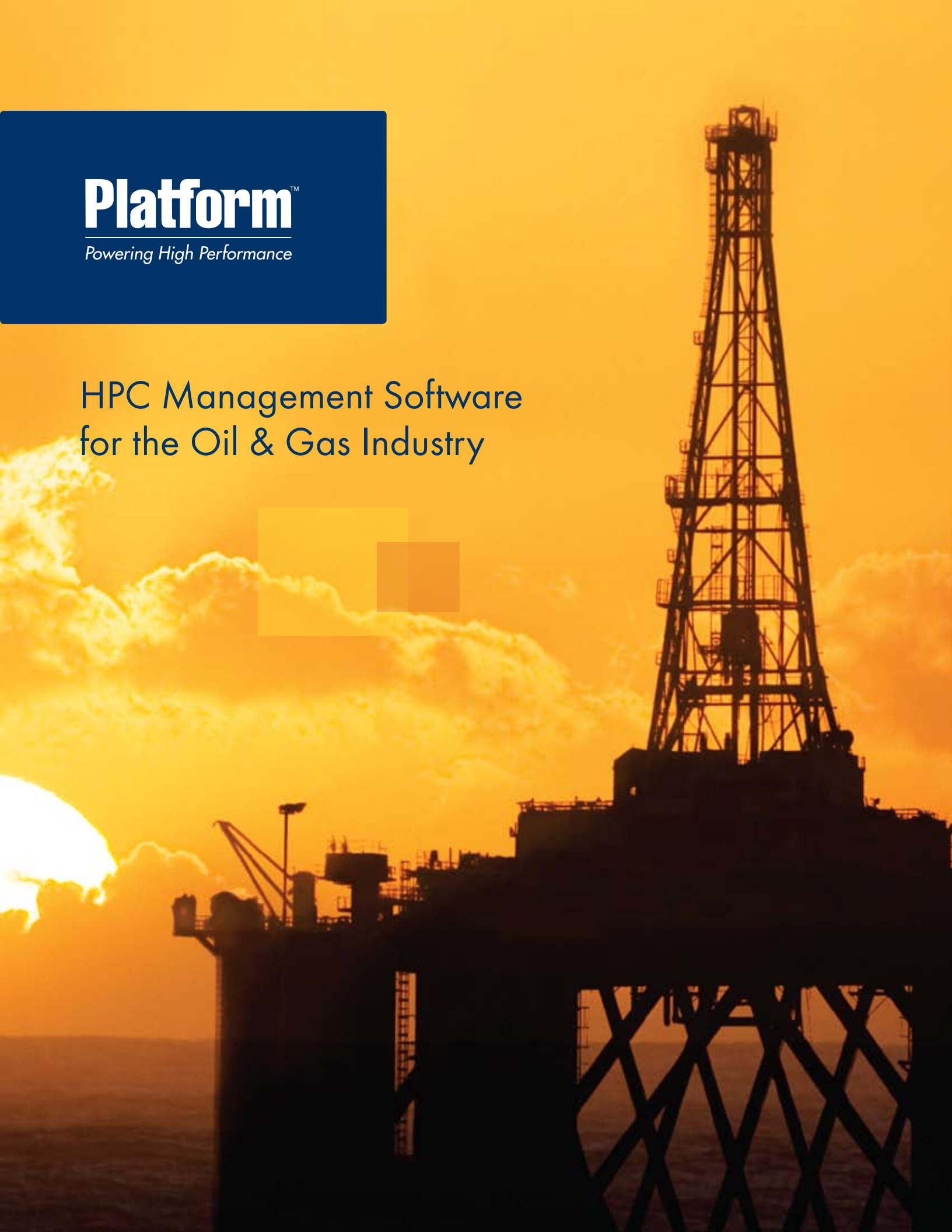


The logo for Platform, featuring the word "Platform" in a bold, white, sans-serif font with a trademark symbol, set against a dark blue rectangular background.

Platform[™]

Powering High Performance

HPC Management Software for the Oil & Gas Industry





StatoilHydro's Solution

StatoilHydro's engineers were under increasing pressure to produce ever-more accurate modeling results using inadequate local computing clusters. Platform helped StatoilHydro deploy a single enterprise-wide computing grid that allows engineers access to idle computers around the world. Instead of buying more CPUs as peak demand increases, StatoilHydro uses its existing compute resources to provide capacity to engineers where and when they need it.

*Image courtesy of
Dag Myrestrand / StatoilHydro*

Software applications used by the Oil & Gas industry in the quest to find and exploit resources require vast amounts of computing power and significant investments in High Performance Computing (HPC) infrastructures. The competing pressures of rising demand for fuel, and a dearth of new reserve discoveries, force companies to find and extract fuel from reservoirs more efficiently, and to squeeze as much computing power from their HPC infrastructure as possible.

Platform's 16 years of expertise in maximizing the utility of HPC infrastructure is most familiar to Oil & Gas companies in the form of Platform LSF, the industry-leading workload management (WLM) software. But Platform also offers other products that enhance performance of HPC technology.

Accelerate and manage mission-critical clusters

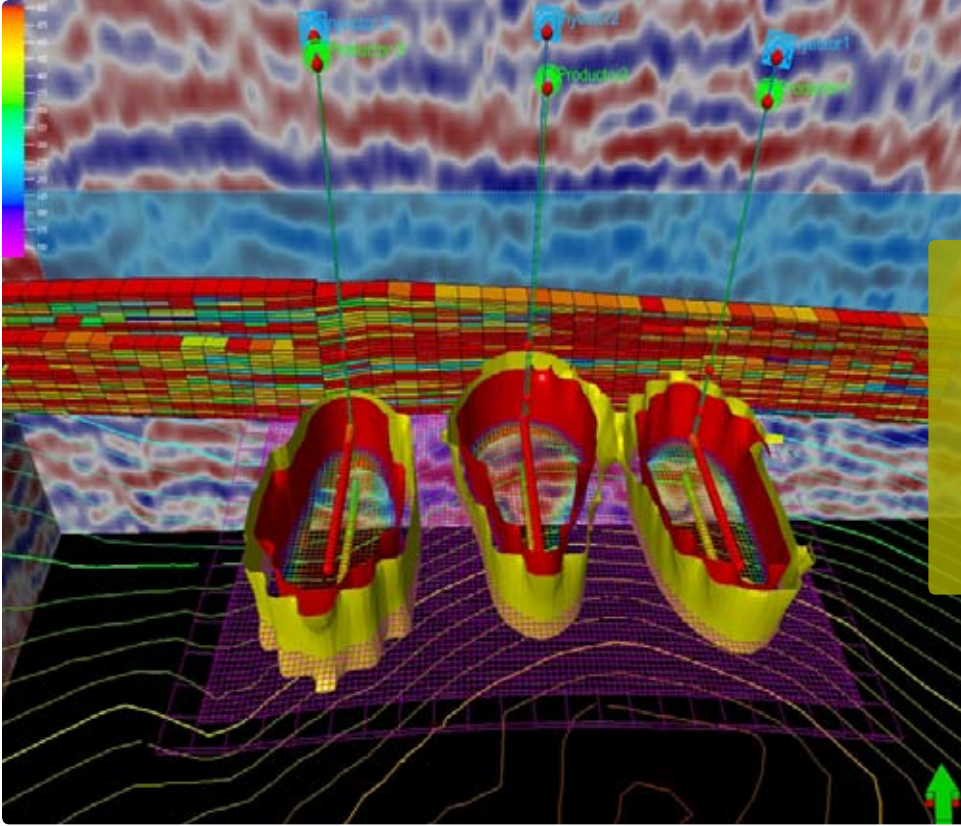
Platform's solution consists of two integrated suites, Platform Accelerate and Platform Manage. The first suite offers products that are designed to accelerate the performance of mission-critical, compute and data intensive applications on HPC clusters and datacenters. Platform Manage allows customers to manage the entire lifecycle of their HPC environment - from provisioning and deployment, through monitoring and alerting, to reporting and planning.

Applications used by the Oil & Gas industry from Schlumberger, Halliburton, CMG and Roxar, as well as many in-house reservoir simulation and seismic analysis applications, are integrated with Platform's HPC management solution. An intuitive, user-friendly web portal allows engineers to access the muscle of a Platform-powered HPC datacenter from these familiar application views.

Enhancing reservoir simulation

The massive number of parallel calculations that reservoir simulations require are particularly well suited to the workload scheduling and balancing capabilities of Platform LSF. Reservoir simulation clusters are generally purpose-built for their intended task and operate 24/7 to maximize utilization of expensive application licenses. While workload management software plays a major role in ensuring maximum use, further improvements in returns on investment can be made by enhancing the management of the cluster itself.

Platform Manager is the only commercially-available cluster lifecycle management product. It is integrated with Platform LSF and other commercial and open source WLM solutions. The integration provides application-aware HPC infrastructure management. This means system administrators and IT managers have a much better view into the operation of their clusters by directly correlating cluster resource usage with the application processes that run on these resources.



The above data image is of a SAGD heavy oil reservoir that was simulated using the ECLIPSE Thermal simulator. The red area represents the steam chamber and the yellow area represents the drainage area.

Data image courtesy of Schlumberger Information Solutions

Managing seismic analysis clusters

Seismic analysis applications, with long-running jobs requiring thousands of processors for each analysis, use clusters optimized for this purpose. Platform Manager helps reduce the management costs of seismic analysis clusters through rapid, consistent, and automated cluster lifecycle management. Platform Manager is designed to allow companies to follow a strategy of building multi-vendor, HPC datacenters leveraging low cost commodity hardware. This enables organizations to select hardware and software of their choice without being tied to a specific vendor, and without the need for multiple, vendor-specific tools.

Companies can achieve significant savings by using Platform Manager to reduce the time spent on deploying, configuring, managing and operating clusters. A single integrated interface for WLM and cluster infrastructure management helps reduce complexity and administrative effort. This results in reductions of overall operating costs achieved by centralizing management, accelerating the time to production, maximizing uptime, and reducing problem resolution time.

Platform boosts 3D visualization

Processing three dimensional views of seismic data can also be done on clusters. Cluster-based visualization provides an affordable way to integrate visualization into existing workflows and allow seismic interpreters to collaborate with processing centers in real-time. By managing all clusters dedicated to 3D visualization, seismic analysis and reservoir simulation with the same tool, companies can greatly extend the value of their software investment.

Why is cluster management software important?

Even as Oil & Gas companies build larger and more heterogeneous HPC environments, robust management and reporting solutions that go beyond workload management are often missing from the mix. Without a clear picture of what is happening in the HPC environment, it is harder to manage costs and ensure maximum ROI.

Clusters are usually built by sourcing affordable, commodity hardware. Whether deploying a new cluster from the bare metal up, or adding capacity to an existing cluster, the cluster can end up with a multi-vendor mix of hardware, operating system versions, and application software. This heterogeneity introduces complexity to clusters, making them more difficult to optimally manage with open source or vendor-specific tools.

Platform Manager provides the tools efficiently manage such a multi-vendor cluster environment. Other cluster management tools like Platform RTM and Platform Analytics supply reporting, tracking, monitoring and analytics tools to aid in understanding and improving cluster performance and planning for future use patterns.

Alleviate multi-core bottlenecks

As multi-core processors become standard in clusters, companies have to cope with new problems, such as memory bandwidth availability, that slow down cluster performance. Many applications, WLMs and OSs currently in use, are not coded to optimize use of multi-core technology. Platform LSF mitigates the memory performance problems through automated scheduling of jobs onto processor cores according to memory bandwidth supply and demand.

Whether your cluster usage is geared towards fast turn-around time for high priority jobs, maximizing job throughput, or a combination of both, Platform LSF allows you to configure available resources for maximum performance. It lets you accommodate each of these objectives by creating a mix of high priority and high throughput queues. The result is a more intelligent allocation of resources to applications and greater control over scheduling jobs to nodes with the required bandwidth availability and processor power to finish the job efficiently.

"In some reservoirs they started out by saying that current production technology would get only about 45 per cent of the oil. We have aims of 55 per cent or up to 60 per cent. You don't do that without knowing what is happening in the reservoirs."

John Hybertsen,
Principal Engineer, StatoilHydro



Resource sharing pays off

The movement from siloed clusters to an enterprise resource sharing model improves the ROI of a HPC datacenter. This trend is demonstrated by StatoilHydro, which tied several local clusters into one computing grid, using Platform MultiCluster. This allows the company to forward jobs from around the globe to its larger, Europe-based clusters.

StatoilHydro also numbers among companies that have leveraged Platform Manager for cluster deployment and administration. Benefits that StatoilHydro has realized include:

- improved management and optimization of increasingly complex HPC environments while controlling costs
- an IT organization that is more responsive to immediate and future business needs
- compute resources fully leveraged and optimized to meet peak demand levels across time zones
- freedom to use solutions from multiple vendors

Duplication of resources both in excess compute capacity and administrative costs imposes a financial penalty. By taking steps towards consolidating existing HPC infrastructure, companies can share resources more effectively across the enterprise.

Applications integrated with Platform Accelerate

Schlumberger Eclipse®
Schlumberger Petrel RE
Schlumberger Cougar™
Landmark DMST™
Landmark VIP®
Landmark Nexus®
SPT Group MEPO®
CMG STARS
Roxar EnABLE™
Roxar Tempest
numerous in-house applications

The Platform promise

Platform's HPC management software reduces the total cost of ownership (TCO) by fully utilizing existing hardware and facilitates the easy deployment and use of economical, heterogeneous, commodity hardware-based systems. Benefits include:

- defer hardware additions
- eliminate cost of maintaining multiple separate clusters
- more efficient usage of available application licenses
- reduced power consumption for heating and cooling
- efficiently redeploy human resources
- eliminate in-house software development
- reduce re-qualification of software to keep up with upgrades
- mitigate risk of knowledge loss through retirement of application developers

Find out more by visiting our website at www.platform.com.

Platform HPC Management Software

Platform offers a complete HPC management software solution that supports a single, consistent HPC environment. Its two suites, Platform Accelerate and Platform Manage, provide the tools you need to:

- manage the lifecycle of multiple clusters
- accelerate performance of compute or data intensive applications
- monitor, report on and analyze cluster performance
- manage license usage
- share resources across the enterprise

Platform Accelerate

Platform LSF
Platform LSF MultiCluster
Platform LSF License Scheduler
Platform LSF Session Scheduler
Platform Process Manager
Platform EGO
Platform MPI
EnginFrame

Platform Manage

Platform Manager
Platform Analytics
Platform RTM
Platform VM Orchestrator

Platform™

Platform Computing is a pioneer and the global leader in High Performance Computing (HPC) management software. The company delivers integrated software solutions that enable organizations to improve time-to-results and reduce computing costs. Many of the world's largest companies rely on Platform to accelerate compute or data intensive applications and manage cluster and grid systems. Platform has over 2,000 global customers and strategic relationships with Dell™, HP, IBM®, Intel®, Microsoft®, Red Hat® and SAS®, along with the industry's broadest support for HPC applications. Building on 16 years of market leadership, Platform continues to define the HPC market. Visit www.platform.com.

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