

## CASE STUDY

# LEADING NATURAL GAS DISTRIBUTOR ACHIEVES IMPRESSIVE PERFORMANCE INCREASE WITH RED HAT ENTERPRISE LINUX

Founded in 1843, The Gas Natural Group distributes natural gas and generates electricity for more than 9.6 million customers in Spain, Latin America, and Italy. It is their goal to reach 13 million customers by 2008. The Gas Natural Group has multiple approaches for achieving this goal, but there is a common thread that runs throughout: They must maintain a solid financial position that will allow for profitable growth and shareholder remuneration.

The Gas Natural Group's recent migration to Red Hat® Enterprise Linux® has had a major impact on this goal. There are now a variety of systems within The Gas Natural Group running on Enterprise Linux, including one of the most business critical systems: a corporate data warehouse powered by Oracle® Database 9i RAC and SAP Business Information Warehouse (BW), and another system running SAP Strategic Enterprise Management (SEM). The overall TCO (total cost of ownership) of their IT infrastructure has been reduced by a 1:4 factor and performance gains in their data warehouse have been as high as 5,214% in some queries.

## IMPRESSIVE GROWTH CREATES TECHNOLOGY PROBLEMS

### #1 - COMPLEX ENVIRONMENT

In order to achieve their goal of 13 million customers by 2008, The Gas Natural Group knew that their IT environment must be easily and, perhaps more importantly, cost-effectively scalable. "With our highly varied infrastructure, our growth would have been vertical, which would require expensive, high-range machinery," Checa explains. "We wanted to try a growth solution's model based on cost-effective, flexible, horizontal growth software. We were very interested in the Grid computing model."

### #2 - GROWTH OF CURRENT ENVIRONMENT = VERTICAL = EXPENSIVE

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## FAST FACTS

**Industry:** Oil and Gas

**Geography:** Spain, South America

### Challenge:

- To simplify their multi-platform IT environment
- To create a highly-scalable yet cost-effective environment in support of corporate-wide goal for massive growth.
- To quickly improve performance of mission-critical data warehouse system

### Solution:

*Platform:* Red Hat Enterprise Linux  
*Software:* Oracle9i RAC, SAP BW, SAP SEM

### Benefits:

- Reduced response time for user queries from minutes to seconds.
- Reduced total cost of ownership (TCO) by a 4x factor.
- Reduced price per transaction by a 10x factor.
- Increased data warehouse performance as much 5,214%.

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### #3 – OBSOLETE DATA WAREHOUSE SYSTEM

At the same time, the data warehouse that The Gas Natural Group relied on was quickly becoming obsolete. “Answering time started to be excessive. We had to improve the platform performance because the current state not only created immediate problems, but also compromised future growth,” Checa said. “We had a whole list of projects related to the Data Warehouse that were stalled because of these performance problems and any type of future load increase was impossible.”

### LINUX EMERGES AS THE BEST SOLUTION

In searching for a new solution, The Gas Natural Group needed to address all of these issues. “Our long term goal was to quickly implement flexible solutions in a Grid computing model and to utilize platform-indifferent environments throughout The Gas Natural Group,” Checa explains.

The Gas Natural Group’s evaluations initially spanned a wide variety of environments, including UNIX® and Windows. However, they quickly determined that these solutions would not meet their requirements of flexibility, low-cost, and high-performance. A clustered Linux system represented a much lower cost than any other solution with a clear parallel in performance improvement. “We saw that Linux systems reached an excellent answering time, and to improve it, we would just be required to add more low-cost machines to the cluster,” Checa says.

“Linux also allowed us to avoid any sort of technological dependence on hardware and software providers,” Checa explains. “We try not to depend too heavily on any single thing, and that

was one of the major attractions of Linux—we wouldn’t be ‘controlled’ by anyone. This allows us to maintain independence in our solutions and to modify the underlying layers without changing our critical applications.”

### ORACLE SUPPORT AND ENTERPRISE COMMITMENT MAKE RED HAT AN EASY CHOICE

Checa knew that Oracle would remain a constant in The Gas Natural Group’s IT environment, so he needed a Linux distribution that was highly-compatible with and fully-supported by Oracle. Similarly, Checa wanted a Linux provider that had close ties with the hardware community.

“The choice of Red Hat Enterprise Linux was an easy one,” he says. “Not only were they fully supported by Oracle and the main hardware vendors, but Red Hat also had a strong reputation of being focused on enterprise issues. We need a stable distribution with regular updates and top-level support. We found all that in Red Hat.”

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### TESTING THE WATERS

“Because of problems with the data warehouse, we knew that the time was right to begin a major overhaul in that area. We had an open door and a perfect situation in which to carry out a concept trial,” Checa says. “To be clear, our interest in a Linux migration was not focused solely on the data warehouse project. It was simply a perfect place to start.”

One of the key things The Gas Natural Group needed to determine was that point at which adding more machines would not increase the system performance proportionally. So The Gas Natural Group performed an extensive concept trial in which various tests were run to assess the viability of this new system in terms of performance and strength. The trial was as close as possible to a true replication of a production environment, including the same data volume and identical queries, but without using indexes.

Tests were conducted to validate the following points:

- The feasibility of a Linux multi-node environment display
- Basic Oracle Database 9i RAC functions
- Involvement of software and hardware settlement.
- Platform scalability model according to CPUs scalability per node and number of nodes
- Private interconnected channel: Gigabit.
- Identification of management tools
- Linux and Oracle Database 9i RAC technology knowledge by hardware manufacturers and possible channel support
- Determination of our current queries model parallel level
- Versatile disc shared to data replacement

The introduction of open source elements into The Gas Natural Group IT environment was gradual and not without some bumps. "We started with Red Hat Enterprise Linux AS v.2.1, and due to the high requirements of our environment, we experienced some problems with supported memory, number of CPUs, number of discs, and discs room management," Checa says. "Fortunately, these limitations were resolved by a simple reconfiguration. Now, the distribution has matured a lot, and we have no problems with releases right out of the box."

In addition, The Gas Natural Group delivered Linux-specific training to the teams in charge of Linux platform management. This has allowed them to solve the majority of issues quickly in-house, and according to Checa, has proven invaluable.

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### **RESULTS LEAVE NO ROOM FOR DOUBT**

Following 2,318 database consultations, The Gas Natural Group concluded that their Linux-

based systems would scale both horizontally and vertically, and would do so best with a heavy load. They found that two-CPU machines performed best and that stagnation during linear scalability was not an issue.

Performance results were more than impressive—the data warehouse solution based on Red Hat Enterprise Linux and Oracle9i RAC reduced the answering time by 5,214%! Regarding SAP SEM, Checa's team realized a 2x factor improvement. This increased performance was coupled with cost benefits. "Our TCO has been reduced by a 1:4 factor and transaction prices have been reduced by a 1:10 factor," Checa boasts.

### **RED HAT ENTERPRISE LINUX OFFERS ENDLESS POSSIBILITIES**

When asked about the future, Checa says, "We are currently thinking about converting the Linux/Oracle environments into an adaptable and flexible data processing center, which would be as close to Grid computing as possible. Within this framework, Red Hat and other open source technologies will play a leading role." Much of the upcoming growth at The Gas Natural Group will be based on an acquisition of small machines whose role may change depending on the business necessities. Checa believes that open source technology will be essential to The Gas Natural Group's ability to properly manage, supply, monitor, and display their IT environments.

"We are committed to the openness provided by our Linux environment, in which stability and reliability are inherent. The migration to Red Hat Enterprise Linux systems allows us to maintain the highest technical performance with great financial reductions," Checa says. "The general feeling at The Gas Natural Group is that Red Hat offers a properly supported, solid product, suitable for the most demanding enterprise environments."

