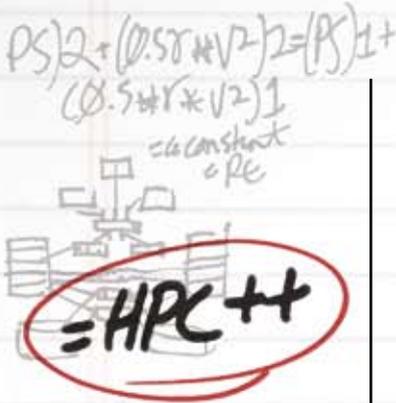


LY PRODUCTIVE HIGH PERFORMANCE COMPUTING



PARTNER PROFILE

JOA® Oil & Gas B.V., with headquarters in Delft, Netherlands, is widely known for developing innovative subsurface solutions for E&P companies.

The flagship product of JOA® Oil & Gas B.V. is the fully integrated subsurface modeling and simulation application Jewel Suite™.



MANAGING UNCERTAINTY IN E&P WITH THE RIGHT SOLUTION, AT THE RIGHT TIME

MICROSOFT® WINDOWS® HPC SERVER 2008 AND SUNBURST SMART INTERFACES MAKE DYNAMIC SIMULATIONS EASIER TO USE

SITUATION

Decisions about the appropriate personnel, processes, and equipment—at the right time—is the single most important variable affecting the cost, safety, and operational efficiency of any field development and operations project. Unfortunately, reservoir size, connectivity, mechanical behavior, fluid distribution, and so on, have various degrees of uncertainty which make high-cost decisions surrounding drilling, facilities, and operations difficult.

The goal of uncertainty management, in this context, is to allow uncertainties to be quantified across the complete reservoir characterization and development workflow. However, operational cost fluctuations, in conjunction with reservoir uncertainty, make such asset quantification almost impossible.

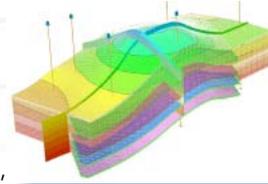
Without a clear picture of the reservoir, how can producers accurately determine how much additional oil can be produced from available assets to produce a measurable financial return? Traditionally, uncertainty analysis involved running several of hundreds of simulations on a single workstation, taking months to complete.

E&P managers need high-performance computing (HPC), and advanced reservoir modeling software, to manage uncertainty in a variety of mature field production situations.

SOLUTION

Windows HPC Server 2008 combines the power of a 64-bit Windows Server® platform with rich, out-of-the-box functionality to improve the productivity, and reduce the complexity, of an HPC environment.

The JOA® Jewel Suite™ reservoir modeling software suite provides optimal and immersive 3D visualization, and advances the design and comparison of various static and dynamic modeling scenarios.



The SUNBURST plug-in adds functionality to Jewel Suite™, allowing reservoir engineers to quantify risk in reservoir

management and plan along the uncertainty bands.

THE COMBINATION

The combination of Windows HPC Server 2008, and the Jewel Suite™ SUNBURST plug-in, allows reservoir engineers to evaluate models using dynamic uncertainties. SUNBURST smart interfaces present the output of dynamic simulations in an easy to use graphical interface that allows assets to be more precisely quantified by both reserve size and ability-to-produce.

Windows HPC Server 2008 runs all relevant simulations from one node, shares the tasks among several other nodes, and then compiles the results. This process is fast, easy, and enables a better, more accurate understanding of reservoir behavior and the associated uncertainties.

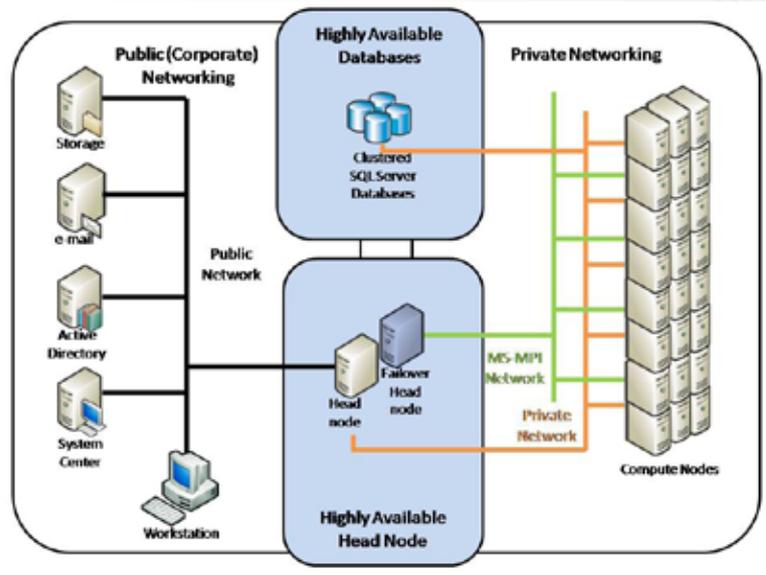
JEWEL SUITE™

JOA® Jewel Suite™ is a full workflow-integration framework that supports seismic interpretation, structural modeling, static reservoir modeling, dynamic reservoir simulation, and well planning.



Jewel Suite™ also provides a flexible Microsoft .NET based Jewel Suite™ Software Development Kit (SDK) for customized plug-in development, allowing users to develop and integrate their own functionality seamlessly within the Jewel Suite™ application software suite. The SUNBURST plug-in uses the .NET environment.

SUNBURST offers reservoir engineers the flexibility to conduct a first pass, unsophisticated sensitivity analysis of uncertain input data into the dynamic modeling of reservoirs. SUNBURST provides a platform for combining data in table format, discrete format, continuous format or multiple continuous formats. The combination is run by a smart sampling technique which gives possible results for the various input data used.



WINDOWS HPC SERVER 2008

Windows HPC Server 2008 enables broader adoption of HPC, and increases productivity by providing numerous end-user, administrator, and developer features and tools, including:

- A rich and integrated end-user experience scaling from the desktop application to the clusters.
- Microsoft management tools that you can leverage to centrally manage the Windows Server infrastructure, including full support for command-line interfaces for administrators.
- Support for familiar development tools, such as the native parallel debugger in Microsoft Visual Studio®, to develop and troubleshoot parallel programs, including support for standard interfaces such as OpenMPI, Message Passing Interface (MPI), and Web Services.

ARCHITECTURE

A typical Windows HPC Server 2008 architecture is shown above. The Windows HPC Server 2008 head node, controls and mediates all access to the cluster resources, acts as the single point of management, deployment, and job scheduling for the cluster, and can failover to a backup head node in the case of failure.

Windows HPC Server 2008 uses the existing corporate infrastructure and Microsoft Active Directory® for security, account management, and Operations management using tools such as Systems Center Operations Manager 2007.

BENEFITS

Ultimately, Windows Server HPC and JOA® Jewel Suite™ combine to improve the quality, and quicken the delivery of decisions.

More accurate asset analysis. Assets that have previously been ignored can now be evaluated more closely for cost, production potential, and for the use of secondary or tertiary production methods.

More informed production decisions.

Windows HPC Server 2008 clusters, and Jewel Suite™ case management interfaces, can be used to study well placement and injection schemes, allowing engineers to make more informed production decisions.

Minimize uncertainty.

By using simulation in an HPC cluster environment, engineers can examine vast numbers of scenarios and combinations to identify the high-value data needed to minimize uncertainty in future production plans.

Leverage existing Windows expertise and IT investments.

Windows-based HPC ensures that you can fully exploit your existing Windows-based expertise and IT investments.

Affordable, accessible, full-featured HPC.

Windows HPC Server 2008 brings simple deployment, operation and IT integration to HPC at a price point that allows companies to successfully deploy HPC applications.

Scalable, highly secure HPC.

Windows HPC Server 2008 provides the scalability of Windows Server 2008, and includes support for Windows Server 2008 security features.

FURTHER INFORMATION

For more information about Windows HPC Server 2008 and HPC, please visit <http://www.microsoft.com/hpc>

For more information about JOA Jewel Suite™, please visit <http://www.jewelsuite.com>