

Gas Natural Strengthens Global Business with Enterprise Computing Grid



Gas Natural SDG, S.A.
Barcelona, Spain
www.gasnatural.com

Industry:

Oil & Gas

Annual Revenue:

€ 8.526 billion (US\$11.6 billion)

Employees:

6,700

Oracle Products & Services:

Oracle Database
Oracle Real Application Clusters
Oracle Partitioning
Oracle Automatic Storage
Management
Oracle Cluster Manager
Oracle Application Server
Oracle Enterprise Manager Grid
Control
Oracle Diagnostics, Tuning,
Configuration Packs
Oracle Cluster File System

“The Oracle grid solution has benefited Gas Natural in two key areas: a platform to modernize our IT operations, and a low-cost way to support business growth.” – Jose Maria Boixeda de Miguel, Gas Natural’s chief technology officer

Gas Natural, the Barcelona-based energy services company, traces its roots back more than 150 years to the days when the streets of Madrid and Barcelona were illuminated with gaslights. Much has changed over the years, and Gas Natural has found a wealth of opportunities to grow and prosper. Today, the Spanish multinational focuses on the supply, distribution and commercialization of natural gas in Spain, France, Italy and Latin America. Worldwide it serves more than 10 million commercial and residential customers.

Business took off for Gas Natural in 1992 as it capitalized on a liberalizing global economy and a strategic merger that doubled its size. The company moved into Latin America, where it became the region’s top gas provider, and diversified into new lines of business such as electrical grid management, liquefied natural gas, and wind power. All of these opportunities called for new ways of managing the business, and new technologies to integrate information from operations spread across time zones and geographies.

Gas Natural’s advanced technology group assumed a major role supporting the company’s globalization. In 2003 it led a major transformation of the company’s computing platform to help Gas Natural better integrate global operating units and speed delivery of performance data to managers. The group replaced Gas Natural’s aging “big-box” SMP platform with Oracle grid technology, deploying it in several projects including a multi-terabyte data warehouse, a SAP-based global performance management application, and an electricity dispatching system.

A study by Mainstay Partners analyzed the three investment projects and documented the business results and lessons learned. The study found key performance improvements and cost advantages at Gas Natural’s new data warehouse operation, which is delivering sales and marketing analyses 10-times faster on

Key Benefits:

- Estimated 298% ROI over five years
- Payback in 19 months
- 10-times faster data warehouse response time
- Eliminated week-long delays in database updates
- 75% reduction in SEM application operating costs
- Avoided €3.5 million (US\$4.7 million) in IT costs over five years

average and 52-times faster for many high-volume jobs. The grid platform also enhanced the company's SAP-based performance management application, enabling a consolidated real-time view of operating units around the globe. Finally, a grid-based mini-data center delivered 24-7 uptime and disaster recovery capabilities at the company's new electricity trading operations.

Overall, the study expects Gas Natural to realize a 298% return on its Oracle grid investment, avoiding an estimated €3.5 million in IT costs over five years. The grid is expected to control costs by offering an economical means to add computing capacity to support Gas Natural's expansion into new markets worldwide.

Project Background

The new global reach of Gas Natural's operations along with more competitive markets and tighter environmental regulations¹ has posed an array of business and technical challenges for the Barcelona-based company, the largest operating unit of Gas Natural Group. Executives identified a range of new business-driven IT capabilities the company would need to confront these challenges and thrive in today's global environment:

- *Faster, more sophisticated market analyses.* Increasingly open markets featuring complex market segmentation required faster, more flexible decision-making.
- *Scalable, cost-efficient infrastructure.* As the company moved into new markets and data volumes grew, it needed to ensure its computing capacity could grow in a flexible incremental manner. This meant moving away from systems that required initial investments in over capacity followed by expensive "forklift" replacements.
- *Real-time, global data access.* With the expansion into markets in Italy and Latin American, Gas Natural needed around-the-clock access to consolidated performance data.
- *High availability.* The company's expansion into electricity grid management called for a highly responsive, fault-tolerant computing platform along with robust disaster recovery capabilities.

¹ Gas Natural is committed to complying with the environmental guidelines set forth in the Kyoto Protocols.

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Jose Maria Boixeda de Miguel
Chief Technology Officer
Gas Natural

Oracle Grid Solution

Starting in 2003, Gas Natural began planning and implementing three major IT projects to support these business objectives:

- *Grid-based data warehouse.* Gas Natural replaced its legacy SMP environment with an Oracle grid platform composed of interconnected commodity servers.
- *Global integration of performance management application.*² Gas Natural enabled real-time consolidation and integration of data from every region by integrating its SAP enterprise management solution with Oracle grid technology
- *Electricity trading IT project.* As Gas Natural expanded into the electric market, it created new requirements for around-the-clock service and high availability to support the sales transaction needs of the electricity market

Table 1 summarizes Gas Natural’s initial investment in its data warehouse platform. More recently, Gas Natural has integrated additional applications from SAP and Siebel into the Oracle grid.³

Table 1: Data Warehouse Total Investment (2004-2008 projected)

Hardware	EUR 382,000
Software (including license maintenance)	EUR 94,700
Implementation and Consulting (internal labor)	EUR 402,000
Total	EUR 878,700

Grid-Based Data Warehouse

Gas Natural’s first IT initiative—planning for which began in early 2003—sought to modernize its aging data warehouse operation, which supplies data analysis and decision support for a range of sales and marketing programs. In recent years, as managers demanded more detailed visibility into global markets, severe shortcoming emerged in the company’s legacy SMP-based IT architecture. Business users were increasingly frustrated with slow system response time and poor data quality. Several projects were put on hold as managers attempted to improve system performance and market analytics.

² Specifically SAP’s Strategic Enterprise Management (SEM) application

³ Additional applications include: SAP SSM, SAP Portal, SAP RM, SAP NetWeaver 4, SAP SRM, SAP PM, and another SAP SEM BI application. The business results of these new applications are not included in the Mainstay study.

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Joan Esquena Marcer
Operations Director
Gas Natural

After extensive planning, Gas Natural selected Oracle’s clustered-database technology, which spread computing After extensive planning, Gas Natural selected Oracle’s clustered-power over a grid of low-cost servers. The new data warehouse features a 2.2-terabyte Oracle Database running Oracle Real Application Clusters software deployed across a grid of eight HP Proliant servers (four CPUs each).

By adopting a grid-computing architecture running Linux, the company gained a range of cost and performance advantages, and established a scalable IT platform that could support business growth. The grid offered cost advantages because it enabled Gas Natural to deploy low-cost servers and Linux operating software. To keep pace with growth, the company can boost system capacity by adding servers to the grid in affordable increments. System scalability will be key in the years ahead, executives said, with the company expecting a doubling of data volumes and a growing need for sophisticated performance monitoring, including subcontractor management.

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The grid also enabled IT managers to run a development and testing environment closely resembling the production environment, helping them respond faster to system issues. “By enabling application centralization, the grid allowed our QA team to provide a rapid response capability and significantly improve user satisfaction,” said Operations Director Joan Esquena Marcer. Overall, executives said the data warehouse project proved the feasibility of a grid approach and paved the way for deploying grids in other business applications.

Benefits in Sales and Marketing

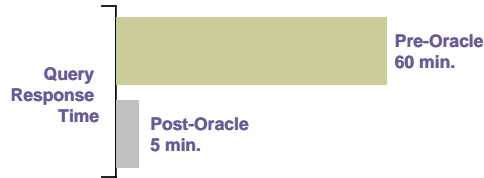
Gas Natural’s new data warehouse generated significant advantages for the company’s sales and marketing programs, addressing the speed and data quality problems associated with the legacy SMP system. As shown in Figure 1, the new

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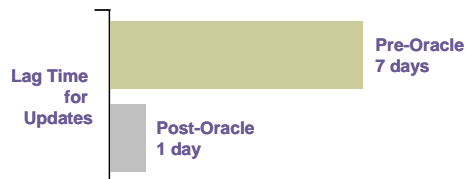
architecture allowed parallelism for long marketing and sales analysis queries, leading to 10-times faster query responses.

Figure 1: Faster Queries



In addition to the query speed boost, the new data warehouse provided near real-time updates for sales forecasts and reports. In the legacy environment, information was typically at least seven days old due to capacity constraints and because the data had to be pulled from separate systems. The grid environment provided enough extra capacity that batch windows could easily keep up with the load, and the company’s various data marts could be consolidated into one environment.

Figure 2: Real Time Data Updates



Grid Enhances Global Performance Management System

As it tested and rolled out the data warehouse, Gas Natural also began evaluating Oracle grid and clustered-server technology to enhance its SAP-based performance management system⁴ that provided strategic analyses such as revenue projections and investment management support. The need to upgrade the legacy SAP system became more critical as Gas Natural expanded into Latin America and other regions, requiring integration of multiple data sets spanning several time zones.

To achieve global integration, the performance management system would need to consolidate data in a more sophisticated fashion—specifically, by running in online and batch modes simultaneously. However, as CTO Boixeda de Miguel observed,

⁴ Specifically, SAP’s strategic enterprise management (SEM) application

“The old performance-management environment was so saturated that a single batch process would dominate all the resources. The new grid environment could run 10 to 15 batch processes simultaneously, and still have capacity for online queries.”

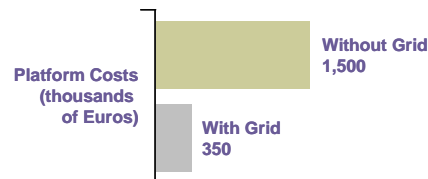
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The move to a grid environment effectively put Gas Natural on a “24/7 global time clock”, enabling it to consolidate multiple sets of business data at once and providing management with a unified view of operations worldwide.⁵ Today, the performance management system delivers complete balanced scorecard information to senior managers, and the entire SAP SEM system runs 150% faster.

The move cut operational costs by 75% as Gas Natural retired its legacy 20-CPU SMP system in favor of the grid platform. According to the study, the move helped Gas Natural avoid about €1.5 million in costs, representing the investment needed to match the grid’s capabilities. The Oracle grid also supported a near doubling in database growth from 150 to 290 gigabytes.

Figure 3: Platform Cost Reduction



In addition, the grid shrank batch-processing time by 30%, as shown in Figure 4, supporting worldwide consolidation. Moreover, performance data is available within 24 hours, versus a lag time of about 30 days in the legacy environment.

Figure 4: Faster Batch Processing



⁵ Gas Natural's internal IT team developed the new grid-compatible SAP application, which SAP later certified to run in the Oracle clustered database environment.

Grid Powers New Electricity Dispatching System

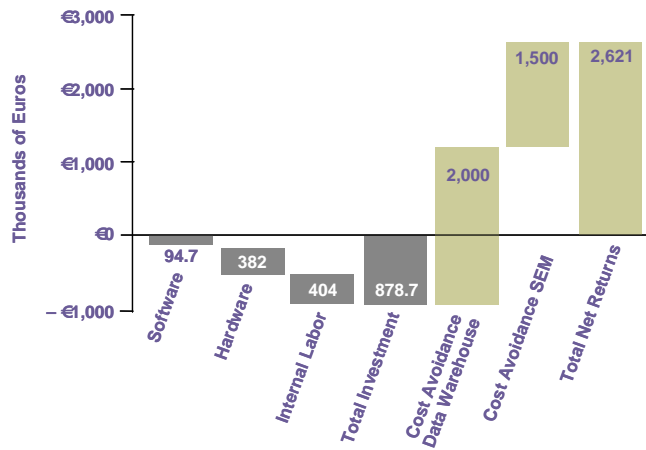
Gas Natural's recent move into the electricity business brought with it a strict new set of operational requirements, such as the need for continuous information access and non-stop transaction execution typical of trading floor environments. Having earlier proved the feasibility of the grid approach, Gas Natural felt confident adopting a similar approach for its burgeoning electricity trading business. Accordingly, in 2005 the company designed and built a mini data center dedicated to electricity trading; it is now planning an associated disaster recover solution.

The mini center currently utilizes Oracle clustered database and middleware technology, providing managers with industry reports and background information. Quantifiable returns are not yet available, but managers say they are benefiting from an increase in information access, which supports better decision-making.

Grid Investment Returns

According to Mainstay's study, Gas Natural should realize an estimated 298% return on its investment from 2004 to 2007, as shown in Figure 5. The company achieved payback on the investment in about 19 months.

Figure 5: Investment-Return Analysis



Advice from Gas Natural

- Gain executive sponsorship and support, especially in the case of wholesale infrastructure change
- Ensure that the vendor's support team is accessible and knowledgeable, and understands fully the different corporate groups and needs
- Be willing to experiment and learn
- Be flexible in integrating existing and new systems
- Develop standard nodes instead of customer nodes for different environments, because it allows nodes to be deployed across the system
- Make complete transition as quickly and seamlessly as possible

The Gas Natural Group is an energy services multinational whose activities focus on the supply, distribution and commercialization of natural gas in Spain, Latin America, Italy and France, where it has 10.7 million customers.

About this case study:

Research and analysis for this study was conducted by Mainstay Partners, an independent consulting firm, and was based on interviews with Gas Natural executives, review of planning documents, and searches of industry literature. ROI calculations use industry standard assumptions regarding the time value of money.

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