



Growing Energy Utility Chooses Virtualization Solution to Drive Agility and Cut Costs

Overview

Country or Region: Spain

Industry: Energy

Customer Profile

Based in Bilbao, Spain, Iberdrola is a private energy company, with a presence in more than 40 countries. It employs 16,000 people and has approximately 10,000 personal computers and mobile devices.

Business Situation

Iberdrola wanted to shorten the IT department's test and development cycles to improve business agility. It also wanted to cut management costs, optimize server utilization, and improve disaster recovery.

Solution

Iberdrola chose Microsoft® Virtual Server 2005 R2 and Microsoft System Center Virtual Machine Manager to improve the management of its virtualized test and deployment environments, and to streamline disaster recovery.

Benefits

- Saved up to 80 percent in data center costs
- Simplified virtualization environment management
- Increased business agility
- Reduced test and deployment time
- Improved reliability

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Federico Garcia, Windows Server Platform Manager, Iberdrola

Following a recent drive to acquire and build new facilities, Spanish utility Iberdrola reached its goal of becoming the world’s top producer of wind-generated electricity. However, this period of rapid growth and expansion into global markets has put pressure on the company’s IT department to more efficiently manage its server farms housed in data centers in Madrid and Bilbao. IT managers chose Microsoft® Virtual Server 2005 R2 and Microsoft System Center Virtual Machine Manager to reduce costs and improve operational efficiency. Iberdrola saved up to 80 percent in data center costs, reduced test and deployment cycles to bring applications more quickly into production, simplified the management of its virtualized environment, and improved disaster recovery. Today, the company’s IT department can provide the operational agility required to support Iberdrola’s rapid growth.

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Situation

Based in Bilbao, the Spanish company Iberdrola is a major global player in the energy sector, serving 21 million customers in Europe and North and South America. It owns hydroelectric, fossil-fueled, nuclear, and renewable power generation facilities with a capacity of nearly 40,000 megawatts (MW).

Culminating five years of building its wind-energy business through strategic acquisitions, Iberdrola purchased Scottish Power in 2006. Today, the company is the world's top producer of wind-generated electricity. As a source of clean, renewable energy, wind-generated electricity is gaining favor. In 2006, worldwide capacity grew a record 30 percent. Currently, Iberdrola has approximately 7,300 MW power capacity in this sector. With expanding operations in Eastern Europe and the United States, Iberdrola plans to have more than 13,600 MW capacity in environmentally responsible, renewable energies by 2010. To achieve this goal, Iberdrola must keep pace with the evolution of innovative technologies in the renewable energy sector.

Growth Puts Pressure on IT Management

Iberdrola has numerous branch offices around the world and 250 offices in Spain. The company's distributed IT infrastructure includes hundreds of servers running Windows® operating systems, ranging from the Windows NT® Server operating system version 4.0 to the Windows Server® 2003 operating system. Most of these servers are housed in two data centers, one in Bilbao and one in Madrid.

Given the company's rapid growth and expansion plans, Iberdrola's IT staffers are under increasing pressure to manage the server farm more efficiently and economically and to quickly provision new environments. Iberdrola also needed to consolidate servers

at its data centers, which were crowded with underutilized boxes.

“Some of our older applications run only in earlier environments like Windows NT Server 4.0,” says Federico Garcia, Windows Server Platform Manager at Iberdrola. “We needed to keep these applications running, while phasing out operating systems and hardware that are no longer supported. Recent acquisitions have introduced the challenge of conducting effective consolidations of other companies' IT infrastructures and custom applications. Also, the IT department must respond to management's requests that it provide backup plans for our most important infrastructures.”

Expensive Test and Development Environment

Over the years, Iberdrola has deployed a growing number of important services on its Windows-based server platform. Now it is facing an increased need to test the applications on this infrastructure. For Iberdrola, this translates into increasing pressure to consolidate and automate its software test and development environment.

“The hardware and labor cost of having dedicated lab environments for all our applications was prohibitive,” says Garcia. “It took so long to go through all the steps of purchasing and installing servers that we only maintained development or integration environments for our most important services. We wanted a low-cost platform to procure and provision the equipment needed to perform testing so we can move more technology into production more quickly.”

Beyond the cost of application deployment, Iberdrola's increasingly complex, heterogeneous IT environment consumed a disproportionate amount of time and resources to manage. This drained IT expertise from more strategic projects. “We

simply weren't keeping up with the demands of our business," confirms Garcia. "We needed to find a way to optimize our IT infrastructure and promote a more agile, supportive IT environment that we can rapidly adapt to meet the changing needs of our growing company."

Solution

In choosing a solution, Garcia and his colleagues reasoned that a holistic virtualization strategy would ensure greater flexibility in many aspects of Iberdrola's IT infrastructure. An end-to-end virtualization strategy enables IT departments to isolate or unbind one computing resource from others, from the data center to the desktop. This strategy made sense to Iberdrola management, as they envision a step-by-step virtualization deployment, starting with the data centers and moving out to virtualizing the desktop for branch offices in the future.

A virtualization strategy offered clear benefits for Iberdrola, both in terms of security and also in terms of effective use of IT resources. Virtualization would help Iberdrola IT staffers ensure that the company's systems are more secure by isolating problem areas. In addition, virtualization would simplify IT tasks—from server provisioning, to application testing and deployment, to daily policy-based infrastructure management and disaster recovery—a key goal for Iberdrola's overworked IT staff.

Choosing the Right Virtualization Solution

After six months of analyzing the virtualization solution market, Iberdrola chose a Microsoft® virtualization solution as a key part of its IT optimization strategy. The company evaluated a virtualization solution in the market and a comprehensive Microsoft virtualization solution including Microsoft Virtual Server 2005 R2 and Microsoft System Center Virtual Machine Manager. "Microsoft's

virtualization solutions are the most important IT enhancement in the Windows platform in many years," says Garcia. "I see them becoming a commodity, extending from data center solutions to the desktop."

Because Virtual Server 2005 R2 enables increased hardware utilization, Iberdrola IT staffers can use it to reduce server sprawl, while rapidly configuring and deploying new servers to address changing business needs. The IT department can use System Center Virtual Machine Manager—part of the Microsoft System Center family of management products—to simplify management of both virtual and physical environments across multiple Virtual Server 2005 R2 host systems. These management facilities are key to maintaining a global vision of the infrastructure.

"Performance tests between the different virtualization technologies revealed no clear difference between the choices," recalls Garcia. "At the same time, hardware compatibility was best with the Microsoft solution. We chose Microsoft because we liked the company's holistic virtualization strategy. We feel that Microsoft recognizes the growing importance of this market and will stand behind its products. We wanted to avoid any risky situation regarding platform support, so this gave us comfort. Our virtualization objectives included reducing the total cost of ownership of our IT infrastructure, which is critical for our consolidation projects."

Working with Microsoft

Iberdrola's approach to virtualization entails a step-by-step deployment, beginning with the lab environment, then moving to testing and deployment, and finally focusing on the live environment. "We wanted to learn as much as possible each step of the way, and partnering with Microsoft gave us the opportunity to participate in a technical

adoption program for the System Center Virtual Machine Manager solution,” says Garcia. “Together, we configured the most suitable virtualization solution for Iberdrola’s needs.”

Iberdrola’s IT staffers defined a building-block concept for the virtual server environment. Each building block includes application processing, storage, and backup components. Each virtual machine is rated as light, medium, heavy, or extra-heavy, depending on input/output, network traffic, CPU, memory, and disk volume requirements. Each building block is based on Virtual Server 2005 R2 and is managed with System Center Virtual Machine Manager.

“For light to medium units, we can host up to five virtual machines per core in the host server,” explains Garcia. “System Center Virtual Machine Manager takes care of image management. This allows us to have a centralized image library that we can share across different building blocks.

“Backup capabilities are very important, but we wanted them to be simple to manage and versatile,” he continues. “We have mixed internal guest backups of the virtual machines with external backups from the hosts, temporarily leaving the machines in a saved state.”

Iberdrola IT staffers use one network card to manage the host and other network cards to manage the virtual machines. That way, network traffic that is generated for the external backup of the host does not interfere with the function of the virtual machines. “This gives us the flexibility to schedule backups by groups of machines on different days, or we can decide not to make an external backup to the same virtual machine,” he says.

Currently, Iberdrola has approximately 150 machines hosted in several virtual servers that are managed by System Center Virtual Machine Manager.

Lessons Learned

Garcia focused on three main design considerations when he planned the virtualization solution: defining virtual machine models, deciding on backup capabilities, and planning host server downtime. In Iberdrola’s case, IT staffers modelled the different kinds of virtual machines to achieve a standard that allowed them to perform capacity planning for the future. IT staffers also ensured that backups were unrelated to the operative state of the virtualization service.

“It’s important to identify all the different dependencies between virtual machines,” says Garcia. “We benefited from the virtual machine migration tool in System Center Virtual Machine Manager to optimize the intelligent distribution of virtual machines to reduce the impact of planned host downtimes.”

Benefits

Iberdrola has already gained significant benefits from its Microsoft virtualization solution and is well on its way to building a more flexible and efficient infrastructure to meet the needs of the business.

“Microsoft’s holistic virtualization strategy, with a cost-effective server virtualization product and a superior management tool for virtual machines, works well for us,” says Garcia. “We use Microsoft virtualization technologies to rapidly and cost-effectively configure and deploy new servers in response to changing business needs. We are saving time and labor with a centralized virtual machine management infrastructure across lab, test, and deployment, and for some

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Reduced Costs

Garcia and his colleagues are using Virtual Server 2005 R2 to consolidate data center infrastructure and increase hardware utilization rates for an optimized IT infrastructure. After removing obsolete servers to reduce required electrical power, rack space, British thermal units per hour (BTU/h) of air conditioning, network link connections, and wiring, the company's data centers are more efficient and cost effective. “Virtualization has led to savings of up to 80 percent of rack space, network socket connections, BTUs/h, and electrical power,” confirms Garcia.

With its Microsoft virtualization solution, Iberdrola is reducing planned downtimes and their associated costs. Consolidating physical servers onto fewer physical machines running virtual machines decreases the number of physical assets that must be maintained by IT staffers, reducing IT maintenance costs as well as any disruption to end users.

Improved Management

Using System Center Virtual Machine Manager to handle both physical and virtual resources means that Iberdrola IT staffers need not be concerned about any extra management burden resulting from creating virtual machines. Using the management solution, IT staffers are automating several tasks that had to be done manually or with scripts. Garcia uses the new Template object to create approved virtual machine configurations that serve as a standard for subsequent virtual machine deployments. IT staffers use System Center Virtual Machine Manager capabilities, including cloning, migration, and fast physical-to-virtual capabilities and intelligent workload placement based on Iberdrola's defined

business policies to simplify the management of its virtual environments.

“The distribution of the image to the host and the creation of the virtual machine in the host using Windows Powershell™ scripting is fast and easy,” confirms Garcia. “System Center Virtual Machine Manager helped us to reduce the number of images and the time required to manage them because they are no longer hardware dependent. In the virtualized world, we only need to maintain an image for each operating system flavor.”

Increased Business Agility

Iberdrola's IT department is using its Microsoft virtualization solution to better support this growing company's business plans by increasing operational efficiency. Rapid server provisioning in the test and development environments means that Iberdrola can introduce system upgrades and new software and services into the production environment more quickly. And using the Microsoft virtualization solution, IT staffers can more efficiently bring new software online from business acquisitions.

“Six years ago, when we began migrating from Windows NT Server and the Windows 95 operating system to the Windows 2000 Server and Windows XP operating systems, we set up approximately 10 servers and 20 clients just for the labs. We dedicated two physical rooms for the lab in separate locations,” recalls Garcia. “More recently, with virtualization, we only needed one rack-mounted 4-bay server box to set up a lab environment with up to 20 servers simultaneously to prepare the upgrade to the Windows Server® 2003 operating system and to Microsoft Exchange Server 2003 from Exchange Server version 5.5. We virtualized not only the servers but most of the clients. To prepare the lab, we simply cloned our production environment and used the

snapshot and undo features to quickly perform different tests.”

While Iberdrola has not yet used its virtualization solution to streamline the process of bringing an acquired company's IT resources into its production environment, Garcia is confident that the IT department's experience with its new virtualization solution will help with any consolidation project. “We have a well-defined building block that can scale out as needed to facilitate integration,” he says.

Improved Reliability and Disaster Recovery

With Virtual Server 2005 R2, Iberdrola can continue to benefit from its earlier applications, while running them in a more reliable environment. Iberdrola's IT staffers are using Virtual Server 2005 R2 to migrate older applications that run on outdated operating systems to new servers running Windows Server 2003 R2. Re-hosting older applications in this way gives Iberdrola the best of both worlds: application compatibility with older environments *and* the reliability, manageability, and security features of Windows Server 2003.

IT staffers are using the Microsoft virtualization solution to improve disaster recovery and quickly resolve problems as they arise. “Currently, we maintain a backup data center for disaster recovery purposes, which is based on standby servers,” says Garcia. “This is an expensive solution that wastes infrastructure. Evolution from a stand-by server-based disaster recovery solution to a virtualization-based solution will be done next year. Today, we spend about 2.5 hours to recover a server, and we expect to reduce this to a couple of minutes. Another important advantage of the virtualization approach is that the recovery process is no longer hardware dependent.

“Setting up virtual machines is now so fast that we can better deal with the unexpected requirements that sometimes happen in our projects,” continues Garcia. “We experienced minor unplanned storage downtime and system degradation on some virtual machines, but in both situations restoring the service and recovering the backup was very fast.”

For Iberdrola's management, this is only the first step in a comprehensive virtualization strategy using Microsoft technologies. “Our server infrastructure is no longer a huge obstacle for project, lab, or disaster recovery scenarios,” concludes Garcia. “Iberdrola has high expectations for the hypervisor-based technology, dynamic resource management, and live virtual machine migration capabilities that are coming with the Windows Server 2008 release, as well as the ability to virtualize x64 servers. Thus, we have already joined the RDP (Rapid Deployment Program) for Windows Server 2008 virtualization technology. With a Microsoft virtualization solution, we expect our benefits will continue to grow.”

For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234 in the United States or (905) 568-9641 in Canada. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to: www.microsoft.com

For more information about Iberdrola products and services, call (34) 944 151 411 or visit the Web site at: www.iberdrola.es

Microsoft Virtualization

Microsoft virtualization is an end-to-end strategy that can profoundly affect nearly every aspect of the IT infrastructure management lifecycle. It can drive greater efficiencies, flexibility, and cost effectiveness throughout your organization. From accelerating application deployments; to ensuring systems, applications, and data are always available; to taking the hassle out of rebuilding and shutting down servers and desktops for testing and development; to reducing risk, slashing costs, and improving the agility of your entire environment—virtualization has the power to transform your infrastructure, from the data center to the desktop.

For more information about Microsoft virtualization solutions, go to: www.microsoft.com/virtualization

For more information about Microsoft System Center Virtual Machine Manager, go to: www.microsoft.com/scvmm

Software and Services

- Microsoft Server Product Portfolio
 - Microsoft Exchange Server 2003
 - Microsoft Exchange Server version 5.5
- Microsoft Virtual Server 2005 R2
- Microsoft System Center Virtual Machine Manager 2007
- Windows 2000 Server
- Windows 95

- Windows NT Server 4.0
- Windows XP Professional

Hardware

- Servers
 - Hewlett Packard DL 580
 - IBM xSeries 445
- Blades
 - IBM