAP applications now run under IBM AIX on the IBM Power Systems p5-520 platform, while the DB2 databases run on larger IBM Power Systems p5-550 servers. A storage area network (SAN) based on IBM System Storage DS8000 hardware provides high-performance, highly scalable storage for the growing environment.

"With the new IBM Power Systems hardware, we are seeing a marked improvement in performance, particularly in batch processing," says Alan Blockley. "Average run-times have been reduced by between 50 and 75 per cent, and some of our more complex batch jobs are astonishingly fast now. To take an extreme example, one job that used to take more than an hour is now complete in around ten seconds."

Managing service requests with iSRVCE

One of the key tools made available to users of the Applications on Demand

"IBM had the right resources to meet our needs, in terms of both technology and expertise – and the Applications on Demand offering made financial sense too. Our maintenance and support costs have been reduced by 50 per cent within five months."

Anil Patel
IT Director
Edwards Ltd.

services is iSRVCE, a portal-based application that enables Edwards to manage change and service requests and communicate with the IBM team rapidly and effectively.

"Previously, when we wanted to make a change or report a problem, we called our service desk, and they would call our parent company's service desk, and in the end something would get done," says Alan Blockley. "With iSRVCE, we can raise an incident in seconds, and it is automatically relayed to the appropriate experts at IBM. We can measure how quickly IBM responds, so it is easy to manage the relationship using a service level agreement model."

Edwards has set targets for response and resolution times for service requests, and IBM is consistently meeting or exceeding 100 per cent of its SLAs. For example, Edward expects Severity 1 Service Requests (the most urgent kind) to receive a response within 15 minutes; IBM's current average response time is less than 50 seconds. The average resolution time for a Severity 1 Service Request is just 2.13 hours – less than half the target time of 5 hours.

"The response to a Severity 1 alert is outstanding," says Alan Blockley. "IBM is able to deal with 95 per cent of issues before our users feel any effects, and much of the response is automated, so problems are fixed as soon as they occur. When a more difficult problem arises, IBM immediately calls us, and keeps dialing experts into the call until a solution is found. The service is superb."

> *"DB2 version 9 enables us to perform backups without taking the system offline – there is no need to wait for the Saturday night maintenance slot."*
>
> Mike Donnelly
> Development and Operations Manager
> Edwards Ltd.

The combination of the highly reliable IBM hardware and software and the proactive monitoring of the environment has enabled Edwards to consistently achieve availability levels of more than 99.5 per cent.

"On average, we used to have unplanned outages roughly once a month," says Alan Blockley. "Since we moved to IBM hosting, we have only had a single minor incident – and even that was resolved very rapidly."

With the success of the IBM hosting solution, Edwards is also planning to move its SAP ERP Human Capital Management solution and Internet hosting into the IBM data center, and will work with IBM to upgrade to SAP ERP 6.0 before the end of the year.

Alan Blockley concludes: "IBM is providing a superb service, helping us ensure near-total availability in our SAP application environment, and improving performance while significantly reducing costs."

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ibm.com/solutions/sap

GILFAM saves time and costs with an electronic land registry application.

Overview

GILFAM
Colmar, France
www.gilfam.fr

Industry
- Government

Services
- IBM Global Business Services

"Security was as important as convenience in designing the electronic land registry system. IBM addressed our concerns by creating a secure biometric identification system for authenticating judges' signatures."

—Jean-Luc Vallens, President, GILFAM

GILFAM is a government organization established for the purpose of computerizing and automating the land registry systems for Livre Foncier d'Alsace Moselle, the land registrar in eastern France.

Challenge

In the Alsace and Moselle jurisdictions of eastern France, land ownership records had been stored locally in 46 courthouses offices for years. The handwritten records—kept in 40,000 paper volumes—are available to the public and to business professionals. The system had worked for a century, but the paperwork had become unwieldy and unsuitable for modern needs. French Ministry of Justice and the local authorities of Alsace & Moselle formed GILFAM with the expressed purpose of replacing paper documents with an automated system of electronic records. The organization's primary concerns were with ensuring security and proper authentication.

Solution

GILFAM engaged IBM Global Business Services On Demand Innovation Services (ODIS) to create a security-rich, online land registry system. IBM consultants designed and built an innovative information system to serve as the legal reference and clearinghouse for the owner of each piece of land. To help prevent unauthorized access to documents, IBM built a biometric authentication framework into the land registry application, requiring fingerprint verification for judges validating records.

Benefits

- Improves convenience for citizens and businesses while reducing costs in the long term – 2.5 million registrations are now online
- Notaries will no longer have to travel to local courthouses to get copies and to register the 750,000 registration transactions processed per year

For more information

To learn more, contact your IBM representative or visit:

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References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.

GBC03012-USEN-00

First National Bank of Omaha puts the spotlight on service innovation in its "branch of the future."

Overview

- ***Business Challenge***
  First National Bank of Omaha wanted to create a new kind of branch that would raise the bar on customer engagement and satisfaction—and maintain its 150-year track record as a service innovator.
- ***Solution***
  First National worked with IBM to design and implement a "branch of the future" that orchestrates a range of new technologies to create a seamless self-service experience that strengthens the bank's brand while enhancing customer satisfaction.
- ***Key Benefits***
  - *Improved customer satisfaction and stronger customer relationships through a more engaging banking experience*
  - *Customer growth at 30 percent over target*
  - *Improved ability to provide the latest information on new products and services, thus improving cross-selling opportunities*
  - *Expected deeper penetration among younger, technologically savvy banking customers*

First National Bank is a subsidiary of First National of Nebraska, Inc., the largest private banking company in the United States with $20 billion in managed assets and over 7,500 employee associates located in 35 states. First National recently launched a "branch of the future" at its Shadow Lake branch, in Omaha, Nebraska.

In the realm of retail banking, the branch—once under the threat of becoming marginalized by ATMs and online banking—is undergoing a renaissance of sorts. There's been an evolution in the way banks think about the role of branches within their overall strategy. Underpinning this evolution, and in some ways driving it, is a richer and more nuanced understanding among banks of what their customers are looking for in an overall banking experience. Along the way, retail banks have also come to realize that all of their channels play specific, yet equally important roles in delivering this experience. The importance of a balanced

> *"Working with IBM has enabled us to enhance human interaction to create the ultimate customer experience. Essentially, we've merged the convenience of a full-service, community bank with the latest technology to redefine what the branch experience can be."*
>
> – *Rolland Johannsen, SVP of Retail, First National Bank of Omaha*

Business Benefits

- Improved customer satisfaction and stronger customer relationships through a more engaging banking experience
- Customer growth at 30 percent over target
- Strengthened brand through digital in-branch signage
- Improved ability to provide the latest information on new products and services, thus improving cross-selling opportunities
- Stronger appeal to younger, technologically savvy banking customers
- Reinforces the bank's image as a service innovator

First National's "branch of the future" enables customers to access their safe deposit boxes using the latest in iris scan technology.

and complementary channel strategy is behind the growing importance of multi-channel banking—whose goal is to align these channels to deliver a consistent, engaging and satisfying experience—as a source of competitive differentiation.

Elevating the retail banking experience

The retail bank branch is a critical part of this mix. For one, it's almost always the channel through which a bank first establishes a relationship with its customer and—over the life of the relationship—it represents the main point of physical contact the customer has with the bank. For this reason, a customer's experience using the branch can have a strong and indelible impact on the customer's perception of the bank. Under the "experience" umbrella, the range and quality of available services is a key element of the mix, as is courteous, informed and personalized service from branch staff. Just as important, however, is the physical backdrop against which the customer experience unfolds. Whether it's lighting and openness, unique applications of technology, or ancillary non-bank services, the physical dimension of the branch environment sends a powerful signal of the bank's commitment to providing a standout customer experience.

First National Bank of Omaha (www.firstnational.com), which recently celebrated its 150th anniversary, was determined to send just such a message to its customers. A subsidiary of First National of Nebraska, Inc., (the largest privately-owned banking company in the U.S.), First National Bank of Omaha planned to use its newest branch, in Shadow Lake Towne Center, to showcase its vision of the branch of the future. While convenient amenities and interior design were part of this vision, its dominant theme was to use innovative technology to pervasively transform the experience of customers using its branches, with Shadow Lake serving as a prototype of the model.

With the specifics yet to be defined, the First National team examined a number of options around in-branch self-service technology. What had proved most compelling was a first-of-a-kind display technology—called IBM Everywhere Branch Optimization—that the team had been shown at the IBM Industry Solutions Labs in Hawthorne, New York. Recently developed by IBM Research, Everywhere Branch Optimization uses a projector, advanced optics and "actionable" camera to project the image of a display on any two-dimensional surface that, when touched, can be used to trigger actions without the wiring typically associated with traditional terminal-based touch screen displays.

Intrigued by the possibilities of using Everywhere Branch Optimization to provide access to in-branch services, First National engaged IBM Global Business Services to lay out the possibilities and to help the bank further define how the technology would fit in with its branch of the future vision. With that foundation established, IBM refocused its mission on defining the overall architecture of the solution

and—most importantly—how it would all fit together to create a seamless, innovative experience for First National's customers. In addition to securing the appropriate internal resources, including staff from IBM's National Kiosk Practice, IBM also needed to coordinate with the third-party vendors that would be providing other elements of the solution, from kiosk software to the digital content that would be displayed alongside the solution. The team recognized that in every aspect of the project—from industrial design to technical implementation, and all points in between—the need for harmonization was paramount. To ensure this outcome, IBM Global Business Services took ownership of the project, coordinating with the other vendors involved in the branch of the future initiative to make all parts of the solution work together holistically.

A new level of customer engagement

The best way to describe how this was achieved is to take a virtual walk through the branch solution that came out of the project. When customers walk in First National's Shadow Lake branch, it isn't just the extraordinary openness of the space that first strikes them. It's also the prominently displayed trio of plasma welcome screens that present First National's latest products, services and marketing messages, which in the process reinforce the bank's brand identity. Among the other dynamic content shown on the screens is personal information on the key bank staff positioned in front of them, which helps to build a personalized relationship between the bank and its customers.

But what truly stands out from the Shadow Lake branch experience—and represents the most innovative application of technology—is the first-of-a-kind self-service solution that defines a whole new level of customer engagement. Designed with IBM Everywhere Branch Optimization at its core, the branch's "virtual koi pond" presents customers with a compelling, interactive gateway to information and self-directed branch services. At the literal center of the service is a menu of options projected as buttons onto the floor from above in the form of a circular koi pond (fish and all). Around it are four interchangeable kiosks. To choose an option, a customer steps on a button within the koi pond, such as "products and services" or "open an account." Using a specially developed pan/tilt video camera, Everywhere Branch Optimization then remotely detects which projected button the customer stands on, and based on that, sends a command to the software underlying the system. This triggers the system to direct the customer to one of the four kiosks by following a school of virtual fish within the koi pond. On the kiosk itself, the menu presented on the screen is automatically customized based on the customer's previous selection.

One of the kiosks' most advanced features is the ability to walk the customer through the entire account creation process, including the production of an ATM/debit card that customers get on the spot—without the usual wait. Branch

Solution Components

Solution

- IBM Everywhere Branch Optimization

Services

- IBM Industry Solutions Labs (Hawthorne, New York)
- IBM Research
- IBM Global Business Services

Timeframe

- Preliminary discussion of concept: 2 months
- Development of Solution: 3 months

Smarter Banking

Using new sensing technology developed by IBM Research, First National Bank of Omaha built a first-of-a-kind customer self-service solution that sets a new standard for providing an engaging retail banking experience. It represents the centerpiece of the bank's "branch of the future" vision.

customers wishing to access their safe deposit box can use another technology-enabled self-service feature that departs from the usual. In contrast to the traditional practice of escorting customers into and inside a secure viewing area with two keys, First National's branch of the future employs state-of-the-art iris scan technology to perform instantaneous, touchless authentication, which is not only secure, but also liberating. The fact that 80 percent of customers have signed up for this feature speaks to its appeal.

Bringing resources to bear

What made the project a success—and what led First National Bank to select IBM—was not only the quality of research it generated in its labs, but also having the depth of resources needed to bring these ideas into the real world and make them work. This included the ability to work with technology partners in a traditional integrator role. But it also meant marshaling the expertise needed to overcome more esoteric issues, from choosing the appropriate way of printing out cards at the kiosks to choosing the flooring material that would provide the best contrast for the projected "koi pond" display. To address some of these issues, IBM Global Business Services looked to other, comparable deployments for the appropriate solution; in other cases, the deep base of technical know-how within IBM's research facilities provided the necessary input.

In the coming months, First National's branch of the future will increasingly become a branch of the present when it begins to broaden the deployment of its new solutions to new and existing branches. By using design and technology to redefine the customer experience, Rolland Johannsen, SVP of Retail, expects First National to not only further strengthen its customer relationships, but also appeal to the younger banking customers with whom the future branch system is most likely to resonate. "Working with IBM has enabled us to enhance human interaction to create the ultimate customer experience," says Johannsen. "Essentially, we've merged the convenience of a full-service, community bank with the latest technology to redefine what the branch experience can be."

For more information

To learn more about how IBM can help you transform your business, please contact your IBM sales representative or IBM Business Partner.

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Flintshire gains a greener IT landscape with IBM

Overview

- ***The Challenge***
  Flintshire as an organisation has ambitious goals to reduce its power consumption and cut carbon emissions. For the growing IT infrastructure, the emphasis is on eliminating "white space" in servers and storage devices through consolidation and virtualisation.

- ***The Solution***
  Flintshire will remove a total of 80 physical servers from its infrastructure by virtualising them to VMware partitions on six IBM System x3950 servers.

- ***The Benefits***
  Virtualisation will remove the capital and operational costs associated with 80 physical servers, as well as their significant lifetime carbon footprint; Flintshire now buys around five physical Intel processor-based servers each year, compared with more than 40 in previous years; the use of server virtualisation on the IBM System x platform supports ultra-rapid provisioning of new servers, with lower total power and cooling requirements.

Flintshire County Council (www.flintshire.gov.uk) provides municipal services to 150,000 citizens, and has a combined annual revenue/capital budget of £360 million. As a unitary authority, Flintshire offers around 750 distinct public services, and runs around 350 business-critical systems to support them.

Beyond its statutory obligations to increase energy efficiency and reduce carbon emissions, Flintshire is taking a proactive stance on climate change. The Council runs an extensive recycling programme and is piloting a ground source heat-pump scheme for public housing that promises to cut the use of fossil fuels. The IT function is also playing a significant role in making Flintshire greener, as John Thomas, Operational Services Manager, explains:

"Our aim has always been to create a highly available, flexible and scalable architecture to support a growing range of services and ever increasing user expectations. We achieve this goal largely through virtualisation, which cuts power consumption and carbon emissions, and significantly reduces the amount of hardware we need to buy, run, and ultimately dispose of."

Lifetime efficiency gains

Flintshire has employed virtualisation for many years on the IBM System i and System p platforms, and today runs IBM i5/OS, IBM AIX and Linux side by side in virtual partitions on two IBM System i 570 servers. The organisation has also virtualised its storage, using IBM System Storage SAN Volume Controller to create a more flexible and efficient SAN. Without virtualisation, John Thomas estimates that the Council would require another 30 per cent more capacity on top of its existing 60TB.

He comments, "Virtualisation not only reduces electricity consumption

and cooling requirements at the point of use, it also eliminates the raw materials, energy and packaging that would have gone into manufacturing and shipping the additional hardware we would have required. That also translates into savings in capital and operational expenditure."

The x factor

Based on its positive experience of virtualisation on System i and on its SAN, Flintshire decided to virtualise its Microsoft Windows infrastructure to VMware virtual servers on the IBM System x platform.

Flintshire implemented four IBM System x3950 servers, currently running a total of 40 VMware servers. A further two x3950 M2s are now being implemented in preparation for new workload – a major, 500-user social care system and a new payroll solution for 7,500 direct employees. The x3950s feature vector cooling: air passes over the hottest components last on its way out of the machine case, increasing the efficiency and efficacy of cooling.

"We've tested the x3950 with up to 30 VMware servers without coming close to the limit, so there's plenty of headroom," says John Thomas. "Using virtualisation on the x3950s, we've removed or redeployed 40 physical servers to date, and anticipate removing a further 40 over the next 12 months."

Flintshire already uses IBM Director software to manage its System x, IBM BladeCenter and System i servers, and plans to introduce the Active Energy Manager (AEM) plug-in. AEM enables the creation of intelligent power policies, with the ability to automatically throttle back or power down System x servers when not in use.

Planning for a greener future

The long-term aim at Flintshire is – where appropriate – to virtualise every element of the infrastructure. All new Windows applications or databases are installed in the VMware environment on the x3950s whenever possible. Flintshire can reallocate the available resources whenever required, so that each virtual server is precisely the right size for its workload. More demanding applications – in particular, Citrix – go onto IBM BladeCenter. Only as a last resort will Flintshire use rack-mounted servers.

"IBM BladeCenter gives us a compact environment in which each blade has only the components it needs, with shared power, networking and cooling," says John Thomas. IBM BladeCenter typically has a 25 per cent smaller environmental footprint than the equivalent rack-mounted servers in terms of power consumption and heat generation.

With BladeCenter and server virtualisation, Flintshire has avoided deploying additional rack space and making power and cooling upgrades. Following a power audit, Flintshire is now running its data centres two degrees warmer, with no detrimental effect on the service as a whole. The air-conditioning in both centres uses "free air cooling" – filtering cold air from the outside whenever possible to reduce power consumption.

"The success achieved by Flintshire is a real-life endorsement of IBM's leadership in green IT," comments David Lockwood of IBM System x.

"With technology and services spanning every aspect of the data centre, IBM is the ideal partner to help Flintshire improve energy efficiency across the entire infrastructure," concludes John Thomas.

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Geisinger Health System consolidates clinical, procedural and research data in a massive storehouse to aid best practices and improve care.

Overview

Geisinger Health System
Danville, Pennsylvania, USA
www.geisinger.org

Industry
- Healthcare

Products
- Clinical Decision Intelligence System (CDIS) solution
- IBM InfoSphere Warehouse 9 platform

Services
- IBM Global Business Services

IBM Business Partner
- Business Objects

GEISINGER

"Building upon our electronic health record experience, our work with IBM now sets the stage for Geisinger to expand its role as a national model for patient engagement, research, and education, as well as leading to business and growth opportunities."

—Glenn Steele Jr., MD, PhD, president and chief executive officer, Geisinger Health System

Founded in 1915, Geisinger Health System serves more than two million residents in central and northeastern Pennsylvania with three major regional medical centers, a 650-member group practice, a not-for-profit health insurance company and the Henry Hood Center for Health Research.

Challenge

Geisinger Health System sought to improve its electronic health record systems to organize information and integrate real-time clinical data with medical history. An integrated solution providing increased clinical insight would help identify clinical trends and best practices, ultimately improving patient care. However, Geisinger lacked the resources and expertise to develop the solution internally.

Solution

IBM implemented a Clinical Decision Intelligence System (CDIS) solution that leverages the health system's wealth of clinical data derived from its decade-long use of one of the industry's most advanced electronic health record systems. Based on an IBM InfoSphere™ (DB2®) Warehouse 9 platform, the solution forms the foundation for integrating clinical, financial, operational, claims, genomic and other data.

The analytics engine built around IBM Balanced Warehouse for AIX® technology consists of IBM System p5® 575 servers with an IBM System Storage™ DS4800 storage server and IBM Tivoli® Storage Manager software for local area network (LAN)–free backup to an IBM Linear Tape-Open (LTO) library. The data warehouse platform consists of IBM InfoSphere Warehouse Information Server software plus a reporting tool from IBM Business Partner Business Objects.

Benefits

- Consolidates information about injuries, illnesses and finance for a comprehensive patient view, including medical history
- Provides a massive storehouse of clinical information, procedure and research, enabling rapid analysis and reporting to foster best-practice care
- Enables extensive, diverse medical information to be used as the basis for medical research, treatments and life-saving breakthroughs

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Gewandhaus Gruber increases customer loyalty and sales revenue by using cutting-edge IBM and IBM Business Partner technology.

Overview

Gewandhaus Gruber
Erding, Germany
www.gewandhaus-gruber.de

Industry
- Retail

Employees
- 1,000

Products
- IBM Anyplace Kiosk
- IBM DB2® for Linux®

IBM Business Partner
- it-werke Technology GmbH

"The system is unusual and distinctive…it has a number of practical advantages… particularly in terms of lower operational costs. With no need to print cards, post them, manage them and replace them when lost, the savings are considerable."

—Svenja Wittrowski, project leader, Gewandhaus Gruber

Gewandhaus Gruber is a clothing retailer with a 350-year history of dressmaking and retailing. It currently has eight branch stores, two outlets and a sports shop where it sells both traditional Bavarian clothing and formal dresses of other brands.

Challenge

Gewandhaus Gruber is a successful mid-level to high-end clothing merchant in Germany. Wanting to better understand and reward its existing customers while attracting new ones, the company decided to implement a customer loyalty program. But traditional card-based loyalty solutions were predictable and could be expensive to maintain. Instead, the retailer sought a cutting-edge loyalty offering that would help it increase revenue and differentiate itself from its competitors.

Solution

Using a combination of IBM and IBM Business Partner technology, the retailer launched the first fingerprint identification–based loyalty program and payment method in Germany. The solution allows the client's loyalty club members to quickly and conveniently pay for items via a fingerprint scanner that also tracks purchases and that rewards members through loyalty incentives. Further, it provides Gewandhaus Gruber with in-depth sales reports that provide decision makers and marketers with valuable insight into the way customers spend their money.

Benefits

- Earned €2.6 million—15 percent—of annual revenue in just six months through approximately 4,500 club members
- Saved €100,000 in operational costs over a comparable card-based loyalty program
- Increased revenue by 4% and improved customer satisfaction

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Groupe Mutuel puts a premium on business flexibility in redesigning its core processes

Overview

- ***Business Challenge***
  To achieve its goal of becoming number one in the Swiss health insurance market, Groupe Mutuel needed to become more flexible and cost efficient—but without changing the decentralized structure that is a pillar of its business model.
- ***Solution***
  Groupe Mutuel worked with IBM to map the key components of its business processes as a prelude to redesigning them. To support these new processes, the company built an SOA-based infrastructure that enables the reuse of services across all 14 of its business units.
- ***Key Projected Benefits***
  - *Reduction in operational costs through the standardization of backend processes*
  - *Reduction in the time and cost of integrating new acquisitions via SOA-based integration*
  - *Reduction in time to market with new insurance products*

Based in Martigny, Switzerland, Groupe Mutuel provides a wide range of insurance services to more than one million customers representing 1.8 million insurance contracts. The company, made up of 14 loosely coupled business units, is the second largest health insurance provider in Switzerland.

In 1996, Switzerland passed a law that fundamentally changed the nature of the health insurance market in that country. Reacting to rising costs and a tendency for insurance providers to skim the healthiest and lowest risk customers, Switzerland mandated that all of its citizens have health insurance. One hallmark of the plan is a reliance on private insurers, from whom consumers can choose from among multiple policies. With much of the rest of Europe following a state-sponsored health insurance model, this practice sets Switzerland apart. The other key element of the law is that consumers

> *"Our unique business model has been a big part of our rapid growth and success. By making our systems and business processes more flexible, IBM has helped us to evolve that business model to make Groupe Mutuel a stronger and more adaptable competitor."*
>
> – *Pierre Marcel Revaz, CEO and Founder, Groupe Mutuel*

Projected Business Benefits

- Reduction in operational costs through the standardization of backend processes
- Reduction in the time and cost of integrating new acquisitions via SOA-based integration
- Increase in customer satisfaction and retention through reduction in re-enrollment and claims cycle time
- Reduction in time to market with new insurance products
- Reduction in time required to comply with changing regulations
- Improvements in the cross-selling and proactive customer management capabilities through a portfolio view of the customer

cannot be denied coverage from any provider, regardless of their actuarial risk. To help them balance this risk in their underwriting practices, the law allows private insurers to assess each individual's risk and reflect that in the premium they charge. For Swiss insurance providers, this change in the landscape created not only a stricter regulatory framework, but also a substantial market opportunity. Part of this stemmed from a general increase in health insurance demand due to government mandate. But a whole other level of opportunity also presented itself in offering consumers a greater variety of choices, with different levels of benefits, deductibles and premiums. The providers that could best meet this new set of needs stood to gain in the marketplace. In this way, the Swiss mandate served to shake up the competition in what had become a very mature market.

Groupe Mutuel, a provider of health and life insurance, has adapted nimbly to this new environment and, as a result, has emerged as one of the market's most successful insurers. Based in Martigny, Groupe Mutuel (www.groupemutuel.ch) has grown by a factor of 10 over the past decade, becoming the number two health insurance provider in Switzerland with more than a million members. With the market's maturity making rapid customer growth through organic means difficult, the company instead focused on growth for acquisition, adding a number of small and medium-sized providers to its portfolio in its quest to become the number one provider in the market. Not surprisingly, a key rationale for Groupe Mutuel's approach was to achieve scale-based efficiencies by pooling the operations of these companies, especially within more commodity-oriented business processes—such as enrollment and claims processing—that typically represent a large share of the cost of operations.

Local strength

However, the approach that more deeply defines Groupe Mutuel's business model is the company's effort to cultivate and maintain the strengths, character and identity of each of its 14 operating units within their respective locales. By maintaining a local presence—in terms of brand, customer service and other differentiating factors—Groupe Mutuel aims to preserve within each unit the qualities that made them successful to begin with. For this business model to work, however, Groupe Mutuel realized it needed to create a common set of optimized processes at the core of its operations, which would give the company the flexibility and efficiency it needed to win in the dynamic Swiss market. Groupe Mutuel turned to IBM Global Business Services for assistance in designing this new process environment and for the flexible technology infrastructure needed to support it.

> *"Our key challenge was to federate all of our units' systems for efficiency while continuing to maintain our separate brands for competitive purposes in each part of Switzerland."*
>
> – *Pierre Marcel Revaz*

From a competitive standpoint, the most basic impact of Switzerland's 100 percent-insured policy is that it creates a zero-sum game for health insurance providers, with each new customer coming at the expense of another provider's base. This means providers have little or no margin for error in any of the business

processes that affect the acquisition and retention of customers. One such process governs the annual reenrollment of members, a function that requires Groupe Mutuel to calculate a new premium for each member and then send out a new application in the shortest time possible, to avoid giving any customer a reason to switch. Another is new product development, under which the company can quickly adapt its product line to changes in available drugs and treatments—based on breakthroughs as well as changing regulations—to ensure members have access to the broadest range of options. Still another is claims processing, which must facilitate a speedy, transparent and error-free experience for the customer to ensure satisfaction and retention.

Diving into process improvement

Groupe Mutuel's plan for addressing these requirements had two parts. First and most important, it sought to create a common set of business processes in these areas that could be used across all of its units. Second—and a precursor to the first—Groupe Mutuel aimed to redesign its IT infrastructure to deliver the flexibility and IT asset reusability it would need to create the common business processes it envisioned. To this end, Groupe Mutuel engaged IBM Global Business Services to lead its corps of internal business process experts and analysts through the IBM Component Business Modeling (CBM) methodology, a framework that breaks a client's organization into logical groupings of people, process and technology called "components," enabling the alignment of business strategies, processes and underlying technology. The CBM methodology enabled Groupe Mutuel to gain a deep and fundamental view of how the company's processes needed to work to enable maximum efficiency and competitive differentiation.

Using the CBM as a roadmap, IBM Global Business Services helped Groupe Mutuel redesign and rebuild its core infrastructure with SOA capabilities, principally the ability to create a layer of abstracted services that can be easily reassembled or redeployed in any of the company's operations with little to no integration effort. The main enabler of this capability is IBM WebSphere® Enterprise Service Bus (ESB), which simplifies connectivity between Groupe Mutuel's backend systems. At the hardware level, Groupe Mutuel consolidated a large number of its existing servers with IBM BladeCenter® HS20 blade servers and a pair of IBM System p5® 595 servers; the latter run its new core applications and employ IBM High-Availability Cluster Multiprocessing software to manage additional partitions and memory to support Groupe Mutuel's ongoing rapid growth. The company's older applications run on two IBM System i® 595 servers, while storage is handled by IBM TotalStorage® 3500 Tape Library devices that are connected to servers via IBM SAN Switches. With the infrastructure foundation in place, IBM Global Business Services turned to the process side, providing Groupe Mutuel's executive management with guidance on business process transformation strategies that

Solution Components

Software

- IBM WebSphere Enterprise Service Bus
- IBM WebSphere Application Server
- IBM High-Availability Cluster Multiprocessing (HACMP™)

Hardware

- IBM BladeCenter
- IBM System p5 595
- IBM System i 595
- IBM TotalStorage 3500 Tape Library devices
- IBM SAN Switches

Services

- IBM Global Business Services

Transformation at a glance

Groupe Mutuel fully capitalized on the changing market landscape through a series of successful acquisitions. By enabling the optimization of core processes across the entire business—while maintaining each business unit's unique market identity—Groupe Mutuel's new SOA enables the company's operational efficiency to catch up with its rapid growth.

drew heavily from best practices from other IBM insurance engagements around the world. Lower in the organization, IBM is leading a series of change management seminars and workshops to propagate the benefit of process change more broadly to employees.

Building on strength

The most important benefit of Groupe Mutuel's work with IBM is that it makes a good business model even better. While Groupe Mutuel can continue to leverage the local market strengths of its individual units, the fact that it can do so on a foundation of flexible, standardized and lower-cost processes makes it a more nimble and efficient competitor. Take, for example, the account renewal process. Because each unit now follows common business rules related to the measurement of risk, the company as a whole is better able to manage risk and calibrate its premium structure in a way that maximizes profitability for the company as a whole. For Groupe Mutuel, the broader benefits of leveraging common business rules are two-fold. First, they facilitate the automation of a wide range of key processes, thereby increasing their efficiency and reducing their costs. Second, the fact that common business rules can be extended—to new business units, channels and acquisitions—gives Groupe Mutuel far more operational flexibility.

Groupe Mutuel's SOA infrastructure also provides a strong basis for differentiation based on agility. For instance, the company's ability to provide an overall "portfolio" view of each customer's coverage profile positions it to respond to the growing importance of consumer-oriented offerings, thus increasing customer satisfaction and retention. This same quality also supports Groupe Mutuel's top-line growth by enabling it to find additional cross-selling opportunities, while the application reuse qualities of SOA gives the company the means to introduce new plans and features faster than competitors. CEO and Founder Pierre Marcel Revaz sees the company's new business process framework as an important step in its quest for market leadership. "Our unique business model has been a big part of our rapid growth and success," says Revaz. "By making our systems and business processes more flexible, IBM has helped us to evolve that business model to make Groupe Mutuel a stronger and more adaptable competitor."

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit us at: **ibm.com**/innovation

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Armonk, NY 10504
U.S.A.

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October 2008

ODC03100-USEN-00

German group of hardware companies Häfele saves money, provides 24x7 availability and cuts transaction processing times with IBM System z9 technology

Overview

Häfele GmbH & Co KG
Nagold, Germany
www.hafele.com

Industry
- Manufacturing wholesale

Products
- IBM System z9 Business Class
- IBM z/VM Version 5.2
- IBM z/VSE Version 4.1
- IBM TotalStorage Enterprise Storage Server

IBM Business Partner
- Comparex

"The IBM System z9 with the z/VM V5.2 and z/VSE V4.1 offers optimum investment protection for our custom-designed, in-house developments."

—Horst Reichardt, director of systems engineering, Häfele GmbH & Co KG

Häfele GmbH & Co KG (Häfele) is one of Europe's leading companies of furniture fittings, building hardware and electronic locking systems. Häfele is also a fitting technology object consultant to many of its customers in 150 countries. Häfele's warehouse ships over 3,500 orders daily, and Häfele reported earnings of €810 million in 2007.

Challenge

Häfele's customers in the fast-paced building and furniture industries, require that their orders be processed as quickly as possible and that they have immediate access to delivery status. This means that Häfele's transaction processing system must be online 24x7. Stability, flexibility and availability are paramount. As its existing IBM S/390® Multiprise® 3000 technology neared its capacity, Häfele began to look for a platform that would offer sufficient resources to meet its growing order volumes.

Solution

To meet the company's requirements for around-the-clock availability at a moderate cost, Häfele, together with IBM Business Partner Comparex, deployed an IBM System z9® Business Class server. Initially the IBM z/VSE™ V3.1 operating system was implemented; the company subsequently moved to the IBM z/VSE V4.1 operating system along with the IBM z/VM® V5.2 operating system. The company's data is stored on IBM TotalStorage® Enterprise Storage Server® technology. The high requirements of Häfele's flexible merchandise management systems are mastered with ease by IBM CICS® (Customer Information Control System) in the z/VSE and the new system environment.

Benefits

- Reduces transaction processing and online response times by 50 percent
- Easily enables cost-effective administration of the IT infrastructure
- Protects custom-designed, in-house applications

IBM Corporation
Systems and Technology Group
Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
November 2008

ZSC03042-USEN-00

Honda Italia Industriale teams with IBM to jump-start a significant business transformation project by adopting RFID technology for its production processes.

Overview

Honda Italia Industriale S.p.A.
Atessa, Italy
www.hondaitalia.com

Industry
- Automotive

Employees
- 800

Products
- IBM Global Business Services
- IBM Global Technology Services
- IBM WebSphere Application Server – Network Deployment, Version 6

HONDA
The Power of Dreams

"Implementing RFID technology is a fundamental step in our 'Outstanding Quality' production strategy. Thanks to IBM Global Business Services and the IBM WebSphere platform, we have a superior foundation on which to build our RFID solution."

—Nicola Marrone , Project Executive, Honda Italia Industriale S.p.A.

Selling motorcycles, scooters and off-road bikes, Honda Italia Industriale S.p.A. (Honda Italia) is the world leader for powered two-wheel (PTW) vehicles. In 2006, Honda Motor Company's Italian subsidiary sold more than 12.7 million PTW vehicles, earning 785 million.

Challenge

To achieve greater efficiency and accuracy in its production lines, Honda Italia wanted to integrate a radio frequency identification (RFID) tracking solution into its Atessa, Italy, production plant. The PTW manufacturer wanted to quickly implement best-of-breed RFID technology, so it sought to engage knowledgeable RFID experts.

Solution

Honda Italia turned to trusted advisor IBM to provide leadership for the RFID initiative. IBM Global Business Services and Global Technology Services support the client in the design and development of the RFID project, which will enable the manufacturer to identify and track each vehicle along the production chain in real time. Additionally, the RFID tags will allow the client to track critical vehicle components, such as engines.

The IBM group collaborated with Honda Italia engineers to design new processes and to identify the best RFID solutions. The IBM team will integrate the selected technology with the client's existing IT systems through an open-standards-based application built on the IBM WebSphere® Application Server – Network Deployment, Version 6 platform.

The first phase of the project transformed the client's motorcycle assembly line, enabling Honda Italia to use RFID tags to monitor the traceability of critical components, manage work-in-progress and replenish inventory. Next, the client will apply the RFID technology to its scooter production line.

Benefits

- Facilitates a significant business transformation that provides real value to Honda Italia
- Improves inventory supply and quality control
- Increases the efficiency of assembly line and configuration management processes.

IBM Corporation
Software Group
Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
02-08

SAC03002-USEN-00

Hudson's Bay Company addresses compliance with industry standards while enhancing its data security using IBM solutions and services.

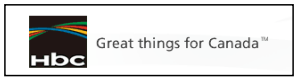
Overview

Hudson's Bay Company
Toronto, Ontario, Canada
www.hbc.com

Industry
- Retail

Employees
- 70,000

Services
- IBM Global Technology Services
- IBM Internet Security Systems



"Meeting the PCI DSS regulations was mandatory, but IBM provided us with more than just compliance. Sensitive data is secure, systems are monitored closely for performance issues, and our IT staff can focus on more mission-critical activities."

—Kristofer Laxdal, Hudson's Bay Company

Hudson's Bay Company (Hbc) is Canada's largest diversified general merchandise retailer, featuring four department store divisions. Through 580 stores and 60,000 associates nationwide, Hbc provides Canadians with stylish, quality merchandise at great value, through retail banners focused on exceptional customer service.

Challenge

All retailers that process credit card transactions are required to comply with the Payment Card Industry Data Security Standard (PCI DSS). Noncompliance can result in significant fines and increase the opportunity for theft or loss of private information, which could cause irreparable damage to a company's reputation and customer loyalty. To meet PCI DSS compliance, Hbc sought a managed security service that could provide full-scale security management for critical credit card holding systems, as well as security alerting and event reporting for less critical devices.

Solution

Hbc chose to outsource its security management to IBM Global Technology Services and IBM Internet Security Systems™. Under the agreement, IBM facilitates security-event log monitoring of 318 network devices and servers within the client's environment. An aggregator server—managed by IBM Global Technology Services—at the Hbc site collects the log data and forwards it to IBM Internet Security Systems, and the server enables reporting through a customer portal.

IBM provides managed protection services for 134 servers, including the installation of host intrusion prevention software on each server. These servers are monitored by IBM Internet Security Systems via a virtual private network (VPN). In addition, IBM Internet Security Systems provides security monitoring for nine network firewall servers.

Benefits

- Addresses compliance with PCI DSS while reducing the consumption of internal IT resources
- Anticipates, tracks and mitigates security threats before they cause harm to data or the IT infrastructure
- Provides professional management of network devices

IBM Global Services
Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
09-08

SEC03006-USEN-00

IBM Computing On Demand Uses Clouds to Increase Business Productivity

Overview

Computing on Demand

Challenge

- IBM customers increasingly require shorter time frames to acquire additional computing capacity. One option is leasing this capacity, but traditional lease terms lack the flexibility, manageability and quick response times that today's businesses need.

Solution

- Using existing Computing On-Demand technologies from IBM systems, IBM has leveraged cloud computing so that customers can gain access to as much or as little additional computing capacity they need with minimal turnaround time.

Key Benefits

- CoD reduces the time to select and provision resources from weeks or days to just a matter of hours.

- IBM clients are able to respond to the needs of their businesses and access additional computing capacity quickly and securely. Moreover, they only pay for the additional computing capacity that they actually use. As a result, IBM CoD customers are more productive and capable of responding to business needs on short notice.

Today's business climate places a premium on flexible and responsive organizations. That's why IBM enables customers to lease whatever computing capacity the situation requires and makes it available within a matter of hours.

This service, known as Computing on Demand (CoD), utilizes cloud computing technology to deliver the computing capacity customers want, when they want it and only for the time period they require it. It's this on-demand feature that makes CoD so customer-friendly. In the process, cloud computing has brought IBM closer to a paradigm shift in IT services: the advent of the dynamic IT infrastructure and the smarter planet.

Thanks to cloud computing and CoD, IBM has enabled clients both large and small to become much more productive. For instance, Exa Corp., a leading simulation software company, has found CoD to be invaluable to the company's ability to serve clients effectively. CoD enabled this company to deliver—over a weekend—an analysis for a client assessing how a series of changes to an auto design would impact the vehicle's aerodynamics, thereby boosting fuel efficiency by 25 percent to 30 percent. With Exa's in-house computing resources, the analysis—which was requested on a Friday and due the following Monday—would have typically required ten days to complete. But by tapping IBM CoD to scale-up its computing capacity, Exa had the analysis completed and delivered in 16 hours. IBM CoD enabled the customer to meet its client's needs without a major investment in hardware—or time. Exa credits IBM CoD with its cloud computing ability, in part, for the company's double-digit percentage growth every year for the past five years.

A leading provider of variable annuities also relies on IBM CoD and cloud computing to analyze huge volumes of data needed by the company's actuarial team within 10 hours of the time the data becomes available. With IBM CoD, the annuity provider can scale from a modest 200 processors to as many as 500 processors for critical workloads. Not only has IBM met the company's IT needs, but also CoD has saved the company the cost of building a new data center to handle the peak workloads, as well as the cost of maintaining the infrastructure. Moreover, the company only pays for the cloud resources it requires when it needs them.

Without CoD, additional computing capacity for peak workloads or back-up can be leased, but the terms usually require multi-year commitments for a specified number of processors and a fixed amount of data storage and network capacity at certain times. Provisioning those processors and storage on short notice is beyond the scope of the standard agreement, as it can take two weeks to build processors to client specifications.

With today's more powerful processors, customer workloads often require far less time to process than the lease term commitment. Customers want to reduce the time required to provision the servers, network and security as well as the time increments available to lease.

With the cloud computing CoD model, IBM delivers these customer requirements. Subscribing customers can now access CoD through a self-service scheduling portal that provides access to 14,000 processors and 56 terabytes of storage spread across six global CoD centers. The portal acts as a service catalog that allows subscribers to choose operating systems and to schedule server racks for any time period, from weeks or days to just a few hours. Utilizing IBM build server and provisioning technology, automation of the deployment cycle now allows large numbers of cluster racks to be built simultaneously, without administrator intervention.

CoD, with its rapid deployment of services, represents one more milestone in the IBM vision for the new enterprise data center. Furthermore, CoD is a service that IBM has come to embrace as part of its every day business. IBM business units, including Research and the Service and Technology Group, regularly utilize CoD themselves to increase productivity and respond to new workloads in less than two hours.

IBM Design Centers can assist your business in developing cloud computing solutions to solve infrastructure challenges. Once engaged with a Design Center, customers partner with skilled IBM experts from the concept stage all the way through implementation of a cloud or ensemble to drive first-of-a-kind advanced solutions to reality.

For more information on how a Design Center can help you, visit:
http://www-03.ibm.com/systems/services/designcenter/index.html

For more information on CoD, visit:
http://www-03.ibm.com/systems/deepcomputing/cod/index.html

IBM's Computing on Demand Centers help clients reduce data center expenses, especially power and cooling costs. A variety of security levels help ensure compliance with U.S. Government requirements.

For more information, visit:
http://www.ibm.com/jct03001c/systems/deepcomputing/cod/testdrive.html

The IBM Executive Briefing Centers offer comprehensive, in-depth technology briefings, product demonstrations and solution workshops for IBM clients and IBM Business Partners wanting product expertise on IBM Cloud solutions. Visit: http://www-03.ibm.com/systems/services/briefingcenter/

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IBM General Parallel File System provides exceptional reliability and performance for file system users

Overview

- ***Challenge***
  Manage the rapidly increasing storage requirements of more than 450,000 users and deliver fast and dependable access for more than 4,500 applications
- ***Solution***
  An internal service, based on a combination of IBM products and open source technologies, that provides a robust high-performance file system for shared data
- ***Benefits***
  Improves performance and regularly delivers 100 percent availability by transparently moving workloads among servers; protects against unplanned outages; substantially reduces administrative costs by simplifying management and capacity planning of file systems

Prior to the introduction of Global Storage Architecture (GSA) File environment in 2001, the IBM internal file system environment was fragmented into many small islands. These islands often used different technologies and were managed by independent teams, each of which created their own local use policies. Cross-site projects were sometimes hindered by this inconsistent approach to technology and management. Also, many of the technologies employed were not designed for enterprise scale computing, and teams struggled to expand the environments to meet the growing needs of IBM.

Providing GPFS access to all IBM employees has yielded significant cost savings and increased efficiency and performance. It also offers a substantial test case to demonstrate the many benefits of this solution.

Based on this success, IBM Services created the Scale Out File System (SOFS), a commercial offering that delivers the GPFS file system solution on customer premises as a highly scalable, global, clustered network attached storage (NAS) solution.

IBM identified a number of specific issues in this environment. First, the cost of managing multiple small islands of unstructured data continued to escalate as volume increased. In addition, the security of data on local servers was increasingly at risk, and strategies for data recovery were often not documented or were difficult to implement. There was no flexibility to move files quickly and transparently to different servers in the event of planned maintenance or other outage. Finally, traditional network file systems such as CIFS (Common Internet File System) or NFS (Network File System) often lacked the scalability, reliability and resilience required by enterprise applications that needed shared access to the same file from multiple application instances.

Minimizing risk with a flexible file system

The GSA File environment was built around the IBM General Parallel File System (GPFS™). Originally designed as a file system to manage resource-intensive multimedia services, GPFS is the core file system in IBM's internal storage architecture.

Because GPFS is a clustered file system, all the servers within a GPFS cluster have direct access to all the storage in that cluster. The combination of GPFS and IBM WebSphere® Edge Server software make the system extremely flexible and resilient. Workload can be moved from one server to another transparently for planned or unplanned maintenance. The performance of each cluster is balanced automatically and continuously. IBM Tivoli® Storage Manager delivers high performance backup to help staff implement data protection policies that align with data availability needs and service level requirements. Through this IBM Service Management solution, staff can cost-effectively manage backup and recovery across disk and tape from a single point of control.

GPFS supports the replication of metadata and data across multiple storage devices. The GSA environment uses this capability to provide greater operational resilience. GPFS survives the loss of individual disks, disk arrays, storage servers and fabric components without an outage. Moreover, data in GPFS can be transparently migrated from one storage device to another to allow for planned maintenance.

Using GPFS, storage devices and servers can be managed in large pools. Managing pools of servers rather than individual servers dramatically simplifies administration and capacity planning of file systems. Within a GPFS cluster, capacity can be scaled up or down simply by adding and removing servers or disks. There is no need to manually rebalance data as the cluster shrinks or grows. Using large pools of capacity also allows the system to be managed with higher utilization than traditional file systems. Higher utilization allows the same amount of data to be stored on less hardware, leading to lower power usage and reduced equipment costs.

GPFS provides a POSIX-compliant file system, and provides coherent file locking across all nodes in a cluster. This means that most applications require no changes or recompilation.

GSA File is deployed in 35 cells, located around the world. Each cell is built around a single GPFS cluster, and every member of the cluster provides the same services. The WebSphere Edge Server software makes all the servers in the cluster appear as a single server, and GPFS clients are connected transparently by WebSphere software to any server in the cluster.

Because it is by nature a large consumer of bandwidth, and sensitive to network latency, file system service is delivered locally at each of the cells. While the service is delivered locally, GPFS is managed centrally. Three control centers—one in Poughkeepsie, NY and one each in Europe and Japan—remotely manage the various cells.

Offering massive throughput and high reliability for even the most resource-hungry applications, GPFS was the obvious choice at IBM. With a ten-plus year history of development and dependability, GPFS offers clustered file systems and shared device file systems, making it a robust solution that also exploits SAN-attached storage devices for additional resilience.

Meeting the needs of a large user population

Prior to the GPFS solution, file management at IBM was dispersed and non-standardized. Data was tied to a particular server. If the server was lost or down for any reason, the user couldn't gain access. With GPFS the data is no longer tied to an individual server, eliminating the single point of failure. If the workload increases it can easily be distributed through the clustered architecture.

GPFS is the only solution that effectively handles the intense file management needs of the large user population at IBM. GPFS meets or exceeds the storage and application access requirements of IBM, provisioning services automatically depending on the storage requirements of the user. The environment supports a diverse user base including hardware and software development, application hosting and end-user file sharing.

Since it first became available in 2001, the GSA File environment has grown to include 35 cells on five continents. There are more than 115,000 users consuming more than 250 terabytes of data, and the GPFS environment in GSA File includes more than 1 billion files and directories.

Solution Components

Hardware

- IBM General Parallel File System (GPFS) file system

Software

- IBM Tivoli Storage Manager
- IBM WebSphere Edge Server

GSA File has a service level agreement, and GPFS far exceeds the stringent requirements of that agreement, regularly delivering 100% availability across all 35 sites.

Providing high availability at a lower cost

While acceptance of GPFS at IBM has continued to grow at an exponential rate over five years, help desk calls have remained remarkably stable. The number of GPFS user IDs has increased to well over 100,000, but the help desk consistently averages fewer than 200 calls per month. This low rate of service calls also highlights the stable and highly available GPFS environment.

Throughout this period of growth GPFS has provided tremendous availability with its clustered architecture. GSA File has a service level agreement, and GPFS far exceeds the stringent requirements of that agreement, regularly delivering 100% availability across all 35 sites.

The overwhelming acceptance of GPFS by IBM employees, demonstrated by more than seven years of continued strong growth, has yielded significant cost savings and increased efficiency and performance. It also offers a substantial test case to demonstrate the many benefits of this solution. Significant cost reductions have been achieved, particularly over the past three years, as a direct result of self-service tooling and centralized management. With self-service configuration and updating, users can easily customize storage for their own requirements. This tooling is made possible by the clustered GPFS environment, and the large pools of storage that it creates.

Based on its success, IBM Services created the Scale Out File System (SOFS), a commercial offering that delivers the GPFS file system solution on customer premises as a highly scalable, global, clustered network attached storage (NAS) solution.

For more information

Contact your IBM sales representative or IBM Business Partner. Visit us at: **ibm.com**

Additionally, IBM Global Financing can tailor financing solutions to your specific IT needs. For more information on great rates, flexible payment plans and loans, and asset buyback and disposal, visit: **ibm.com**/financing

IBM Corporation
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TIC14061-USEN-00

Johns Hopkins unites its businesses with SAP and IBM

Overview

■ ***The Challenge***

Johns Hopkins' multifaceted organizational landscape – including hospitals, clinics and a major research university – was running numerous business applications, many of which were not fully integrated. To improve data quality and reporting across the enterprise, Johns Hopkins wanted to move to a centralized ERP platform – and needed an infrastructure refresh to support the new solution.

■ ***The Solution***

Working with Bearing Point and IBM Global Technology Services, Johns Hopkins implemented ERP applications from SAP on IBM AIX on the IBM Power platform. Servers are clustered using IBM PowerHA for high availability, and a SAN infrastructure based on IBM System Storage DS8300 systems is in place.

■ ***The Benefits***

SAP applications provide a 'single source of truth', helping Johns Hopkins gain insight across the entire organizational landscape. IBM Power servers provide excellent performance for more than one hundred virtualized SAP application servers, with simple scalability through IBM Capacity on Demand. Storage and servers both provide better than 99 per cent availability for the ERP environment.

■ ***Key Solution Components***

Industry: Healthcare, Education
Applications: SAP® R/3® 4.7, SAP ERP Human Capital Management with Employee Self-Service and Management Self-Service, SAP Supplier Relationship Management, SAP NetWeaver® Business Intelligence, SAP NetWeaver Exchange Infrastructure, SAP NetWeaver Portal
Hardware: IBM Power 570 servers, IBM System Storage™ DS8300
Software: IBM AIX®, IBM PowerHA, Oracle®
Services: IBM Global Technology Services, Bearing Point

Johns Hopkins Institutions, comprising the Johns Hopkins Hospital and Health System, Johns Hopkins University, and several other hospitals and institutions, is Maryland's largest private employer, with more than 45,000 full-time staff. The Johns Hopkins Hospital has been rated as America's number one hospital for 17 consecutive years, while the University is ranked first among US universities in receipt of federal research and development funds.

Running a multi-campus university and eight separate medical facilities is a complex operation, so Johns Hopkins has traditionally managed the University and Health Systems divisions separately. However, the IT infrastructure of both divisions is managed by a shared service organization known as 'IT at Johns Hopkins'.

In the past, the two divisions ran and developed their own IT systems, which were often managed at the institutional level rather than the group level. The IT at Johns Hopkins team found that they were managing a very large number of applications from different

IBM | SAP®

"In addition to new resilience features like Live Partition Mobility, POWER6 should deliver greatly improved energy efficiency, which is a major consideration."

Lisa Poremski
Client Representative for Johns Hopkins
IBM

vendors, often poorly integrated. It was very difficult to get an overall view of operations, especially if they wanted to look at the University and the Health Systems divisions as a whole.

To resolve these issues, IT at Johns Hopkins wanted to find a single, centralized ERP platform that would help rationalize the entire IT landscape and provide a 'single source of truth' – improving data quality and providing faster, more accurate reporting.

Making the right choice of ERP platform

Over the course of six months, Johns Hopkins performed a full review of enterprise-level ERP vendors, including a detailed requirements-gathering exercise to decide on the best option for the business.

A large-scale ERP implementation is one of the most challenging projects that an organization like Johns Hopkins can undertake – not just from a technology point of view, but because all the core business processes need to be realigned.

Lisa Poremski, Client Representative for Johns Hopkins at IBM, comments: "Johns Hopkins wanted a product that would offer the closest possible out-of-the-box fit with their business."

Johns Hopkins chose to work with Bearing Point to deploy the SAP applications. Before the software implementation could begin, however, Johns Hopkins needed to decide on a new hardware infrastructure to support the ERP platform.

Leveraging IBM Power

Working with IBM Global Technology Services, the IT at Johns Hopkins team deployed a number of IBM Power 570 servers running IBM AIX. The main production databases for the SAP application environment run on two machines in the primary data center, with a third machine using IBM PowerHA high availability clustering (formerly known as HACMP) to provide a failover option in case one of the other servers fails.

IBM PowerVM dynamic resource distribution can automatically adapt hardware resources to the new workload in accordance with predefined priority levels, if there is a PowerHA failover. This leads to more efficient utilization of the hardware and better Service Level Agreement (SLA) performance.

Another Power 570, located at the secondary data center, provides disaster recovery support, and acts as a quality assurance environment during day-to-day operations. Several other Power servers run the production SAP applications, as well as a development environment and a sandbox.

Lisa Poremski comments: "Even though Johns Hopkins runs more than 100 virtualized LPARs for the SAP application environment, the AIX

environment, hypervisor and hardware management console make it simple to manage them. And when they need to set up a new system for one of their business units, PowerVM virtualization makes it quick and easy – there's no need to buy more hardware or plug in more cables."

Another feature of the IBM Power platform is the easy scalability provided by IBM Capacity on Demand. When more processing capacity is needed, Johns Hopkins can temporarily switch on additional processors within the Power 570 servers – and it only pays for the extra processors when it is using them.

Looking ahead to POWER6™

"In addition to new resilience features like Live Partition Mobility, POWER6 should deliver greatly improved energy efficiency, which is a major consideration," explains Lisa Poremski. "Aside from the rising cost of electricity, there is only so much power that can be fed into the Johns Hopkins data centers, so efficiency is vital. Moreover, Johns Hopkins has a number of corporate environmental objectives, and Green IT is becoming an increasingly important issue."

High-performance storage

To support the IBM Power servers, Johns Hopkins worked with IBM Global Technology Services to build a storage area network (SAN) based on the IBM System Storage DS8300 platform. The DS8300 is a massively scalable disk system that supports fiber channel connectivity at up to 4Gbps. Using a mixture of high-speed and high-capacity disks, enterprises like Johns Hopkins can create a storage profile that offers the optimum combination of performance and cost-efficiency.

"The DS8300 is an excellent basis for the kind of high-performance storage environment that SAP ERP applications require," explains Lisa Poremski. "The built-in storage management software is easy to use and highly flexible, and capabilities like IBM FlashCopy are ideal for making point-in-time copies of business-critical SAP databases."

Successful ERP implementation

With the servers and storage in place, Johns Hopkins and Bearing Point were able to complete the implementation of the SAP ERP applications using SAP NetWeaver Exchange Infrastructure to create more than 150 interfaces with other systems within the hospital and university infrastructure.

"IT at Johns Hopkins was able to roll out the software to the entire organization within two years," comments Lisa Poremski. "The biggest challenge is not technical at all – it is to drive the culture change and get Johns Hopkins' 15,000 users to work with the new applications effectively.

"IBM Global Technology Services, Bearing Point and the in-house team all played an important role in the success of this major IT initiative," concludes Lisa Poremski. "The IBM Power servers and DS8300 systems deliver industry-leading performance and near-100 per cent availability for the SAP ERP environment – ensuring that Johns Hopkins' users can access the IT systems they need, whenever they need them."

"The IBM Power servers and DS8300 systems deliver industry-leading performance and near-100 per cent availability for the SAP ERP environment – ensuring that Johns Hopkins' users can access the IT systems they need, whenever they need them."

Lisa Poremski
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Klinikum Chemnitz cuts SAP infrastructure investment costs by 20 percent

Overview

■ ***The Challenge***

Older infrastructure for SAP applications at Klinikum Chemnitz presented a serious business risk, with database and application servers that were not protected adequately against failure. The systems had reached the limits of their capacity, and could not be extended further. The eight physical servers in the SAP environment were costly to support, maintain and administer.

■ ***The Solution***

Working closely with Klinikum Mittleres Erzgebirge GmbH, Klinikum Chemnitz chose to consolidate to a shared infrastructure for SAP applications, using virtualization to reduce from eight HP servers to two IBM Power Systems servers. Data storage was moved from an isolated RAID storage system to a SAN based on IBM System Storage DS4000 disk systems. Data management was rationalized by standardizing on IBM DB2, with IBM Tivoli Storage Manager for automated backup, archive and restore services

■ ***The Benefits***

Reduced initial investment costs by 20 percent and cut operating costs by 10 percent with a shared infrastructure, using IBM PowerVM to support multiple virtual servers on each p570 server. Reduced user response times by 35 to 40 percent in dialogue mode and by a factor of four or five in batch mode. Cut system recovery time in case of component failure from one day to around 10 minutes. Reduced time for complete data recovery in case of disaster from one day to around two hours.

■ ***Key Solution Components***

Industry: Healthcare
Applications: SAP® ERP® including core financials, asset management, materials management and sales and distribution components, SAP for Healthcare solution, SAP NetWeaver® Business Warehouse
Hardware: IBM® Power Systems™ p5-570 and p5-550, IBM System Storage® DS4000 systems, IBM System Storage SAN32B-3 (32-port 4GB SAN Switch), IBM System Storage TS3310 Tape Library
Software: IBM AIX®, IBM DB2®, IBM Tivoli® Storage Manager
Services: PROFI, an IBM Premier Business Partner

IBM | SAP®

The Klinikum Mittleres Erzgebirge (KME) and Klinikum Chemnitz operate several locally owned hospitals in the Saxony region of Germany. KME possesses about 450 beds and employs some 700 clinical and non-clinical staff, with hospitals in Zschopau and Olbernhau. The Klinikum Chemnitz group is one of the largest hospitals in Germany, running a 1,790-bed hospital with 15 clinics, and employing more than 4,000 people.

All significant business, financial and patient administration processes across the combined group are handled by SAP applications, using the SAP for Healthcare solution. The core data needs to be always available, and, because requirements are continually changing, the system needs to be able to grow and adapt to new demands. All shared systems infrastructure was hosted by Klinikum Mittleres Erzgebirge at its Zschopau location.

Dr.-Ing. Stefan Förster, Head of Medical Informatics at KME, explains, "The Chemnitz system was operating at its absolute limits, and we were not able to extend capacity further. The whole system architecture was outdated and the performance was not meeting the business needs. KME was experiencing similar issues, and had updated its IT infrastructure with help of the latest IBM technology in 2006. We therefore decided to leverage the synergetic potentials and start creating a combined solution in a cooperative project between both organizations."

> *"PowerVM allows you to run several systems within a single machine, even using different operating systems, and with fine-grained logical partitioning features. That was a big wow factor for us, and it was clear that virtualization would help us meet our objectives."*
>
> Dr.-Ing. Stefan Förster
> Head of Medical Informatics
> KME

Prof. Dr.-Ing. Olaf Schlimpert, CEO of MidGerman Health GmbH Medizininformatik, the IT service provider for Klinikum Chemnitz, comments, "It is costly and time-consuming to run dedicated servers for each information system, and some of the servers were not being actively maintained. We only had one database server, which had reached the limits of its expansion, and a total failure would have caused a data outage of up to 24 hours. We were also running several operating systems, including TRU64, and 32- and 64-bit Linux, which further complicated maintenance."

Possible routes to lower costs

To meet the twin challenges of availability and scalability, a team was formed including IT staff from both organizations, led by Dr. Förster. The team examined two possible approaches: deploy new server infrastructure at Chemnitz, or consolidate and extend the systems at Zschopau. The ambition was to introduce resilient systems, reduce operating costs, and implement scalable systems that would enable continued expansion. After an intensive study covering technical feasibility and cost-efficiency, the consolidation option was selected, offering hardware investment cost savings of around 20 percent and operating cost savings of around 10 percent annually.

The eight HP servers were replaced by two IBM Power Systems p5-570 servers, running the complete production SAP application landscape for both organizations. Two IBM p5-550 servers support the other SAP applications, such as development or consolidation systems. Virtual servers provide separate environments for the various SAP instances and the DB2 databases. Some 800 users at KME and about 1,700 users at Chemnitz access the SAP applications, with 600 concurrent users continually using the production systems.

"We wanted to create an economically advantageous solution," says Dr Stefan Förster. "What we found really interesting regarding the IBM system architecture was the PowerVM virtualization technology. PowerVM allows you to run several systems within a single machine, even using different operating systems, and with fine-grained logical partitioning features. That was a big wow factor for us, and it was clear that virtualization would help us meet our objectives.

"The former monolithic systems were dedicated to specific tasks, with specific RAID storage systems in each machine. We had reached the point where we simply could not extend the systems in this direction any further cost-effectively. The new IBM architecture has taken us to another level of overall performance and system flexibility."

"Virtualization allows us to assign capacities automatically, use dynamic load balancing, share virtual I/O devices and adapters, all of which help us to reduce costs and makes IT services management more efficient. The Micro-Partitioning facility allows us to assign tenths and even hundredths of CPU capacity to a virtual server, dynamically with or without limits, so that the server always consumes

what it currently needs. That's a very smart solution and a highlight for us! The technical advantages translate directly into business benefits, which convinced us to decide for IBM."

Olaf Schlimpert adds, "The IBM solution provides some new possibilities not previously available. In the old set-up we needed to buy new hardware and install application servers or whatever was needed – now by virtualization this is rarely necessary, so we can provide new systems faster and more cost-effectively. The bottom line is high investment protection over the next years. Additionally, this is a more elegant solution: adding applications and servers does not add to complexity, which helps restrain administration and maintenance costs, too."

Improving data management

During the evaluation and implementation project, the team also considered data management. It was vital to ensure that data was always available, and that a suitable disaster recovery service was in place.

"At the time, SAN technology was new to us," says Stefan Förster. "We replaced the single RAID backup-managed, vulnerable database server with a SAN based on IBM System Storage DS4000 systems that would ensure that data was reliably accessible, and introduced data mirroring that would ensure continuity even if a specific storage device became unavailable."

Two storage servers at different locations have been deployed, with data automatically and continuously mirrored to both locations. This arrangement has eliminated the single point of failure, and ensures data is always available for the critical patient and administration systems.

In 2005, KME had reviewed its database strategy, and selected IBM DB2 for SAP applications as the group-wide standard. A combination of superior performance and lower licensing costs for SAP applications made DB2 the right choice for KME. Klinikum Chemnitz chose to migrate from its existing Oracle database platform to DB2 for the same reasons, which would also ensure a uniform and simplified landscape for the combined operations.

"We wanted to run one, consistent, database environment, which would reduce workload and make it easier to integrate tasks such as backup across all systems. We measured and compared database solutions, and DB2 was better than other enterprise-class systems we considered, not only in terms of performance metrics, but also concerning handling and management of backups and costs. Database systems differ substantially from each other when it comes to maintenance, and we found that DB2 offers significant cost savings here," says Stefan Förster.

"Additionally, the DB2 licensing arrangements for SAP applications provide very attractive price points and lower costs than competitor offerings, with a better cost-performance ratio.

Ensuring high availability

Klinikum Mittlere Erzgebirge implemented IBM Tivoli Storage Manager Solutions across its entire SAP and non-SAP application environment, yielding fast and flexible backup, recovery and archiving processes. Resource utilization can be optimized by balancing workload between storage subsystems. By deploying IBM Tivoli Storage Manager, Klinikum Mittleres Ergebirge has minimized system downtime and implemented simple, cost-efficient backup processes that provide operational flexibility.

> *"We measured and compared database solutions, and DB2 was better than other systems, not only in terms of performance metrics, but also concerning handling and management of backups and costs."*
>
> Dr.-Ing. Stefan Förster
> Head of Medical Informatics
> KME

"We selected IBM Tivoli Storage Manager to provide incremental backups for all SAP and other critical data," says Stefan Förster. " The IBM Tivoli solution reduces our administrative overhead for data backup significantly, enables fast and reliable backup and recovery of data, and provides greater reassurance that business-critical information is being safeguarded at all times."

Though backups were completed every day, the previous solution was vulnerable to server failure. The worst-case scenario would have been loss of a full day's data, with restore times of several hours. To mitigate this risk, the new IBM servers are clustered using IBM PowerHA. In the case of server failure, workload is automatically transferred to available servers for continuous operation.

"Fortunately, we have never experienced a major hardware failure, and SAP applications have only been unavailable during planned maintenance," says Stefan Förster. "SAP application availability on the IBM Power Systems servers has been better than 99.8 percent – or 99.9

percent if you exclude maintenance windows. With PowerHA clustering, and the data mirrored to the remote DS4000 systems, we expect SAP application availability to become near-continuous.

"PowerHA monitors the systems continuously and disaster recovery is automated, responding automatically to different breakdown scenarios and moving applications from one system to the other. We operate two p570 systems in the cluster and all production SAP systems run on these machines. In a breakdown scenario, perhaps when a hardware component fails, the affected systems move to the second machine with no manual intervention. After 10 minutes the systems are back online.

"It is well known that server failures tend to happen out of hours or during vacations – yet with PowerHA we remove the burden from our standby staff, which saves costs and allows us to devote time to more proactive tasks."

Excellent project management

Under EU rules, the implementation project was offered for public tender, which was won by IBM Business Partner PROFI.

"PROFI completed the hardware implementation promptly and on time, with a very smooth set up, integration and migration of the production systems to the new platform, and we were very satisfied with their work. IBM completed implementation of the SAP applications and DB2 migration, again a very satisfactory service," says Stefan Förster.

A spin-off benefit of the program has been reduced power costs. By consolidating its infrastructure to a smaller number of more powerful IBM Power Systems servers using PowerVM virtualization technologies, total energy consumption has been significantly reduced. The dedicated RAID arrays in the previous standalone servers have been replaced by the DS4000 storage systems, which allows total storage space to be allocated more efficiently and the energy-hungry RAID systems to be eliminated.

Common infrastructure – better results

The new IBM infrastructure is delivering straight performance improvements when compared with the former solution, and reduced response times are leading to increased user satisfaction and rapid user acceptance.

Stefan Förster comments, "The common infrastructure for the hospitals leads to ease of IT management, for example through joint release updates and software patches. Previously, these tasks and services were duplicated, whereas now we have the option to plan and execute upgrades or the implementation of new features across all business units, reducing the cost of operation. The next joint task of our IT departments will be to migrate to the latest release – SAP ERP 6.0."

He concludes: "The new IBM infrastructure has given us the capacity, performance and availability to complete a number of consolidation projects successfully. The bottom line is that we are very satisfied with the actions and tasks delivered by both PROFI and IBM."

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Tivoli software

Lower Colorado River Authority expands throughout Texas with IBM Maximo solution.

Overview

- ***Challenge***
  Scale the business to meet increased resource demands while optimizing efficiency
- ***Solution***
  An asset management solution that seamlessly manages the resources for four varied utilities and provides a fast, efficient mobile system for improved staff productivity
- ***Benefits***
  Helps staff predict future resource needs while accommodating growth; helps substantially reduce maintenance resources dedicated to repairs; improves field technician productivity

LCRA provides electricity, water and wastewater services to more than one million people over 30,000-square miles in Texas.

The Central Texas region experienced significant population growth in the 1990s, creating the demand for more electric power, more water and wastewater facilities and other public services. As a public, nonprofit utility provider, the Lower Colorado River Authority (LCRA) responded to that demand and to additional opportunities provided to it by the Texas Legislature. The challenge was scaling the organization to reliably deliver services to accommodate this growth.

"IBM Maximo software has helped us redefine how we do business. Now we can grow with greater certainty about our future resource needs."

– Brian Urbanek, Business Systems Analyst, LCRA

Building out this infrastructure provided an opportunity for LCRA to track its growing inventory and workforce activities more effectively. Unfortunately, its legacy system wasn't up to the job. LCRA was spending a substantial percentage of its maintenance resources on costly reactive repairs.

"You can't really manage what you can't see and understand," says Brian Urbanek, an LCRA business systems analyst. "With our previous system, it was harder to be aware of the problems, understand their scope and know where they were."

"IBM Maximo software gives us insights that we didn't have before, letting us focus on individual processes and identify possible improvements."

– Brian Urbanek

LCRA decided to switch to an integrated system that was flexible enough to handle the specific requirements for these utility business units, but could scale as LCRA continued to grow throughout Texas. It chose IBM Maximo Asset Management software (formerly MRO Software Maximo Enterprise). Since deploying Maximo software, LCRA has consolidated all of its asset information into one repository, automated its most crucial and time-consuming processes, mobilized its field technicians and substantially reduced corrective maintenance.

These efficiencies have helped LCRA grow more smoothly in a complex market than would have been possible with its legacy systems. LCRA currently provides electricity, water and wastewater services to more than one million people over 30,000-square miles in Texas. It sells wholesale electricity to more than 40 retail utilities, including cities and electric cooperatives that serve customers in 53 counties. It provides needed electric transmission projects through a nonprofit corporation that owns and operates nearly 3,500 miles of transmission lines in Texas. And it provides 3,000 megawatts of generating capacity. LCRA also owns about 16,500 acres of recreational lands with 40 parks, natural science centers and nature preserves.

Automated reporting

LCRA used its legacy systems to manage its various operations for nearly 11 years. During that time, managers could see the overall operating costs, but they couldn't track them over time, which ultimately hindered cost projections and predictive inventory analyses. The system was cumbersome, and made routine equipment maintenance scheduling difficult. If someone needed a specific report, that person had to request the report from management, who directed IT staff to produce the report. This process could take a couple of days, by which time the data could already be out of date.

As part of a program to replace all existing systems, LCRA evaluated Maximo Asset Management software and determined that it could handle the organization's various lines of businesses. To streamline workflow, LCRA integrated Maximo Asset Management software with its PeopleSoft enterprise application software. The Maximo system runs on three dedicated UNIX®-based servers and two database servers.

Now, inventory and maintenance scheduling are linked to accounting and labor costing. For example, if LCRA begins to use a new type of valve for its water treatment facilities, it enters the valve ID number into the PeopleSoft system, which provides accurate accounting of costs matched to the date of purchase and the item number. That information is then sent to Maximo, which tracks the volume of the new valves in stock and when and where they may be used for maintenance jobs.

"Maximo met most of our requirements out of the box; we needed very few modifications," says Urbanek. "It didn't take long before we realized the software was actually a lot more flexible than we thought. It automates key reports and gives us predictive analysis capabilities, enabling us to add more customers while accurately projecting the inventory and maintenance impact."

Maximo software has automated on-the-fly report generation so managers can gain a bird's-eye view of real-time maintenance work, including inventory replaced or fixed, labor hours and the next scheduled maintenance. From this information, managers can track maintenance history and conduct predictive analyses regarding what time and resources will be spent on future maintenance.

Over time, these projections have helped managers better plan for equipment failure and schedule preventive maintenance to reduce equipment breakdowns. "IBM Maximo software gives us insights that we didn't have before, letting us focus on individual processes and identify possible improvements," says Urbanek. "Its powerful functionality opens up business possibilities that let us accurately predict details regarding future resource needs, including head count, costs, inventory, maintenance and other key criteria."

Key Components

Software

- IBM Maximo® Asset Management
- IBM Maximo Mobile Auditor SE
- IBM Maximo Mobile Inventory Manager SE
- IBM Maximo Mobile Work Manager SE

"IBM Maximo Mobile solutions give our crews information when and where they need it. That saves time and helps us operate more efficiently."

– Brian Urbanek

Mobilizing the workforce

LCRA took advantage of IBM Maximo Mobile suite to mobilize nearly 75 crew leaders, technicians and supervisors in the field. Prior to Maximo, employees received a printed work order from the service center that detailed the problem, the location, the suspected cause and the likely tasks to get the job done. The employee would perform the maintenance and then drive back to the office to file a separate report on the actual work completed, with such details as parts used. Then the employee would receive another printed work order for the next job to be done.

LCRA uses IBM Maximo Mobile Work Manager SE to push electronic work order information remotely to an employee's PDA or laptop, so the employee can spend more time performing maintenance, and less time filling out paperwork and filing reports.

IBM Maximo Mobile Inventory Manager SE software lets LCRA personnel manage inventory, spare parts and equipment from almost anywhere, to help ensure field employees have the parts they need to complete their work. IBM Maximo Mobile Auditor SE software replaces the "clipboard approach" to gathering detailed information about equipment, such as transformers, their status and the need for maintenance. Employees can quickly populate fields on their PDAs or laptops so managers have a real-time view of asset location and status.

"IBM Maximo Mobile solutions give our crews information when and where they need it, while providing them with a means of instantly logging the work they've done and the resources they've used—all without having to go back to the office," says Urbanek. "That saves time and helps us operate more efficiently."

A healthy future

With IBM Maximo solutions, LCRA has been able to grow steadily to help meet the demands of a growing region. Aside from providing power to more than one million people in 53 counties, it is the state's largest public provider of renewable energy, with six hydroelectric dams and wind power purchased from West Texas wind farms. LCRA regulates water discharges to manage floods, and releases water for sale to municipal, agricultural and industrial users. LCRA also offers grants and services for local capital projects and nonprofit and government organizations that serve the public and enhance the region's quality of life. "IBM Maximo software has helped us redefine how we do business. Now we can grow with greater certainty about our future resource needs," says Urbanek.

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit our Web site at: **ibm.com**/tivoli

For more information on IBM Maximo solutions visit: *www.mro.com*

You can get even more out of Tivoli software by participating in independently run Tivoli User Groups around the world. Learn about opportunities near you at: **www.tivoli-ug.org**

For more information about the Lower Colorado River Authority, visit: *www.lcra.org*

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METRO Group moves closer to its "Future Store" vision with smart merchandising enabled by RFID.

Overview

- ***Business Challenge***
  To meet rising customer expectations and stay ahead of the competition, METRO Group sought to enrich the shopping experience of its retail customers by providing them with valuable and relevant content – in real time, as they shop.
- ***Solution***
  METRO Group and IBM worked together to create a first-of-a-kind "smart" retail solution that tailors in-store merchandising messages by tracking product movement in real time. This same capability provides METRO Group with real-time business intelligence and the means to optimize its retail processes.
- ***Key Benefits***
  - *More engaging customer experience through detailed product information delivery*
  - *Improvements in inventory and shelf-replenishment management*
  - *Reductions in out-of-stock situations and lost sales through automated replenishment alerts*

Based in Duesseldorf, Germany, METRO Group is the fifth largest retailer in the world, with some 290,000 employees working at over 2,100 outlets in 32 countries in Europe, Africa and Asia. Its brands include Metro Cash & Carry, Real, Media Markt, Saturn and Galeria Kaufhof (pictured above).

To be successful over the long term, retailers have to do a lot of things right, and do so consistently. It means having not only the right mix of products, but a retail experience that is compelling and satisfying enough to keep customers coming back. While creative and effective merchandising is essential to achieving this, it's just as important for retailers to meet a more basic requirement – that when a customer wants a product, it will be on the shelves and not out of stock. This last point underscores how important it is for retailers to seamlessly align their downstream retail operations – the parts of the business that customers see – with their upstream supply chain operations.

> *"Our use of RFID is improving our operational effectiveness as well as the shopping experience of our customers. Our relationship with IBM has been a strategic component of our RFID programs and one of the biggest factors in our success."*
>
> – Dr. Gerd Wolfram, managing director, MGI METRO Group Information Technology

Business Benefits

- More engaging customer experience through personalized product information delivery
- Reductions in out-of-stock situations and lost sales through automated replenishment alerts
- Increased revenue through improved cross-selling capabilities
- Reduced inventory and logistics costs
- Improved sales associate productivity
- Ability to perform instantaneous inventory counts
- Significant expected reductions in logistical errors related to parts shipments

"Our success depends on our gaining the trust of the customer at every stage of the retail interaction. This means making sure we have the products our customers want and a retail shopping experience that rewards and builds on that trust."

– Dr. Gerd Wolfram

The fact that it's always in motion due to constantly changing products, customer preferences and purchasing patterns, to name just a few, makes it even more of a challenge.

Another constant in retail is the steady upward trajectory of customer expectations, specifically around how technology can be used to improve and enrich the shopping experience. For a long time, rising retail expectations were focused on the quality and convenience of the online shopping experience. Retailers responded first by effectively emulating their brick-and-mortar experience online, and then moving beyond it by providing a richer array of information and services to supplement the online experience, ranging from detailed product information to user-generated content. Now there comes a new chapter in the technological evolution of retail.

Great expectations

Recognizing how much consumers have come to expect easy access to information in every sphere of their lives, one of the major international retailers – METRO Group (www.metrogroup.de) based in Duesseldorf, Germany – is pioneering the use of RFID. The crux of METRO Group's project is the use of RFID to automatically deliver the most relevant information to customers at different points of the purchase process, thereby making the customer experience more efficient, memorable and satisfying.

While METRO Group's importation of advanced technology into physical retail breaks new ground in the industry, the initiative actually builds on a number of first-of-a-kind projects employing intelligent RFID, albeit in a different part of the company's operations along the entire supply chain. It began in 2002, when METRO Group started working with a number of technology partners to lay the groundwork for next-generation retail processes, an effort that came to be known as the METRO Group Future Store Initiative. The first phase of the initiative culminated in the deployment of Europe's largest supply chain RFID solution. Designed and deployed with IBM and powered by IBM software, the solution enables the METRO Group to track shipments from its suppliers to its warehouses and distribution centers and then on to its outlets in Europe.

When METRO Group decided it wanted to extend the Future Store Initiative more deeply into its in-store retail operations, it again turned to IBM. As conceived by METRO Group, the project would focus on the company's Galeria Kaufhof department stores, a chain of more than 140 stores in Germany and Belgium focused primarily on fashion items. While the project would have a significant supply chain angle, its distinct emphasis was on weaving RFID deeply into the fabric of the customer's in-store experience.

Working closely with Kaufhof personnel, IBM Global Business Services conducted a detailed process assessment – covering everything from back-room operations and merchandising to shelf-replenishment and floor sales practices – and from that, designed a first-of-a-kind RFID solution that was implemented on a pilot basis in the men's department of a Kaufhof store in Essen. Working with a series of technology partners, IBM led the implementation of the RFID infrastructure.

RFID a good fit

The source of the solution's intelligence is the ability to detect the movement of products within the store via RFID, and then use that data to invoke and display information. This movement, in turn, corresponds to (and is driven by) specific actions on the part of the customer, such as removing an item from the shelves and bringing it into a dressing room. To enable this, each of the roughly 30,000 articles in the men's wear department in the pilot have an additional RFID tag, while RFID readers are placed at strategic spots throughout the store. On the shop floor, intelligence comes into play, when RFID readers embedded within "smart shelves" detect and record each time an item is removed from the shelf so that the data can be analyzed for patterns later. It's in the next stage – when the customer takes the item to try on in a reader-equipped smart dressing room – that the system's intelligence is manifested in a richer customer experience through showing additional product information and cross-selling ideas on a touch screen.

Once the product enters the premises, the system recognizes it and records it as a transactional event in METRO Group's merchandise information systems, where the IBM RFID tracking solution (implemented by IBM Global Business Services and the first to use the new global EPC Information Services, or EPCIS, standard) serves as a repository for all information. Leveraging underlying business logic, the system is then able to look up content associated with the product and display it to the customer in the form of suggestions ("Other products that would go well with that shirt include...") and information on other available sizes and colors for the product. This same type of automated assistance is also provided by an RFID reader-equipped "magic mirror." In the event a customer wants to retrieve a complementary product, or a different color or size, the system informs the customer whether it is in stock and where it is on the shelves or in the back room. Overall, the solution demonstrates how the "right" information can be used to create a more convenient and satisfying shopping experience.

Solution Components

Software

- IBM WebSphere® Application Server
- IBM WebSphere MQ

Services

- IBM Global Business Services

Smart solutions for retail

Incorporating RFID into its in-store retail operations, METRO Group broke new ground by enabling "smart" merchandising practices that provide a more customized and engaging customer experience. The solution's real-time sensing and reporting capability enables a quantum improvement in retail process efficiency, while providing METRO Group with the valuable insights into consumer trends it needs to optimize its product mix and increase its revenues.

By bringing RFID-based business intelligence into the physical retail environment and making it transparent, METRO Group is also dramatically improving the effectiveness of its decision making and processes. On an operational level, the system's dashboard-based reporting capability gives store managers a real-time window into on-site inventory and provides automated out-of-stock alerts, thus ensuring that the most popular products are always available to customers and lost sales are minimized. Dashboard analytics can also alert managers to potential product abnormalities or problems by flagging patterns, such as a product that is frequently taken from the shelf and/or tried on but not purchased. Over the longer term, METRO Group can also harvest the business intelligence generated by the solution to gain insights into customer buying trends to ensure that it stocks the right products on its shelves. This helps METRO Group to not only maximize the revenue efficiency of its merchandising strategies, but also improve the accuracy of inventory counts, minimize inventory carrying costs and reduce the logistics costs of returning unsold products to suppliers.

Smart means efficient

With cost control a concern for all retailers, the solution's positive impact on process efficiency further strengthens METRO Group's business case for smart retail. It starts at the loading dock door, where RFID readers provide workers with detailed information about goods received from the warehouse, thus minimizing the need to physically inspect boxes and significantly reducing the cost and time of the receiving process. On the retail floor, the ability to track down products on the shelves or in inventory means employees can spend less time searching and more time helping – and selling to – customers. By combining smart tools for sales associates with the cross-selling benefit of smart dressing rooms, METRO Group is putting in place a strong foundation for faster revenue growth, increased customer satisfaction and stronger customer loyalty.

Dr. Gerd Wolfram, managing director of MGI METRO Group Information Technology, sees the Galeria Kaufhof project – which was one of the first to use the new EPCIS RFID standard that METRO Group helped develop – as clear evidence of the benefit of smart technology in all aspects of retail. "Our use of RFID is improving our operational effectiveness as well as the shopping experience of our customers," says Dr. Wolfram. "Our relationship with IBM has been a strategic component of our RFID programs and one of the biggest factors in our success."

For more information

To learn more about how IBM can help transform your business, please contact your IBM sales representative or IBM Business Partner.

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IBM SAP International Competence Center

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Metro shows how IBM external storage can provide an enterprise-wide high availability solution for SAP software environments

"The services performed by IBM have been outstanding. For example, the recent installation of the IBM Copy Services Tool kit was a great success, and significantly reduced our switchover times. The developers were very open to making changes that would further simplify our operations. It is this level of support that makes it clear that IBM is a true partner."

Michel Saindon
Team Leader Centralized Systems
Metro Inc.

Metro shows how IBM external storage can provide an enterprise-wide high availability solution for SAP software environments

About this paper

This technical brief describes the project to migrate Metro's SAP R/3 Enterprise system onto IBM external storage. This brief provides a technical overview of system sizing and layout, project planning and realization of an enterprise wide storage solution, providing Metro with a flexible, scalable, and cost-effective solution.

Customer Objectives

- Enable the entire enterprise's heterogeneous environment (or any subset of it) to be switched over to systems at the disaster recovery site in less than 60 minutes in the event of a disaster or a planned outage
- Decrease the technical support requirements caused by having different replication tools in each of the company's IT environments (IBM i5/OS, IBM AIX, IBM z/OS and Microsoft Windows)
- Eliminate delays in data synchronization
- Shorten the time and decrease the risk of implementing new projects by leveraging the ability to deploy large amounts of storage whenever and wherever required
- Maximize the utilization of storage across the enterprise
- Eliminate the need to make numerous separate business cases for storage acquisition, and diminish the risk of inaccuracy in predicting requirements for each of the different environments.

IBM Solution

- Introduce a dual-site solution (10 km apart) based on two IBM System Storage DS8300 and two IBM ESS800 disk storage systems
- Use Independent Auxiliary Storage Pools (IASP) together with i5/OS cluster services to enable the IASP switchability required for this solution
- Mirror the storage systems using IBM Metro Mirror (formerly Peer-to-Peer Remote Copy), and use IBM FlashCopy for high speed back-up in the z/OS environment
- Leverage the Fiber Channel load-source and multipath I/O capabilities of the IBM System i5 servers
- Deploy IBM Director for server management and the IBM Copy services tool kit for additional control of the storage environment.

Customer Benefits

- Time required to transfer operations to the disaster site has been reduced by two thirds
- Highly flexible environment enables data to be moved rapidly to wherever it is needed
- New business projects can be implemented quickly, and tested on full copies of production data when required
- Synchronization problems have been eliminated
- When questions or issues arise, there is only one IT vendor to deal with
- Storage costs have been reduced and utilization rates improved
- Highly scalable solution can easily support the organization as it grows and takes on new business ventures
- Only one business case needs to be made each year for storage across the entire enterprise.

Background, starting point and objectives

Boasting more than 55 years of experience in the food industry, Metro Inc. operates a network of more than 550 food stores and 250 pharmacies under a variety of banners. The majority of stores are found in the Canadian provinces of Quebec and Ontario. With so many stores to manage, the corporation maintains a staff of 65,000 employees, providing quality service to its customers.

In August 2005, Metro Inc. acquired A&P Stores of Canada. Metro Inc. needed an infrastructure that would enable it to easily integrate A&P Store into its existing IT environment.

The company needed to be able to set up new IT environments rapidly. To reduce the risk involved, Metro needed a way to test these new systems using full copies of production data. This would require a storage environment flexible enough to move large quantities of data to and from different storage systems rapidly, without the need for manual intervention by technical staff.

Metro's IT environment is based around ERP software from SAP, running in a two-tier environment on IBM System i servers. In addition to the SAP software landscape, the company also runs numerous business-critical applications on a heterogeneous server landscape, consisting of several Intel-based Microsoft Windows servers, as well as IBM System z and AIX partitions. The loss of any one of these business critical applications would lead to severe disruption to the business. The ability to switch over any combination of servers to the backup site as quickly as possible is critical to ensure business continuity at Metro.

The SAP software landscape was originally hosted on servers with dedicated, internal disks; data for the other applications was also stored in a variety of different systems. The heterogeneous server landscape meant that every different type of server required a different technology in order to be switched to a back-up site, which significantly increased the risk of performing a switch-over, and required significantly more technical support on an ongoing basis. In addition, the company's data replication software was experiencing synchronization issues due to high transaction volumes.

Without storage consolidation, accurate prediction of the storage growth for each of the servers was difficult, and a business case was required to justify the storage demand for each individual server.

These limitations and heavy technical support requirements led to a new set of requirements:

- High Availability must be ensured
- The switch-over scenario had to be based on only one technology
- Prediction of storage growth needed to be simplified .

Sizing the infrastructure solution

Metro needs its business-critical applications to be able to support near-24x7 operations. The company's goal was to reduce the switch-over time to less than 60 minutes in case of a disaster, and to resolve the synchronization issues. Before introducing IBM System Storage technologies, Metro was using internal disks on its System i server, with third-party software application for data replication.

As most of Metro's key applications were running on System i, it was important to develop a solution that would take advantage of the company's strong System i technical skills. To identify and deploy the best possible solution, Metro worked very closely with IBM, leveraging their visits to the IBM Rochester lab during the Large User Group (LUG) meetings.

Metro evaluated a number of external storage products from both IBM and its competitors. The decision to choose IBM external storage was based on price, superior data replication capabilities, and the availability of System i technical support. In addition, the ability to work with a single vendor when workloads need to be switched would minimize the risk of compatibility and support problems and reduce the time taken to determine the causes of any problem.

At the time of implementation, Metro Inc. had 1,500 named SAP software users, with a peak of 500 concurrent users for the sales and distribution, financial accounting, cost controlling and plant maintenance functionalities within the SAP ERP application and the SAP NetWeaver Business Intelligence component of SAP NetWeaver 7.0.

Move from internal to external drives needed careful planning

The IBM System i and System Storage teams worked closely together with Metro. The IBM internal "Disk Magic" sizing tool was used in order to determine the best hardware configuration. Several models were built, taking into account the different I/O characteristics of the day-time and night-time batch run workloads.

Following the disk magic sessions, Metro set out to decrease the number of I/Os in their System i environment. In order to minimize the investment in external storage. Metro attended the IBM "DB2 for i5/OS performance workshop", and was subsequently able to decrease the number of I/Os by 50 percent within approximately three months, through the creation of indexes tailored to business needs.

Metro went to the IBM Rochester Benchmark Center in order to carefully size the system auxiliary storage pool (system ASP) in preparation for the move to IASP.

The project originally began with the IBM ESS800 and the I/O workload was gradually moved, making it easier to compare the performance of the external and internal drives. The production work was not fully moved to the IBM ESS800 because of performance concerns. The newly announced DS8300 was then installed, and finally all the production workload was moved to IBM external drives (with the exception of the system ASP, as there was no need to move it at this time).

As an early adopter of IASP for the SAP software environment, it was important for Metro to have SAP BASIS skills on site. IBM Global Business Service provided a basis consultant, and the SAP on System i teams from both IBM and SAP were also involved. The redbook "IBM eServer iSeries Independent ASPs: A guide to moving Applications to IASPs" (IBM document SG24-6802-00), includes a chapter on moving SAP to IASP and was used as reference material.

IBM DS8000 Storage Server as primary data host

Metro's SAP software environment consists of two System i 595 servers (0954-5891), running i5/OS V5R4 with dynamic logical partitioning (DLPAR) and uncapped processors. Each i595 system is connected to a DS8300 and/or the ESS800, with 27TB of data stored at the production site and 39 TB at the backup/ development site.

Metro and IBM developed a mirroring solution, utilizing IBM Metro Mirror functionality to provide a synchronous mirror. The IBM System Storage DS8000 and ESS storage servers are designed to provide high availability, with no single point-of-failure. Metro Mirror is able to utilize more than one physical link for data replication and mirroring, ensuring minimal latency and rapid data synchronization after a fail-back of the IT center.

System design

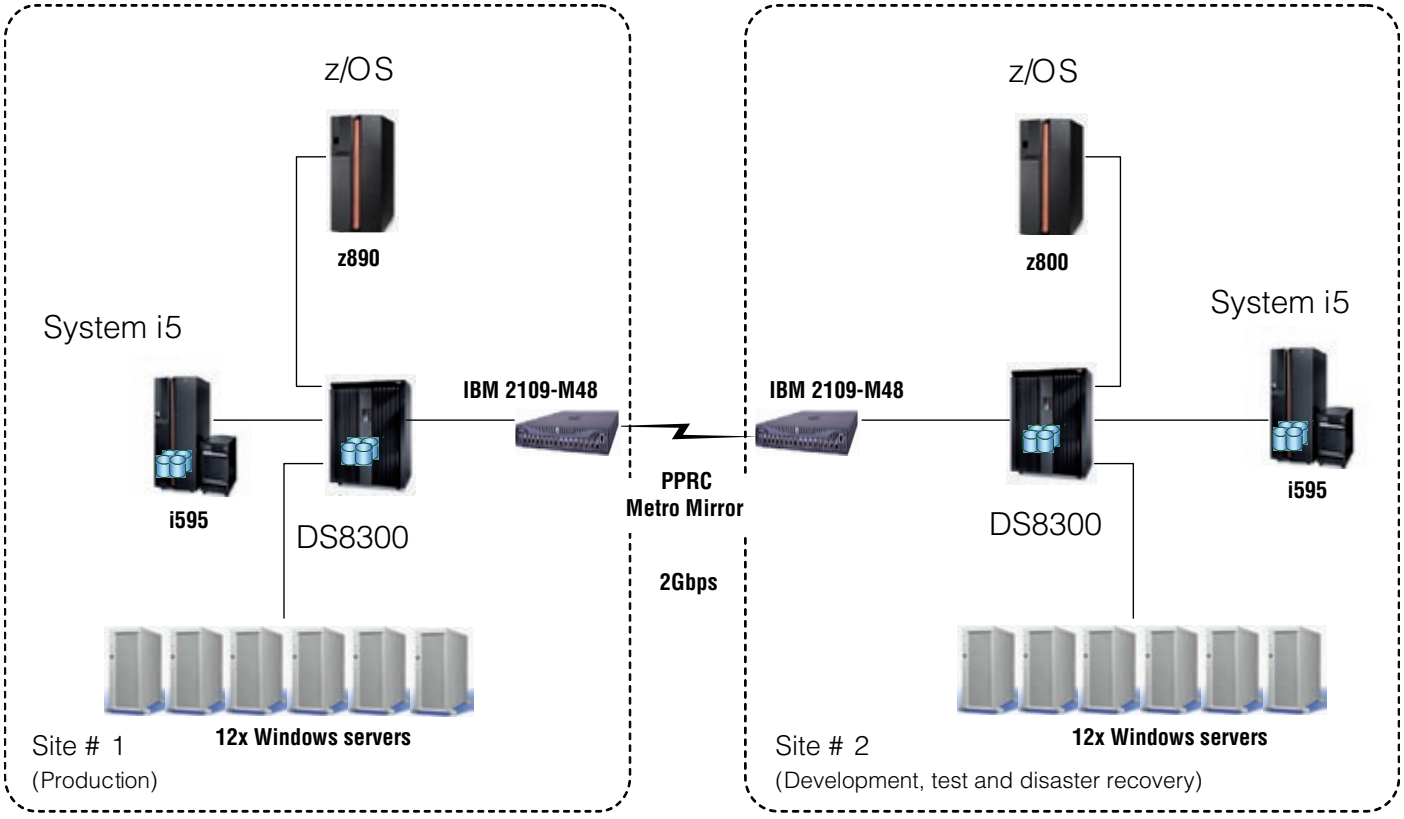
Each i595 is a 32-way system, sharing the workload between them. The following list describes the installed applications:

Applications running under i5/OS:

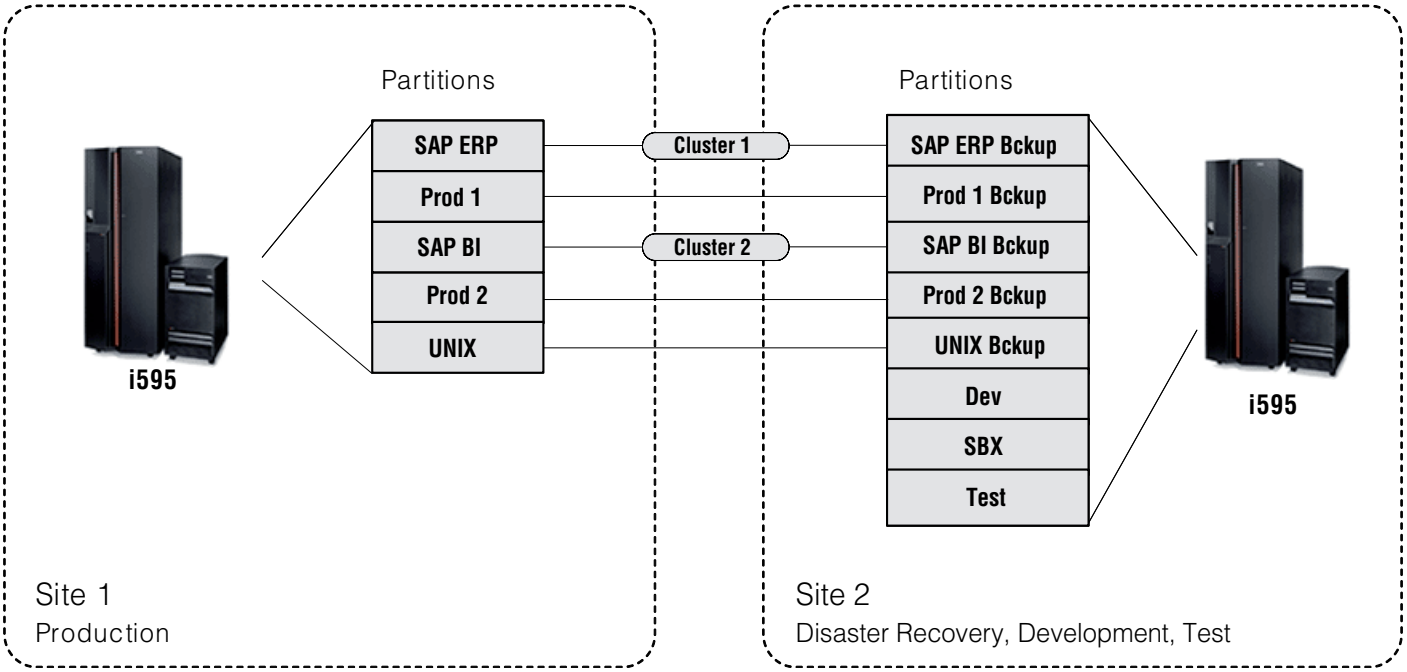
- SAP R/3 Enterprise
- SAP NetWeaver BI
- IBM WebSphere Business Integration
- IBM WebSphere MQSeries
- IBM Content Manager OnDemand
- Trusted Link (EDI)
- Showcase
- Legacy Applications

Applications running under AIX 5L 5.3:

- Control/M - Job scheduler
- Tivoli Storage Manager 5.4
- Several internal A&P applications



Consolidated hardware topology, with two-site disaster recovery solution. IBM ESS800 remains installed and carries some workload. The graphic provides a high-level view of the final topology implemented at Metro. The two sites (which are 10km apart) are connected by a 2Gb per second fiber channel connection.



The partitioning graphic shows a logical view of the different partitions that make up the SAP landscape. The SAP ERP and SAP NetWeaver BI systems are configured as clusters.

Independent Auxiliary Storage (IASP) pools

Key to this solution is the use of Independent Auxiliary Storage (IASP) pools. IASPs are a type of user ASP, numbered 33 through 255. IASPs are different from basic ASPs in several ways. Independent ASPs can be used on a single system or switched between multiple systems or LPARs when the IASP is associated with a switchable hardware group.

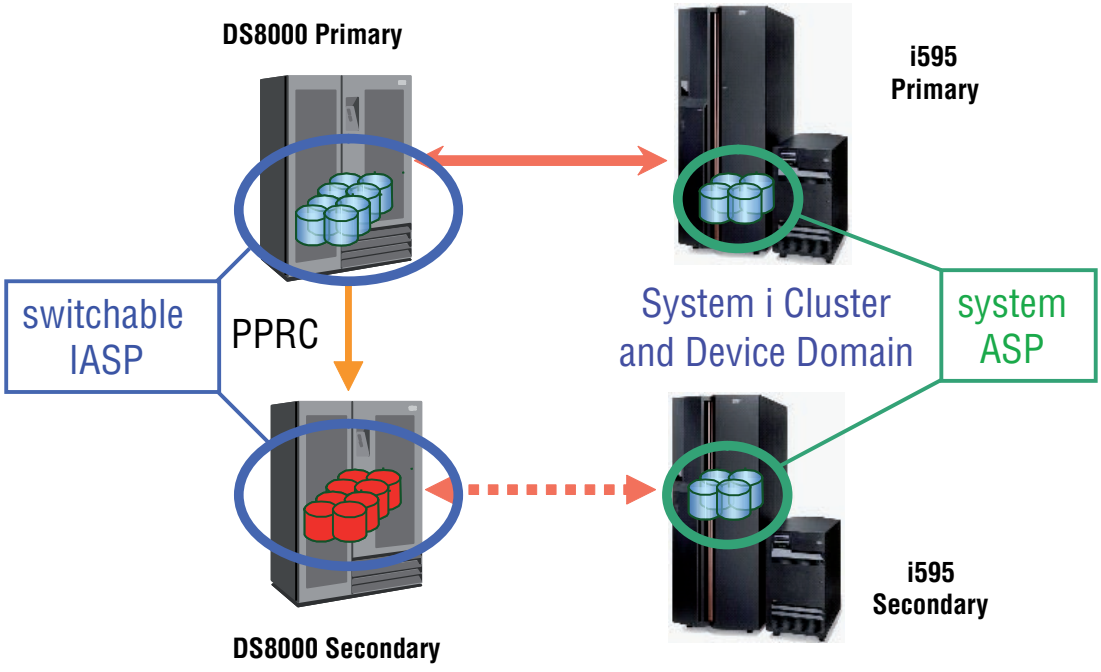
When used on a single system, the IASP can be dynamically varied on or off without restarting the system. In iSeries Navigator, the IASP and its contents can be dynamically made available or unavailable to the system.

When used across multiple systems, clustering support is required between the systems, and the cluster management GUI in iSeries Navigator is used to switch the IASP across systems in the cluster. This is referred to as a switchable IASP. At any given time, the IASP can be used by only one of those systems.

Multiple systems cannot use the IASP simultaneously. IASPs also differ from basic ASPs because they are identified by a device name on the System i5 platform. This device can be varied on or off to make it available or unavailable. This can be done without a system IPL, which saves a lot of time and increases the flexibility offered by ASPs. (Reference Redbook "IBM System Storage Copy Services and System i5", IBM document SG24-7103-01)

Here is an example of how the switch between the IASP environments is performed:

- Stop the SAP applications that are running at the primary site
- Vary-off the IASP
- Failover the PPRC (Metro Mirror)
- Transfer IP (virtual private network)
- Vary-on the IASP at the remote site
- Reverse the PPRC (Metro Mirror) relationship, so that secondary becomes primary and vice versa
- Start the SAP applications at the secondary site.



PPRC: Peer to Peer Remote Copy: Standard definition of data replication, here synchronously mirroring using IBM Metro Mirror.

Project results

The combination of System i, external storage and SAP software has enabled Metro to develop a highly scalable IT architecture, facilitating the support of business growth and offering an enterprise-wide solution to the company's availability requirements:

- With the new infrastructure Metro is able to perform a switch-over in less than 60 minutes. IBM Copy services tool kit was key in obtaining this goal.
- By using IBM Metro Mirror for data replication, Metro has been able to eliminate the need for third-party data replication software, reducing licensing costs and reducing complexity.
- With internal disk storage it was difficult to perform tests on full copies of production data. With a centralized storage environment, storage can be assigned to any server in a very flexible way.
- With a consolidated storage environment, Metro is able to predict storage growth more accurately, ensuring that the right amount of hardware is always available to meet the demands of the business.
- The move to IBM external storage has delivered equal or better performance for end-users in the heterogeneous server environment.
- Technical staff supporting this environment only need to be trained on one type of storage hardware and one type of data replication. This saves time for education and minimizes the risk during fail-over.

Metro's future plans

Metro intends to further improve on their current availability and to minimize the current maintenance windows.

In June 2007, Metro asked the IBM Optimum Care program to perform an "Availability Assessment." This IBM service led to several IBM recommendations that are currently being implemented, and that will position Metro to accomplish its future plans.

For more information:

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Nationwide Insurance: Using virtualization as a foundation for innovation

Overview

- ***Business Challenge***
  Faced with the need to build a new, multimillion-dollar data center to cope with server proliferation and seeking to streamline application development and daily operations overall, Nationwide Insurance instead made a strategic decision to move to a flexible, virtualized IT environment.
- ***Solution***
  Nationwide deployed two IBM System z™ mainframes running Linux.® The solution is a cornerstone of Nationwide's strategy of moving all new development to virtualization and J2EE as a means of "future-proofing" its IT environment.
- ***Key Benefits***
  - *US$15 million cost savings anticipated over three years*
  - *85-90 percent server utilization*
  - *80 percent reduction in environmental costs*
  - *Web hosting costs lowered by 50 percent*

The server proliferation issue

Most large corporations face the problem of server proliferation. With the servers in use at a major company typically numbering in the thousands, costs related to purchase and support can be very high, especially in an era of rising energy costs and increasing IT usage related to new applications and services.

Nationwide Insurance, a Fortune 500 company and one of the United States' leading underwriters, is no different. Like other large insurance companies, Nationwide has a mixed IT environment that includes both traditional, mission-critical mainframe-based applications and enterprise applications running on distributed servers.

> *"The ability to flexibly add capacity wherever we need it changes the whole mindset of the developers. It promotes out-of-the-box thinking, because the risk cost is so low. What virtualization really gives us is a strong foundation for innovation."*
>
> – Buzz Woeckener, manager of Linux, Nationwide

Business Benefits

- Provides anticipated cost savings of US$15 million over three years
- Enables server utilization of 85-90 percent
- Reduces environmental costs by 80 percent
- Lowers Web hosting costs by 50 percent
- Leverages investments by using development/testing hardware for business continuity
- Promotes cost savings through reduced licensing fees and avoidance of investment in new facilities and additional equipment
- Simplifies and speeds server provisioning, enabling developers to try out new ideas quickly and with very little risk, thereby fostering innovation

"Rapid provisioning lets us try things that we'd never have considered attempting before."

– Buzz Woeckener

This mixed environment comes from the nature of Nationwide's business. From an IT standpoint, the insurance industry requires high-speed transaction processing to handle the tremendous amount of activity, such as policy verification and claims handling, associated with serving millions of policyholders around the clock. This kind of workload is best done by mainframes. Other kinds of workloads, such as enterprise applications or Web servers, do not warrant the use of a mainframe, and so are normally deployed on smaller, distributed servers. As the business grows, however, the number and variety of these smaller servers begins to increase, until it becomes unsustainable.

"We were facing the same problems that any company our size has to deal with," says Buzz Woeckener, manager of Linux for Nationwide. "We were running out of floor space, cooling and electricity, and our servers were drastically underutilized."

There were productivity issues as well. Server provisioning – the activity of allocating capacity to a new task – took anywhere from weeks to months, which was stifling application development. "It simply wasn't worth the risk to try out new ideas most of the time," Woeckener says. "The costs, should a given project not pan out, were too high."

Changing course to save money

In 2005, it became evident that unless a new direction was taken, Nationwide would have to update the power and cooling at its Tier 4 data center and possibly build a new data center at a cost of millions of dollars to accommodate growth. To avoid this expenditure and to address the underlying proliferation issue, Nationwide made a major strategic decision: to deploy a virtualized infrastructure.

The new environment is based on IBM System z mainframes and key technologies including IBM z/VM® virtualization software, IBM WebSphere® middleware and IBM DB2® database, which Nationwide analysis had shown could deliver a much faster, and much greater, ROI than other platforms due to its inherent cost of ownership savings. These savings, according to Woeckener, come in large part from reduced licensing fees. In a situation like Nationwide's, where there are thousands of servers in use, the cost of software licensing is considerable. But because of the way license fees are calculated – by processor – a solution that can employ a few very powerful processors to replace many individual servers can result in significant license fee savings.

"The software and maintenance costs add up to millions. And, of course, there are all the ancillary cost savings as well…floor space, cabling, switches, network administrators…it all adds up," Woeckener notes.

Virtualization provides a significant performance boost for Nationwide's overall IT environment, which translates into reduced response times and greater productivity. The consolidated servers run a version of Linux compiled to run on IBM System z. Combined with z/VM virtualization, this eliminates the physical separation of Linux servers and enables resource sharing. With a distributed infrastructure, enterprise and line-of-business applications on standalone servers interact with the mainframe via a conventional network infrastructure. But with Linux on z/VM, the virtualized servers are able to use the fast I/O of the mainframe directly, while at the same time taking advantage of the traditional mainframe strengths of reliability and high availability.

In addition to moving to Linux for new applications, Nationwide has also strategically decided on the use of the industry-standard Java 2 Enterprise Edition (J2EE) environment for all future application development, which is seen as a good way to ensure future extensibility and development of applications.

By consolidating workloads onto its virtualized infrastructure, Nationwide has replaced hundreds of standalone servers running various applications under several different operating systems, and also avoided having to purchase hundreds of new servers to handle growth. "Our virtualized environment is configured to handle the most important applications, but we still have a distributed infrastructure," says Woeckener. "We've consolidated servers where it made sense to do so, but with a business like ours you're never going to completely replace all of the distributed servers."

The two System z mainframes that run the virtualized environment are located at two separate data centers. One of the mainframes runs the production environment consisting of enterprise, line-of-business and Web applications, and the other is devoted to application development and testing. The second mainframe also doubles as a disaster recovery resource. Data is replicated between the two sites on a 30-second delay. In this way, the investment in hardware is leveraged to provide business continuity with no additional outlay.

Key Components

Software

- IBM WebSphere Application Server
- IBM DB2
- IBM z/VM
- Linux

Hardware

- IBM System z

Why it matters

A fully virtualized Linux environment running on IBM System z has saved Nationwide Insurance millions of dollars by eliminating hundreds of servers and avoiding the need to build a new data center, while at the same time providing performance increases. More importantly, the new environment has made the development of new applications far less risky through the rapid, low-cost and efficient provisioning of server capacity. This enables Nationwide developers to try new ideas that would otherwise not have been attempted, fostering innovation and out-of-the-box thinking.

The combination of cost savings and performance increases made virtualization on System z the best choice for Nationwide's needs, according to Woeckener. "We anticipate saving approximately US$15 million over three years," he says. "We're seeing dramatic improvements across the board. An 80 percent reduction in environmental costs including power, cooling and floor space; hardware and OS support efforts cut in half; Web hosting monthly costs also cut in half through capacity optimization and overall server utilization running at 85 to 90 percent."

Rapid provisioning changes the mindset of developers

While the initial reason to deploy a virtualized environment was related to money, the new IT architecture's flexibility has provided a significant added benefit. It gives Nationwide's application developers much greater freedom thanks to the ease with which computing capacity can be allocated, or provisioned, to new workloads. This enables them to bring new services to market more quickly, which in turn drives competitive advantage.

With a distributed infrastructure, provisioning a new project can take days, weeks or even months. Equipment must be retasked, or new equipment purchased. As a result, the costs involved in testing new ideas can be prohibitive, which tends to stifle development.

"With the virtualized infrastructure," Woeckener says, "we can provision servers literally in minutes. That gives us the benefits related to rapid scalability that you might expect. For example, we premiered a high-profile ad during the Super Bowl last year, and we knew it would result in a usage spike on our Web portal. So we temporarily added capacity to the Web servers to handle it, very simply and easily."

It's the indirect benefit, however, that Woeckener highlights. "Rapid provisioning lets us try things that we'd never have considered attempting before. If something doesn't work out, well, no problem…we just take the capacity back and use it for something else, right away. The ability to flexibly add capacity wherever we need it changes the whole mindset of the developers. It promotes out-of-the-box thinking, because the risk cost is so low. What virtualization really gives us is a strong foundation for innovation."

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NC State makes a breakthrough in improving access to academic computing resources.

Overview

- ***Business Challenge***
  Growing demand for academic computing resources at NC State made it increasingly difficult to deliver the service level that its key user populations – students, instructors, researchers and administrators – required. NC State needed to fundamentally change the way it managed these resources.
- ***Solution***
  In collaboration with IBM, NC State looked to the domain of high-performance computing to create a new "cloud computing" model for provisioning technology that offers a quantum improvement in access, efficiency and convenience over the traditional computer labs it had relied on.
- ***Key Benefits***
  - *Projected savings in software licensing costs of up to 75 percent*
  - *150 percent increase in students served per application license*
  - *Increased flexibility to shift computing capacity between instructional, research and administrative needs*
  - *Ability to meet significant growth in enrollment without building additional computer labs*

Based in Raleigh, NC, North Carolina State University is a comprehensive university known for its leadership in education and research, and globally recognized for its science, technology, engineering and mathematics leadership. NC State has more than 31,000 students and nearly 8,000 faculty and staff.

As a look into virtually any college or university will tell you, academic computing has grown steadily more integral to the way institutions of higher education fulfill their multi-faceted missions. While the ubiquity of personal technology devices on campus may be its most familiar sign, the effect of this trend on the overall educational experience runs deep and broad. In the classroom, it is basically reshaping the way instructors and students interact, while giving students greater exposure to the technology tools they will be dependent on in the "real" world.

> *"Our goal was to rethink the way we met the academic computing needs of students, instructors and the other populations we serve. By collaborating with IBM, we are now better able to deliver on that mission."*
>
> – Mladen Vouk, head of the Department of Computer Science, North Carolina State University

Business Benefits

- Projected savings in software licensing costs of up to 75 percent
- 150 percent increase in students served per application license
- Higher student satisfaction through more convenient access
- Improved access to most recent software releases for instructors
- Increased flexibility to shift computing capacity between instructional, research and administrative needs
- Ability to meet significant growth in enrollment without building additional computer labs
- Overall improvement in server utilization levels

The infusion of technology is also raising the bar for academics to find more innovative ways to engage students, while at the same time providing them with a growing pool of computational power to push the boundaries of academic research. Perhaps most importantly, the growth of academic computing is helping colleges and universities meet what is arguably their paramount goal of improving access.

But as technology has become more pervasive on campuses – and enrollment continues to grow – institutions striving to keep pace with ever-growing resource requirements are coming under increasing strain. The need for increased raw computing capacity to support a continually growing user base is just one dimension of this. The bigger and more complex challenge for schools is to provide a level of service that meets the diverse needs of their "customers," the students, instructors, researchers and administrators whose everyday lives have become deeply dependent on technology. North Carolina State University (www.ncsu.edu) is one institution that – with the help of the IBM Research Triangle Park Center for Advanced Studies (CAS) – took a decidedly unique approach in addressing this challenge. As with most universities, NC State's campus-based computer labs represent an important conduit through which its students access (and instructors deliver) curriculum-related applications, especially those that are more costly or require intensive processing, such as engineering programs. When a new application or release comes out, instructors typically approach the IT organization with a request to update the back-end system, where applications are embedded into a series of application clusters or "images" – each of which are accessed by specific classes in specific labs.

> *"Deploying a new software application in our student labs on a timely basis had become a major challenge due to the sheer volume of software utilized in our engineering programs. A more scalable approach was clearly needed."*
>
> – Thomas K. Miller III, vice provost for Distance Education and Learning-Technology Applications, North Carolina State University

Hampered by complexity

For NC State, it became increasingly difficult to fulfill these requests. The reason was complexity. For NC State's IT staff, one of the biggest challenges to preparing an image was in making sure all the applications within it interacted smoothly. Because it took so long to perform the necessary integration and testing, IT was forced to impose a deadline on the porting of new applications months before classes were due to start. As a result, instructors wishing to add the latest applications or releases had to wait as long as a year to get them in the hands of students. To fill that gap, NC State envisioned a more flexible, user-driven provisioning framework that would enable fundamental change – in the way the university's internal customers access academic computing resources and, more broadly, in the way these resources are managed. While its physical computer labs would continue to play a key function, NC State sought to move beyond them for the benefit of all key university stakeholders.

In moving from conception to design, NC State established two basic requirements. The first was a modular yet integrated pool of computing resources; the second was a platform to efficiently and centrally manage it. The university chose to deploy the IBM BladeCenter® platform in various places across the university to run high-performance computing applications. While the BladeCenter's native management capabilities for functions like remote deployment provided a solid foundation, NC State's proposed solution would also require advanced scheduling capabilities to enable automated provisioning.

To address this need, NC State worked with local IBM BladeCenter development and CAS, the latter an outreach organization within IBM designed to foster information exchange with university researchers. As an outgrowth of this collaboration, NC State decided to employ an IBM open-source management tool known as Extreme Cluster Administration Toolkit (xCAT) – which had been used principally for workload scheduling in high-performance computing environments – and import that functionality into an academic computing environment. Using these building blocks, NC State built a first-of-a-kind provisioning and scheduling system – known as the Virtual Computing Lab (http://vcl.ncsu.edu/) – that has completely redefined the way students, faculty and researchers interact with NC State's IT resources, and has enabled the university to reach a new level of resource optimization. Distinct from a grid computing solution, and operational now for almost five years, VCL was, in effect, the first true "cloud computing" solution developed for education – long before the term became popularized.

In designing VCL, NC State put a premium on simplicity and convenience, qualities that are perhaps most evident at the user interface level. Perhaps the most basic difference is that users can access VCL from anywhere they want, enabling them to trade the inconvenience of a late night at the lab for the convenience of their own dorm room, office or home. Based on their access privileges, users can select a granular application image (consisting of the operating system and a suite of applications) either for current use or future use, at a set time and for a set duration. Instructors can create block reservations for an entire class, reserve clusters of servers and even add new applications – all without the assistance of NC State's IT staff. Some of VCL's most noteworthy properties are enabled by the system's intelligent provisioning architecture, which automatically allocates blade computing capacity in accordance with each user's needs. Once a scheduled session is over, that user's "virtual space" – which had been running on one or more blades – is wiped clean, enabling the blades to be put back in the resource pool, where they can be re-provisioned by other users as needed.

Solution Components

Software

- IBM Extreme Cluster Administration Toolkit (xCAT)

Servers

- IBM BladeCenter

Services

- IBM Research Triangle Park Center for Advanced Studies (Raleigh, NC)

Smarter Education

With demand for academic computing resources skyrocketing, NC State took a flexible and intelligent provisioning system originally developed for high-performance computing and adapted it to meet the university's broader technology needs. By introducing virtualization into academic computing, NC State has changed its basic formula for managing its resources, enabling it to deliver more resource support across the university at lower cost.

While its decision to fundamentally change application provisioning was driven by the need for better service, NC State also saw the benefits of such a change spilling into other critical areas. For instance, under its more fixed, location-based application model, NC State was essentially forced to "over-provision" to ensure that a certain number of lab-based machines were equipped to deliver specific applications. With its new self-provisioning model, NC State can now follow a more efficient licensing strategy based on real utilization, reducing its future licensing costs by up to 75 percent. What's more, the model's greater flexibility of access has enabled the university to increase the average number of students served per license by more than 150 percent. The net result – fewer application licenses serving more students at a lower cost – epitomizes resource optimization through flexibility.

University-wide benefits

NC State's intelligent provisioning system also improves its ability to flexibly allocate resources between instructional, administrative and research activities, each of which has its own peaks and valleys of resource requirements. A key example is the near complete drop-off of student computing activity that is typical during breaks between semesters. The new system gives NC State the ability to quickly and easily switch the bulk of its roughly 1,000 IBM BladeCenter server blades to the computationally intense requirements of researchers – such as running complex models and simulations – and in the process leveraging what would have been idle server capacity to advance the goals of the university's researchers. The same capability would enable NC State to shift capacity to administrative functions like class registration that produce a surge in processing activity before each academic semester.

All of these benefits point to how intelligent provisioning and similar "cloud" initiatives effect the more granular optimization of computing resources, which enables NC State to handle the academic computing requirements of a growing student population while minimizing the growth of its infrastructure. Mladen Vouk, head of the Department of Computer Science at NC State and one of the project's key visionaries, believes that the new solution heralds a shift in the way universities address the challenges of academic computing in a time of tight resources, growing enrollment and rising expectations. "Our goal was to rethink the way we met the academic computing needs of students, instructors and the other populations we serve," says Vouk. "By collaborating with IBM, we are now better able to deliver on that mission."

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generationE and IBM deliver a new window into telecommunications services

Challenge

To deliver a robust, customer-facing reporting solution on service availability and system performance, compiling data from across vast, disparate networks and devices.

Solution

Northwestel worked with IBM Business Partner generationE and IBM to implement a reporting solution built on Netcool/Proviso®.

Key benefits

Northwestel is now able to meet SLAs for service availability, deliver metrics on services to customers easily and accurately, and have confidence in the future ability of the reporting tool to grow with its business.

Northwestel, the telecommunications company providing telecom solutions over nearly four million square kilometers of the most remote and rugged areas of Canada, needed a way to provide customers with full visibility into the managed services it delivers. The company planned to implement a managed IP-based VPN service, and sought a software solution for fault monitoring and customer reporting. The solution was required to demonstrate Northwestel had met or exceeded Quality of Service Tracking service level agreements with customers. Steve Sorochan, Northwestel Associate Director of Design & Implementation – Network, explains, "When you're selling quality of service for voice, data and more on the same line, the customers are looking for you to prove that they are getting the service they are paying for." The availability of this reporting would not only help Northwestel differentiate itself from competitors, but also fine tune its own operations with a more complete view of network events and their impact.

Northwestel's services include local telephone service, long distance communications by microwave radio, fiber optic cable and satellite, and advanced data communications, including high-speed Internet. Northwestel required a better way to manage performance on its array of networks, systems and applications. The solution would also include the ability to:

- reduce number of events occurring in their environment.
- correlate those events amongst devices.
- create a combined picture to better see the dependencies between various events.
- correlate policies and services.

Because Northwestel also resells its services, such as network availability, the company anticipated this sort of dashboard could be positioned as a revenue generator, providing customers with unprecedented business-critical data as a paid service.

"...it's important to correlate events and make more meaning of them—not just their impact on the infrastructure, but on Northwestel's customers."

— *Maureen Boyle*
Account Executive,
generationE

Northwestel also faced the unique challenge of delivering service across a wide, rugged expanse of sparsely populated territory. "We have the largest geographical area in North America for providing telecommunications services—spanning about four million square kilometers," says Eva Wieckowski, Associate Director of Design & Implementation – IS, for the company. Sorochan adds, "In lots of these places, there's no road access. It's all satellite communications, so that increases the challenge in providing data and voice services." It also complicates reporting on service availability and system performance. The company has employed an array of technologies in building and maintaining its world-class infrastructure over that service area. The new reporting tool would be required to compile data from all those varying applications and operating platforms and assemble it into one easy-to-use reporting format. It was a daunting prospect, and Northwestel knew it needed outside expertise to help implement a best-of-breed solution to meet its exceptional challenges.

Building a solution

Through a request for proposal process, Northwestel evaluated numerous solutions presented by bidding vendors, with proposals encompassing the full range of products on the market. Ultimately, the company chose a solution put forth by generationE, an IBM Business Partner working jointly with Micromuse, a software company specializing in IT Service Management, fault and performance management, and reporting tools. The proposed solution rendered Micromuse Netcool/Proviso® at its core, which generationE believed met Northwestel's requirements across the board. In particular, Netcool/Proviso specifically delivered the performance reporting sought by Northwestel—and a granular view of what occurs across all systems impacting customer usage.

generationE Account Executive Maureen Boyle says, "The solution addressed a number of critical points; the first was to reduce the number of events coming into Northwestel's environment. Second, it's important to correlate events and make more meaning of them—not just their impact on the infrastructure, but on Northwestel's customers." These capabilities together create a topology that gives Northwestel a much bigger view of infrastructural events that impact their customers, as well as the ability to comprehend and quantify the impact of poor service and outages. "Ultimately," Boyle says, "Netcool also allows them to reduce the meantime to repair."

Boyle adds that Northwestel was also focused on scalability. generationE knew the Netcool solution would scale to Northwestel's environment beyond other competitors' offerings in the marketplace. "Telecom environments are sophisticated, often including multiple devices and Element Managers from a myriad of vendors, which can generate hundreds of thousands of alarms," she explains. "Because of the way Netcool is designed, it has out-of-the-box functionality that

allows the solution to interact and interface with all these differing complex devices." Netcool can support thousands of different types of devices, then consolidate events from all of them into one view. The company can also easily extend the Netcool solution to add new devices from a variety of vendors, giving it the flexibility to alter its infrastructure to adapt to changing business and market trends.

"One of the benefits of this product is that it bridges the network world and the IT world."

— *Steve Sorochan*
Associate Director of Design & Implementation – Network, Northwestel

An added partner

In the midst of the deployment with generationE and Micromuse, IBM acquired Micromuse and its suite of Netcool products, and became a partner in the effort to build a successful experience for Northwestel. Steve Sorochan of Northwestel says, "This factored into our confidence with the solution in the respect that we wanted to work with a company that had staying power, because we were looking at years and years out of this product." This engagement with IBM later became critical as the implementation of the project ran into unanticipated roadblocks. "generationE's bread and butter has been Netcool, and we have a fair amount of experience with deploying Netcool solutions into hundreds of accounts including telcos, service providers, financial institutions, as well as other industries," explains Boyle. But she says the challenge came in implementing Netcool/Proviso itself, as it was fairly new to the Micromuse product suite and the North American marketplace. "We were the first IBM Business Partner to implement Netcool/Proviso," says Boyle, adding that by actively partnering with the IBM support available for Netcool/Proviso at the time, the project took on the aspect of true teamwork.

Northwestel also appreciated the hands-on approach of IBM. Wieckowski noted that IBM played a key role in solving a predicament encountered after the solution went into production. The company unknowingly made a backup error that essentially wiped out the entire solution. "We were looking at being down for a month, which was not palatable for us," says Wieckowski, "but through our contacts with IBM, we were able to secure help the next week to get us up and running quickly. We were really impressed." She adds, "As a smaller telecommunications company, we do in some ways feel like a small fish in a big sea, but IBM doesn't treat us that way. We've always gotten what we needed and are really confident in the contacts we have inside IBM."

An eye on the future with Netcool

The new Netcool solution is also helping parts of the Northwestel business work more effectively together. "One of the benefits of this product is that it bridges the network world and the IT world," says Sorochan. "SNMP (Simple Network Management Protocol) traps and other devices are things IT folks don't understand. But getting the right data into Netcool/Proviso means you also have to have IT input, so the solution bridges both worlds."

Wieckowski says that synchronization of staffs is only one aspect of the implementation that has impressed Northwestel since putting the solution into production. “After the project, we got our architecture team together and did a review,” she says. “Because this is something that is the cornerstone of our future, we did want to make sure this was the right tool and that we made the right selection. And the result of that was yes, we did pick the right tool and we do want to continue with it and utilize it in our future.” In fact, she says they are engaging generationE for further training in the near future, to enhance their capabilities using the tool. “It’s a positive thing that everyone is happy with the tool itself, even though there are challenges that lie in the complexities of the software—because on the other hand, that complex data we’re collecting also offers great flexibility if we know how to harness it.”

For his part, Sorochan expresses equally positive thoughts on Netcool as the choice over other competitors on the market. “One of the key differentiators was simply the look and feel—Netcool/Proviso was much more impressive with superior graphics and navigation,” he says. “Another thing was the sophistication of the architecture, recognizing that other products just weren’t as scalable as the Netcool solution.” As Northwestel moves into new areas of business, such as its growing cable services, it is confident Netcool is capable of meeting its expanding needs.

generationE also looks forward to continuing with Netcool/Proviso as part of its arsenal for doing business in the telecommunication industry. “Particularly when you’re dealing in the telecom space, Netcool has a number of applications that are really powerful from a marketing perspective,” Boyle explains, adding that this is a new angle of interest to Northwestel. “As they continue to move forward and develop new services, their marketing department is actually very interested in how they can use Netcool to tell their story.” Wieckowski agrees. “On the business side of it, we now have something to offer that we couldn’t offer before, so a lot of the excitement around this comes from sales and marketing—in not only what it can provide today, but tomorrow.”

To learn more

For more information about Netcool/Proviso and other IBM Netcool products, visit:
ibm.com/software/tivoli/products/netcool-proviso

For more information on IBM Business Partner generationE, visit:
www.generationetech.com

For more information on Northwestel, visit:
www.nwtel.ca

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NYPD changes the crime control equation by transforming the way it uses information.

Overview

- ***Challenge***
  An innovation leader in tactics, NYPD needed to more effectively exploit its data resources to strengthen its processes.
- ***Why Become an On Demand Business?***
  By integrating its siloed crime data systems, NYPD gets a more holistic view of information it can act on more rapidly.
- ***Solution***
  IBM and Business Partner Cognos created a real-time Crime Information Warehouse that makes NYPD more proactive and effective in fighting crime.
- ***Key Benefits***
- *Ability to redeploy resources in response to crime patterns and trends*
- *Ability to resolve crimes and apprehend criminals more quickly*

» **On Demand Business defined**
An enterprise whose business processes – integrated end-to-end across the company and with key partners, suppliers and customers – can respond with speed to any customer demand, market opportunity or external threat.

The New York City Police Department (NYPD), the largest police department in the United States, has primary responsibility for law enforcement and investigation within the five boroughs of New York City. The NYPD has approximately 37,000 sworn officers.

As a general rule, crimes occur in a particular place at a particular time. Though the effects of a crime may linger, the crime itself does not. The same is *not* true from the angle of law enforcement. From the moment a crime is detected and reported, and throughout its investigation, the law enforcement system generates broad and diverse streams of information related to that crime.

"The NYPD's innovative policing strategies depend on our ability to gather, share and act on information. IBM – its people, partners and technology – have helped us redefine how information can be used to fight crime."

– James Onalfo, Chief Architect and CIO, NYPD

ON DEMAND BUSINESS™

On Demand Business Benefits

- Support for more proactive policing tactics by virtue of an ability to see crime trends as they are happening
- More efficient use of NYPD resources resulting in more public safety per tax dollar
- Faster and higher rate of case-closing through more efficient gathering and analysis of crime-related data
- Continued improvement in quality of life
- Improved overall data integrity and speed of data access to optimize decision-making
- Improved officer safety through better risk assessment capabilities

While these streams are bound by a common thread – the crime – each concerns a different perspective of it – from the 911 call, to the dispatch of officers, to the various reports filled out by officers at different stages of the investigation. Over the years, major police departments have become extremely adept at capturing this information, doing so almost as fast as it is generated. The problem, however, is where the information goes *after* it's ingested.

Hindered by silos

Big-city police departments are for the most part highly compartmentalized, and their functions highly specialized. When crime information systems were first built as long as 30 years ago, they were – not surprisingly – designed to meet the needs of a specialized, vertically oriented process framework. At the time, little or no thought was given to more advanced forms of reporting or analysis, or to the sharing of information across different departmental functions. The result was an environment made up of siloed systems that were very efficient at capturing data but were challenged in sharing it.

This situation had a direct impact on the detectives and officers investigating crimes, whose job it is to pull together all the strands of information and create a coherent picture to guide their efforts. With case information residing in pockets throughout large departments, officers spend much of their time on the phone or on their feet trying to track it down, leaving them less time to do what they were trained to do – process the information to solve crimes.

In addition to streamlining the nuts and bolts of casework, large police departments like the NYPD are increasingly looking to the "bigger picture" to guide their policies, practices and resource decisions. The new wave among major metro police departments is to use information to become more proactive in the fight against crime. It's about recognizing patterns within crime statistics and using this recognition to modify policing tactics so that resources are directed to where they're most needed. The NYPD's CompStat program is a strong case in point.

Ask any New Yorker about "quality of life" and most will tell you it improved markedly during the administration of Rudolph Giuliani, a time of dramatically falling crime rates. Driving this reduction was an increased focus on more granular policing, under which so-called "quality-of-life" crimes (such as public

"There's no substitute for interacting with people to solve cases. Our goal is to make the process more efficient: instead of having to talk with ten different investigators in different parts of the city, they'll have to talk with two. That's a lot more time available to solve cases."

– James Onalfo

drinking, panhandling and disorderly conduct) are aggressively enforced, and enforcement accountability established at the neighborhood level. CompStat, a weekly process under which crime data is gathered, analyzed and shared, has proven an effective auditing tool that holds Commanding Officers accountable for any crime spikes in their precincts. It did not however provide the powerful data mining capability that is now being employed by the NYPD to identify patterns and to find and capture individual criminals.

Putting the pieces together

The NYPD knows that it's exceptionally good at both the bottom-up casework to solve crimes and the innovative, metrics-based policies that prevent them, but never enough to be satisfied. From both perspectives, time – namely, the time required to get a holistic view of crime information and then act on it – is the enemy. Time keeps perpetrators on the streets longer, hinders efforts to spot developing trends and increases the risks to officers. The NYPD was determined to reduce this time by fundamentally transforming the way crime information is managed and exploited. The department recognized that to more effectively solve and prevent crimes, it needed to provide information to key users – from precinct detectives to crime analysts to department leadership – more holistically, thus strengthening their ability to synthesize various bits of information into actionable intelligence. A key lesson of 9/11, that having pieces of the puzzle, unassembled, isn't enough, provided a key foundation of this understanding.

To frame and execute its transformation strategy, NYPD engaged IBM Business Consulting Services. IBM's first move was to conduct a thorough user study designed to identify the information elements needed at every level of the department and from it establish the solution's high-level business requirements. From them, the team produced a conceptual design of the solution as well as a new underlying data model to facilitate the integration of information from the department's many systems. The solution that came out of this process, known as the Crime Information Warehouse (CIW), provides a single, easy-to-use point of access to data on virtually all crimes committed in NY's five boroughs. In the backend, the solution pulls data from various standalone systems, transforms it to the new data model format and integrates it on the CIW. The solution's core technology, IBM DB2 Universal Database Data Warehouse Edition, runs on an IBM System p5 575. The CIW is backed up in real time on an IBM TotalStorage DSS800 storage server running IBM Tivoli Storage Manager.

Key Components

Software

- IBM DB2® Universal Database™ Data Warehouse Edition
- IBM WebSphere® Portal
- IBM WebSphere Application Server
- IBM Tivoli® Storage Manager
- Cognos ReportNet

Hardware

- IBM System p5™ 575
- IBM TotalStorage® DSS800 storage server

Services

- IBM Business Consulting Services
- IBM Sales and Distribution
- IBM Hardware Group
- IBM Software Group

Business Partner

- Cognos

Time frame

- Business requirements: 6 months
- Design: 3-6 months
- Development: 6-9 months
- Deployment: Ongoing

Why it matters

Everyone knows good police work relies on good information. But in today's big cities, speed is becoming just as important. NYPD proved that data-driven police tactics can produce dramatic reductions in crime rates. With its Crime Information Warehouse, it's proving that integrated crime data, delivered in real time, can change law enforcement even more. It's the ability to see trends as they form – instead of in the rearview mirror. It's the ability to see connections and break cases faster. It's the ability to make life-saving decisions by seeing the big picture.

Powerful processes with real-time speed

Having replaced its siloed systems with a common crime data repository, the NYPD is now able to do far more with the information, systems and processes that it already had in place. Indeed, the solution's architecture reflects the department's key criterion that it be flexible enough to support a wide range of processes and users – both current and future. In that goal it has excelled. At the tactical control level, for instance, the CIW solution provides the information foundation for the NYPD's state-of-the-art Real Time Crime Center. Using business intelligence software from IBM Business Partner Cognos along with GIS mapping and visualization tools, officers and analysts in the center can detect crime patterns as they are forming, enabling precinct commanders to take proactive measures to keep ahead of these trends – and head off spikes in criminal activity. The department's CompStat program, already a milestone in innovative policing tactics, was also transformed into a more effective crime-fighting tool by replacing its traditionally manual method of data tabulation with the CIW's real-time data feed. Reports that could take weeks or months are now available instantly.

Empowering officers

But it's not all about the big picture. This same ability to see deep and wide also enables dispatchers to flag dangerous situations for responding officers, thus contributing to increased officer safety. The CIW also promises to transform the tasks of investigators – perhaps the most critical link in the law enforcement chain – by unleashing their most valuable quality: their judgment. Investigators that once spent a huge slice of their time chasing down information can now access all of it through a single, portal-based interface (based on IBM WebSphere Portal) or by working with the Real Time Crime Center. Freed from low-value data gathering, officers can now turn to the higher value, more analytical activities they are trained to do, such as formulating and testing hypotheses. The ability of the CIW to support robust, multidimensional queries and drill-downs on crime databases enables them to refine and test their hunches far more quickly than was even imaginable a few years ago.

The prime driver of the initiative, Chief Architect and CIO James Onalfo, sees the new solution as an example of the "culture of innovation" within the NYPD that has made New York the nation's safest large city five years running. "The NYPD's innovative policing strategies depend on our ability to gather, share and act on information," says Onalfo. "IBM – its people, partners and technology – have helped us redefine how information can be used to fight crime."

For more information

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Pacific Coast Producers uses RFID technology to step up customer service and improve supply chain visibility.

Overview

■ ***Business Challenge***

Pacific Coast Producers needed to respond to a major retail chain's request mandating that suppliers tag shipments with radio frequency identification (RFID) devices. With an eye on competitive advantage, the company saw an opportunity to go far beyond mandated capabilities and develop a scalable, integrated and analytics-enabled solution that would provide the impetus to transform business processes for the company as well as its customers.

■ ***Solution***

The company opted for an inline RFID tagging system solution, fully integrated into the IT infrastructure. Pacific Coast Producers can now expand beyond the compliance efforts of its competitors and use business intelligence gained to improve business processes. The company further positioned itself as a preferred supplier, as the solution allows it to collaborate more closely with its customers by using the analysis of its inventory data much more effectively than before.

Pacific Coast Producers implemented a fully integrated RFID solution with capabilities far beyond industry standards, further strengthening the company's position as a preferred supplier.

■ ***Key Benefits***

- *Answered retailer mandate for RFID*
- *Enabled increased supply chain visibility, useful for tracking business processes like display promotions and shelf replenishment*
- *Implemented a scalable solution in advance of anticipated increased RFID mandates*
- *Enabled inventory decision making informed by more accurate information than was previously available*
- *Enhanced collaboration with customers, improving ability to avert out-of-stock situations in retail stores*

Transforming business processes to efficiently increase customer service

Pacific Coast Producers (PCP) is a California-based private-label packer of premium canned fruits and tomatoes. The company, a cooperative of more than 180 growers, runs three processing facilities and a distribution center in Northern California. Recently, PCP's largest customer began mandating that their suppliers ship cases and pallets tagged with radio frequency identification (RFID) devices.

Like other food distribution companies, PCP relies on bar-code labels placed on boxes and pallets to provide tracking capabilities to its retailers. Wanting to move quickly, the technology team at PCP turned to IBM and IBM Business Partner OATSystems.

Business Benefits

- Answered retailer mandate for RFID tracking capabilities
- Enabled increased supply chain visibility for tracking business processes like shelf replenishment
- Enabled closer tracking of products included in retailer's special promotional campaigns
- Implemented a scalable solution in advance of anticipated increased RFID adoption
- Enables inventory decision making informed by more accurate information than was previously available
- Increased collaboration with customers, improving ability to avert out-of-stock situations in retail stores

"We are actively processing RFID data using OATSystems and IBM software in order to monitor and improve business processes like display promotions and regular shelf replenishment. Our findings have led to the most immediate benefit of the RFID solution – it has further enhanced PCP as a preferred supplier to major retail chains."

– Peter Wtulich, chief technology officer and vice president of information services, Pacific Coast Producers

Collaborating to deliver a better solution

Using a consultative partnering approach, IBM, OATSystems and PCP personnel conducted a business analysis session; the team offered budget estimates, analyzed distribution processes and made recommendations on how best to use RFID technology for business value. IBM Global Business Services consultants then conducted a two-day RFID Solution Development Workshop. The workshop familiarized PCP's shipping personnel with RFID technology and best practices, helping ensure that the company would meet retailers' needs, and helped PCP's people understand the RFID solution options.

PCP fully understood the possibilities RFID offered beyond compliance, and realized it could differentiate itself with an integrated solution. The company knew that the most important benefit to be gleaned from its embrace of RFID would be improved relationships with its customers; using OATSystems software, the company would now be able to share RFID data, and the analysis of that data, in an unmatched, collaborative effort to improve business processes in conjunction with major retailers.

RFID solution identifies preferred suppliers

"Right now, in the food processing industry, RFID is similar to bar coding in the 1970s," says Peter Wtulich, chief technology officer and vice president of information services, Pacific Coast Producers. "Companies are reluctant to go through the expense and don't see the benefits yet. The most immediate benefit for us was that it has further enhanced us as a preferred supplier to major retail chains, and with increased visibility into our supply chain, we'll be able to improve our business processes." Further, the integrated solution provides the data necessary to improve stocking and replenishment processes, while also giving the company an easily scalable solution that will allow them to anticipate and quickly fulfill upcoming retail industry RFID mandates with other customers.

Most other suppliers in PCP's industry use a manual process to apply RFID tags, referred to as "slap and ship." The process is inefficient, as cases must be reprocessed to tag each case on the production line. PCP's approach moves beyond slap and ship with a "tag@source" solution. OAT tag@source is a complete, automated, inline tagging solution for applying RFID tags to products and is integrated on IBM WebSphere® RFID Premises Server. With inline printers and taggers, the company can apply RFID tags to more than 30 cases per minute, far faster than a manual solution.

Distribution chain visibility has improved dramatically, as PCP now has real-time information regarding the location of its products. In addition, the new RFID tracking system provides order fulfillment and delivery validation, improving visibility. In one instance, the company is now tracking the performance of its products involved in promotional activities much more closely, hoping to understand why individual stores in a chain show inconsistencies within sales ranges expected.

IBM, OATSystems and DSI enable an integrated RFID solution

At the heart of the solution is IBM WebSphere Application Server, the IBM WebSphere RFID Premises Server and IBM MQSeries® messaging software. PCP uses Data Systems International's (DSI) dcLINK,® a fully integrated, real-time automated data capture solution to enhance business process communication; dcLINK gathers PCP's RFID information generated in manufacturing and shipment processing for subsequent analysis in OATSystem's OATaxiom. OATaxiom, an enterprise RFID data management system with built-in adaptors for trading partner data, delivers a record of inventory and goods movement across the supply chain. It also serves as a robust analytics platform, enabling PCP to extract value from the electronic product code (EPC) data. In addition, the solution includes OATSystems' OATxpress to provide EPC number management and control all business process operations of the inline tagging operation.

The use of IBM middleware in the solution has allowed PCP to fully integrate the RFID solution into its IT infrastructure. The solution gathers and analyzes RFID data with software from IBM Business Partners DSI and OATSystems, with IBM middleware enabling the applications to talk to each other. The company now has the infrastructure in place to expand beyond the compliance efforts of its competitors and use business intelligence gained to improve business processes.

"Since we were on the leading edge with this solution, no one provider could supply everything we needed," Wtulich explains. "IBM was able to assist me in coordinating all the pieces, giving us a first-of-its-kind solution in our industry, in a reasonable amount of time."

Key Components

Software

- IBM WebSphere Application Server
- IBM WebSphere RFID Premises Server
- IBM MQSeries messaging software
- Data Systems International (DSI) dcLINK
- OATxpress® (tag@source scenario management)
- OATaxiom® (EPC business intelligence)
- DSI Trancollector™ script mods to accommodate data related to pallet inventory
- DSI Interface with OAT for collection of data

Hardware

- IBM System x™ servers
- Symbol Technologies RFID readers
- Symbol Technologies wireless hand scanner
- Weber RFID printer applicator
- Weber RFID tags

Services

- IBM Global Business Services – Vendor and project coordination

IBM Business Partners

- OATSystems Business Solutions Services
- Data Systems International (DSI)

Why it matters

Pacific Coast Producers (PCP), a private-label packer of premium canned fruits and tomatoes, needed to respond to a major retail chain's mandate that suppliers tag shipments with RFID devices. With an eye on competitive advantage, PCP implemented much more – a solution that goes beyond industry standards and allows visibility and tracking at the store level, increasing supply chain efficiency and improving replenishment processes. These improvements have positioned PCP as a preferred supplier while creating a new level of collaboration with its customers.

Using RFID data to create information and drive process improvement

"We have visibility at the store level that we never had before, and we're starting to turn our inventory data into information," said Wtulich. "With that information we believe we can improve business processes within our facilities and also improve replenishment and stocking for our customers. Basically, we can use the integrated RFID information in OATaxiom to help us make sure we have the right inventory in the right store at the right time." And with the scalable solution in place, when a major retailer requests additional RFID tags, PCP can quickly expand their initial RFID activities with increased volume and additional SKUs, all while engaging in pilot RFID programs with other retailers.

For more information

To find out more about how IBM and the IBM Business Partner Network can collaborate to conduct an RFID workshop at your company, or help you implement a fully integrated RFID solution, please contact your IBM representative.

Visit us at:

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About OATSystems, Inc.

Headquartered in Waltham, MA, and with offices in Austin, Chicago, London, and Bangalore, OATSystems, Inc. is a recognized RFID framework leader, providing software that empowers businesses to achieve competitive advantage from radio frequency identification (RFID).

About Data Systems International (DSI)

For nearly three decades, DSI has served clients worldwide with industry-leading technology solutions. More than 750 companies in 31 countries have looked to DSI for complete data capture and RFID solutions – software, scanners, mobile computers, integrated label/tags, implementation services and global support.

ODC00329-USEN-00

Rohm and Haas realizes IT cost reductions, enabled with SAP ERP and IBM Power Systems

Overview

■ ***The Challenge***

Having grown largely through acquisition, specialty materials manufacturer Rohm and Haas found accurate, timely business reporting was increasingly difficult to achieve. Raw materials price changes, for example, took three months to be reflected in final product pricing. With more than 1,400 physical servers running multiple financial, production and manufacturing systems, the infrastructure was too complex and costly, and not capable of meeting business needs. Multiple applications at the core of the business each needed separate user sign-on, and managing user names and passwords was unproductive for employees and a major drain on IT helpdesk resources – as well as a security risk.

■ ***The Solution***

Rohm and Haas chose to standardize on SAP applications running on IBM Power Systems servers, replacing a mix of in-house and best-of-breed solutions running on Microsoft Windows, mainframe, AS/400 and other operating systems. Rohm and Haas recently upgraded its SAP ERP applications as part of a corporate move to the latest software, and introduced IBM Tivoli software to automate administrative tasks. As part of the upgrade, IBM Global Business Services was chosen as the preferred SAP and infrastructure partner.

■ ***The Benefits***

IT operational costs have declined steadily since 2000. General Ledger closing time has been reduced to 2 days – a 92 percent improvement. Full financial close also has been reduced, going from 28 days to 5 – 7 days. Raw materials price changes that took three months to reflect are now adjusted on the same day. Executive dashboards provide near real-time KPI monitoring. New SAP applications and consolidation of physical servers have contributed to significant savings. Also contributing was a reduction in IT support costs through the use of Tivoli Access Manager for Enterprise Single Sign-On.

■ ***Key Solution Components***

Industry: Chemicals
Applications: SAP® ERP 6.0, SAP Advanced Planning and Optimization 5.0, SAP Customer Relationship Management, SAP NetWeaver® Business Intelligence 7.0, SAP NetWeaver Portal 7.0, and SAP ERP 6.0 components
Hardware: IBM® Power Systems™ servers (p570, p560), including both POWER5™ and POWER6™ processor-based servers, IBM System Storage 3594 tape library
Software: IBM AIX®, IBM Tivoli® Storage Manager, IBM Tivoli Access Manager for Enterprise Single Sign-On
Services: IBM Global Business Services

IBM | SAP®

"By consolidating to a single SAP ERP platform, annual IT costs have been reduced significantly during a period in which the corporation's sales grew from $6bn to $10bn."

Anne Wilms
Executive Vice President and Chief Information Officer
Rohm and Haas

With sales of almost $10 billion, Rohm and Haas pioneers innovative technologies and solutions for the specialty materials industry. Headquartered in Philadelphia, PA, the 15,000 company employees serve the construction, electronics, food, household, industrial, medical, packaging, paper, personal care, pharmaceuticals, transportation and water markets.

Business growth

Built largely through acquisition, Rohm and Haas is focused on growth. Today it has more than 100 manufacturing, technical, research and customer service sites in 27 countries. Acquiring and integrating multiple businesses created an enormous business challenge. A mix of best-of-breed and in-house developed applications were inherited from each acquisition, making central reporting and planning a complex and time-consuming task.

Anne Wilms, Executive Vice President and Chief Information Officer at Rohm and Haas, comments: "In this situation, how do you ever really know what's going on? How can you manage and grow the business prospectively, rather than respectively? Information quality is always questionable, and executives spend significant time questioning the validity of the numbers."

"Patching systems together could be done, but in the end would cost about the same as implementing a new global ERP solution, plus you would have the difficulty of making changes in a best-of-breed 'spaghetti'

environment," says Anne Wilms. "We did not want to have to become systems experts."

"With a common solution for all divisions, we knew we were going to lose some localized functionality as we did not wish to tailor applications down to the departmental level. The balance was the huge increase in the quality, reliability and speed of data delivered."

SAP ERP applications offered a very close fit for Rohm and Haas, with their long history of serving the chemicals industry and offering a complete order-to-cash process. Recently, the company decided to upgrade its original SAP ERP production system (version 4.6C) to the latest version of SAP ERP with ECC 6.0 components, and perform a Unicode conversion at the same time. IBM India was a key part of this effort and is now a well-known resource in SAP upgrade projects.

IBM partnered with Rohm and Haas in the technical upgrade, and helped ensure that all the existing custom and standard programs were fully Unicode compatible, during a six-and-a-half-month project. During execution, the IBM team worked on 2,615 objects of which 1,547 (about 60%) were affected by the Unicode conversion and required sustained focus and efforts to reach the goal.

Business transformation

Rohm and Haas began this transformation during the years 2000 – 2004 by implementing a single instance of SAP ERP modules across all global business units and functions. Each component area of the implementation, such as financials or order to cash, was owned by a specific business representative who took responsibility for completing the implementation. The results of moving to a global ERP system were outstanding, as Anne Wilms explains: "For example, it used to take 28 days to close the books. With the SAP applications, closing the books now takes just 5 to 7 days. For the first time, we had a consolidated view of procurement activities for our raw materials, and were able to optimize spending and gain valuable discounts."

The team also reports that one of the largest savings is in the IT support environment. "Previously we could not even define our infrastructure on a chart! By consolidating to a single SAP ERP platform, annual IT costs have been reduced significantly, during a period in which the corporation's sales grew from $6bn to $10bn," says Anne Wilms.

Put another way, in the period 2003-2008, IT costs reduced from approximately 3 percent of revenue to 1.3 percent. Much of the cost reduction was through the implementation of SAP and standardization of processes, combined with the IBM Power Systems using virtualization to reduce the physical server footprint.

The company's SAP implementation coincided with the emerging trend for greater financial accountability and corporate compliance with legislation

> *"It used to take 28 days to close the books. With the SAP applications, closing the books now takes just 5 to 7 days."*
>
> Anne Wilms
> Executive Vice President and Chief Information Officer
> Rohm and Haas

"We now use SAP ERP to deliver financial data using executive dashboards – a solution we call 'the Pulse'. Accurate, detailed information is available to appropriate executives, refreshed twice daily, with key performance indicators."

Anne Wilms
Executive Vice President and Chief Information Officer
Rohm and Haas

such as the Sarbanes-Oxley Act of 2002. By implementing SAP software as a single global ERP solution, Rohm and Haas was able to realize additional benefits in terms of transparency and ease of compliance with new legislation.

Price changes reflected more quickly

As the company is dependent on a wide variety of raw materials, a significant challenge for Rohm and Haas is to reduce the time between input price changes and sales price adjustments. In the past, it took one quarter to reflect variations. With shared SAP applications that can drill-down from final product right through to initial feed stocks, raw materials price changes can be reflected more quickly.

When raw materials prices are rising, Rohm and Haas is able to manage the consequences – including the impact on cash flow. When costs are falling, the company can reduce final prices while maintaining margins.

Executive dashboards

Easy access to reliable information has transformed Rohm and Haas from a diverse company with multiple data sources to an integrated operation.

"For example, we now use SAP ERP to deliver financial data using executive dashboards – a solution we call 'the Pulse'," says Anne Wilms. "Accurate, detailed information is available to appropriate executives, refreshed twice daily, with key performance indicators."

"The Pulse has been exceptionally successful: there is not an executive in the business that does not like the dashboards. They say things like: 'I don't know what we did before this' and 'The dashboards have been the best investment decision we ever made'."

Rohm and Haas is also using SAP NetWeaver Portal to provide the Pulse dashboards on Blackberry devices, offering high clarity and consistent data – in near-real time – from the SAP applications over the IBM infrastructure. With the Blackberry solution, executives on the move can have key performance indicators always available.

Building the new architecture

The original IT landscape at Rohm and Haas had been dictated by the constant acquisition of new companies. Between 1,200 to 1,400 physical servers, mainly running Microsoft Windows and some UNIX operating systems, were dispersed throughout the corporation.

Working with IBM Global Business Services, Rohm and Haas elected to implement its upgraded SAP applications on IBM Power Systems servers, predominantly p570 POWER6 systems with their optimal compromise between flexibility, performance, and cost, running IBM AIX. Using the advanced virtualization technologies of the IBM POWER architecture, multiple applications and services can run in separate virtual servers, which has allowed the corporation to cut the number of physical servers by more than half, to 600. This reduction saves at least 150kW in electrical power alone, making a sizable contribution to greener, more efficient operations. The virtualization program has also helped to deliver reductions in maintenance, management and support costs that contribute to lower IT operational costs at Rohm and Haas.

Charles Wallace, Executive Director of IT Architecture and Infrastructure, comments, "The drive is for continuous consolidation and simplicity of management, and to help us to exploit the performance offered by the Power Systems servers.

"With virtualization, we are able to move processor capacity to where we need the power. With IBM Power Systems, we typically reach 60 to 70 percent processor utilization, which means we can avoid buying new systems simply by using what we have more efficiently – with IBM we get more bang for our buck."

The central IT team of four database administrators and four SAP BASIS administrators is able to support some 12,000 SAP users. With global operations, the SAP applications are in continuous operational use, with uptime of better than 99.98 percent. Rohm and Haas has achieved these availability levels through using the advanced clustering capabilities of the IBM Power Systems servers, ensuring that operations continue even should a specific server require downtime.

The SAP ERP applications run on IBM Power Systems servers at a main data

"With IBM Power Systems, we typically reach 60 to 70 percent processor utilization, which means we can avoid buying new systems simply by using what we have more efficiently – with IBM we get more bang for our buck."

Charles Wallace
Executive Director of IT Architecture and Infrastructure
Rohm and Haas

"With Tivoli Access Manager providing enterprise single sign-on, it is faster and easier for employees to gain access to the systems they need, saving a significant number of man-hours each day across the whole organization."

Scott Megill
Project Manager for the Tivoli Access Manager for Enterprise Single Sign-On implementation
Rohm and Haas

center in Philadelphia, with a remote backup and recovery data center some 23 miles distant. IBM Tivoli Storage Manager provides automated backup, archive and restore services to an IBM System Storage 3594 tape library.

Rohm and Haas also deployed Tivoli Access Manager for Enterprise Single Sign-On for 13,000 users. This allows all users to sign in to the relevant applications, as defined by their role, with a single log-in process. This simple yet enormously powerful concept helped the company achieve $190,000 in savings in year one alone by reducing the number of helpdesk calls associated with password resets.

Tivoli Access Manager for Enterprise Single Sign-On also offers a simplified end-user experience, by eliminating the need to recall multiple user names and passwords, which in turn has helped compliance reporting by tracking and collating user access. The software offers strong authentication, session management, workflow automation and centralized administrative and audit capabilities, without requiring changes to SAP applications and the existing IT infrastructure. Employees now have fast access to all applications and network resources with a single password on both personal and shared workstations.

Scott Megill, Project Manager for the Tivoli Access Manager for Enterprise Single Sign-On implementation at Rohm and Haas, comments, "Management at Rohm identified single-sign-on as one of the top three

technical changes that improved their lives and helped raise productivity. These are the things that can make a real difference across an enterprise. With Tivoli Access Manager providing enterprise single sign-on, it is faster and easier for employees to gain access to the systems they need, saving a significant number of man-hours each day across the whole organization."

Rohm and Haas worked closely with IBM Global Services to scope out a twin migration of the SAP applications and complete a migration to Unicode in the same project. The purpose was to take advantage of the program steps that could be shared across both projects, offering a more cost-effective route towards the new system environment.

"Having started with SAP R/3 4.6C, Rohm and Haas completed its cutover to SAP ERP 6.0 and 5.5TB database – introducing Unicode during the same migration – inside a 48-hour time window," says Charles Wallace. "We have also invested in automated systems management software such as Tivoli, which enables us to run the SAP applications globally with an exceptionally small team. All our actions are designed to drive costs down or mitigate cost increases. Simplification through server virtualization and consolidation is very important to us."

Rohm and Haas has also implemented IBM CommonStore for SAP, which automates the archiving of SAP application-related data to disk or tape. CommonStore provides access to stored business information and reduces unnecessary data redundancy, helping businesses maximize their storage utilization by optimizing databases and improve total business efficiency.

Business intelligence and planning

Rohm and Haas has deployed SAP NetWeaver Business Intelligence to bring together its reporting, analysis and business management projects. Data is collected from transactional, production and manufacturing systems, and executives can then conduct what-if and data mining exercises on the constantly updated information warehouse.

In a related project, Rohm and Haas is working with IBM Global Business Services to introduce the SAP Advanced Planning and Optimization (SAP APO) solution, designed to optimize the "available to promise" process. This will enable Rohm and Haas to have a global demand and supply planning model positioning them well for the supply chain process transformation and optimization journey.

"Through the use of dashboards, SAP NetWeaver BI and SAP APO data automation we are giving the people at the plants the ability to do more querying and analysis of the supply chain for themselves," says Charles Wallace. "We are on the lookout for solutions that will save significant dollars on procurement and compliance, and with IBM Power Systems we have the infrastructure capacity to do this."

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Charles Wallace
Executive Director of IT Architecture and Infrastructure
Rohm and Haas

Real teamwork

Rohm and Haas has been working with IBM since 1996, and continues to explore cost-saving opportunities that can be exploited on the new SAP and IBM infrastructure.

Anne Wilms says, "What we really like is the IBM model, including the IBM offshore model combined with people on the ground. We like the honesty and openness – IBM has skin in the game and a willingness to take responsibility.

"From a cultural perspective, IBM fits very well with Rohm and Haas. When we are faced with market pressures IBM Global Business Services responds with a flexible attitude to meet our needs. IBM is willing to find solutions even if it is a short-term need and not necessarily a long-term opportunity."

The popularity of the SAP NetWeaver BI solution has led to increased usage, and consequent growth in server workload. Rohm and Haas is considering the introduction of the IBM Systems solution for SAP NetWeaver BI Accelerator, based on IBM BladeCenter technologies, which would greatly accelerate the delivery of query results. IBM Global Business Services regularly presents such possible solutions and advises about the costs and benefits, so that the Rohm and Haas executive team can consider the business case before commissioning implementation.

> *"When we are faced with market pressures IBM Global Business Services responds with a flexible attitude to meet our needs."*
>
> Anne Wilms
> Executive Vice President and Chief Information Officer
> Rohm and Haas

"Ultimately we want to assure we are giving our executives and managers the best possible information to make accurate and timely decisions," concludes Anne Wilms. "Rohm and Haas is well-positioned to accomplish this with IBM and SAP infrastructure, combined with advice and support from IBM."

IBM Deutschland GmbH
D-70548 Stuttgart
ibm.com/solutions/sap

Sainte-Justine Hospital positions itself for breakthroughs in pediatric research and treatment.

Overview

- ***Business Challenge***
  To realize the potential benefit of genomics in pediatric research, Sainte-Justine Hospital Research Centre needed to streamline the way it gathered, managed and updated the clinical information it relied on. Data fragmentation combined with manual processes led to wasted resources and a longer research cycle.
- ***Solution***
  Sainte-Justine teamed with IBM to transform its existing infrastructure for integrating patient information into a powerful research support tool. Automated workflows keep clinical databases up to date, enabling the hospital to channel more of its efforts and resources to core pediatric research.
- ***Key Benefits***
  - *Expected 90 percent reduction in time required to gather research cohorts*
  - *Expected 75 percent reduction in administrative costs associated with data gathering and validation, which Sainte-Justine can channel into core research efforts*
  - *Faster development of new treatments for complex pediatric diseases*

Established in 1907, Sainte-Justine Hospital is the largest pediatric hospital in Québec and the second largest pediatric hospital in North America. Sainte-Justine Hospital's Pediatric Research Centre is well known for its work in such pediatric diseases as childhood leukemia and other complex pediatric diseases.

Behind most every medical breakthrough is an enormous body of research, much of it taking years to compile, analyze and translate into new and more effective treatments for patients. Not surprisingly, the clinical research process is often characterized as a search for hidden clues or patterns within a vast pool of biomedical data. The recent emergence of genomics as a primary tool for researchers, and the successful use of ultra-powerful computing resources to spot genetic patterns in diseases, have reinforced the notion that the key to medical research is unlocking secrets in the data.

> *"With IBM's assistance, we have vastly increased our ability to exploit the knowledge of the human genome in the way we understand and treat pediatric illnesses."*
>
> – Dr. Daniel Sinnett, head of the Oncogenetic Research, Sainte-Justine Hospital Research Centre

Business Benefits

- Expected 90 percent reduction in time required to gather research cohorts
- Expected 75 percent reduction in administrative costs associated with data gathering and validation, which Sainte-Justine can channel into core research efforts
- Improved information accuracy and the elimination of duplicate entries
- Faster development of new treatments for complex pediatric diseases
- Optimization of existing pediatric treatment practices to maximize responsiveness and minimize side effects
- Improved ability to secure research funds and expertise

"All research projects will eventually be supported from a single database and integrated infrastructure. And starting now, our physicians can access data in a way suited to their specific needs. This provides long-term follow-up with patients well into adulthood."

– Dr. Daniel Sinnett

But if you talk to the people actually engaged in the process – from senior researchers to technicians to administrative personnel – the odds are good that they'll view their biggest challenge as obtaining and validating the base of data needed to do the research. Standard research practices revolve around the tracking of groups of patients with common attributes or clinical profiles, known as cohorts. Depending on their focus, researchers' data needs in establishing a cohort can range from family health information to genetic profiles, test results and treatment histories. All too often, obtaining this information requires researchers to extract information from patients' paper-based files, in some cases spread across different departments. This tendency for critical information to live in "pockets" throughout the hospital has in effect created a structural bottleneck in the research process, which not only draws precious resources from hospital staff, but also lengthens the time required to develop new and more effective treatments.

In the realm of pediatrics, these challenges are amplified by a number of factors. For one, the pediatric illnesses targeted by researchers are by comparison quite rare, making it harder for researchers to assemble a cohort to study them. An even greater challenge relates to the inherent complexity of understanding the dynamics of pediatric illnesses, since their onset and progression tend to coincide with major metabolic and physiological changes in the children themselves. As a result, pediatric researchers are especially dependent on patient data points gleaned over a long time horizon – starting as early as their mothers' prenatal care and extending as far as years after their treatment – to understand the interplay of factors involved in pediatric illnesses. The combination of small cohort populations and the need to track them consistently over time place a heavy burden on hospitals like Sainte-Justine Hospital Pediatric Research Centre, which are dedicated to pediatric research.

End of the rainbow

A teaching hospital affiliated with the University of Montreal and the second-largest pediatric hospital in North America, Sainte-Justine (www.recherche-sainte-justine.qc.ca) had been the first hospital in Québec to implement an electronic health record (EHR) solution. Developed by IBM Canada in an initiative known as "Project Rainbow," the solution was designed to provide a framework for Sainte-Justine and two sister hospitals to share patient information and improve the quality of care and the patient experience. In the wake of this highly successful engagement, Sainte-Justine and IBM sat down to establish a roadmap that would build on the new capabilities that resulted from the project, chief among which was the ability to gather and aggregate a wide variety of clinical information. While its EHR solution was designed to serve the clinical side of its operations, Sainte-Justine and IBM realized that the integration infrastructure that lay at the heart of the solution could be extended and adapted to vastly improve the efficiency of the hospital's research operations.

With advances in genomics changing the face of medical research, Sainte-Justine saw both the need and the opportunity to take its research capabilities to the next level. Although Sainte-Justine viewed advanced computing technologies as a key part of this transition, it recognized that the most fundamental change would be in resource efficiency. Put simply, streamlining and automating its "front end" processes would enable Sainte-Justine to channel more of its scarce resources into the core research activities.

With the electronic health records solution as a starting point, IBM needed to create a technology and process framework on top of it that would perform all of the updating, validation, security and patient authorization functions necessary to use the valuable data. In addition to medical data drawn from hospital records – such as tests and records of treatments – the solution also needed to incorporate genotypic data drawn from patient tissue samples. This combination was essential to understanding not only the genetic basis of disease, but also how genetic makeup could affect the way a patient responds to a particular course of treatment, or the likelihood of a patient experiencing side effects from a particular treatment. Lastly, IBM needed to create a powerful, flexible and easy-to-use interface through which researchers could analyze or query the data.

Following a new flow

Led by IBM Global Business Services, IBM developed a solution that meets each of these requirements. From a process perspective, the starting points are the many clinical systems throughout Sainte-Justine that generate patient data. Each time a patient's information changes, the information is automatically sent to a gateway that serves as a hub to all the hospital's clinical systems. Once a patient's record reaches the gateway, an information broker (powered by IBM WebSphere Business Integration) employs a series of business rules to filter, process and compile the information. The first function is to check the patient's file for parental consent, which is stored as an electronic signature. If the consent is not on file, the information is automatically discarded. If the signed consent is on file, the solution then locks in the patient's privacy by replacing the patient's name with an anonymous global patient identifier that remains attached to the patient and – importantly – can be traced back if a new treatment is found. The broker's final function is to extract pre-specified data elements (such as blood count) from the overall record, and to send those elements to a master patient record stored in an IBM DB2 database running on an IBM System p5 570 server. Each time a patient undergoes subsequent procedures, testing or genomic profiling, the results are automatically incorporated into this database.

Key Components

Software

- IBM WebSphere® Business Integration
- IBM DB2®
- IBM Data Discovery and Query Builder

Hardware

- IBM System p5™ 570

Services

- IBM Global Business Services
- T.J. Watson Research Labs

Time frame

- Design and prototype development: one year
- Full rollout: in progress

Why it matters

Using its recently built patient data infrastructure as a foundation, Sainte-Justine created a new process framework to automate the gathering, managing and updating of critical research information. By overlaying this with a powerful querying and analysis tool, Sainte-Justine gives its researchers real-time access to a vast and continually updated reservoir of clinical and genomic information, which will help speed childhood cancer research and improve patient outcomes.

In addition to automation and efficiency at the front end, Sainte-Justine's solution also provides a powerful analytical inquiry tool for researchers. By using the IBM Data Discovery and Query Builder (DDQB), Sainte-Justine's researchers are able to identify potential cohort members by specifying attributes at a very granular level virtually in real time, replacing a process that often required several months and substantial administrative resources. Even more powerful is DDQB's ability to analyze and identify correlations between elements of patients' clinical files and their genomic patterns. Formerly, such analysis required the manual inputting of data into a database and a database administrator to run complex routines. With the new solution, researchers themselves can use intuitive query language to see the relationship between genetic patterns and susceptibility to certain pediatric disorders. But this is just one dimension of the solution's capabilities.

Perhaps most important is the fact that the new solution gives Sainte-Justine's researchers the means to cross an important threshold in complex genomic analysis. Thus far, research has focused on "Mendelian" disorders, which examined the role of heredity in pediatric illnesses and birth defects. The new Holy Grail for pediatric research is to use genomic analysis to optimize the treatment of childhood diseases by understanding how a child's genetic makeup can impact their responsiveness to particular treatments, as well as their vulnerability to side effects. It's not uncommon for a child to receive a cocktail of half a dozen different drugs, with the impact of each component potentially affected by his or her genetic makeup. Understanding this complex relationship – a discipline known as pharmacogenomics – gives physicians a tool to maximize the effectiveness of childhood treatments while minimizing their side effects. Achieving this goal requires not only powerful analytical capability but also the ability to procure and validate a deep reservoir of patient information over time. Sainte-Justine's solution, by securely, efficiently and automatically performing this function, provides the hospital with a foundation for this next generation of pediatric research. To help build this foundation, Sainte-Justine's researchers worked with computational biologists from IBM T.J. Watson Research Labs.

Dr. Daniel Sinnett, head of the Oncogenetic Research at Sainte-Justine's Research Centre, expects the IBM solution to keep the hospital at the forefront of pediatric research, thereby increasing its ability to attract both funding and world-class research expertise. "Today our fundamental understanding of genetic susceptibility to disease is very limited, particularly in pediatrics," says Dr. Sinnett. "With IBM's assistance, we have vastly increased our ability to exploit the knowledge of the human genome in the way we understand and treat pediatric illnesses."

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit us at:

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Tivoli software

San Francisco PUC gets better data for capital planning with IBM Maximo Asset Management solution

Overview

- ***Challenge***
  Provide better documentation for budgetary planning and better ratio of preventive to corrective maintenance, which is how the organization is measured against the industry
- ***Solution***
  Use information on maintenance history and status of equipment collected with IBM Maximo® Asset Management to provide visibility into maintenance operations and physical infrastructure for making better operating and planning decisions
- ***Key Benefits***
  - *11% improvement in the ratio of preventive to corrective maintenance*
  - *Provide more complete documentation for budgetary planning*
  - *Respond to information faster with reports generated from IBM Maximo software*

Surrounded on three sides by the Pacific Ocean and the San Francisco Bay, the city of San Francisco lives in close proximity to water. Thanks to the efforts of the 1,800 employees and the facilities of the San Francisco Public Utilities Commission (SFPUC), these waters are spared from the pollution that the city drains into its sewers and runoff basins. The 100-year-old division treats an average of 80-90 million gallons of wastewater during dry weather and during wet weather a peak of up to 370 million gallons of combined wastewater and storm runoff.

"The real value of IBM Maximo software is the information it gathers. We're collecting information on why a piece of equipment broke down, which gives us a better understanding of what to do with it."

– John Powell, Superintendent and Asset Manager, Wastewater Enterprise, San Francisco Public Utilities Commission

"IBM Maximo software was able to gather the information we needed to make more informed recommendations."

– John Powell

Few people are as aware of how this process is achieved as John Powell, superintendent and asset manager of the SFPUC Wastewater Enterprise. Assigned to the enterprise ten months ago from a previous position elsewhere at the SFPUC, Powell's job is to make sure that the physical infrastructure of the system is in working order through proper maintenance. That infrastructure includes wastewater treatment machinery, basins and piping including huge capital investments such as large-capacity lift pumps, dewatering centrifuges, belt presses, engine generators and a complex series of huge collection boxes—large basins strategically located throughout the city that capture stormwater. All of these assets have to be maintained properly in order to extend their life. Alternatively, in some cases, those assets have to be replaced.

"It's absolutely critical to know when it's more expensive, and less efficient, to keep repairing a piece of equipment as opposed to investing in new technology," Powell says. "We were at a stage where we didn't have enough information to be making those decisions."

Need for greater visibility

One of Powell's new assignments was to implement IBM Maximo software at the Sewer Operations group, which is charged with monitoring and responding to citizen calls related to the collection system. The system is extensive, consisting of approximately 950 miles of mains, boxes and basins, some over 110 years old. The work order system that Sewer Operations had was not providing enough financial information to give management a clear picture of when sewer segments should be replaced. Not only was the information inadequate for making budgetary requests, the division was also hampered by lack of information about its own measurements of preventive to corrective maintenance, a ratio that is widely used by the industry to gauge the health of an organization.

Working smarter with IBM Maximo software

Outside the Sewer Operations group, the SFPUC has been using Maximo software for more than eight years to manage its assets and track purchases, costs and work order history. Recently, SFPUC did an evaluation comparing IBM Maximo software with other computerized maintenance management systems products to decide whether to upgrade to IBM Maximo Asset Management 7.1 or use another platform. The evaluation generated a highly favorable opinion of the product. "We know the strengths of IBM Maximo software," says Powell. "We felt that Maximo could do what we were looking for right out of the box. You don't have to modify it to make it usable."

"We realized that IBM Maximo software was able to gather the information we needed to make more informed recommendations," says Powell. "You can pull a failure class, a problem code, you can do work order history, and you can see if there's inventory in the warehouse or if you have to order parts." The Sewer Operations group has already improved the ratio of preventive to corrective maintenance by approximately 11 percent over the last calendar year, meaning that the organization has been doing more preventive and less corrective maintenance. This is how SFPUC is measured against industry standards. "This is a modest gain, but for our large organization a significant improvement," says Powell.

Along with IBM Maximo software, the Wastewater Enterprise is using ArcGIS geographic information software from IBM Business Partner ESRI to locate and measure assets spatially. It is also using IBM Cognos® 8 Business Intelligence software to pinpoint and report to management about trends in labor activity, such as the time required to get work orders, and the ratio of preventive maintenance to corrective maintenance.

Becoming more responsive

At Sewer Operations, the feeling is that major changes are being accomplished. "We're starting to realize that it's possible for us to find out what we have," says Powell. "With some work order histories from IBM Maximo software we can see that we've rebuilt a pump, say, 10 times. Maybe it's time to replace it. Or if we need a set of bearings on a weekend when vendors are closed, we can find it in another division's warehouse. As we integrate our asset management program IBM Maximo software will be the key component for storing valuable information that will be used to track life-cycle costs and simplify replacement and operational decisions for Maintenance and Operations. The goal is for the data systems to function quietly in the background so that the work in the field is done on the right gear at the right time with a minimum of delay."

IBM Maximo software integrates with the city's 311 and 28-CLEAN Customer Service systems. Both are dispatch centers that handle non-emergency problems, such as potholes, abandoned vehicles and sewer problems such as odors, loose manhole covers and overflowing storm drains.

"Problems are often solved within 24 hours," says Powell. "But the real value of IBM Maximo software is the information it gathers. We're collecting information on why a piece of equipment broke down, which gives us a better understanding of what to do with it. We are also collecting costs for labor and materials—that gives us the ability to determine the true cost of managing the system down to the component level."

Key Components

Software

- IBM Maximo® Asset Management 7.1
- IBM Cognos® 8 Business Intelligence 8.4

IBM Business Partner

- ESRI

For instance, the city was able to solve a problem of missing catch basin grates—the heavy metal grates that keep large objects from falling into storm drains. IBM Maximo software and ArcGIS revealed that all the incidents were located within a quarter mile of a scrap metal yard. "The case is still pending so we can't reveal the details, but the point is that we were able to respond to the problem much faster than we could have done without IBM Maximo software," says Powell. "We can also show reports generated from Maximo to the budget group to improve their level of confidence in what we do. We're working smarter."

Migrating to Version 7.1

To reap the benefits of a Web-based solution, Powell's group will migrate from IBM Maximo Asset Management 4.1 to version 7.1 in a few months. "Version 7.1 also has the linear assets module, which will help us manage our 30,000 pipe segments," says Powell. "We already have them loaded into IBM Maximo software, and we're working with ArcGIS to locate them on a map. From the demonstrations I've seen of 7.1, the systems should work together brilliantly."

For more information

Contact your IBM sales representative or IBM Business Partner, or visit us at: **ibm.com/**software/tivoli/products/maximo-asset-mgmt

You can get even more out of Tivoli® software by participating in independently run Tivoli User Groups around the world. Learn about opportunities near you at **www.tivoli-ug.org**

For more information on the San Francisco Public Utilities Commission, visit: sfwater.org/home.cfm

Additionally, IBM Global Financing can tailor financing solutions to your specific IT needs. For more information on great rates, flexible payment plans and loans, and asset buyback and disposal, visit: ibm.com/financing

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Servimatica S.A. shortens its recovery window and improves overall IT availability to better serve its banking customers.

Overview

Servimatica S.A.
San Sebastian, Spain
www.ibermatica.es

Industry
- Computer services

Products and services
- Business continuity and resiliency services
- Storage and data services
- IBM TotalStorage Global Mirror
- IBM TotalStorage Productivity Center for Replication
- IBM System Storage DS8100

IBM Business Partner
- Open Norte S.L.

"With more political pressure being placed on the banking industry, we are faced with similar pressures to deliver improved service to our customers. Thanks to IBM's efforts, we can do that more easily."

—Servimatica S.A.

Servimatica S.A., a subsidiary of Ibermática S.A., is an IT services company that caters predominately to its three banking customers—Kutxa, Caja Vital and Banco de Madrid. The organization offers outsourced IT support services, as well as production and system services.

Challenge

In the past, Servimatica had managed the IT operations of its three largest banking customers from a single data center. To protect these systems, the organization had secured recovery services from IBM with an agreed upon two-day restore time in the event of an outage. Recent financial regulations, including the Basel II Accord, had rendered this agreement obsolete, and Servimatica needed to shore up its recovery strategy to comply with the new regulatory standards.

Solution

Pleased with its prior IBM solution, Servimatica turned to IBM Global Technology Services and IBM Business Partner Open Norte S.L. to secure a new business resiliency solution. The IBM team, working with staff from Open Norte, delivered a redundant server and storage network based on IBM server and storage hardware. The client now uses IBM TotalStorage® Global Mirror copy technology and IBM TotalStorage Productivity Center for Replication software to mirror data between a pair of newly installed IBM System Storage™ DS8100 storage servers. The IBM Global Technology Services team also deployed a pair of IBM System z® servers to support the core applications and financial databases of Servimatica's banking customers.

Benefits

- Reduces the recovery window from two days to a few hours—even if a complete outage occurs at the company's primary data center
- Improves system availability with redundant IT systems
- Helps Servimatica and its customers address compliance with strict government regulations

IBM Global Services
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Produced in the United States of America
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Sisters of Mercy Health System streamlines its management efforts by establishing uniform IT processes

Overview

Sisters of Mercy Health System
St. Louis, Missouri, United States
www.mercy.net

Industry
- Healthcare

Employees
- 33,500

Products and services
- IT strategy and architecture services
- Middleware services
- IBM Infrastructure Resource Management
- IBM Tivoli Application Depedency Discovery Manager
- IBM Tivoli Service Request Manager

"If we were going to launch our new Epic system in February, we needed to standardize operations at all of our facilities quickly. Not only did IBM deliver these uniform processes on time, but IBM did so without going over budget."

— Sisters of Mercy Health System

The Sisters of Mercy Health System (Mercy) is a network of healthcare facilities spread across seven states in the southern United States. The organization includes 18 acute care hospitals, two heart hospitals and seven other medical facilities.

Challenge

To improve the quality of care it could provide to its patients, Mercy had purchased the Epic clinical information system to manage its medical records. Unfortunately, the organization had developed a number of segmented processes and IT systems at its 27 facilities that complicated the rollout of the Epic platform. Mercy needed to standardize its systems, and it needed to do so quickly before the launch of the Epic system. Ideally, by standardizing its processes and systems, the healthcare organization would be in an improved position to roll out additional systems in the future.

Solution

Mercy teamed with IBM Global Technology Services to quickly standardize IT processes across its 27 facilities. As part of a 12-month time-and-materials contract that included IT strategy and architecture services, as well as middleware services, the IBM team implemented the IBM Infrastructure Resource Management accelerator suite. The accelerator solution, which is based on IBM Tivoli® Service Request Manager software, offers the healthcare organization an integrated IT Infrastructure Library® (ITIL®) framework. The IBM Global Technology Services team also deployed IBM Tivoli Application Dependency Discovery Manager software to help the organization support its configuration management processes.

Benefits

- Streamlines management efforts and establishes a clear governance model
- Establishes a uniform architecture that can support the organization's new clinical information system
- Helps simplify future growth and integration efforts with a standardized architecture

IBM Global Services
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Produced in the United States of America
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Sky builds a state-of-the-art broadband network with the support of IBM Tivoli Netcool

Overview

■ ***The Challenge***

In order to further innovate and diversify its business, Sky sought to challenge incumbent telecommunications companies by launching a consumer broadband service for its TV subscribers, offering a richer broadband experience and much better value. This would require a state-of-the-art network monitoring solution, capable of scaling to handle a complex infrastructure supporting millions of users.

■ ***The Solution***

Working with Eirteic Consulting (www.eirteic.com), Sky deployed a suite of IBM Tivoli Netcool software to monitor its entire infrastructure – from the fibre optic network up to the application level. This network and service assurance solution currently monitors thousands of network devices and application services at over 1,200 exchanges, providing 24x7 availability to more than 1.6 million broadband customers who have joined the UK's fastest growing broadband service.

■ ***The Benefits***

Tivoli Netcool provides comprehensive end-to-end monitoring for the Sky transmission network, which simplifies root cause analysis and should ensure a rapid response to problems. As a result, Sky's broadband has received industry recognition for its levels of customer service – underlining the company's total commitment to achieving the highest levels of service.

IBM Business Partner

Eirteic CONSULTING
Your Partner for Superior Management Solutions

"One of the most impressive things about Eirteic was their flexible approach. They did an excellent job of adapting to our changing requirements."

Selwyn Castleden
IS Director
Sky Network Services

Sky is a leader in entertainment and home communications, with 8.9 million households in the UK and Ireland enjoying an unprecedented choice of movies, news, entertainment and sports on its digital television platform, Sky Digital.

Through its investment in an all-IP broadband network, Sky is also the fastest growing home communications company in the UK, with Sky Broadband providing great value services to Sky customers, supported by Sky Talk, the UK's fastest ever growing home telephony service.

The company employs over 15,000 people, and focuses on delivering the highest possible quality of service to its customers.

Sky saw an opportunity to diversify its portfolio of services by entering the home broadband market. The company acquired Easynet, one of Europe's leading Internet service providers (ISPs) and the owner of a state-of-the-art fibre optic transmission network in the UK. This provided the infrastructure required to launch Sky Broadband – but there were still a number of challenges to be faced, as Selwyn Castleden, IS Director at Sky Network Services, explains:

"Easynet had built a leading-edge transmission infrastructure, an ideal foundation on which to build a new consumer broadband service – but as networks get larger, they also get more complex. The existing monitoring solution was not really scalable enough to manage the entire infrastructure effectively.

"Moreover, Easynet's existing customer-base consisted mainly of business customers. With businesses, there is less pressure to provide true 24x7 availability, since most critical activity tends to take place during extended business hours only. By contrast, our objective was to offer broadband to millions of households, and since home users can be online at any hour, we had to ensure that the infrastructure could deliver the service they need, whenever they want to use it."

Improving flexibility with end-to-end monitoring

Sky looked for a network and service assurance solution capable of scaling to monitor and process millions of events across its entire infrastructure – which includes thousands of network devices and application services at over 1,200 exchanges

"We wanted a solution that would give us greater visibility and control of everything from the fibre optic network up to the application level," explains James Monico, Network Applications Manager. "We organized a full RFP, and the IBM Tivoli Netcool solution demonstrated that it could provide the end-to-end network monitoring solution we required."

Sky decided to implement a suite of IBM Tivoli Netcool software, including Netcool Network Mediation, Netcool/OMNIbus, Netcool/Webtop, and Netcool/Realtime Active Dashboards. Now the company needed an experienced IT partner to help it deploy the software successfully and configure it for Sky's complex transmission network.

"The consultants from Eirteic Consulting were very impressive and gave us a lot of confidence that they could deliver the project successfully," says James Monico.

Selwyn Castleden adds: "One of the most impressive things about Eirteic was their flexible approach. We had a target to get Sky Broadband up and running within six months, even though it required a full refresh of all the hardware. This meant that in some cases, we needed to deploy tactical platforms as stepping stones to the final strategic solution – and of course, this made the deployment of the monitoring solution more difficult because the infrastructure changed several times. Eirteic did an excellent job of adapting to our changing requirements."

Improving customer satisfaction

The IBM Tivoli Netcool software provides a single point of control for monitoring the entire Sky Broadband network, and will soon also be used to perform server monitoring at Sky's data centres. Tivoli Netcool Network Mediation is used to collect, process and distribute network traffic data, while Netcool/OMNIbus provides the centralized monitoring engine, detecting faults and notifying the Sky team about the most urgent issues.

Tivoli Netcool/Webtop and Netcool Realtime Active Dashboards provide a front-end that delivers realtime reporting and visualisation of the state of the network, including graphical representations of service and availability levels. These can be accessed via a simple Web-browser, so there is no need to install client software on each employee's workstation.

"Tivoli Netcool gives us all the information we need to monitor the network on a single screen – so it is easy for us to see what needs to be done and react rapidly to any issues that arise," says James Monico. "Since service quality is such a priority for Sky, the ability to respond quickly and resolve issues before they affect our customers is a major advantage."

Selwyn Castleden concludes: "IBM Tivoli Netcool gives us the reliable, end-to-end monitoring we need to manage our state-of-the-art network infrastructure – which not only means that we can deliver excellent service as our customer-base grows, but should also support Sky's ambitious future plans for innovative online services."

"The IBM Tivoli Netcool solution demonstrated that it could provide the end-to-end network monitoring solution we required."

James Monico
Network Applications Manager
Sky Network Services

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CASE STUDY

Business Continuity

MSI Establishes High Availability Between Physically Separate Data Centers

The largest health care provider in its region, SMDC Health System of Duluth, Minn., operates four hospitals and 17 clinics. The organization serves a rural area larger than the state of Delaware. Its 7,000 physicians and employees handle more than 400,000 patient visits each year. In an organization this large, databases hosting vital medical records, patient billing, and other business-critical information -- sometimes life-saving information -- had better be readily available on time and at all times.

Location: Duluth, MN

Industry: Health Care

Customer: SMDC Health System

Solution Focus: Business Continuity
Establish high availability of EPIC applications across geographically separate data centers

Customer Requirements:
- Optimize disaster resiliency of EPIC across two separate data centers
- Enhance scalability to easily manage new growth
- Increase processing power and performance
- Verification of uptime in outage situations

Hardware, Software & Services:
- IBM® pSeries® 590s
- IBM HACMP-XD software
- IBM Peer to Peer Remote Copying (PPRC) metro mirroring software

Results:
- Successfully tested for planned, unplanned and multiple-error outages
- Verified synchronous failover in various high-volume workloads for both locations
- Upgraded server with built-in expandability for quickly growing patient database
- Reduced delays in accounting and other departments
- Improved access to patient records and other critical information

These databases are built on EPIC, a widely used records management software program that uses applications that are integrated from the beginning. This allows people to access the right information at the right time and offers web access to extend the user's available resources.

While many health systems have set up high availability failover within a single data center, SMDC mapped out a plan with MSI Systems Integrators (MSI) to take resilience one step further. SMDC now has the first EPIC installation, based on the IBM hardware platform, implementing an environment that facilitates automated failover between physically separate data centers utilizing an extended distance (XD) software component.

The Challenges

Today's most sophisticated data centers boast redundancy in virtually all aspects of their infrastructure. SMDC realized there was still a huge risk of losing critical data from a broader site failure that could occur with a major power outage or through catastrophic physical damage to the data center. They just couldn't take the gamble.

SMDC wanted a disaster resilience solution that could be implemented across geographically separate data centers while maintaining sub-second response times of high-volume transactions and ensuring data integrity in the case of a major disaster.

In addition to continuous operation, the solution would need to increase processing power for SMDC's EPIC applications and bring built-in scalability to accommodate new applications down the road.

The MSI Solution

MSI conducted a comprehensive Proof of Concept (POC) workshop to prove the effectiveness of two IBM technologies -- HACMP-XD and Metro Mirroring Peer-to-Peer Remote Copy (PPRC) -- which together instigate a highly reliable, automatic failover process for a variety of problem situations.

Metro Mirror is an IBM storage service designed to create and maintain a real replica of data between locations. The service in two separate storage subsystems communicates to create and maintain copies of data between locations. The XD component of HACMP-XD facilitates communications and actions between servers in separate locations. PPRC configuration menus are built into the XD software, allowing the two technologies to work together to enable automated failover and recovery for data centers typically within 18 miles of one another.

msi systems integrators

www.msiinet.com
800.640.4674

During a Proof of Concept Plan and Design, MSI set up two IBM pSeries production servers and a third IBM pSeries server, which held a shadow database to verify the integrity of the EPIC database after failover. The shadow server also acted as the EPIC transaction driver to generate a representative mix of transactions accessing and updating the 600-gigabyte database. The transaction driver was set to push the EPIC production system to high workloads, over 70 percent utilization, to test the effects of a realistic workload.

The POC demonstrated successful failover between the two production servers in three key types of outages: planned outages, unplanned outages and forced or multiple error situations. The Proof of Concept allowed MSI to fine-tune and document processes that ensure the software works automatically and in both directions -- that is, from the first production server to the second, as well as from the second back to the first.

MSI's workshop methodology accelerated SMDC's understanding of how the components work together and identified operational or setup issues unique to our environment.

The Benefits

MSI's lab environment provided a true-to-life demonstration of how well pSeries, HACMP-XD and PPRC solutions integrate to achieve a highly available, robust and scalable environment for EPIC across geographically separate data centers. SMDC no longer has the risk that many of its competitors that use EPIC have. SMDC can continue doing business confidently knowing that not even a broad site failure can harm its most precious assets.

Because proper procedural documentation and appropriate security is essential to maintain system availability and data integrity, MSI also left SMDC with a great deal of knowledge and detailed documentation in terms of how the software and hardware would respond in various types of disasters, and what actions would need to be followed to rectify each of the conditions created.

> ***"Healthcare delivery today relies on a complex set of tightly interfaced digital systems [requiring zero data loss and recovery times measured in minutes]. MSI has been a great partner in building and executing our plan to provide our caregivers and the patients they serve a highly resilient and expandable infrastructure."***
>
> ***- Dennis Smith***
> ***Director, Technology Systems, SMDC***

Summary

SMDC Health System, a world-class organization, is committed to innovation and excellence in medical care, education and research. A key element to the delivery of high quality health care is the use of electronic health records (EHR). EHR offers health care providers with an integrated view into the medical history of healthcare clients. This integrated view enhances provider efficiency, quality of service and lower costs of care delivery.

The SMDC electronic health record system is designed using integrated technologies that include IBM servers, IBM storage and EPIC Systems software solutions. Using multiple, interconnected data centers that are distributed across the SMDC campus, the electronic health records system has been designed to protect this service from the most common local disasters.

By automating the EHR recovery processes, SMDC has the capability to return electronic health record services to production in a matter of minutes following a disaster. The value that EHR brings to patient care means that legacy disaster recovery techniques, which provided recovery of the service in a matter of hours or even days, no longer meet the demanding SMDC standards for patient care.

The information systems team is committed to supporting the mission and vision of SMDC Health System by delivering services that support the continued delivery of world-class medical services. By working with two key information systems solution partners, MSI Systems Integrators and EPIC Systems, SMDC has developed an electronic health records capability that provides leading EHR function, capability, availability and security.

msi systems integrators

SMDC HEALTH SYSTEM

IBM Premier Business Partner

Southwestern/Great American virtualizes on IBM BladeCenter for full disaster recovery

Overview

■ ***The Challenge***

Sales-based Southwestern/Great American (SWGA) determined that multiple business systems were not serving the corporation well. Different backup, archive and restore processes and an uncertain disaster recovery plan all needed to be improved to secure business data. The technical objectives were to simplify the IT infrastructure, reduce costs and implement a scalable solution.

■ ***The Solution***

Worked with SAP, IBM and Dynamix, an IBM Premier Business Partner to unify and consolidate SAP and non-SAP application environments onto IBM BladeCenter and IBM Systems Storage DS4700; used VMware ESX to run multiple SAP and non-SAP application servers on each physical server; automated data backup, restore and archive processes with IBM Tivoli Storage Manager; implemented second IBM BladeCenter and DS4000 solution as disaster recovery and failover service.

■ ***The Benefits***

Automatic backup, restore and archive processes reduce IT administration workload and provide reliable data protection; CPU utilization has been raised as high as 70 per cent, reducing the need to invest in new servers.

■ ***Key Solution Components***

Industry: Retail
Applications: SAP® ERP 6.0, including financial accounting, controlling, sales and distribution, materials management, and warehouse management functionalities, SAP Solution Manager 4.0
Hardware: IBM® BladeCenter®, IBM HS21 blade servers, IBM System Storage® DS4700
Software: IBM Tivoli® Storage Manager, VMware® Infrastructure including VMware® vCenter Server and VMware® ESX
Services: IBM Premier Business Partner Dynamix, IBM Global Financing

Established in Nashville, Tennessee in 1855, Southwestern/Great American, Inc. today is a diversified, growing, international, sales-driven, employee-owned corporation. Its flagship is the Southwestern internship program. College and university students from all over the world participate in Southwestern's summer program. From these students, companies are started using the capital, support and resources of SWGA's business incubator.

Using shared corporate services and led by former Southwestern student dealers, some of the many industries include Direct Selling, Real Estate, School Fund-Raising, Customized Publishing, Fine Art Consulting, Work and Travel Sponsorship, Insurance and Financial Services, Executive Search and Recruitment, Sales Consulting and Sales Training.

SWGA has relied on SAP applications to manage its business for many years, alongside Microsoft® Office®, Exchange® and other Microsoft Windows®-based applications.

IBM | SAP®

"We were looking to virtualize basically the entire data center, and it seemed that IBM BladeCenter would be the most cost-effective way to deploy virtual machines – and it certainly has been: adding a blade to the chassis has been very easy and cost-effective."

Dave Brogan, Database Administrator/ Technical Support, Databases, Southwestern/Great American

"One of the advantages is that we can do more than 90 per cent of our restores without the need to recover tapes from our warehouse or even mounting any tapes. You don't have to worry about what data is on which tape, it's all managed by Tivoli Storage Manager."

Ed Solima, Director of IT, Southwestern/ Great American

There was little application integration between the two environments, particularly at the infrastructure level. Separate backup, restore and archive procedures were required – operated manually – and there were two disaster recovery solutions in place. This twin-track approach tended to increase operational expenses, with two backup sets to manage and store, and additional hardware investments. Disk capacity on the systems was not shared, resulting in over-investment in storage.

Choosing the right route

SWGA engaged SAP, IBM and an IBM Premier Business Partner, Dynamix, to address its business objectives. In particular, SWGA wished to improve, unify and simplify its data backup, restore and archive processes, and implement a single disaster recovery procedure for all business systems.

Long experience of SAP applications had shown SWGA the value of reliability and performance. Though Dell was the preferred hardware vendor for non-SAP applications, the move to blades prompted the team to invite IBM to propose a solution, too. The close relationship between SAP and IBM gave SWGA confidence in the system sizing proposal, and real-world success running SAP applications on other IBM platforms showed that IBM understood the business needs, offering a sound business case. Funding for the complete solution was provided through IBM Global Financing on a three-year lease. A major concern was to create a configuration that would provide very high reliability, as the SAP applications are central to SWGA's business operations.

SWGA selected an integrated solution based on IBM BladeCenter, IBM DS4700 storage, IBM Tivoli Storage Manager and VMware ESX. This highly robust solution offers a unified data backup, restore and archive environment, and introduces a full disaster recovery solution. Additionally, the storage area network helps to reduce total storage costs by maximizing disk utilization, and IBM Tivoli Storage Manager helps to cut system administration costs through process automation.

Sizing the solution

The first step was to size the solution, based on existing usage data. SWGA uses a range of SAP ERP functionalities, including financials, controlling, sales and distribution, materials management and warehouse management. Some 250 online or dialog users access the applications regularly, accessing 600GB of data. A number of offline or batch processes, such as standard reports, are run during off-peak hours, and some power users are able to run ad-hoc queries either online or batch.

SWGA approached the IBM SAP Sizing Center, a service offered by the Techline Americas group in West Chest, PA. which provided its recommended CPU, memory and I/O capacities. These system specifications were used to generate the hardware tender documents sent to Dell (as the incumbent supplier for Intel processor-based servers) and the IBM Business partner, created a robust solution with high availability and disaster recovery factored in.

Completing the migration

SWGA took a two-stage approach: first moving to the new infrastructure and then upgrading the SAP applications.

In the December 2007 holiday season, SWGA migrated its existing SAP R/3 4.6C applications to the new BladeCenter servers, each populated initially with three HS21 blades. The BladeCenter and BladeServers

architecture leverages high-performance Intel quad-core processors to provide excellent performance for SAP and non-SAP applications. The HW is based on multiple levels of redundancy and as such IBM BladeCenter is highly available and can support the IT reliability needs of SWGA. One BladeCenter supported the production environments for both SAP and non-SAP applications, and the second BladeCenter supported development and test environments. The SAP landscape replicated the previous production, development and test environments as closely as possible, with very little change to the user interfaces or experience.

The intention of this arrangement was to deploy, test and operate existing SAP applications on VMware infrastructure, BladeCenter and a storage area network (SAN) based on DS4700 storage. This intermediate stage would also allow existing Microsoft Windows-based applications and data to be integrated into the SAN, and a unified backup process created and deployed with minimum business risk. Dynamix provided migration services, assisted by a certified SAP Migration Consultant based in Germany. Dynamix also advised on the implementation and configuration of VMware ESX on the BladeCenters, as both technologies were new to SWGA.

Dave Brogan, the database administrator who led the migration process, comments, "We were looking to virtualize basically the entire data center, and it seemed that IBM BladeCenter would be the most cost-effective way to deploy virtual machines – and it certainly has been: adding a blade to the chassis has been very easy and cost-effective."

SAP application upgrades were, by comparison, an even easier process. During the Independence Day holiday, which conveniently fell on a Friday in 2008, SWGA successfully migrated to SAP ERP 6.0.

Achieving full disaster recovery

SWGA took the opportunity to move both the SAP and general business applications away from direct-attached storage to a storage area network (SAN). The production location contains the IBM DS4700 storage system, with 2TB (raw) capacity, configured as RAID 5. A Quad-Core Intel Xeon processor X5470-based server provides backup and archiving service for heterogeneous server and storage environments.

Tivoli Storage Manager completes the daily differential backup by creating virtual tape images copied to tape. Physical tape management is handled by Tivoli Storage Manager, and the manually updated Access database has been eliminated.

Tivoli Storage Manager tracks changes to system and SAP application as well as database and file data. Using Tivoli Storage Manager has also dramatically reduced the backup duration, since the incremental backup feature eliminates the need for a full backup except where selected for operational reasons.

Ed Solima, Director of IT at Southwestern/Great American, says, "One of the advantages is that we can do more than 90 per cent of our restores without the need to recover tapes from our warehouse or even mounting any tapes. You don't have to worry about what data is on which tape, it's all managed by Tivoli Storage Manager."

SWGA created a secondary site with a similarly sized IBM BladeCenter and

"The BladeCenter solution has helped us to simplify the IT infrastructure and reduce costs. We now have a model in place for full disaster-recovery capabilities, with automated processes that significantly reduce our IT administration workload with a rock-solid, highly reliable infrastructure ready for the future.

Ed Solima, Director of IT, Southwestern/ Great American

"What you're gaining through virtualization with VMware is not having a separate piece of hardware to buy – you can buy a slightly more robust piece of hardware and virtualize. In the typical Microsoft Windows environment you typically get 10 per cent CPU usage, whereas with virtualized application servers you can reach around 70 per cent."

Ed Solima, Director of IT, Southwestern/ Great American

IBM DS4700 storage system. This site houses their test and development SAP environments. It also serves as a fail-over site with production data being replicated to the secondary site using a product from Vizioncore called vReplicator.

SWGA is currently working through the replication setup with the plan to have full disaster-recovery capabilities by implementing the two BladeCenter and storage solutions. If the SAP production system should be struck by disaster, the development and test BladeCenter is available as a failover production system – correctly sized, with a known operating environment.

Selecting the virtual route

The VMware virtualization approach has created a simpler data-center solution for SWGA, as it removes the need for a separate physical server for each part of the SAP ERP environment. If demand rises, SWGA is able to create a new ESX virtual machine on an existing blade for the new service within a matter of hours. This includes creating temporary virtual machines for software testing, something that was impossible before.

"What you're gaining through virtualization with VMware is not having a separate piece of hardware to buy – you can buy a slightly more robust piece of hardware and virtualize," says Ed Solima. "In the typical Microsoft Windows environment you typically get 10 per cent CPU usage, whereas with virtualized application servers you can reach around 70 per cent."

The virtual environment has also increased total uptime. Where a physical server requires maintenance, SWGA uses VMware VMotion to move the virtual machines it contains to another blade, so there is no service interruption.

Choosing IBM solutions

The corporation's long experience of SAP applications had shown SWGA the value of reliability and performance. Though Dell was the preferred hardware vendor for non-SAP applications, the move to blades prompted the team to invite IBM to propose a solution, too. The close relationships between SAP and IBM provided a convincing system-sizing proposal, and the integrated BladeCenter, DS4700 storage and Tivoli Storage Manager proposition offered a sound business case. Funding for the complete solution was provided through IBM Global Financing on a three-year lease.

Achieving business results

Peak sales for SWGA are typically in the Fall, so embedding the changed landscape and completing the SAP application upgrade in July was essential.

The systems and application migrations were achieved on time and on budget, and have delivered system response times, even at times of maximum activity, of less than 0.8s – and normally below 0.4s. The integrated, automated backup, restore and archive processes provided by Tivoli Storage Manager have significantly reduced the IT team's workload, and the infrastructure for full failover and disaster recovery capabilities have been implemented for the business-critical production environment.

Ed Solima concludes, "The BladeCenter solution has helped us to simplify the IT infrastructure and reduce costs. We now have a model in place for full disaster recovery capabilities, with automated processes that significantly reduce our IT administration workload with a rock-solid, highly reliable infrastructure ready for the future."

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Storstrøms ErhvervsCenter lays the foundation for a new model of elderly at-home healthcare.

Overview

- ***Business Challenge***
  A regional business development group, Storstrøms ErhvervsCenter sought a way to mitigate the looming strain on healthcare resources that the region's growing elderly population represented – and do so in a way that created new revolutionary service opportunities.
- ***Solution***
  Storstrøms ErhvervsCenter worked with IBM and local healthcare providers to create a predictive health monitoring system. By combining advanced telemetry technology with leading-edge practices in other industries, SEC laid the groundwork for a whole new way of managing chronic illnesses among the elderly.
- ***Key Benefits***
  - *Estimated reduction of €100 million in healthcare costs associated with debilitating falls over a ten-year period (for a region of 800,000 citizens)*
  - *Estimated reduction of €25 million in healthcare cost savings related to improved means of monitoring hypertension*
  - *Improved quality of life for elderly citizens*
  - *More efficient allocation of scarce healthcare resources*

Storstrøms ErhvervsCenter (SEC) is a publicly funded independent business development center whose mission is to assist small and medium-sized enterprises, with the aim of strengthening the economy of the Storstrøm region in Denmark. One of SEC's top goals is to inspire companies in fields such as healthcare services to leverage new technologies and services to support growth.

While there may be a number of ways to define it, business innovation is at the core about finding new ways to solve problems or improve practices. In many cases, innovation tends to happen within an industry or a market, since many business practices, issues and requirements are specific to particular industries and markets. But it's also true that some of the most notable improvements come about when innovations cross industry boundaries. Making cross-industry innovation work depends not only on the strength of the initial idea, but on the creative vision to connect it to broader problems.

> *"The work we achieved with IBM provides clear evidence that remote predictive monitoring of chronic medical conditions can help healthcare organizations deliver better outcomes while achieving a whole new level of resource efficiency."*
>
> – Ann Roldan, project manager, Storstrøms ErhvervsCenter

Business Benefits

- Estimated reduction of €100 million in healthcare costs associated with debilitating falls over a ten-year period (for a region of 800,000 citizens)
- Estimated reduction of €25 million in healthcare cost savings related to improved means of monitoring hypertension
- Improved quality of life for elderly citizens
- More efficient allocation of scarce healthcare resources

Lessons from the farm

One particularly compelling example of this exchange originated in Denmark's livestock industry, where time-tested processes came into conflict with regulatory changes. As long as there have been livestock farms, success has depended on getting the most from animals, and that includes maximizing their reproductive efficiency. For pig farmers, one of the biggest challenges in this area has been in knowing when a sow was ready to mate, a determination usually made by visually observing their behavior while immobilized in a pen. When the European Union established new rules that restricted their ability to restrain their pigs, farmers – especially on large farms – needed to find a more practical and efficient method of sensing a sow's reproductive readiness and reacting accordingly. Working with a group of farmers, researchers from the University of Copenhagen used 3D accelerator sensing technology to develop a wireless telemetry solution that detected the telltale changes in a sow's gait that indicated estrus, and automatically notified the farmer. This enabled pig farmers to circumvent the disruptive effects of the new regulations.

The second half of this innovation story shifts the focus to Storstrøm County, a 2,000-square-mile region in southeast Denmark with a population of just over 260,000 – and into the realm of human healthcare. Like most of Scandinavia, Storstrøm County operates a world-class healthcare services infrastructure. While funding comes from the Danish government, it is the responsibility of counties such as Storstrøm to administer healthcare services. Beyond this, Storstrøm also plays a more general role in supporting regional business development through Storstrøm ErhvervsCenter (SEC), a publicly funded organization whose mission is to assist small and medium-sized enterprises and to inspire them to leverage new technologies and services to encourage their growth. It was in the latter role that SEC (www.sec.dk) provided a catalyst for healthcare innovation.

> *"The right combination of fresh, creative thinking and enabling technology can fundamentally change the equation in healthcare service delivery."*
>
> – Ann Roldan

Heading off trouble

Like much of the developed world, SEC recognized the increasing strain that an aging population was likely to place on the county's healthcare infrastructure. Of particular concern was the growing population of elderly patients with high blood pressure or mobility issues that make them prone to falling. To manage their conditions and prevent adverse events, caregivers need to make frequent and costly visits to patients' homes to monitor them. With this population expected to surge – along with that of chronically ill elderly citizens in general – Storstrøm foresaw even greater strains on its healthcare resources in the future. The real motivator, however, is the much higher personal, clinical and financial costs society incurs when prevention fails and at-risk patients become victims of debilitating falls, broken hips and strokes.

SEC sought not only to head off this problem, but to do so in a way that would catalyze Storstrøm's healthcare community. Cross-industry innovation proved to be a critical ingredient in realizing this vision.

In collaboration with local municipalities and healthcare providers, SEC engaged IBM to help it develop a pilot system to demonstrate the viability of the concept. At its most basic, the system needed the ability to detect and then transmit the relevant health data, which were defined as blood pressure readings and – more challenging – a measure of the "normalness" of a patient's physical movement. It was at this point that IBM introduced the idea of adapting the livestock motion detection approach to the human motion requirements of SEC's solution. It was a perfect fit, opening the door for a first-of-a-kind healthcare telemetry solution.

Sensing trouble and sending help

Led by IBM Global Business Services, IBM designed and successfully built a wireless predictive monitoring solution that measures blood pressure and muscle movement at the patient's home and feeds it – securely and automatically – to a centralized facility where it can be analyzed and acted on by healthcare providers. In designing the solution, IBM's overarching goal was to maximize its ease of use and minimize its intrusiveness on patients' day-to-day activities. It achieved this by simplifying the sensing method on the front end of the solution. To read blood pressure, elderly patients step on a scale in their homes and affix a measuring device enabled with a Bluetooth wireless sender. In stepping on the scale, the patient automatically transmits the data from the device to an asset monitoring hub, a specially configured Sony Ericsson P910i Smartphone that performs the solution's most critical functions. The "brains" of the hub are an embedded software solution called IBM Personal Care Connect (PCC) that was developed by IBM using the IBM WebSphere Everyplace suite of products. The key sensing function is performed by IBM WebSphere Event Broker, which – upon detecting the signal – triggers IBM WebSphere MQ Everyplace to deliver the information to a remote IBM System p server, which stores it in an IBM DB2 database. If the central system detects a blood pressure reading outside of a normal range, it can be configured to send an alert that would trigger the appropriate medical intervention.

The motion sensing part of the solution was rooted in the observation that among the elderly, abnormal movements tend to signal a higher likelihood of falling. This is where the existing motion sensing technology used in the livestock solution comes in. As the patient walks, a small, belt-mounted sensing device uses Bluetooth to send motion data to the PCC hub, which uses the

Key Components

Software

- IBM WebSphere® Event Broker
- IBM WebSphere MQ Everyplace®
- IBM Mobile Connect
- IBM WebSphere Everyplace Suite Embedded Edition
- IBM WebSphere Everyplace Connection Manager
- IBM DB2®

Servers

- IBM System p™

Services

- IBM Global Business Services
- IBM Software Services for WebSphere

Time frame

- Solution design: 12 months
- Implementation: 6 months

Why it matters

In its role as a regional business catalyst, Denmark's Storstrøm ErhvervsCenter (SEC) applied a fresh approach to an old but growing problem – keeping the at-risk elderly population healthy. Leveraging advanced sensing technology, SEC laid the foundation for the automated monitoring of elderly patients in their homes, and a fundamental change in the way healthcare services are delivered.

same combination of WebSphere tools to upload the data to the centralized server. Once there, an algorithm compares the patient's motion to a baseline that the system calculates from empirical observations. As with blood pressure sensing, a motion pattern that deviated from an established norm would signal the need for caregivers to check on the patient and head off a potentially catastrophic fall. By leveraging the fundamental approach of the livestock application, IBM and SEC have established a means by which the Storstrøm healthcare system can improve patients' lives by being more proactive in the way they deliver care.

Changing the formula

As with any healthcare initiative, the most important measure of success for the predictive monitoring system is what it does for patients. To underscore this benefit, one need only look at the human and financial cost when the warning signals of hypertension and fall proneness are missed and patients suffer strokes, falls and broken hips. That's just what SEC did in a business case it compiled in the wake of the pilot. The biggest beneficiaries were the at-risk elderly, who would be far more likely to sustain high-quality lives. But so too were the broader base of citizens, for whom the efficient use of scarce healthcare resources will become an increasingly important priority. By SEC's estimates, a region of 800,000 citizens would be expected to reduce the healthcare costs associated with debilitating falls by as much as €100 million over a ten-year period, with another €25 million in savings related to improved monitoring of hypertension.

But that's just the start. True to its mission of nurturing opportunity, SEC has applied for grant funding from the European Union to further its studies and work with IBM, which will expand the system's capabilities and develop a market-ready offering. Ann Roldan, a project manager at SEC, sees the solution providing similar preventative benefits for other chronic conditions – such as diabetes – as well as in monitoring patients at home after surgery. "The work we achieved with IBM provides clear evidence that remote predictive monitoring of chronic medical conditions can help healthcare organizations deliver better outcomes while achieving a whole new level of resource efficiency," says Roldan. "It shows how the right combination of fresh, creative thinking and enabling technology can fundamentally change the equation in healthcare service delivery."

For more information

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Svenska Handelsbanken improves availability for mission-critical applications using IBM Power Systems and IBM System Storage hardware and the IBM PowerHA for i solution

Overview

Svenska Handelsbanken
Stockholm, Sweden
www.handelsbanken.se

Industry
- Banking

Products and services
- IBM Power 570
- IBM PowerVM Standard Edition
- IBM SAN Switches
- IBM System Storage DS8100
- IBM System Storage Metro Mirror
- IBM Copy Services for System i
- IBM PowerHA for i

Handelsbanken

"Using the new IBM Power Systems technology, we've been able to create a continuously available infrastructure for our mission-critical credit card and internet banking applications. Our customers can now make credit card payments or withdraw cash from ATMs 24x7."

—Svenska Handelsbanken

Based in Stockholm, Svenska Handelsbanken is a major bank in Sweden, with 459 domestic branches, as well as some branches in the Nordic countries, the United Kingdom and Asia. It offers traditional corporate transactions, investment banking and trading, consumer banking and life insurance.

Challenge

To maintain its competitive edge, Svenska Handelsbanken needed to replicate its mission-critical credit card and Internet banking applications to a second server so that the company would not lose data in the event of a disaster. The bank wanted to reduce replication administration work as much as possible and gain the ability to switch from the production server to the backup platform in under an hour. The bank needed a system that could help ensure that the backup server was in synch with the production server, regardless of transaction volumes. It was also important that the replication not consume an extraordinary amount of CPU resources.

Solution

Svenska Handelsbanken based its new availability solution on IBM Power Systems™ technology, choosing a pair of IBM Power 570 servers, running the IBM i 5.4 operating system, to act as production and backup servers.

Using IBM PowerVM™ Standard Edition virtualization software, the bank divided the production and backup servers into multiple partitions that mirror each other in real time using the IBM Copy Services for System i® solution, independent auxiliary storage pools (IASPs) and IBM System Storage™ Metro Mirror replication software. The Copy Services for System i solution—the predecessor of the current IBM PowerHA™ for i product—is the IBM i storage-based high availability cluster management offering. Each Power 570 server connects to an IBM System Storage DS8100 disk system via IBM SAN Switches.

Benefits

- Creates a continuously available infrastructure for the client's mission-critical banking applications
- Simplifies monthly server maintenance by enabling the bank to switch between production and backup systems in 14 minutes
- Provides ease of administration without requiring downtime from the bank's production server

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Produced in the United States of America
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Swedish Medical Center embraces the leading edge with a first-class data center built with help from IBM.

Overview

- ***Challenge***
  Design and construct a data center that would better support medical center needs
- ***Solution***
  A resilient, scalable and reliable data center
- ***Key Benefits***
  - *Established a central, reliable source for IT operations and control*
  - *Eliminated single points of failure*

Providing exemplary healthcare—96 years and counting

Superior healthcare goes beyond just treating the physical. It combines innovative treatment and expertise with kindness and sensitivity. It blends state-of-the-art facilities and services with genuine compassion and concern. And it provides a healing environment for those who need it—throughout the community or from around the world.

Swedish Medical Center (www.swedish.org) is one such healthcare provider. Founded in 1910 with just $10,000, a renovated apartment building and 24 beds, Swedish Medical Center is now one of the largest, most comprehensive nonprofit healthcare providers in the Pacific Northwest region. Based in Seattle, Washington, it has four campuses—First Hill, Providence, Ballard and Issaquah—that include multiple specialty clinics, a new community-based emergency room, a network of 12 primary-care clinics, a home-care services program, and affiliations with suburban hospitals and physician groups. In addition, Swedish Medical Center is a regional referral center and provides specialized treatment in cardiac care, oncology, orthopedics, high-risk obstetrics, neurological care, sleep medicine, pediatrics, and organ transplantation. The hospital also conducts clinical research.

> *"I would never have wanted to attempt this type of project without IBM and their leadership."*
>
> *—Janice Newell, CIO, Swedish Medical Center*

"We have distinguished ourselves by delivering extremely high-quality healthcare. Our doctors have earned great reputations," says Janice Newell, CIO for Swedish Medical Center.

For Swedish Medical Center, the leading edge is a critical place to be—not for the prestige, but to continue offering the most innovative healthcare available. To keep its positive momentum going, Swedish Medical Center had launched a US$120 million clinical information system. As part of the initiative, the healthcare provider was transitioning from paper-based medical records to electronic records to improve the quality of care and help minimize errors as well as help improve day-to-day operational support for medical staff members.

Performing surgery on an outdated IT environment

But as Swedish Medical Center embraced its new initiatives, its senior managers quickly realized that the current IT environment could no longer keep up with the evolving technological requirements.

"We had to get ourselves to a data center that was capable of supporting our delivery of care with technology," says Newell. "Our data center was wholly inadequate."

The hospital's IT operations and data center had reached maximum capacity. The data center also needed to upgrade its power capabilities to support new applications, which in turn would increase its cooling requirements. In addition, the overall physical IT environment for housing support personnel was constrained. The hospital clearly needed a solution that could extend its existing IT environment and infrastructure and provide the flexibility needed to meet the demands of an ever-evolving organization.

Not only was Swedish Medical Center's data center insufficient, but it also needed to be relocated to make way for the expansion of several other buildings on campus. The new data center had to be designed, constructed and brought online in less than 12 months—and schedule slippage was not an option.

Building a robust data center from the ground up

Swedish Medical Center turned to the IBM Global Services team to determine how to achieve the hospital's overall technical goals and begin the process of building a world-class data center. Initially, IBM helped Swedish Medical Center establish a statement of requirements and provided a schematic design to outline the data center's specific design points. IBM then evaluated the levels of data redundancy that were needed to avoid any single points of failure.

Swedish Medical Center and IBM also collaborated on facility size requirements to help ensure that the new data center was designed to be flexible and scalable enough to accommodate future opportunities and growth. IBM was then able to complete the design and construction of the new data center. As the general contractor for the build out, IBM assumed complete responsibility for all aspects of the construction project and specified, procured and installed all the necessary equipment to support all data center functions and operations.

After the IBM team completed construction, it tested and commissioned the facility to ensure that it was functioning properly. IBM also managed the relocation of approximately 500 servers and numerous computers and storage devices to the new facility. The relocation was accomplished with detailed planning and scheduling. Each specific application and its associated server/storage were mapped to successfully bring the application back online. The relocation was choreographed in weekend move waves to help reduce any effect on Swedish Medical Center operations.

The result was a data center that could meet Swedish Medical Center's current and future requirements—and one that was constructed within the hospital's aggressive timeline.

"IBM's strict project management processes and dedication—such as the running of crews almost 24x7—helped keep the project on its critical timeline," says Steve Horsley, director of IT infrastructure for Swedish Medical Center.

> *"I can truly say IBM led to our success."*
>
> *—Steve Horsley, director of IT infrastructure, Swedish Medical Center*

Today, Swedish Medical Center has a data center it truly can rely on. Designed to minimize the chances of downtime, the new data center incorporates dual power sources all the way back to the main building power plant. Each server cabinet includes dual power distribution units fed by separate remote power panels, which are in turn fed by dual power distribution units supported by dual uninterruptible power supply (UPS) modules with separate battery systems. The electrical system is then backed up by a redundant building generator plant. The cooling system is also redundant and features a chilled water solution supported by water source feeds from two sides of the data center and redundant air-conditioning units.

In addition, IBM provided and installed a dual-path cabling system throughout the facility. The system, which incorporates dual-fiber runs to every cabinet and copper runs where needed, is coupled with Swedish Medical Center's redundant network core to help create a highly available communications network.

At 6,000 square feet, the new data center is nearly twice the size of the old data center. It incorporates seismic supports and a number of security features, including a dry pipe preaction sprinkler system and an FM200 fire suppression system. The facility also includes a new state-of-the-art network operations center (NOC) that IBM designed and built. The NOC features custom ergonomic furniture and a 10.8' x 9' sectional screen for monitoring IT operations.

To allow for future growth, the main infrastructure was sized to accommodate the installation of additional UPS and cooling systems as needed. And because Swedish Medical Center's management team requested that IBM ensure that upgrades and maintenance would not affect ongoing IT operations, the hospital should experience no outages when it expands its systems.

"It's just night and day from where we were," Newell says.

Collaborating with IBM—facing a healthier future

With the new data center in place, Swedish Medical Center can now move forward on other key business objectives. The completion of the NOC and the IT improvements will enhance the quality and speed of medical services as well as provide noticeable financial savings. Plus, the inclusion of environmental status alerts on power and cooling along with enhanced security monitoring will help Swedish Medical Center monitor its IT operations more closely around the clock, every day. The new data center allows Swedish Medical Center to:

- *Focus on core competencies*
- *Sustain high levels of redundancy and increased capacity using dual-fed connectivity*
- *Provide future growth capacity for the new operations*
- *Accommodate existing and future UPS systems and air-conditioning requirements.*

"I would never have wanted to attempt this type of project without IBM and their leadership," says Newell.

Horsley agrees. "I can truly say IBM led to our success."

For more information

To learn more about IBM's data center solutions, contact your IBM representative or visit:

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IBM Case Study

Tivoli software

IBM Service Management helps Swiss Re IT make ITIL best practices actionable

Overview

- ***Challenge***
  Provide scalability, flexibility and quality of service to support a demanding IT environment in a global organization
- ***Solution***
  Use IBM Service Management solutions to integrate change and release management into a central deployment process based on IT Infrastructure Library® (ITIL®) version 3 best practices
- ***Key Benefits***
  Consolidated 40 change processes into one for increased efficiency; enabled move from ITIL v2 to ITIL v3 via a central deployment process; helped support compliance with internal and external requirements for service changes and new releases

As a leading global reinsurer, Swiss Re offers financial services products that enable risk taking essential to enterprise and progress. The company operates in more than 25 countries and provides its expertise and services to clients throughout the world.

New insurance acquisitions have driven tremendous growth at Swiss Re, making it the world's largest re-insurance company.

"IBM is the only company covering the whole scope we wanted to address from business process design to application development to operational infrastructure."

– *Heinrich Waldhier, Head of Process Management, IT, Swiss Re*

"Because Tivoli Provisioning Manager can be integrated in the planning process and applications can be deployed automatically without manual intervention, we can improve staff productivity and accelerate deployment times."

– *Heinrich Waldhier*

To help manage this growth, Swiss Re is moving from a siloed, manual approach in managing key IT processes to an end-to-end service management model in which IT processes are standardized, automated and aligned with business needs.

"IT should not be an inhibitor to growth," explains Heinrich Waldhier, head of process management in IT at Swiss Re. "Our executives expect IT to be there and that we manage it efficiently and effectively. Whenever it's possible, we try to automate processes to ensure that we have sustainability for growth."

One area where this shift can be seen is in the organization's handling of change and release management processes. It's not unlikely that during a single weekend IT staff must implement between 200 and 1,000 IT changes. Problems can arise and availability of services or information can be compromised when unforeseen resource conflicts occur.

Swiss Re's environment includes more than 300 three-tiered Web services running on IBM WebSphere® Portal and IBM WebSphere Process Server along with dozens of applications from IBM, PeopleSoft, SAP and others. These applications depend on both mainframe and distributed resources running a variety of operating systems (Linux®, Sun Solaris, IBM AIX®, etc). The company's mainframe environment performs nearly 30,000 MIPS (million instructions per second).

In improving change and release management processes, Swiss Re staff sought to:

- *Align best practice processes for software delivery with business requirements to accelerate development and deployment of new services.*
- *Predict IT requirements for new business services and assess how changes will affect service availability.*
- *Automate previously manual processes to help ensure that necessary tasks occur on time as planned, reducing manual labor and the risk that errors are introduced in the environment.*

"We have such complexity that we needed to create standards for how we approached service changes and new releases," says Waldhier.

Improving scalability, flexibility and quality of service

Working with IBM, Swiss Re began its journey toward an IT service management model that will enable Swiss Re to achieve the scalability, flexibility and quality of service it requires.

Throughout this process, IBM Global Technology Services and IBM Lab Services partnered with Swiss Re staff to provide implementation support as needed and to help develop a comprehensive IT governance framework that would enable staff to advance from ITIL v2 to ITIL v3 best practices.

Using IBM Rational® Method Composer software, the Swiss Re staff could quickly document its change and release management process designs and implement best practices based on ITIL.

Additionally, through specialized workshops, IBM worked with Swiss Re management and IT staff to evaluate the company's policies, enhance its IT governance solution and define guiding principles. From this, the team created an IT governance handbook that aligns IT processes with business needs and clearly outlines roles, responsibilities and governance processes. IBM also created a process maturity model, an action plan for future expansion of the IT governance policy and a scorecard that helps the company evaluate its new processes.

Following the establishment of standard processes through which change managers and developers could request changes and release managers could deploy those changes, the company began evaluating vendor tools that would help automate asset management, configuration management, change management and release management processes.

"When we started to speak with different vendors, we saw that the most important part is the change and configuration management database," says Waldhier. "We chose IBM because it had the ability and knowledge to help us standardize data configurations and change histories. IBM is the only company covering the whole scope we wanted to address from business process design to application development to operational infrastructure."

Using IBM Tivoli Change and Configuration Management Database, IBM Tivoli Release Process Manager, IBM Tivoli Provisioning Manager and IBM Tivoli Asset Management for IT

Solution Components

IBM Service Management Solutions

- Service Request Management & Fulfillment
- Server & Application Provisioning & Release Management

Solution Components

- IBM Rational® Method Composer
- IBM Tivoli® Asset Management for IT
- IBM Tivoli Change and Configuration Management Database
- IBM Tivoli Release Process Manager
- IBM Tivoli Provisioning Manager
- IBM Global Technology Services
- IBM Lab Services

> *"We now have a consistent business case template for all our services. As a result, we can easily generate a view of events we have designed on the needs of SOX and other regulations."*
>
> – *Heinrich Waldhier*

> *"By mitigating the complexity of our infrastructure we are becoming more scalable, reliable and flexible."*
>
> – *Heinrich Waldhier*

software, the team is creating a fully automated deployment engine based on ITIL v3 best practices that consolidates 40 change processes into one and enables:

- *Application owners to understand the dependencies of their applications and the potential impact on other applications or infrastructure component changes.*
- *Developers to forecast new infrastructure requirements and communicate them to IT staff. In cases where new technologies are needed to support an application, staff can gain approval early in the process to avoid unnecessary delays.*
- *Automatic implementation of change requests based on business practices.*
- *The ability to audit all changes in the production environment.*

Mitigating complexity improves productivity

By standardizing processes and sharing information for configuration, change and release management, Swiss Re has been able to deploy new services and service changes faster and with fewer errors. In fact, some service changes that previously took days to deploy can now be completed in just 10 minutes.

"Proper impact analysis is now possible using IBM Service Management software to support our change and release management processes," says Waldhier. "Because Tivoli Provisioning Manager can be integrated in the planning process and applications can be

deployed automatically without manual intervention, we can improve staff productivity and accelerate deployment times."

Additionally, by gaining a consolidated infrastructure view, developers gain greater insight into the underlying environment and can develop new services to run on existing resources rather than requiring new technologies.

"To build a new platform is a very complex and expensive undertaking," adds Waldhier. "Whenever it's possible, we try to avoid it. If an application developer uses our existing infrastructure, then the only cost to us is in added capacity."

Supporting regulatory requirements

These changes have also been essential in helping Swiss Re meet regulatory requirements and minimize risk. The organization adheres to a number of pan-European and country-specific regulations, including Sarbanes-Oxley Act (SOX) to demonstrate to shareholders and customers proper management of policies and financial operations. By creating a framework and standardizing and automating the deployment of changes, with a clear audit trail, IT staff can easily justify changes and adhere to principles set forth in these regulations.

"We now have a consistent business case template for all our services," says Waldhier. "As a result, we can easily generate a view of events we have designed on the needs of SOX and other regulations."

And according to Waldhier, these changes are just the beginning. The company is exploring the integration of forms management tools to further streamline these processes as well as expanding service management best practices into other areas, such as problem and incident management, and inventory management.

"By mitigating the complexity of our infrastructure we are becoming more scalable, reliable and flexible," concludes Waldhier. "We will continue to gain significantly better control of our IT infrastructure through the use of IBM Service Management solutions."

"We will continue to gain significantly better control of our IT infrastructure through the use of IBM Service Management solutions."
– *Heinrich Waldhier*

For more information

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Telenor pioneers a new way to bring the benefits of RFID to small and mid-sized companies.

Overview

- ***Business Challenge***
  Intent on expanding its revenue base with high-value services, Norway-based Telenor set its sights on the fast-growing market for "machine-to-machine" (M2M) services, targeting small and mid-sized businesses for whom M2M have been out of reach due to cost and complexity, as well as larger enterprises looking for a low-cost, entry-level M2M solution.
- ***Solution***
  Telenor teamed with IBM to create the first-ever hosted M2M offering. By creating a flexible, low-cost shared services platform, Telenor has drastically expanded the number of companies that can make a strong business case for offering M2M.
- ***Key Benefits***
  - *Increased wireless traffic over Telenor's network*
  - *A new revenue stream for Telenor, leading to higher average revenue per user (ARPU)*
  - *Enhanced ability to leverage the growth of M2M and move up the wireless value chain*
  - *Improved ability to penetrate the small and mid-sized business market*

Headquartered in Fornebu, Norway, Telenor is emerging as one of the world's fastest growing providers of mobile communications services, with approximately 130 million subscribers spread over 12 countries in Scandinavia, eastern Europe and Asia. Telenor also has a strong position in the growing Scandinavian market for broadband services and is the largest provider of television and broadcast services in the Nordic region.

For providers of telecom services, intense competition has become a way of life. One of the biggest challenges they face is the need to establish a solid foundation for future revenue growth. While traditional voice service still represents the primary component of average revenue per user (ARPU) for the industry as a whole, voice is rapidly becoming a commodity service and the epicenter of aggressive price competition between providers. Thus, even as user volume rises, the "treadmill effect" of falling prices is making it increasingly difficult for providers to increase ARPU.

> *"By enabling us to be the first Nordic telecom service provider to offer a hosted M2M service, IBM has helped us to open a new door for the rapid growth of the market."*
>
> – Rolv-Erik Spilling, manager, Telenor Business Norway

Business Benefits

- Increased wireless traffic over Telenor's network
- A new revenue stream for Telenor, leading to higher average revenue per user
- Enhanced ability to leverage the growth of M2M and move up the wireless value chain
- Improved ability to penetrate the small and mid-sized business market

That's just one dimension of a deeper strategic imperative of telecom providers, namely that they carve out a sustainable role for themselves in an increasingly complex and diverse services environment.

Moving up the chain

This is especially true in the realm of wireless communications, which has witnessed an explosion in the number and variety of services around messaging, music, video and gaming – to name a few. An important underpinning of this growth has been the efficient, reliable and affordable transport services that telecom service providers have been able to deliver over their networks. However, when it comes to future growth and profitability, most providers see the need to move beyond their role as a "pipe" in the services ecosystem and move up the value chain. This goal is perhaps the biggest reason providers are investing billions to build next-generation networks through which they can add value and thus extract a greater piece of the growing service pie. But they also realize that technology change is only half of the formula for success. The other half is a change in mindset, with service providers energized to find new opportunities and apply innovative approaches to capitalizing on them. Telenor (www.telenor.com), a diversified provider based in Norway, is showing how such an approach can fuel rapid growth and success in today's global telecom market.

Telenor's aggressive pursuit of opportunity has been most evident in the mobile communications arena, where it serves an estimated 130 million subscribers worldwide. It's seen in the company's expansion into a number of rapidly growing markets in eastern Europe and Asia. Another recently seen facet of the company's vibrant growth strategy – and the focus of this story – is Telenor's first-of-a-kind initiative aimed at developing the market for "machine to machine" (M2M) communications, which is expected to be among the fastest-growing wireless applications.

> *"We looked at IBM's thought leadership in RFID – as well as its clear ambitions in this field – and we concluded that it was a good opportunity to partner with the best in the industry."*
>
> – Rolv-Erik Spilling

The main thrust of M2M communications is the use of RFID tags and sensors to track and monitor dispersed assets without human intervention. Some key uses of M2M include the tracking of shipments in transit, tracking vehicles within fleets and tracking inventory as it moves through a supply chain. The data captured by M2M systems range from basic geographic location (such as ensuring that a high-value shipping container is where it's supposed to be) to more parametric data such as temperature (such as ensuring that a perishable shipment stays continuously within a prescribed temperature range).

Because of the cost and complexity of deploying M2M solutions, adoption has been mainly focused within larger companies, which are more likely to have the resources to build and manage the stand-alone solutions that typify M2M today.

Fresh thinking on M2M

Telenor's insight was that many small and medium-size businesses in the same vertical segments driving large-company M2M adoption – transportation, utilities and retail, for instance – also have a compelling need for M2M capabilities, but lack the resources and in-house expertise required to make it happen. On paper, offering M2M as a managed service held the promise of overcoming these barriers, and, in so doing, unlocking a huge new source of revenue potential. This is amplified by the high probability that the European Union will issue new rules that require companies to improve their ability to track the conditions of perishable shipments while in transit.

To realize this potential, Telenor faced the technical challenge of taking what has traditionally been a custom, stand-alone solution and reincarnating it as a flexible, shared-services platform. In addition to the strong security that is critical to M2M, Telenor also needed to make the system easy enough to use for small and mid-sized companies with lean IT departments. More fundamental was the need to develop a viable go-to-market strategy and business model for what would be a truly first-of-a-kind offering.

IBM's key contribution was the design and development of a shared-service M2M platform that employs SOA features at its core. To accommodate a variety of customers and needs, the IBM La Gaude European Business Solution Center (EBSC) designed the M2M solution for maximum flexibility and versatility. This refers to the ability to gather remote sensing data from a variety of different sources (including – but not limited to – RFID), as well as to make that data accessible to other parts of the solution for purposes of business process automation, reporting and sharing. This role is played by IBM WebSphere® Enterprise Service Bus, which provides a simplified integration layer for sharing data between applications and services in the solution.

For example, in the case of a customer using RFID-based sensing, the solution uses IBM WebSphere RFID Premises Server to collect and filter RFID data from remote sites. From that point, the data can be used to trigger automated business process events through IBM WebSphere Process Server (also connected via WebSphere Enterprise Service Bus), or can be made available to IBM WebSphere Portal to generate customer reports on demand. The solution relies on Tivoli® Monitoring Server and Tivoli Enterprise Portal for end-to-end monitoring and runs on IBM System x™ servers, chosen for their inherent scalability.

Key Components

Software

- IBM WebSphere Enterprise Service Bus
- IBM WebSphere RFID Premises Server
- IBM WebSphere Process Server
- IBM WebSphere Application Server
- IBM WebSphere Portal
- IBM Tivoli Monitoring Server
- IBM Tivoli Enterprise Portal Server

Servers

- IBM System x

Services

- IBM Global Business Services
- IBM Global Technology Services – Integrated Communications Services
- IBM La Gaude EBSC

Business Partner

- Intermec

Timeframe

- Design and implementation: 4 months

Why it matters

Determined to move up the telecom value chain, Nordic wireless giant Telenor teamed with IBM to create a new, hosted business model to deliver RFID-based asset management capabilities to the largely untapped small and medium-sized business segment. By simplifying and standardizing "machine-to-machine" applications, this new model promises to speed up the adoption of M2M by all segments.

The customer engagement model developed by Telenor and IBM is a model of collaboration. Before a new customer is brought on board the hosted M2M solution, IBM Global Business Services conducts a thorough business process audit to ensure that the customer's processes are optimally configured to get the most out of the solution. The installation of wireless equipment at the customer premises is performed by IBM Global Technology Services, while Telenor personnel are responsible for integrating remote wireless devices back to the host platform. IBM Global Technology Services also performs integration as needed to generate custom reports (such as temperature readings for perishable products) or to automate processes (such as triggering alerts when temperatures go out of range).

M2M for the masses

The notion that M2M services can improve a company's supply-chain transparency, decision-making and process optimization – to name just a few – is beyond doubt, and a big reason it's projected to grow faster than any other wireless service. But before Telenor and IBM broke ground with a hosted M2M offering, it was also beyond the reach of most companies due to cost and complexity. What changed this formula was fresh thinking all around. IBM technology, expertise and access to strong wireless partners enabled Telenor to create a new business model for offering M2M services. By the same token, Telenor's strategic vision ultimately promises to change the business case for companies seeking the benefits that M2M technologies have to offer.

Rolv-Erik Spilling, manager of Telenor Business Norway, sees the success of the M2M initiative as a testament to Telenor's strategic vision and to IBM's track record of helping to translate bold visions into solid businesses. "By enabling us to be the first Nordic provider to offer a hosted M2M service, IBM has helped us to open a new door for the rapid growth of the market."

For more information

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SUCCESS STORY

Cisco and IBM Provide High-Voltage Grid Operator with Increased Reliability and Manageability of its Telecommunication Infrastructure

Executive Summary

Customer Name

Terna—Rete Elettrica Nazionale SpA

Industry

Utilities

Business Challenges

- Eliminate grid blackout risks induced by possible telecommunications failures
- Improve quality of service and meet stringent target of Energy Not Supplied
- Replace ageing, expensive ATM network with faster, more reliable MPLS

Solution

- Back-up IP network over power lines supplements superior MPLS functionality
- Forward Error Control patch-panel solution with Asset Lifecycle Management
- Joint Cisco-IBM team covering development, implementation and maintenance

Business Results

- Improved safety and security across entire nationwide high-voltage network
- New equipment costs at field stations cut by 90 percent
- Low-maintenance costs
- Digital solution will allow central monitoring and control of electrical line failures

Business Challenges

Terna is the company in charge of electrical transmission and dispatching over high-voltage (HV) and extra high-voltage (EHV) lines for the whole of Italy. It owns 97 percent of the country's transmission infrastructure, and its main domestic role is to guarantee the balance between electricity supply and demand from a national control centre. Formerly in public ownership, as a wholly owned subsidiary of Enel, Italy's dominant electricity generator and distributor, Terna was privatized in 2004.

Along with 35 other European transmission operators, Terna is a member of the Union for the Coordination of the Transmission of Electricity (UCTE), sharing a wider responsibility for the safety and coordination of interconnected electrical networks across continental Europe. Terna is also pursuing new commercial opportunities abroad. It owns a controlling stake in Brazil's second-largest transmission network and is set to expand into new European markets.

In 2003, Italy experienced two major blackouts. The second, and more serious of these, was precipitated by damage to a high-power pylon in Switzerland, and the effects spread all over Italy. Terna established later that none of its transmission equipment had failed during the incident. The problem lay with a loss of telecommunications signaling in the leased lines used to monitor and manage its network. In order to improve the reliability of the network Terna needed a new and advanced back-up system to eliminate weak points and a centralized monitoring solution for effective remote operations.

Solutions

Terna's Italian national transmission network includes more than 300 field stations. Fluctuating demand for electricity must be kept in constant balance with supply, but the company's existing network management system which linked all its transmission assets to the national control centre, was based on a two layer network: the backbone based on an elderly Asynchronous Transfer Mode (ATM) network and an access network based on both Frame Relay technology and Power Line Carrier (PLC).

Cisco and IBM were ideally placed to create, test, and implement the new
an extended collaborative effort, working as strategic partners.

"In the energy sector, many of the technologies are very old and they are not open. We spotted the opportunity to create a way of dealing with our telecommunications that would get rid of a closed technology —a custom component—and instead integrate solutions on an open standard platform, like the Cisco MPLS network we are now deploying."

Carmine Auletta, CTO
Terna

In day-to-day operational mode, the ATM and Frame Relay network function over leased lines supplied by a leading Italian telecommunications operator. This is backed up by a proprietary, PLC solution, using military-grade broadband switches. It provides a maximum data transmission speed of 44 to 48 kbps, which is limited by the Forward Error Correction (FEC) algorithm used to eliminate electronic 'noise' on the lines.

In addition to being expensive to maintain or replace, the existing configuration offered minimal communication and control capabilities. Centralized monitoring of the power line communications network at any given moment was not possible. Engineers had to be sent out to each individual station to check for faults before any remedial action could be taken.

By 2004, Terna's management was already in discussions with Cisco on the design of a large new wide area network (WAN) in order to manage and control the grid more cheaply and effectively. The company chose a Multi Protocol Label Switching (MPLS) solution, with fibre optics, as the best option to combine improved monitoring and control with lower costs. In addition, the Italian company asked Cisco to carry out a feasibility study on a new data-over-power line solution, aimed at strengthening the capabilities of its back-up network.

At the time, IBM was already working with Terna, principally as a vendor. However, when IBM won the bid to become project manager for the new Terna MPLS network, including the integration, implementation, and maintenance, Cisco and IBM were well positioned to forge a close working partnership. The two companies already had a well-developed relationship after working together for three years at Enel, on another MPLS solution. In fact, Cisco and IBM were ideally placed to create, test and implement the new back-up power line solution for Terna through an extended collaborative effort, working throughout as strategic partners.

Terna wanted a back-up system that could operate independently of any outside telecommunications provider network. The most elegant and logical answer was to use its own power-line network to maintain continuity of grid network control and to safeguard against outside communications links going down. What began as a network renewal project thus switched focus to critical network outage management issues.

Carrying IP communications over power lines is not a new concept. There are various approaches to preventing the electronic 'noise' generated in power lines from disrupting IP traffic travelling over the same wires, so removing the

back-up power line solution through

need for data retransmission. Such techniques generally use the published FEC algorithm. In Terna's case, however, the proprietary nature of its existing solution blocked visibility of how FEC was functioning in its network. "There was no way to control the system remotely because we could not see from a central location whether each power line carrier was working properly," notes Auletta.

Terna's HV and EHV lines presented an additional challenge because they can create very high electronic noise levels—they are rated as 'very disturbed' (BER 10-3). IBM laboratories helped determine whether the standard FEC algorithm could be implemented on line-cards, to be inserted into Cisco routers, but for technical reasons this was not feasible. Cisco and IBM therefore had to look for an alternative solution.

Following extended discussions between Terna executives and Cisco technical experts, Cisco investigated the market in order to work on the software for an FEC 'patch panel'. It would have to be fully compatible with standard Cisco components and simple to connect. Cisco formed a joint team with IBM and third-party local consultant experts on telecommunications equipment, using Cisco Advanced Services extensively to support the development work, while IBM provided the high-level design.

After testing the concept in a small mock-up network in San Jose, the two companies presented the solution jointly to Terna. Cisco resold the third-party product to Terna as part of its overall solution package, while IBM retained responsibility as prime systems integrator, with an ongoing asset lifecycle maintenance responsibility for the FEC solution post-implementation to ensure optimum performance in the longer term.

Business Results

Field-tests of the prototype solution were conducted on two separate Terna high-voltage lines in Sicily and, by October 2007, the electricity company was poised to begin the roll-out by connecting 33 field stations in Sicily and Sardinia, joining up a network that will involve multiple jumps over interconnected PLC lines.

The national rollout to all Terna's 300-plus stations is scheduled to take place over three years, between 2008 and 2010. The company anticipates numerous benefits, including centralized control, improved network safety and security, and major cost savings.

From a technical viewpoint, the new system is expected to deliver an immediate 20 per cent increase in available bandwidth over PLC lines. The operational benefit is that whenever numerous lines register faults simultaneously under the existing system, restricted bandwidth becomes a bottleneck and processes slow down. In the future, this will no longer be the case, and the company foresees further bandwidth upgradeability by using progressively more sophisticated compression algorithms.

"Finding an innovative solution to handle the power line carrier network involved tight integration between IBM, as project manager, and Cisco, who carried out all the research and development. We were able to discuss any issues and problems face-to-face with Cisco, while IBM took responsibility for the testing and will now implement the full solution."

Carmine Auletta, CTO
Terna

"We now have the tools to adapt to each situation as it arises and can configure our solution to the specific case. With centralized management, it's not just a matter of making savings; it's a matter of network safety. Because we can monitor PLC lines form our central NOC and anticipate any trouble, we are making the system more secure."

Carmine Auletta, CTO
Terna

Moreover, Carmine Auletta anticipates that the switch to open standards will mean that power line data compression can be decoupled from use of FEC. It will no longer be necessary to keep FEC switched on at all times. Central monitoring will enable line controllers to switch FEC on and off as needed, so that it can be dispensed with at those times when electronic noise levels are low, thus further improving data speeds.

An additional operational benefit will be the ability to transition the separately controlled electrical network protection system, for back-up switching between stations, from analogue to digital. At present, this operates over an analogue network, and the only way to determine whether the network protection system is working is to send an engineer to test the lines manually on site. Here too, Terna expects to gain centralized monitoring and control, in the same way as it will have for PLC data.

The new solution also promises a dramatic reduction in Terna's costs. The cost per station to deploy the new FEC device has been cut by 90% compared to the former solution. The company will realize substantial savings on the costs of field monitoring and maintenance. Evidence of greater efficiency and significant cost savings should please its shareholders and help the company meet the demands of the disclosure obligations that have come in the wake of private ownership.

By increasing the reliability and the manageability of its telecommunication infrastructure Terna will also improve its capability to control the Italian power grid both during regular operations and more important in case of extraordinary events (e.g during black-outs) when public telecommunication infrastructures have showed their weaknesses.

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MD 10/07

The Bank of New York Mellon continues its leadership role in adopting automated technology

Overview

- ***Business Challenge***
  As one of the early adopters of check imaging, even before Check 21 spurred many banks into action, The Bank of New York Mellon resolved to adopt digital check clearing. It sought a solution that would fully leverage its existing check processing infrastructure, while enabling the operational flexibility the bank needed to adapt to a fast-changing market.
- ***Solution***
  Using IBM Payments Director and middleware technology, The Bank of New York Mellon deployed a new SOA-based electronic check processing system by service-enabling existing assets, thus allowing the bank to easily extend the system to its banking partners and deploy new payment services rapidly.

Established in 2007 from the merger of Mellon Financial Corporation and The Bank of New York Company, Inc., The Bank of New York Mellon is a leading asset management and securities services company, uniquely focused to help clients manage and move their financial assets and succeed in the rapidly changing global marketplace. Headquartered in New York, The Bank of New York Mellon has more than $20 trillion in assets under custody or administration and more than $1 trillion under management.

- ***Key Benefits***
  - *Up to 90 percent reduction in manual touch points in the check clearing process*
  - *Greater than 50 percent reduction in time required to integrate new banks into the check clearing exchange network*
  - *Reduction in processing errors and required remediation*
  - *Improved flexibility to introduce new payment services via SOA*

> *"IBM Payments Director enables us to take physical processes that were supported by our legacy check system and bring them 'above the line' by making them services-oriented... This greatly strengthens our ability to adapt and meet new opportunities."*
>
> – *Louis Arkenau, VP of Image Initiatives, The Bank of New York Mellon*

Business Benefits

- Up to 90 percent reduction in manual touch points in the check clearing process
- Greater than 50 percent reduction in time required to integrate new banks into the check clearing exchange network
- Reduction in processing errors and required remediation
- Improved flexibility to introduce new payment services via SOA
- Faster integration with acquired banks' check clearing systems

With technology permeating nearly every aspect of commercial life, the traditional check clearing process—in which customers receive their original, physical checks along with their banking statement—held on for a surprisingly long time. By now, however, many consumers are beginning to notice that instead of a stack of checks, they're receiving a smaller and more orderly deck of printed images that they can also view online. Accustomed to a steady flow of conveniences such as online banking, these customers see check imaging as the latest in a long string of innovations enabled by technology. But in reality, it reflects the confluence of a complex series of driving forces, important decisions on the part of banks and evolution in the technology itself.

Paper trail

Historically, for a receiving bank to clear a check, it would have to physically transport the paper check to the issuer's bank. Before this can happen, though, the receiving bank needed to run the check—along with thousands of others every day—through mechanical sorters, which group the checks into bundles based on issuing bank. Using a courier, each of these bundles would then be sent to the appropriate bank along with a "cash letter," which lists the amounts and instructions for transmittal to other banks. While less than efficient, physical check processing remained in place for two reasons: first, because it worked, and second, because replacing it would be costly and complex. It took the 9/11 terrorist attacks—which shut down air transport and kept billions of dollars worth of checks from clearing—to show that physical check processing represented a potential Achilles' heel to the entire economy, and that a catalyst for change was required.

Two years later, Congress passed the Check Clearing for the 21st Century Act, better known as "Check 21," which enables banks receiving paper checks to create and process digital versions of them—thus eliminating the need for further physical transport and handling of physical checks. By dramatically altering the regulatory landscape, Check 21 fully opened the digital door for banks, but another important incentive for banks to change their processes was already at work. With more and more consumers paying via credit and debit cards and more banks offering online bill payment, the volume of checks processed by banks has been declining, causing the unit processing cost per check to rise proportionally. Even before this confluence of events, however, The Bank of New York Mellon (www.bnymellon.com) saw that the future of banking required automation, and so beginning in 1994 it began the process of converting its traditional check clearing process into an automated process that utilized images of checks, not the physical checks. The bank chose IBM, on whose Check Processing Control System (CPCS) the bank had long relied for its traditional check clearing process, to help them convert to check imaging.

Electronic check processing solutions are comprised of components that address each phase of the check clearing process. One component needs to address the actual capture and storage of the check image. Another needs to enable the so-called "day-one" processes that take place after image capture within the bank's back office operations. Yet another needs to support the bank's subsequent "day-two" processes, which address exception items, such as illegible checks and overdrafts. While The Bank of New York Mellon's decision to use the IBM Payments Director solution would have a major role in shaping its future electronic processing capabilities, its choice of a broader architecture strategy—that is, how and where to deploy it within its existing infrastructure—would prove equally significant.

Dynamism demands flexibility

The bank's existing IBM CPCS solution had, for a long time, delivered exceptional reliability and performance running within IBM CICS® on an IBM System z® server. However, the process changes inherent in electronic check clearing dictated a new set of IT requirements centered on flexibility, since the need to support change was essential. As The Bank of New York Mellon formed new correspondent banking relationships, for instance, the new system needed the flexibility to rapidly, seamlessly and cost effectively integrate them into the process flow. Another source of dynamism was the demand for new services in the payments area, such as check clearing in Automated Clearing House (ACH) and least-cost routing services offered to banks, which provides new revenue streams and enhances the bank's ability to differentiate through value-added services. To effectively capitalize on these opportunities, the bank would need the ability to adapt or repurpose key elements of the solution without the major development and integration requirements that make such changes costly and time-consuming. For these reasons, it was essential that the bank follow a different approach than traditional mainframe deployments. It saw SOA as the answer.

Because many processes within IBM Payments Director are built around SOA, the bank was able to deploy the solution in a way that effectively turns key check-clearing functions into services that are invoked in the course of the process flow. One such component is IBM Payments Director Gateway, which serves as the front end of the system and the means by which transaction information and messages are directed to and from the core CPCS solution on the System z (where they are stored in an IBM DB2® database). Among these messages are "electronic cash letters," which previously had been delivered in paper form. IBM WebSphere® MQ provides the core messaging functionality within this SOA framework. To further strengthen the solution's SOA properties the bank is also deploying IBM WebSphere Message Broker as an enterprise service bus that will connect the solution's key components and provide an environment for future SOA integration.

Solution Components

Software

- IBM Check Processing Control System
- IBM Payments Director
- IBM WebSphere Message Broker
- IBM WebSphere MQ
- IBM DB2
- IBM CICS

Servers

- IBM System z

Services

- IBM Sales and Distribution

Timeframe

- Design and Implementation: 9 months

Why it matters

Moving from the manual processing of paper checks to an automated, image-based process enabled The Bank of New York Mellon to streamline its operations, while at the same time providing a source of new value-added payments services, bringing a new level of operational excellence. The fact that the solution was deployed within SOA enables the bank to develop and bring these new services—like check clearing in ACH and least-cost routing services—to market more rapidly and profitably.

Louis Arkenau, VP of Image Initiatives, sees IBM Payments Director's support for SOA as providing the bank with a new level of flexibility to optimize its key processes. "IBM Payments Director enables us to take physical processes that were supported by our legacy check system and bring them 'above the line' by making them services-oriented and disconnecting them from legacy hardware and legacy mainframe processes," says Arkenau. "This greatly strengthens our ability to adapt and meet new opportunities."

Straight through error correction

The most immediate benefit of the new system is its dramatic impact on the efficiency of the bank's check clearing operation. Under the previous system, a check could be touched by human hands many times over the course of the entire process, with each touch point representing a chance to mishandle the check. In such a case, the check would need to be returned through a laborious, time-consuming process. Since the Bank had long been imaging checks, the Payments Director solution allows for "truncated" checks which are incorporated into an automated workflow that cuts the number of touch points by up to 90 percent, bringing the bank closer to the much sought-after goal of straight-through processing.

Going forward, Arkenau believes that the flexibility enabled by IBM Payments Director will also strengthen the bank's ability to address its most pressing challenges, including the operational demands of rapid growth, the need to efficiently integrate newly acquired banks and the need to seize fast-moving opportunities.

For more information

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The Co-operative Group cuts 722 tonnes of CO_2 emissions with IBM

Overview

- ***The Challenge***
  Aiming to cut its total energy use by 25 per cent by 2012, The Co-operative Group identified overnight electricity consumption in its 2,200 food stores as a prime candidate for reduction

- ***The Solution***
  Working with IBM, The Co-operative's in-house IT team re-engineered its InControl store end-of-day batch processing system, enabling the introduction of 'Wake-up on LAN' capabilities for all 45,000 of its in-store POS-related devices

- ***The Benefits***
  By automatically switching off in-store devices overnight and re-starting them in the morning, the solution is expected to save 1.68 million kilowatt hours of electricity annually, saving an estimated £120,000 and cutting CO_2 emissions by an estimated 722 tonnes

The Co-operative Group (www.co-operative.coop) is the world's largest consumer co-operative, with 2.5 million active trading members and more than 80,000 employees. In 2007, the Group turned over £9.4 billion, carrying out 14 million food transactions each week.

Social responsibility is one of the four key ethical values of The Co-operative Group, so it should come as no surprise that the organisation is a leader in tackling global climate change. Some 4,000 of the Group's outlets are powered by energy from renewable sources, and The Co-operative Insurance Society's head office in Manchester is Europe's largest vertical solar project. All three sides of its 25 storeys are clad in solar panels, generating enough electricity each year to power 1,000 PCs.

With a corporate target of reducing energy consumption across all business premises by 25 per cent by 2012, The Co-operative Group resolved to cut out-of-hours electricity use in its 2,200 food stores. Against a backdrop of fast-rising energy prices, it made sound business sense – as well as environmental sense – to power-down non-essential systems during closing hours.

Cutting costs and CO_2

When The Co-operative Group's food stores close each evening, the Group's InControl store management software runs an end-of-day batch process to collate sales and stock data for submission to head office. Working with IBM Retail Store Solutions, The Co-operative Group's in-house IT team re-engineered the software to include a controlled

power-down of all point-of-sales (POS) equipment. When the stores re-open for business in the morning, the solution uses 'Wake-up on LAN' technology to automatically re-start all the relevant systems.

With a total of 45,000 pieces of equipment in its stores – including 7,500 POS terminals with linked receipt printer, 15,000 screens, 7,500 barcode scanners and 7,500 chip-and-pin card terminals – the positive impact of the solution will be considerable. Turning off non-essential systems during the night will cut an estimated 1.68 million kilowatt hours of electricity use each year, saving around £120,000 per year at current prices.

Beyond the financial benefits, the IBM and Co-operative Group solution should cut around 722 tonnes of CO_2 emissions, significantly reducing the carbon footprint of the food stores business and contributing to the fight against climate change.

Longer service and less waste

The powering-down of systems during the night should also extend the useful life of the POS equipment by as much as 30 per cent, enabling The Co-operative Group to reduce the frequency of investment in new hardware.

This should not only reduce capital expenditure, but also cut the amount of non-recyclable waste that will ultimately end up in landfill.

The need to comply with the EU Waste Electrical and Electronic Equipment (WEEE) directive has increased the cost of disposing of old equipment; again, by prolonging the service-life of its POS systems, The Co-operative Group should reduce its long-term costs.

Mark Hale, Director of IS Food Retail, comments: "The re-engineering of the POS system so it can be shut down at night clearly underlines The Co-operative Group's continuing commitment to the environment and to finding new ways of saving energy."

Janine Cook, Director of Retail Stores Solutions, IBM UK, comments: "IBM has a commitment to develop products and services that are designed to reduce the consumption of energy. Working with The Co-operative Group, we have applied our green know-how to help them release savings that they can plough back into their business."

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Tivoli software

United Space Alliance counts down to infrastructure efficiency.

Overview

- ***Challenge***
  Improve service quality and efficiency by providing IT staff with real-time visibility of incident, problem, change and configuration management
- ***Why IBM?***
  IBM provided a platform to unify disparate IT systems and give staff a single real-time view of asset and service management
- ***Solution***
  An integrated asset and service management platform based on IT Infrastructure Library® (ITIL®) best practices
- ***Key Benefits***
  Reduced repair times; improved IT service; helps staff minimize downtime, plan ahead and budget; will help staff efficiently meet and exceed SLAs

United Space Alliance leverages IBM asset and service management solutions to proactively address service incidents before they become serious issues.

IT organizations are constantly looking to provide better, more reliable services and support with smaller budgets and fewer personnel. This is the task ahead for the IT department at United Space Alliance (USA), LLC. As the largest contractor for the NASA space shuttle program, it has more than 10,000 employees in Texas, Florida, Alabama and Washington, D.C. The 2 billion USD company relies on 400 IT experts to manage more than 50,000 hardware assets, 100,000 software assets as well as to support traditional incident and problem management responsibilities.

> *"We had to change our approach because we were storing IT asset information in five different databases. With fewer IT staff, keeping track of those assets would be extremely difficult."*
>
> *– Mike Schnoke, Project Manager, United Space Alliance*

> *"Sharing data so that we only have to solve a problem once means that we can fix IT issues faster, and that we don't have to send 10 technicians to fix the same problem on 10 machines. That is the biggest payback from Tivoli software so far."*
>
> *– Mike Schnoke*

To streamline the company's operations, USA Project Manager Mike Schnoke and his staff had to figure out how to replace the disparate, siloed IT service management (ITSM) and asset management systems with one platform delivering a unified view of incident, problem, change, configuration and release management, along with a comprehensive view of the organization's IT assets. Doing so would make it easier to proactively address service incidents before they become full-fledged fires. More importantly, one integrated asset and service management system would allow United Space Alliance to manage its IT infrastructure more efficiently.

After researching possible solutions, Schnoke and his team realized that embracing the Information Technology Infrastructure Library (ITIL) best practices would be critical to their success. United Space Alliance evaluated several solutions and ultimately chose IBM Tivoli Asset Management for IT and IBM Tivoli Service Desk.

Bringing IT assets into one database

IT efficiency is a constant goal and challenge for enterprises. The larger the company, the bigger the challenge. "Even with fewer IT experts, we'll have to provide the same level of service," says Schnoke. "We had to change our approach because we were storing IT asset information in five different databases. With fewer IT staff, keeping track of those assets would be extremely difficult."

Previously, managers did not have an accurate, real-time view of which employees had what software and hardware at any given time. This lack of visibility complicated crucial change management and configuration management processes because representatives didn't know whether the information they saw was up to date. Implementing changes such as deploying new software to resolve problems often leads to new problems if the configuration data of an IT asset is inaccurate.

USA realized that unifying its IT systems and adopting ITIL best practices were essential to making its infrastructure, and the staff that manages it, more efficient. To assess the effectiveness of IT asset and service management products, USA studied a variety of factors, including alignment with ITIL best practices based on industry consultant Pink Elephant Pink Verify certification. USA selected Tivoli software because it achieved Pink Verify certification and because it provides one platform to unify disparate IT systems to give staff one real-time view of asset and service management.

Rapid resolution through self-service Web access

One of the first issues for USA to resolve was consolidating incident management and streamlining help desk interaction so IT staff can respond efficiently to problems. Previously, employees had to navigate through a variety of Web sites and forms to file a service request.

By deploying IBM Tivoli Service Desk, USA is providing self-service Web access to all employees via a portal. Employees need only click on the portal to find quick solutions to common problems or an easy-to-file service request, which becomes an incident that automatically sends staff from the right IT department to the rescue.

Tivoli software helps ensure IT staff throughout USA have access to incident and problem records. Technicians can now apply previous solutions to common problems without having to "reinvent the wheel," according to Schnoke.

"We had a tendency to solve the same problems over and over," says Schnoke. "Sharing data so that we only have to solve a problem once means that we can fix IT issues faster, and that we don't have to send 10 technicians to fix the same problem on 10 machines. That is the biggest payback from Tivoli software so far."

Tivoli software will also help USA to meet the service level agreements (SLAs) it establishes for maintaining maximum IT uptime and minimizing repair times. Previously, the company used a priority system where any manager could request a top priority, which didn't give IT staff an accurate view of how serious a problem was and what they would need to fix it. Using ITIL guidelines, Tivoli software prioritizes incidents based on urgency and impact, giving managers the visibility to see exactly what is wrong and how to repair it so IT staff can meet or exceed SLAs.

Proactive processes to drive greater efficiency

USA will also become more proactive in how it effects change and configuration management throughout the company, minimizing problems with improperly installed software and enterprise-wide software rollouts. IBM Tivoli Asset Management for IT provides IT staff with extensive visibility into users' individual PCs, providing details about whether someone's computer has software loaded that could cause infrastructure problems.

Key Components

Software

- IBM Tivoli® Asset Management for IT
- IBM Tivoli Service Desk

"We became very good at fighting fires when, in fact, the problems shouldn't have escalated to that point. We now have the tools to anticipate and address issues before they escalate and to plan for major projects. That is the kind of efficiency the IBM platform will deliver."

– Mike Schnoke

By being proactive with change and configuration management, USA will not only minimize downtime that costs money and slows productivity, but also will have a better view of upcoming projects and how to plan and budget for them. For example, the company will be able to plan ahead and budget for deploying the latest version of Windows, reducing some of the challenges it previously faced.

"We became very good at fighting fires when, in fact, the problems shouldn't have escalated to that point," says Schnoke. "We now have the tools to anticipate and address issues before they escalate and plan for major projects. That is the kind of efficiency the IBM platform will deliver."

For more information

Please contact your IBM sales representative or IBM Business Partner.

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You can get even more out of Tivoli software by participating in independently run Tivoli User Groups around the world. Learn about opportunities near you at: **www.tivoli-ug.org**

For more information about United Space Alliance, visit:
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University of Bologna protects its large, open network against Internet-born attacks.

Overview

- ***Challenge***
  The University of Bologna's (Unibo) network architecture is very wide and open, serving more than 100,000 students and around 70,000 computers. Due to its size, Unibo's network is prone to attack by worms and other Internet-born threats and, for that reason, the university needed to be able to monitor the network more closely.
- ***Solution***
  The University of Bologna teamed with IBM Internet Security Systems™ (ISS) to add a network intrusion detection tool to its existing firewall, allowing Unibo to identify illegal traffic or damaging worms and view high-priority events.
- ***Benefits***
  Improved security control and centralized management, supported by industry-leading expertise and technology

A need for network security

Founded in 1088, the University of Bologna is the oldest university in Europe and one of the largest. It serves more than 100,000 students and covers 67 disciplines ranging from astronomy, archeology, physics and engineering to medicine, music, psychology, economics and linguistics.

The university has one of the largest computing networks among European universities, with two B-class networks serving more than 70,000 computers in Bologna and the surrounding cities of Rimini, Ravenna, Forli, Cesena and Reggio Emilia. The network provides a platform for a wide range of computing research and was relatively open—even though it handles large volumes of sensitive and proprietary content. As a result, it was prone to attacks by worms and other Internet-born threats.

This vulnerability forced two members of the seven-person IT security staff to focus exclusively on intrusion detection. Many incidents could happen on the network every day. If a worm hit one or more stations on the network, it could propagate rapidly, causing a lot of damage.

Selecting the best solution

When the IT security team decided to add a network intrusion detection tool to back up its existing firewall, it tested solutions from a short list of three vendors. The team conducted a strenuous two-month test using real-time traffic, the three solutions competing head-to-head against the same attacks and conditions. The IBM ISS solution demonstrated the highest stability and the best flexibility in terms of management capability. Its event analysis capability and the level of protocol analysis compared favorably to those of the other contenders. The outstanding technical assistance from IBM ISS was also a deciding factor.

Gaining better control over a vital, far-flung network

The IBM Real Secure® Network Gigabit software and IBM SiteProtector™ Reporting Module tool enable the IT security team to quickly identify illegal traffic or damaging worms on a machine and view high-priority events. The staff can rapidly locate a PC that has been hit by a worm and take immediate action to limit its propagation.

> *"We have experienced up to three million events on the network a day. The IBM ISS tool helps us intervene as quickly as possible by letting us know which machines are infected in case a worm breaks out."*
>
> – *Franco Silvestro, IT security manager*

Sophisticated features such as protocol analysis and signature pattern recognition enable better control of the network. In addition, the IBM ISS solution enables the university to address recently enacted legislation regarding data privacy.

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University of Bristol powers up new IBM supercomputer

Wills Memorial Building, photo taken by photographer Joss Guest and provided by Thorn Lighting

Overview

- ***Challenge***
  The University of Bristol wanted to increase the speed and capacity of its supercomputing facilities. The existing data center lacked the necessary floorspace, power and cooling facilities to house the planned solution.
- ***Solution***
  The University built a new 3360-core supercomputer—called BlueCrystal—based on IBM System x™ servers with ClearSpeed acceleration cards, housed in a new data center designed and constructed by IBM Global Technology Services and incorporating APC InfraStruXure® water-cooled racks.
- ***Key Benefits***
  Peak performance of approximately 38 TFlops, supporting faster and more detailed computational research; compact, energy-efficient supercomputer; robust and highly scalable solution.

Founded in 1876, the University of Bristol is a leading UK academic institution, with almost 12,000 undergraduate and 6,500 postgraduate students across six schools.

From the late 1990s onwards, individual University departments had taken advantage of low-cost clustering technology to build their own high-performance computing environments. As the servers became heavier, hotter and hungrier for electricity, this distributed model became less and less viable, and the University looked to create a central supercomputing resource.

The University sees supercomputing as basic infrastructure for the whole institution, rather than just a specialist tool for traditional areas such as mathematics and engineering. Arts and humanities researchers are beginning to use computationally demanding research methods and more than 40 individual groups across four schools were involved in the business case for a new supercomputer.

Dr Ian Stewart, Director of Advanced Research Computing at the University of Bristol, comments: "Our plans for a new large scale cluster required a new data center with appropriate floorspace and modularly expandable power and cooling to allow for future growth in both cpu and storage. IBM won the contract for both elements, giving us a seamless single-vendor solution that combines performance and scalability with cost-efficiency."

Winning on price-performance

The University of Bristol specified the basic architecture for the new supercomputer, then invited vendors to propose their best solution for the available budget. Says Stewart, "The IBM System x platform offered excellent build-quality and price-performance, but what really won us over was access to IBM expertise and programs such as the IBM Academic Initiative. IBM clearly had the strongest heritage and interest in high-performance computing, and could add significant value beyond simply providing the best hardware."

IBM has run a number of training workshops for the University, and the two organizations are collaborating on projects, including porting one of the University's flagship codes—for modeling helicopter rotors—to the IBM Blue Gene platform. The University also benefits from access to IBM Cell processor technology, which it is considering for use in molecular simulations.

> *"The IBM System x platform offered excellent build-quality and price-performance, but what really won us over was access to IBM expertise and programs such as the IBM Academic Initiative."*
>
> – *Dr. Ian Stewart, Director, Advanced Research Computing University of Bristol*

High speed, low power

In addition to supplying the main 3360-core cluster, IBM built two clusters for the University's Earth Systems modeling group, BRIDGE http://www.bridge.bris.ac.uk/—one with 16 IBM eServer® 326 m systems and the other, a NERC funded system, with 96 IBM System x3455 systems, all running ClusterVisionOS™, based on Linux®. IBM Business Partner ClusterVision installed, configured and tested the clusters, which are already operational.

The main cluster, called BlueCrystal, expands the existing 2007 phase one installation of 96 IBM System x3455 systems with dual-socket, dual-core AMD Opteron processors, Qlogic InfiniBand® networking and a 15 TB IBM General Parallel File System™ (GPFS™) file store with a phase two installation of 424 IBM System x3450 quad core Intel® servers to running ClusterVisionOS, with high-speed Qlogic InfiniPath® networking and a 200 TB DCS9550 Storage System that also uses GPFS.

The University has also deployed four IBM System x3755 systems, each with 32 GB of memory and a ClearSpeed floating-point accelerator card, to support applications that require more than 2 GB per process. The University has increased its investment in ClearSpeed technology by recently adding two ClearSpeed CATS™ (ClearSpeed Accelerated Terascale System) systems.

"The ClearSpeed cards provide around 2 TFlop/s while consuming very little power," says Stewart. "Our efforts to reduce energy consumption can also be seen in the new data center, which uses targeted water-based cooling in addition to air conditioning."

State-of-the-art data center

IBM Global Technology Services worked with the University and a project management consultancy to design and build the new data center—housed in a disused water tank on the roof of the University's Physics Department. Says Stewart, "The unique location presented a number of difficulties, and IBM has been very helpful in overcoming those—including building a Faraday cage to prevent interference with a research radio telescope which is also on top of the building."

The modular data center has up to 2 MW capacity, and space for 48 APC InfraStruXure water-cooled racks. The main cluster uses 18 racks, and a further 12 racks will be used for a planned petascale data storage environment. The University plans to keep at least 25 percent of the data center empty to enable a future cluster to be brought into service before the existing one is decommissioned.

"We're very pleased with what IBM has delivered: the System x platform offers excellent performance, and GPFS is proving to be very robust," says Stewart. "IBM is a great company to work with, and we look forward to taking advantage of future opportunities to collaborate on research."

> *"We're very pleased with what IBM has delivered: the System x platform offers excellent performance, and GPFS is proving to be very robust."*
>
> – *Dr. Ian Stewart, Director, Advanced Research Computing University of Bristol*

For more information

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University of BRISTOL

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UPMC rewrites the rules on IT investment to facilitate tomorrow's healthcare innovations

Overview

- ***Business Challenge***
  UPMC, Pennsylvania's largest integrated healthcare delivery network, sought to lower the cost and complexity of IT infrastructure to enable the continued investment in next-generation clinical systems and to lay the foundation for the best possible patient care.
- ***Solution***
  Now in the middle of a landmark, 8-year strategic partnership with IBM, UPMC is transforming its systems through consolidation, standardization and—most importantly—virtualization. Relying on IBM products and services, the mid-stream effort has already resulted in the reduction of hundreds of servers across the UPMC network.
- ***Key Benefits***
  - *$30 million in capital and operating cost reductions*
  - *150 percent increase in processing capacity*
  - *40 percent reduction in IT infrastructure floor space requirements*
  - *67 percent reduction in number of physical servers*

Widely recognized for its innovations in patient care, research, technology and healthcare management, UPMC is the largest integrated healthcare enterprise in Pennsylvania and one of the leading nonprofit health systems in the United States. Based in western Pennsylvania, UPMC is the region's largest employer, with 48,000 employees and nearly $7 billion in revenue.

When the University of Pittsburgh Medical Center (UPMC) joined with IBM in an 8-year, $402 million partnership designed to transform its IT infrastructure, the deal was viewed as a watershed in how IT vendors and their customers work together. Today, with the deal approaching the halfway mark, the UPMC and IBM collaboration has met the original expectations and, in many instances, has exceeded them. What continues to make the partnership unique is how the companies' shared vision of the future of healthcare delivery is cemented by a shared commitment to fostering healthcare innovation. The predominant focus of the partnership is on transforming UPMC's entire IT infrastructure to lay the groundwork for the future, an effort that is far reaching in scope and subject to major challenges—most or all of which are shared by major healthcare providers today. UPMC's strategy is

> *"Considering that IBM and UPMC are only midway through this transformation project, the results have been impressive. We have already proven that standardization, along with aggressive implementation of virtualization, yields unprecedented productivity and efficiency."*
>
> – *Paul Sikora, VP of IT Transformation, UPMC*

Business Benefits

- $30 million in capital and operating cost reductions through virtualization-driven efficiencies
- 150 percent increase in processing capacity with no increase in IT support costs
- 40 percent reduction in IT infrastructure floor space requirements, freeing up space for revenue generating services
- 67 percent reduction in number of physical servers
- Expected increase in average utilization per server from three percent to nearly 80 percent
- Faster integration of acquired healthcare operations

based on the simple idea that having the resources to meet future demands—be they operational, clinical and technological—requires the maximum efficiency of IT resources across the entire enterprise. This story revisits the initial goals and drivers of the partnership and, more importantly, tracks its progress according to key milestones. A key takeaway from the UPMC-IBM experience is that a well conceived transformation strategy can not only adapt to changing circumstances or intensifying trends, but indeed thrive under them.

Gauging progress

When the project was conceived, all key measures of information processing activity, including the volume of data and the number of applications, were projected to grow sharply, producing a commensurate increase in infrastructure and support costs. The transformation plan put forward by IBM was designed to effectively uncouple growth from cost by remaking the IT infrastructure through consolidation, standardization and—perhaps most importantly—virtualization. Since the project began, however, UPMC's information processing volume has grown even faster than the plan's initial aggressive expectations. That IBM was able to not only meet—but actually exceed—its infrastructure efficiency goals is compelling evidence of the robustness of the virtualization framework that UPMC and IBM put into place.

> *"We were being crushed by our own infrastructure. We saw increasing demand all around us, while at the same time systems had to be more reliable and run faster. We didn't see any light at the end of the tunnel for additional funding or staffing, so it became a question of how do we do more with what we have."*
>
> – *Paul Sikora*

Here's the path it took to get there. Having evolved from a major academic medical center to Pennsylvania's largest integrated healthcare delivery system—with revenues of nearly $7 billion and 48,000 employees—UPMC has acquired a reputation as one of the nation's most respected and influential healthcare providers and as an innovator in patient care, research, technology and healthcare management. As part of its growth strategy, UPMC also acquired several hospitals (now numbering 20) along with numerous other kinds of care facilities. While such acquisitions strengthen both the clinical breadth and depth of the UPMC network, they also tend to complicate the IT picture by adding to the heterogeneity—and overall complexity—of its infrastructure, as each new acquisition brings its own set of applications. Moreover, because it made integration inherently more difficult, this reality conflicted directly with UPMC's vision of leveraging information from across its entire network for the benefit of its patients.

Breaking the cycle

Resource efficiency was another huge driver for the project. Historically, UPMC's IT costs had been propelled inexorably upwards by what seemed to be an ironclad logic. More applications—and more users of those applications—meant more data, which in turn meant more servers to buy and more people required to run them. The growing requirement for servers and storage also consumed more and more of

the UPMC's physical space, which could otherwise have been used for clinical—and revenue-generating—purposes. UPMC's leaders saw that rising IT costs were ultimately at odds with its long-term goals around innovation and patient care, a dynamic likely to intensify given the ongoing tightening of resources in the U.S. healthcare market. The central goal of the IBM-UPMC partnership is to break this linkage by going down a completely new path for its IT strategy by consolidating and standardizing its disparate server and storage resources, and aggressively implementing virtualization. "Virtualization isn't an option," observes Paul Sikora, vice president of IT Transformation at UPMC. "It's a necessity."

And, by all appearances, it's working. Indeed, judging by the results UPMC has been able to achieve—even in the relatively early stages of the project—the virtualization strategy being implemented by IBM is exceeding even the most optimistic projections. The most telling indicator of the project's success is the difference between UPMC's actual capital and operating costs (related to IT) and those that would have been incurred had it taken no action. As discussed above, a key backdrop for this comparison is the surge in processing and storage volume that resulted from the faster-than-projected expansion in the scope of UPMC's industry-leading electronic health records adoption. In the "baseline" case—that is, had no action been taken—UPMC would have needed to more than double its number of servers, to nearly 300. Instead, it was able to reduce the number of servers by two thirds, and the consequent reduction and avoidance of $30 million in capital and operating costs. This number is projected to rise to $40 million by the end of year three of the transformation project.

At a strategic level, the project is succeeding because it has enabled UPMC to uncouple the inevitable growth in its processing capacity from the growth of its IT costs, thus rolling back what had become a major threat to its future investment in new treatments and the technologies they require. More broadly, this breakthrough—whose fundamental enabler is IT virtualization—is allowing UPMC to rewrite the rules that govern its resource decisions. By simplifying its IT infrastructure through virtualization, for instance, UPMC is able to support 150 percent more server capacity without the need to hire any additional support staff. On top of that, the server consolidation afforded by its virtualization strategy enabled UPMC to reduce its floor space requirements by nearly 40 percent. In addition to enabling UPMC to avoid facilities expansion that would have been needed under the baseline scenario, consolidation freed up space that UPMC can now repurpose for revenue-generating clinical activities.

Solution Components

Software

- IBM WebSphere® Application Server
- IBM WebSphere Business Integration
- IBM Tivoli product suite

Servers

- IBM System x
- IBM System p
- IBM System z
- IBM BladeCenter
- IBM TotalStorage Enterprise Storage

Solution

- IBM Component Infrastructure Roadmap

Services

- IBM Global Technology Services
- IBM Healthcare and Life Sciences
- IBM Research
- IBM STG Services
- IBM SWG Services

Why it matters

By transforming its IT infrastructure through consolidation and virtualization, UPMC has achieved more than a quantum improvement in resource efficiency. It has fundamentally changed the link between processing and resource needs—enabling it to meet an ambitious clinical agenda with a far lower rate of IT investment growth.

The tools of virtualization

The transformation making these benefits possible is being implemented by IBM Global Technology Services. Working in close cooperation with UPMC and following a phased approach, IBM's role is comprehensive in scope, including the design and definition of a virtualized, dynamic architecture, the consolidation and migration of applications to the new system, and the optimization of applications to maximize performance.

IBM hardware products at the core of the effort include IBM System x™, System p™, System z™ and BladeCenter® servers, as well as IBM TotalStorage® Enterprise Storage Servers, which are running the two UPMC storage databases that were consolidated from 40. Virtualization within and across these resources is enabled by IBM's Advanced POWER™ Virtualization, which performs partitioning and dynamic load distribution for System p servers, and VMware's Virtual Infrastructure 3, which will be used to consolidate more than a thousand Intel-based servers to 20 IBM System x servers. In the latter case, the utilization rates of the servers are expected to increase from the current average of three percent per server to nearly 80 percent. To manage the infrastructure centrally and efficiently, the solution employs a common toolset based on IBM Tivoli® products. The modular, standardized nature of the solution means UPMC can integrate new acquisitions into its network faster—enabling the more prompt realization of the acquisition's operational and clinical goals.

If anything, the importance and urgency of healthcare as an issue has only risen since the outset of the transformation project, as has the intensity of public discourse over how to address the resource challenges for the industry—and for society as a whole. This, in turn, only strengthens the value proposition underlying UPMC's transformation strategy. While Sikora acknowledges the long road ahead, he sees the merits of UPMC's efforts as beyond dispute. "Considering that IBM and UPMC are only midway through this transformation project, the results have been impressive," says Sikora. "We have already proven that standardization, along with aggressive implementation of virtualization, yields unprecedented productivity and efficiency."

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Tivoli software

URS, Washington Division lifts productivity 63 percent higher than industry average with IBM Maximo EAM

Overview

- ***Challenge***
  Help customers extend the asset value over the lifecycle of equipment across the enterprise, defer capital expenditures and save operational costs
- ***Solution***
  Enterprise asset management solution enables company to see into operations, automate work order management, control performance of workforce and boost productivity
- ***Key Benefits***
  - *65% productive hours as opposed to 40% industry average*
  - *2-year payback of investment in IBM Maximo® software*
  - *Ability to control operational costs and defer capital expenditures*

How can we avoid capital expenditures in a time of tight credit and low demand? How can we adjust our operational expenses to save money?

Rarely have such questions been so crucial for companies that depend upon machinery and equipment for their business, such as manufacturing, power generating, infrastructure, transportation and environmental management organizations.

"IBM Maximo software helps us maximize the asset value of our customers' equipment over its lifecycle. It also helps us provide our customers with information about these assets that helps them better understand service priorities and optimize investment and resourcing decisions."

–Dan Peterson, Director of Facilities Engineering, Washington Division, URS Corporation

"The industry standard is that 40 percent of a workday is considered productive, that is, actual wrench turning time. Within our company, the average runs around 65 percent because of the scheduling ability within IBM Maximo software and our use of stringent data standards."

– Dan Peterson

That's why they turn to firms such as the Washington Division of URS Corporation (URS), which provides maintenance engineering services for a wide range of Fortune 500 companies as well as federal and national governments, infrastructure organizations and power providers. The Washington Division provides preventive, reactive and reliability engineering which helps to ensure operability for customers' expensive assets and defer capital investments.

To help it schedule and track maintenance and repairs and to provide the information that customers need on their boilers, chillers, air conditioning units, fire pumps and other assets, the company uses IBM Maximo Enterprise Asset Management software. "We have been using Maximo for 10 years and consider it a market leader," says Dan Peterson, director of Facilities Engineering, URS, Washington Division. "IBM Maximo software helps us maximize the asset value of our customers' equipment over its lifecycle. It also helps us provide our customers with information about these assets that helps them better understand service priorities and optimize investment and resourcing decisions."

Recently, the Facilities Engineering group migrated from IBM Maximo V.4 to the V. 6.2 Web-based version. The group evaluated a range of alternate products, including TRIRIGA and Datastream, and decided that IBM Maximo software provides the best support for the maintenance management industry. "Individually, we've all been longtime IBM Maximo software users," says Peterson. "IBM Maximo software is very easy to use and is quite flexible right out of the box."

Using innovation to enhance service delivery

When money is tight, it's time to innovate. The flexibility of IBM Maximo software enables the team to use its ability to innovate to enhance the company's service delivery to its customers.

For instance, the Washington Division published a complete set of data standards for each IBM Maximo module. This means that one type of equipment has standardized coding that is used all over the world. "We don't have to spend any extra time training anyone who is moved from location to location," says Peterson. "Reporting is much easier, too. We can easily get any benchmarks or metrics on any type of equipment down to very detailed levels of work performance and other factors."

The team also standardized the IBM Maximo solution globally with best practices and preventive maintenance programs for typical facility and manufacturing equipment.

"We also use the Escalation, E-mail and Communication system for a number of purposes," says Travis Bailey, operations support manager. "This includes auto-notification to supervisors and managers of urgent work, delinquent work and related work order needs. In addition, each work order is communicated to the customer via e-mail when completed, along with a hyperlink to an online customer satisfaction survey."

"The robustness of the IBM Maximo product by its nature gives us many ideas for expanding it by design," says Jeff Schneider, operations support manager. "We look to IBM Maximo software and what it offers out of the box, and we investigate how we can use it to give our customers more value for their money."

IBM Business Partners enhance value

To this end, the Washington Division turned to IBM Business Partner Total Resource Management (TRM) and deployed the TRM Rules Manager SE V3.2.6 product. This is a server-based product which plugs into IBM Maximo Enterprise Asset Management software to enable the configuration of highly complex business rules using a JavaScript engine. "Rules are built primarily to enforce data integrity," says Schneider. "It helps the user know what can and can't be entered and what can and cannot be changed. This has reduced the number of errors in work orders by nearly 95 percent." URS continues to monitor data or syntax errors, then determines whether these can be eliminated or reduced by applying business rules.

The company also tapped an IBM Premier Business Partner, Syclo, for an IBM Maximo mobile solution that can be run on a handheld device. An alternative mobile solution from IBM Business Partner Collaborative Solutions Group (CSG) enables users to work with a digital pen which optically reads handwritten information. The digital pen writes like a pen, captures notes and sketches with optical sensors and uploads data via a docking station.

See, automate, control

With all these improvements, the company has a robust IBM Maximo product to use for gaining visibility into its operations, automating its work management system and controlling the effectiveness of its service delivery. "If we are required to have 98 percent of our preventive maintenance done on time, not only can we show that actual measurement every month, we can determine if we will miss that target before month's end," says Peterson. "We also have visibility on the purchasing side. Since we have a centralized system for multiple sites, we can group purchases together and get better deals. And we're always pushing automation with the IBM Maximo product to gain efficiencies. For instance, when someone calls in with a service request, we take information off the caller ID to

Key Components

Software

- IBM Maximo® Enterprise Asset Management software

IBM Business Partners

- Total Resource Management, Inc.
- Syclo LLC
- Collaborative Solutions Group, Inc.

auto-populate the work order with information in the system to make that call last one minute rather than 2.5 minutes. With the automation of our work orders we can respond a lot faster—in fact within a minute and a half."

The control that IBM Maximo software gives the company is key to its success. "A customer can come to us and say, 'cut 10 percent of my operations cost,' and we adjust the work schedule on IBM Maximo software to do preventive maintenance every four months instead of every three months," says Peterson. "We can show the customer how much they can save and whether it will impact operations."

That control includes the ability to put maintenance engineers in the field with work orders that have been properly scheduled to enable them to go from one job to another without traveling long distances—and make sure that they have all the equipment they need to do their jobs.

Productivity 62.5 percent higher than industry average

The ability to see, automate and control has given this company the ability to push its productivity rates up well beyond the industry average. "The industry standard is that 40 percent of a workday is considered productive, that is, actual wrench turning time," says Peterson. "Within our company, the average runs around 65 percent because of the scheduling ability within IBM Maximo software and our use of stringent data standards."

"We typically see the payback of IBM Maximo software within the first two years," says Peterson. "Cost savings and improvements in the performance of our field staff enable us to realize the value of IBM Maximo software and all the work we put into it."

For more information

Contact your IBM sales representative or IBM Business Partner, or visit us at: **ibm.com**/software/tivoli/products/maximo-asset-mgmt

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Additionally, IBM Global Financing can tailor financing solutions to your specific IT needs. For more information on great rates, flexible payment plans and loans, and asset buyback and disposal, visit: ibm.com/financing

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Vishay virtualizes its SAP ERP environment with IBM Power Systems

Overview

■ ***The Challenge***

As its existing Tru-64 hardware platform was being retired by the manufacturer, Vishay, a global electronic components manufacturer, wanted a strategic replacement that would offer long-term stability. With 24/7 operations in Europe, Israel, the Far East and the Americas, the team looked for a technology partner able to support migration to a new global server landscape and assist with the SAP application changes and upgrades.

■ ***The Solution***

Vishay implemented IBM Power Systems servers as a standardized platform in all data centers, using both server and storage virtualization. The company deployed IBM PowerHA to provide failover and disaster protection, with IBM Tivoli to automate storage, backup and archive services. The Vishay team performed the migration utilizing the Advanced Technical Support (ATS) Migration Workshop Program from IBM. ATS delivered three migration workshops over a two-year period and assisted in the successful migration of all the SAP environments to IBM Power Systems.

■ ***The Benefits***

Long-term development roadmap for IBM Power Systems assures Vishay of a stable environment that supports the company strategy; server virtualization allows maximum utilization of compute capacity, which avoids over-investment in hardware; storage virtualization simplifies management and reduces costs; standardized Power Systems landscape allows technical resources to be shared across global data centers, reducing expenses and cutting training needs.

■ ***Key Solution Components***

Industry: Manufacturing
Applications: SAP® R/3 4.6
Hardware: IBM® Power Systems™ (multiple p5-570, p5-560, p550 and p520 servers), IBM System Storage® DS8000
Software: IBM SAN Volume Controller, IBM FlashCopy, IBM PowerHA, IBM Tivoli® Storage Manager, Oracle®
Services: IBM Global Technology Services, Advanced Technical Support (ATS) Migration Workshop Program

IBM | SAP®

"IBM PowerVM technology means we do not over-invest in server capacity; instead, we direct existing capacity in the most cost-effective manner, maximizing the value of our infrastructure."

Roland Davies, Senior Director of Business Application Innovation, Vishay

Vishay is one of the world's largest manufacturers of discrete semiconductors and passive electronic components. Its products are used in virtually all types of electronic devices and equipment in the aerospace, automotive, computing, consumer, industrial, medical, military and telecommunications markets.

Headquartered in Malvern, PA, Vishay operates manufacturing plants in China and five other Asian countries, in Europe, in Israel, and in the Americas, with sales offices worldwide. Vishay has grown through innovations and strategic acquisitions, building a business with sales of $2.8 billion.

In 2004, the vendor of Vishay's existing server platform chose to end development and support. With all the major business functions, such as order-to-cash, purchase-to-pay, financials and planning, supported by SAP applications running on this hardware platform, it was essential to find a strategic replacement for the end-of-life servers.

Choosing a new platform

Key migration issues concerned the long-term prospects for any new platform. The Vishay team was keen to move to a UNIX platform, and began to compare the major vendors' offerings. The team concluded that the IBM Power Systems family running IBM AIX offered the greatest flexibility, lowest operational cost and best performance, with a clear roadmap for future development and continuity.

"We made several trips to see reference sites and vendors, and we were very excited by the possibilities offered by IBM virtualization technologies for both servers and storage systems," says Mike Carey, Senior Director of Global Infrastructure. "We wanted to ensure that Vishay would be on a platform fully supported by SAP, which was essential for our business-critical applications."

The team took the opportunity to revitalize its entire computing infrastructure, rationalize its systems, and introduce new failover and recovery solutions. The transformed landscape has given Vishay a leaner IT operation that is able to handle greater workload at lower costs, and offers greater ability to handle business change with flexible, adaptable computing resources.

High availability

All SAP applications at the headquarters site now run on IBM Power Systems servers in a primary data center, with a remote data center for backup, test and development. Using IBM PowerHA technology, the servers are clustered to provide continuous operations even if a specific physical machine suffers an outage.

"We had known for some time that unplanned downtime could have massive impact on the business. We would lose orders, be unable to respond to enquiries for availability, and fail to meet our 'on-time' delivery commitments," comments Mike Carey. "Before the IBM solution, we used a third-party vendor to provide off-site restore from tape, a slow process that involved considerable downtime. IBM PowerHA gives us high-speed switch-over and re-access to the mirrored rapidly from one datacenter to another."
.

Vishay has deployed IBM Tivoli Storage Manager, which provides a flexible and comprehensive backup, archive and recovery solutions. Repetitive administration tasks are handled by Tivoli Storage Manager, which also provides backup and performance status reports to IT staff.

In failover or planned downtime conditions, production workload is moved to the secondary servers without affecting business users, and moves back when the primary servers are restored. IBM Tivoli Storage Manager automates backup, restore and archive services, with data replication handled by IBM FlashCopy, and combined with the PowerHA configuration, Vishay now has a complete disaster recovery service.

Rather than purchase fixed-capacity servers for each SAP application, Vishay has deployed virtual servers on each Power Systems machine. Using the IBM PowerVM virtualization layer, a portion of the total compute capacity of each physical server is allocated to individual virtualized logical partitions (LPAR) according to the workload requirements of each application.

Roland Davies, Senior Director of Business Application Innovation, remarks, "From the application point of view, we can move processor power to the most appropriate place. IBM PowerVM technology means we do not over-invest in server capacity; instead, we direct existing capacity in the most cost-effective manner, maximizing the value of our infrastructure.

"Virtualization gives us the ability to size the different servers exactly as we please, and creating new servers for new application requirements is quick and easy."

Mike Carey adds, "This capability gives us what you might call on-demand server rightsizing, and in a world where we are being asked to do more with less, this is a great advantage."

IBM as standard

Vishay chose IBM as its standard for all its global operations, replacing a mix of different platforms with IBM Power Systems servers across its US, Far East and European operations. IBM Global Technology Services provided technical specification and migration services, including onsite enterprise management to oversee both IBM and business partner teams, and ongoing post-implementation support.

Mike Carey comments, "The global consolidation to IBM Power Systems means that we are able to share central resources across the company. While Europe sleeps, engineers in the US can tackle maintenance tasks on systems they know and understand. The consolidated approach offers lower training requirements and shared knowledge that can be used across all our operations.

"With this type of approach, you soon learn which vendors are truly global, and which are not. IBM Global Technology Services was able to agree a single deal for our entire Power Systems infrastructure, regardless of the actual country of implementation, enormously simplifying the proposition and reducing the costs for Vishay."

Optimizing storage

Around 3,000 users access some 1.7TB of data at Vishay. One of the biggest attractions in switching to integrated IBM systems was being able to rationalize and maximize data storage capacity, by deploying IBM SAN Volume Controller (SVC) software. Combined with the deployment of new IBM System Storage DS8000 solutions, Vishay now has integrated storage for all its SAP and other business applications.

SVC allows the storage capacity on multiple devices from different vendors to be pooled, and presented to applications as a single resource. Space on formerly isolated SAN and NAS devices can be integrated into the SVC environment, maximizing available capacity.

> *"IBM SAN Volume Controller was a huge advantage during the initial migration, as we were able to move data between devices without resorting to the expense and delay of tape copies."*
>
> Mike Carey, Senior Director of Global Infrastructure, Vishay

Mike Carey says, "IBM SAN Volume Controller was a huge advantage during the initial migration, as we were able to move data between devices without resorting to the expense and delay of tape copies.

"In the past, a major difficulty was in training people to use different storage subsystems, and in some cases the control panels were so complex we had to rely on vendor support. With SVC, engineers learn only one interface, and we can save time and costs by managing all our storage in-house."

Working as a team

Vishay and IBM Global Technology Services worked closely as a team for the initial system migration and for ongoing development, and the commitment to mission by IBM has impressed the corporation.

Mike Carey remarks, "We needed significant assistance to complete the original migration on time, as we were very stretched in terms of personnel. The IBM Global Technology Services team was simply outstanding, meeting or exceeding our timelines and expectations.

"A typical technical example was a shop-floor application interface on a machine that was about to reach end of lease. We had no documentation and no in-house coding skill for that platform. Failure of the interface, which was at least 12 years old, could have really hurt us. IBM Global Technology Services simply brought in an expert who was able to recompile the interface for AIX. We were really impressed at the can-do attitude."

"We needed significant assistance to complete the original migration on time, as we were very stretched in terms of personnel. The IBM Global Technology Services team was simply outstanding, meeting or exceeding our timelines and expectations."

Mike Carey, Senior Director of Global Infrastructure, Vishay

Looking to the future

The next major steps will be to upgrade to SAP ERP 6.0 and the company is considering to engage with IBM to complete the next development phase.

Roland Davies concludes, "IBM Global Technology Services provided excellent project management – for example, we were able to cut the Singapore office over to the new SAP ERP environment over a single weekend, without any interruption. Many vendors offer server virtualization or storage management technologies, but they don't always deliver on their promises. The IBM commitment to service makes all the difference."

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Tivoli software

Warner Robins Air Logistics Center leverages Maximo software to improve facility and equipment management

Overview

- ***The Challenge***
  Create a unified system across all defense services to perform industrial plant facility and capital equipment planning and maintenance management; increase efficiency and effectiveness of operations; reduce material purchases and maintenance labor; facilitate preventive and corrective maintenance management
- ***The Solution***
  IBM Maximo, a strategic facility and equipment maintenance system
- ***Key Benefits***
  Eliminated five stovepipe legacy systems; improved decision making because of better visibility and data access for users and customers; significant reduction in overall costs

Robins Air Force base is the home of Warner Robins-Air Logistics Center (WR-ALC) and more than 60 other units that comprise a vital part of the United States Air Force war fighting team. Located on 8,722 acres, WR-ALC is the largest industrial complex in Georgia. It employs a workforce of more than 25,584 civilian, contractor and military members, with approximately US$3.3 billion replacement value of facilities, 3.8 million square feet of maintenance shops, 3.5 million square feet of storage space and 1.7 million square feet of administrative space. WR-ALC, one of three Air Force Air Logistics Centers, has worldwide

Maximo has greatly improved the efficiency and effectiveness of operations at WR-ALC and helped to eliminate five stovepipe legacy systems.

Key Components

Software

- IBM Maximo

management and engineering responsibility for the repair, modification and overhaul of the F-15 Eagle, C-130 Hercules, C-5 Galaxy, C-17 Globemaster, all Air Force helicopters, and all special operations aircraft and their avionics systems.

In 1995, as part of an initial Joint Logistics Systems Center (JLSC) initiative, the Assistant Secretary of Defense for Command, Control, Communications and Intelligence selected IBM® Maximo® software (formerly MRO Software's Maximo) as its facility and equipment maintenance (FEM) system. The Navy Systems Support Group (NSSG) was designated as the overall project manager for the FEM program.

In turn, NSSG contracted General Dynamics IT (formerly Anteon Corporation) to implement Maximo for any Department of Defense (DoD) agency wanting an automated maintenance management system (MMS). The goal of Maximo was to provide a unified system across all defense services to perform industrial plant facility and capital equipment planning and maintenance management.

As the initial operating site, WR-ALC assumed the operational risk associated with changing no less than three different incumbent systems. Using a measured process and a business case analysis, WR-ALC undertook the necessary steps to make Maximo a reality. General Dynamics IT, the contractor that performed the configuration, also played a critical role in the overall success of the Maximo implementation.

Maximo was selected to provide depots with an automated tracking and control system to manage facility and equipment maintenance, equipment calibration, equipment maintenance contracts, inventory control, asset costs, preventive and corrective maintenance and capacity data. Maximo has now grown to include tools management, a graphical interface system (GIS) and radio-frequency (RF) tagging.

Maximo, designed to address superior acquisition and sustainment challenges, is responsible for maintaining and restoring the support assets for the Air Force fighter and cargo planes, helicopters and other key weapon systems. Currently, WR-ALC is using Maximo in four major areas: industrial plant and equipment (IPE), precision measurement equipment laboratory (PMEL), ground support equipment (GSE) and tools management.

Preventative maintenance improves productivity for IPE

The Plant Management organization manages all the IPE located on WR-ALC. It is responsible for 4,926 pieces of equipment, ranging from X-ray machines to hoists and torque wrenches to pneumatic equipment. More than 1,250 pieces of equipment are established in the system for scheduled preventive maintenance, and over

Using Maximo, resource utilization improvements occurred through increased visibility of equipment status, improved PM scheduling based on known equipment downtime periods and an increased PM scheduling lead time from one week to 2.5 weeks.

500 pieces of equipment are established on a repair on-call basis. Plant Management accomplishes all necessary actions required to establish and maintain support effectiveness of assigned equipment.

Plant Management initiates the scope of maintenance, repair, tests or calibration to be performed by in-house mechanics/technicians or contractors on assigned equipment. Once established, they investigate, analyze and recommend corrective action on repair and support problems on a continuing basis to enhance repair policies and procedures. Through coordination with Production Directorates, Plant Management determines the mission essentiality, reliability, maintainability, safety implications, use of standard and interchangeable parts, speed and safety of operations, accessibility of components for replacements and repairs, life cycle and compatibility with associated equipment. It also provides technical input to procurement packages.

The new technology enables the Plant Management organization to realize labor productivity and material improvements. In addition to productivity gains, the IT infrastructure costs for maintaining Maximo were comparatively less than the replaced legacy systems.

Using Maximo, the number of PMs being completed on or before required due dates substantially increased. Resource utilization improvements occurred through increased visibility of equipment status, improved PM scheduling based on known equipment downtime periods and an increased PM scheduling lead-time from one week to 2.5 weeks. Maximo also enabled the Plant Management organization to implement an automated work-order priority system based on criticality of the asset followed by criticality of the location. This priority system, combined with improvements in PM and CM visibility and lead times, has had significant impact on workforce productivity and material utilization.

Since the inception of Maximo, WR-ALC has experienced a major C-141 program elimination balanced by a major C-5 program acquisition. Over a five-year period equipment increased 88 percent. Similar to this equipment increase, IPE unique materials have increased 183 percent. Maximo has helped Plant Management absorb these increases without additional personnel.

Data access and reporting improves decision making for PMEL

The Precision Measurement Equipment Laboratory (PMEL) helps ensure that all customers are provided test measurement and diagnostics equipment (TMDE) that meets mission requirements with accuracy traceable to the National Institute of Standards and Technology (NIST) or other nationally recognized standards.

With Maximo, purchase orders can be routed electronically, reducing routing time from 45–60 minutes to 5–10 minutes . . . reducing number of clerks from four to one—accounting for an annual total savings of $89,232.

Depending on the nature of the TMDE, out-of-calibration conditions could potentially cause serious "unsafe conditions" for deployed weapons systems. Similarly, mission-critical weapon systems may be made unavailable because of similar out-of-calibration conditions. Whenever a suspect standard appears, PMEL can quickly alert all installations of a potential problem and mitigate any unforeseeable risk. Clearly one accident can cost the Air Force millions of dollars in equipment, and more profoundly, can result in the loss of human life due to out-of-calibration equipment.

Maximo offers much better visibility to both users and customers for reviewing/querying their data, both on and off the base. It tracks the history on all PMEL work, whereas the previous legacy system did not. It also allows multiple status changes, the use of value lists, quality random selections for work orders, tables/screens to set up customer information and hyperlinks between screens. Maximo ties all work to the equipment for easy reporting access. By printing weekly reports and work orders, PMEL can save about three weeks waiting for the products to come in the mail.

Contractor performance tracking, previously unavailable, is provided through Maximo, thus improving contract adherence. Penalties are assessed for non-compliance to flow days—the time equipment is received until the time it is shipped. Maximo enables PMEL management to track such improvements and, if necessary, apply flow-day penalties.

Using Maximo has also enabled PMEL to quickly construct equipment histories to identify bad actors. These bad actors increase the number of calibrations required, ultimately driving up the cost of ownership. With equipment history information in hand, PMEL can make recommendations for continued calibration activities, equipment overhaul and equipment replacement decisions.

Quicker reporting helps reduce personnel costs for GSE

The Plant Management organization also manages the ground support equipment (GSE) at WR-ALC. It provides technical guidance to ensure the maintenance contract is written to give maximum support of serviceable equipment to the product divisions within the Maintenance Directorates and other base organizations. The program contract for GSE provides the repair/maintenance for 1,000–1,200 pieces of powered equipment, 5,000–6,000 pieces of non-powered equipment, 312 golf carts and 220 chain hoists.

Using Maximo, maintenance personnel and supervisors can track history information on GSE work and equipment moves. They have the capability to tie scheduled and unscheduled work to a specific piece of equipment, track purchasing information and keep track of the contract dollars expended by each customer's contract line item (CLIN). The aircraft supervisors can also open tickets via the Web for equipment moves.

The previous legacy system could take up to a week to get a purchase order through the sourcing and approval process. With Maximo, purchase orders can be routed electronically, reducing routing time from 45–60 minutes to 5–10 minutes. This helps to reduce the number of GSE clerks required to perform these functions from four to one—accounting for an annual total savings of $89,232.

GSE reported increases in labor hours per work order and decreases in material dollars per work order. In 2001, GSE experienced a 3,331 increase in pieces of equipment (due primarily to winning the C-5 support contract), yet remarkably held labor per work order constant.

Streamlined operations improve tools management

Using Maximo, multiple divisions support tools management. Under tools management, divisions support inventory management—the stocking and restocking of bulk, special, unique, consumable and safety tools; support operations of tool cribs (issuing, exchanging, tracking and others). The divisions also provide kitting functionality (templates and tool kits) and are integrated with metrology, which ensures that TMDE tools are tracked and calibrated on schedule.

Tools management at WR-ALC has more than 5,000 kits, each containing an average of 300+ tools per kit. From an inventory standpoint, WR-ALC has 30,000 item records and manages 3.5 million tools in tools management. WR-ALC has over 20 tool rooms and makes 2,000–3,000 transactions a day. Maximo has enabled WR-ALC to streamline operations from accounting to check-in/check-out capabilities in multiple tool rooms.

Overall, Maximo has greatly improved the efficiency and effectiveness of operations at WR-ALC and helped to eliminate five stovepipe legacy systems. The reusability of Maximo has significantly reduced overall cost, and the system's flexibility facilitates out-of-the-box thinking, while providing credible data to manage asset requirements. Because of the team effort of the project office (NSSG), the contractor (General Dynamics IT) and user teams, Maximo continues to meet the evolving requirements of WR-ALC by keeping pace with advancing technology.

For more information

Please contact your IBM sales representative or IBM Business Partner.
Visit our Web site at:
ibm.com/tivoli

For more information on IBM Maximo solutions visit:
www.mro.com

You can get even more out of Tivoli software by participating in independently run Tivoli User Groups around the world. Learn about opportunities near you at:
www.tivoli-ug.org

For more information about Warner Robins Air Logistics Center, visit:
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Whirlpool Corporation focuses on operational excellence as global growth shifts into high gear.

Overview

■ ***Business Challenge***

With its business processes becoming more numerous, disconnected and inefficient as it grew, Whirlpool Corporation reached a point where its profitability stagnated – despite rapid revenue growth. Whirlpool needed to not only consolidate its global business processes, but also integrate them to deliver maximum efficiency through its entire value chain.

■ ***Solution***

Whirlpool engaged IBM Global Business Services to reconstitute its fragmented business processes with best practices across all of its processes and lines of business. Standardized metrics – as well as product and parts taxonomies – enable Whirlpool to achieve a new level of operational efficiency on a global scale.

■ ***Key Benefits***

- *Substantially reduced finished goods inventory*
- *Faster product development cycles*
- *Improved ability to focus on the most profitable products and features*
- *More effective allocation of trade partner incentives*

Whirlpool Corporation is the world's leading manufacturer and marketer of major home appliances, with annual sales of more than US$18 billion, more than 73,000 employees and more than 70 manufacturing and technology research centers around the world.

While globalization creates a host of new market opportunities for manufacturers, it also tends to intensify – and in some cases redefine – the terms of competition. Put simply, global manufacturers need to do a lot of things right to perform successfully on a bigger and more demanding stage. Given the core importance of scale-based efficiency in the global manufacturing business model, perhaps no need is more basic than the vigorous and consistent growth of the business, through organic means, acquisitions or both. In the past decade, Whirlpool Corporation (www.whirlpoolcorp.com), the world's leading appliance manufacturer, has done just that. While Whirlpool

> *"We're relying on operational excellence to manage rapid growth more profitably and continue our leadership… By enabling Whirlpool to become a more globally integrated enterprise, IBM is helping us reach that goal."*
>
> – Kevin Summers, corporate vice president and Global CIO, Whirlpool Corporation

Business Benefits

- Substantially reduced finished goods inventory
- Faster product development cycles
- Improved ability to focus on the most profitable products and features
- More effective allocation of trade partner incentives
- Optimized product merchandising
- Streamlined parts inventories through standardized parts taxonomies
- Improved ability to manage the company and optimize performance on a global basis by virtue of standardized business processes and performance metrics

needed 90 years to reach US$10 billion in revenues, it took only ten years to reach the US$20 billion mark, aided in large part by its 2006 acquisition of Maytag. Its current plan calls for even faster growth in the next decade.

But Whirlpool is also cognizant of the new and intensifying challenges it faces in meeting this goal, which is why it conducted a top-to-bottom analysis of what it needed to do differently as a business to succeed. Whirlpool framed its analysis by asking itself: How does a company that grew large as a U.S.-centric distributor for Sears transform itself into an even larger global consumer packaged goods company? While the company saw IT issues as part of the equation, it viewed business processes as the true focal point of its efforts. To this end, Whirlpool spent several months drilling down into the processes of each of its lines of business and benchmarked them against the industry.

Among its key findings was the discovery that Whirlpool had roughly 100 separate instances of SAP running throughout the company – a figure that, for all its IT implications, was seen first and foremost as an indicator of the gradual, yet unchecked proliferation of business processes that had occurred over time. Underlying the problem was a chronic and self-perpetuating cycle: because processes were largely unique to a particular line of business or manufacturing location, each incremental addition brought with it a unique set of metrics, product taxonomies, part numbers and other support systems, producing a highly heterogeneous environment that made optimization across the global enterprise next to impossible.

"Having discipline around processes and metrics is important. If you don't have it, it becomes exponentially harder to optimize production as the company scales up. With 20 plants in North America alone, we vividly see the importance of standardized metrics."

– Kevin Summers

Threatened by complexity

While a smaller Whirlpool had been able to improvise around the situation, the growing size, complexity and global scale of the company quickly rendered its disjointed process framework unsustainable. In effect, Whirlpool had reached a tipping point where the growth of the business exacerbated its underlying process inefficiencies – producing a kind of "friction" that kept the Whirlpool bottom line stagnant as its top line grew. To Whirlpool, the key to sustained global leadership was operational excellence, and the only way to achieve it was to rationalize, improve and integrate its processes in a way that would enable optimization across its global operations. Whirlpool turned to the industry and process expertise of IBM Global Business Services to help put this vision into action.

While broadly aimed at process standardization, the IBM role in Whirlpool Corporation's transformation was multilayered. Its first task was to establish a deep understanding of the company's key processes that would become a starting point for optimization efforts. With that established, IBM leveraged

its process expertise and global track record in the consumer packaged goods space to begin laying out the groundwork for its future process framework. An important part of this effort was determining which processes were best suited to global deployment and which – due to local market requirements – would be best deployed regionally. As for the processes themselves, IBM is leveraging its broad portfolio of industry best practices, an intellectual asset that figured prominently in Whirlpool Corporation's selection of IBM.

Tackling redundancy

The deepest layer of IBM's process analysis is also the most granular. As an appliance manufacturer, one of the most basic information elements Whirlpool references is the part number. As the breadth of the Whirlpool product line has expanded, the number of underlying parts involved in making and servicing these products, from the smallest screw to the largest subassembly, has expanded at a proportional rate. In reality, however, many products – often across product lines – employ generic parts that, while functionally identical, have been categorized as different because each business unit has followed its own parts taxonomy. As mapped out by IBM, the implications of this redundancy ripple across Whirlpool Corporation's value chain, beginning with product development.

Say, for example, a new Whirlpool product design calls for a new part that – unbeknownst to its designers – could have been filled by an existing part. The fact that the new (and redundant) part needs to be designed and certified lengthens the product's development cycle and, by extension, its time to market. At the same time, the practice of multiple lines of business maintaining separate stocks of common parts keeps parts inventories at higher than optimal levels and prevents procurement optimization. With Whirlpool launching an average of 73 new products every year, the dramatic cost and efficiency implications of this redundancy underscore the importance of the foundational work IBM is doing to rationalize and standardize the Whirlpool parts portfolio across all business units.

If there is a big picture to the company's transformation story, it is that the key to achieving operational excellence is in moving beyond the standardization of core business processes to actual value chain integration. Whirlpool Corporation's goal of sharply reducing its global finished goods inventory is a case in point, notes Global CIO Kevin Summers. "Having good [Sales & Operations Planning] processes is important, but they can't only be focused on manufacturing. They need to extend up and down our value chain into areas like forecasting, go-to-market strategies, the supply plan and the production plan inside manufacturing. The process implementation roadmap being developed by IBM will be critical to our success in achieving this integration across our global operations."

Solution Components

Software

- IBM DB2®
- IBM Tivoli® family of products
- SAP R/3

Servers

- IBM System p®
- IBM System z®

Services

- IBM Global Business Services
- IBM Global Services – Strategic Outsourcing

Smarter Manufacturing

To stay ahead of rising competition, Whirlpool is implementing best practices across all of its lines of business and integrating them to optimize its business processes across its entire global value chain. Becoming a more globally integrated enterprise enables Whirlpool to achieve "operational excellence" – the delivery of the right product mix to local markets while maximizing the efficiency of its global operations, from R&D to retail merchandising.

A single picture of global production

With the global appliance market becoming more competitive and dynamic, Whirlpool views support for operational, tactical and strategic decision making as a critical underpinning for operational excellence. One of the most basic requirements of optimization is the ability to make production decisions based on capacity and inventory information across global manufacturing facilities. To enable this, IBM is also working to implement a standardized SAP solution across its 30 plus manufacturing sites, through which the Whirlpool executive team will have an "apples-to-apples" view of such key operational metrics as quality, asset utilization, labor utilization and inventory levels. A comparable solution, known as Business Performance Management, provides a dashboard view into key financial metrics such as procurement spend.

Finally, with sales through trade partners like Home Depot accounting for a large share of its revenue, Whirlpool is also seeking to gain more visibility into the effectiveness of the US$1.5 billion it spends annually on trade partner incentives – more than any other company in the industry – so that it can direct its resources to the most effective and profitable channels. To adapt to the increasing competition for retail floor space, Whirlpool is working with IBM to process map all aspects of its retail strategy – from merchandising to pricing – to ensure a product mix that maximizes profitability and increases market share.

In addition to readying its processes for rapid growth, Whirlpool is also working with IBM to strengthen its IT infrastructure, the core of which includes the IBM System z and System p servers, IBM DB2 for core database and data warehouse functionality, and IBM Tivoli products providing systems management and automated backup and recovery. Its data center in Benton Harbor, Michigan is managed remotely by IBM strategic outsourcing staff located in Brazil.

In Summers' view, Whirlpool is hitching its future prospects on rapid growth – and IBM is playing an essential role in helping Whirlpool fulfill the operational challenges of meeting that growth. "We're relying on operational excellence to manage rapid growth more profitably and continue our leadership in a more dynamic and demanding global appliance marketplace," explains Summers. "By enabling Whirlpool to become a more globally integrated enterprise, IBM is helping us reach that goal."

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