ELECTRIC LIGHT & POWER
81 Years of Energy Business

February 2004

Grid Computing Captures Attention

By Gary Lisa, DataSynapse Inc.

In an economic climate where every IT investment is closely scrutinized and companies face increased pressure to do more with less, IT expenditures must be aligned with overall business objectives and tied to quantifiable results.

Added to economic challenges, regulatory mandates are driving energy and utility companies to reevaluate their purchasing decisions and approaches to risk management and compliance.

Business and Technology Challenges

Many organizations have compute resources that are dedicated to particular applications or groups, trapped in sub-optimized "silos." At the same time, business users are constrained by available computing power as well as inflexible and often non-resilient applications. IT organizations need to meet stringent service levels while deploying and managing resilient and scalable applications across the enterprise.

There are a number of specific factors driving the need for more computing power and more flexible applications. Many energy-related applications are a challenge to run efficiently and schedule optimally. In the risk, trading and scheduling world:

- Compute- or data-intensive applications require large numbers of simulations.
- Volume-intensive applications with large sets of service requests have rapid turnaround requirements.
- Overnight pricing and risk management reports are not consistently completed on time.
- Intraday and real-time analysis is often simply unavailable given the time constraints and processing power required.

Regulations and recent examples of noncompliance are compelling organizations to place significantly greater emphasis on compliance reporting. However, effectively tracking and analyzing potential high-risk activities can be challenging given the increasing complexity of financial and physical products, vast amounts of real-time and historical data to mine and uncertain counter-party standing.

Risk managers in energy and utility companies face not only the normal financial risks inherent in today's marketplace, but they also must manage a complex and challenging-to-model portfolio of assets. As such, energy and utility companies need advanced decision support tools that can model a greater variety of factors and perform thousands of simulations. As organizations are scrutinized based upon the ability to extract value from the optionality embedded in their physical assets, the asset base must be treated as just another component in the portfolio of trades.

Over the past several years, energy companies have been migrating to advanced trading, scheduling and risk systems. Once in place, many of these organizations have encountered performance problems when leveraging the new systems' enhanced analytic capabilities. The complexity of products and portfolios managed by energy companies requires more calculations and scenario simulations. The greater volume and complexity of data has spurred an unrelenting

demand for additional processing power and speed, stretching IT resources well beyond their current capabilities. To meet traders' and risk managers' requirements, IT executives struggle to cost effectively provide adequate compute-power to enable this era of transparency and strict limit adherence.

Electric utility management executives need their analyses to move from overnight to intraday and even to near real-time.

The Rise of Grid Computing

A technology paradigm shift with commercial roots in financial services firms, grid computing is on the rise across industries for operations with compute intensive, data-intensive and scalability constraints, like those found in the electric utility sector.

What is grid computing? A "grid" harnesses together the power of multiple systems as a single pool of computing resources, which applications may tap on demand. A grid can help utilities and energy companies leverage available, underutilized compute capacity within their existing IT infrastructures, thus helping them to reach more accurate end results far more rapidly than within conventional computer environments.

The ideal grid computing environment provides an operating platform for all application and resource types across the organization. From legacy to Web services, mainframes to desktops, the technology extends applications to operate in a distributed environment across underutilized computing resources. By allowing applications to be decoupled from dedicated servers and operate within a virtual environment, the infrastructure improves compute-processing power and provides a cost-effective model for acquiring, deploying and managing resources on-demand.

What are the benefits of grid computing? Organizations can expect to see significant improvements in transaction and processing speed, application resiliency, overall capacity and utilization and time to build and deploy business-critical applications. Typical benefits achieved by an ideal grid computing solution include:

- Reporting and analyses that previously took hours are now completed within minutes
- 25-50 times greater application processing speed
- 70 percent improvement in IT resource utilization
- Up to five times increase in throughput and capacity with no new hardware requirements
- As much as 18 percent reduction in overall IT budget
- Five times greater improvement to service-level agreements.

For example, grid computing can improve the performance of many organizations charged with risk management responsibilities. Where often these firms have been limited to overnight batch or long-running processing to generate risk positions using a single, large machine, it leaves them vulnerable to any type of failure and the corresponding business impact in reporting delays. Through rapid deployment of on-demand application infrastructure software, organizations are now able to leverage existing but underutilized resources to increase application performance and reliability. For instance, one firm reduced unreliable overnight risk processing to approximately twenty minutes. Another organization reduced valuation processing from 10 minutes to 30 seconds, a 95 percent improvement. Moving to a grid computing environment expands capability while driving infrastructure costs down.

Most energy and power applications use traditional, distributed computing tools and frameworks that run over a fixed number of processors. Jobs require a constant number of central processing units and reports can take hours to run, severely impacting the decision-making process. In turn, this affects the ability to effectively meet reporting and transparency regulations in a cost-efficient manner.

From its ability to maximize resources and computing power to meeting the needs of CIOs faced with increasing amounts of data and limited budgets, the rise of grid computing can be attributed to a number of factors. As the technology continues to speed efficiencies and save the energy industry millions each year, the allure of grid computing will grow.

Gary Lisa is the vice president of sales and energy for DataSynapse Inc. He has spent more than 15 years in various software and IT industry roles, such as senior sales executive at SunGard Energy Systems and regional sales director for JGI.