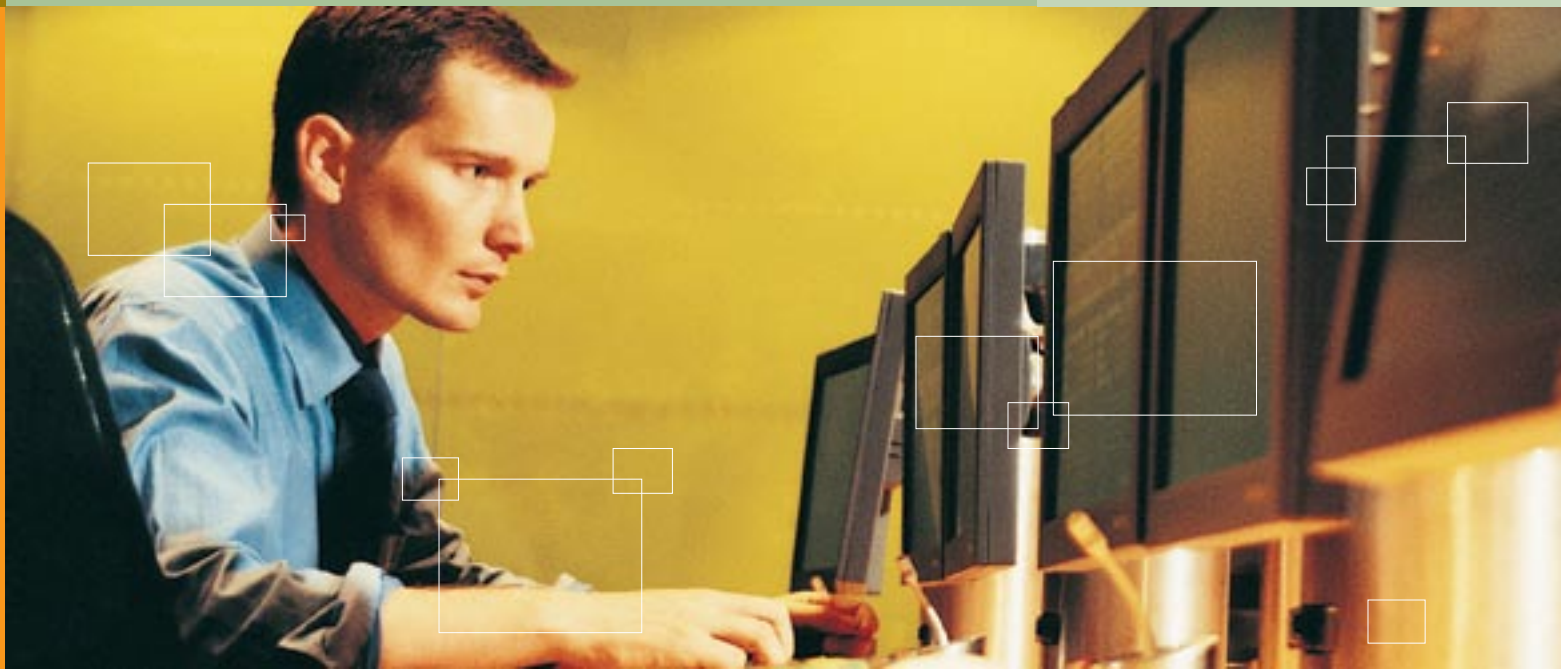


## Platform LSF Family of Products



## Platform LSF® Family of Products

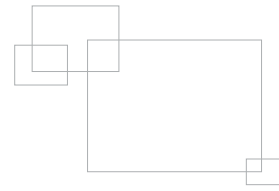
The Platform LSF family of products is the industry's most powerful, comprehensive, policy-driven workload management solution for engineering and scientific distributed computing environments. This product family helps manage and intelligently optimize expensive and complex IT environments delivering higher IT efficiency, faster time to business results, dramatically reduced cost of computing and guaranteed service execution. The Platform LSF family of products provides the foundation for on demand computing environments, utility computing, and Service Oriented Infrastructure (SOI) resulting in IT agility.

The Platform LSF family of products delivers a superior grid-enabled solution that is optimized for solving technical computing problems.

In addition, Platform has partnered and integrated with more than 100 key industry-leading application vendors including Cadence, Mentor Graphics, Synopsys, Magma, Abaqus, MSC Nastran, Schlumberger Eclipse, MathWorks Matlab and Blast.

As pioneers of grid computing, Platform Computing has successfully deployed its product solutions with over 2,000 customers, spanning multiple industries, geographies and applications.

[www.platform.com](http://www.platform.com)



# Industry Challenges and Solutions

Industry Challenge	Platform Solution
Dramatically accelerate time-to-market and results	<ul style="list-style-type: none"> <li>High performance architecture improves workload throughput - driving even the largest clusters at greater than 95% utilization</li> <li>Clustering distributed IT resources into a single virtual supercomputer delivers processing power as needed</li> </ul>
Reduce operational & infrastructure costs	<ul style="list-style-type: none"> <li>Maximum utilization rates and system scalability delivers more power with fewer resources</li> <li>Leverage commodity-based hardware and open industry standards</li> <li>Optimize utilization of application licenses</li> <li>Detailed analytics and reporting to support fact-based project planning decisions</li> </ul>
Minimize business risk by increasing system reliability	<ul style="list-style-type: none"> <li>Fault-tolerant, and fail-over capabilities ensure always-on computing</li> <li>Compliant with open industry standards</li> </ul>
Improve quality of results	<ul style="list-style-type: none"> <li>Failed jobs are automatically re-run</li> <li>Guaranteed service levels and execution</li> </ul>

## Platform Solution

Platform LSF and Platform LSF HPC, built on Platform EGO, provide such an infrastructure software platform that manages enterprise IT supply and decouples resource demand from resource supply. Applications can run on top of Platform EGO allowing consumers to get resources dynamically, while orchestrating jobs, tasks, sessions as usual.

Platform LSF Family of Products is optimized for:

- Electronics
- Government & Research
- Industrial Manufacturing
- Life Sciences
- Oil & Gas
- Educational Institutions
- Telecom
- Business Intelligence

Platform LSF Family of Products At a Glance:

- Platform LSF
- Platform LSF HPC

Complementary Products:

- Platform Enterprise Grid Orchestrator™
- Platform VM Orchestrator™
- Platform LSF MultiCluster
- Platform LSF License Scheduler
- Platform LSF Analytics

## Platform LSF & Platform LSF HPC

Platform LSF and Platform LSF HPC manage and accelerate workload processing for compute-intensive applications resulting in better, faster and cheaper product designs. With Platform LSF and Platform LSF HPC, an organization can intelligently schedule and guarantee the completion of workloads across a distributed, virtualized IT environment. Platform LSF fully utilizes all IT infrastructure resources regardless of operating system - including desktops, servers and mainframes – or the architecture – support for 32-bit and 64-bit operating systems - to ensure policy-driven, prioritized service levels for always-on access to resources reducing risk and complexity.

- **Platform LSF** provides a comprehensive set of intelligent scheduling policies including Fairshare, Preemption, Application Encapsulation, Advance Reservation, Resource Reservation and Service Level Agreement (SLA) based Scheduling resulting in the following benefits:
  - Ensures the right resources are automatically allocated to the right users for maximum efficiency
  - Meets service level agreements for various users and projects
  - Provides extensive control to support multiple policy centers
  - Ensures workload is executed reliably and on time
  - Ensures optimal resource utilization
- **Platform LSF HPC** provides High Performance Computing (HPC) Centers with intelligent scheduling for parallel and serial workloads to solve large, complex problems while utilizing the available computing resources at maximum capacity. It leverages hardware specific integrations and enables you to take full advantage of high performance network interconnects available on clustered systems and supercomputers. Platform LSF HPC is a proven solution that is currently powering supercomputers across the world listed on the TOP500 list.

## Platform Enterprise Grid Orchestrator™ (EGO)

Platform LSF and Platform LSF HPC are built on Platform EGO, the first and only infrastructure platform that delivers a shared virtualized pool of IT resources to meet the demand of multiple application types based on business policies. Platform EGO is the resources broker that delivers IT resources, including compute nodes and software licenses, to applications where and when needed based on business priorities. EGO helps virtualize distributed data center resources – it creates one virtual pool of resources supporting all applications to be shared out of many servers and other resources.

Platform EGO solves the datacenter business pain of under or over-provisioning by translating unpredictable infinite demand to finite compute resources e.g. CPUs, Memory, & Software Licenses resulting in the following benefits:

- **Scalability:** Most schedulers have to deal with large numbers of jobs. Platform EGO allows multiple schedulers to co-exist in one environment. This allows the entire Platform EGO-based cluster to become more scalable.
- **Increased Utilization:** Platform EGO optimizes resource utilization against service level policies and obtains greater productivity gains through IT resource optimization
- **Enhanced Robustness and Reliability:** Most schedulers perform the scheduler and resource manager functions. De-coupling the scheduler from resource manager makes the entire system more robust. It reduces/eliminates the downtime to the scheduler's end-users while resources are being added or removed. If the Resource Broker's master node goes down, the scheduler will continue to accept user queries, while the failure happens. EGO monitors all scheduler daemons and other critical processes that the cluster needs, i.e. license servers, and automatically restarts them if they fail.
- **Single reporting framework and Centralized Management & Administration framework** across various application heads residing on top of the Platform EGO

Platform EGO is the result of 14+ years of production proven real-world experience in large scale distributed computing environments. Platform Computing's experience has been in supporting enterprise-wide large-scale production grids, managing multiple types of applications on top of an infrastructure shared by multiple design teams, projects or user communities comprised of tens of thousands of CPUs. Given Platform's experience in large-scale distributed and multi-site grids, it is uniquely qualified to generalize this experience to all types of workloads and applications, hence enabling a true enterprise grid.

### Platform EGO is application-aware:

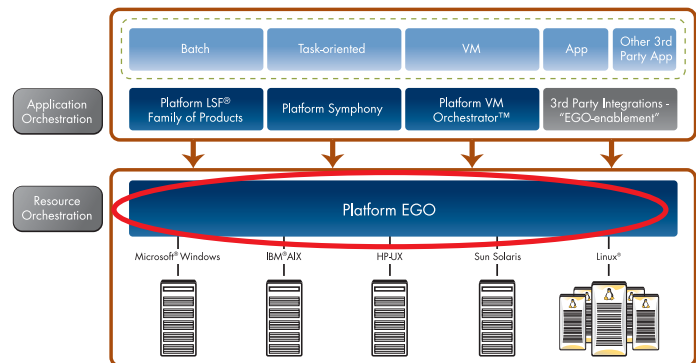
- Understands all classes of applications and the demand they generate
- Manages to SLA's

### Platform EGO is infrastructure-aware:

- Understands all classes of resources, physical and virtual
- Heterogeneous network, storage, server, OS (and VM) resources

### Platform EGO orchestrates:

- Manages allocation of workload onto resources
- Manages allocation of resources to workload
- Employs policy-driven resource allocation and sharing



### Platform LSF License Scheduler

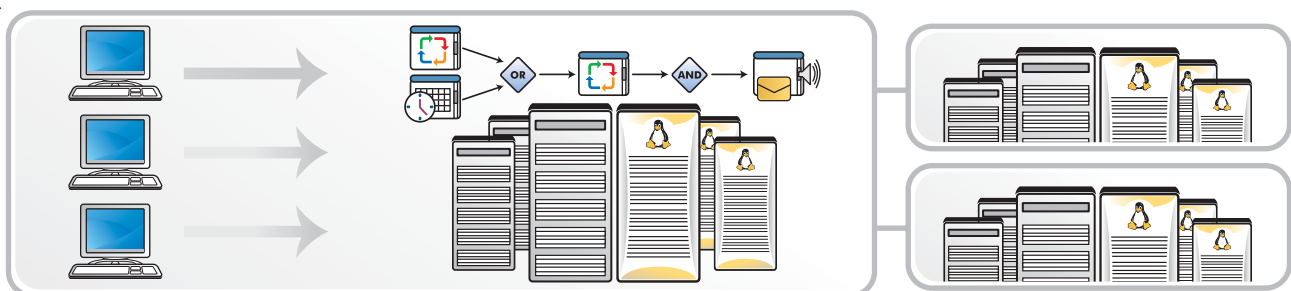
Software tools represent one of the single largest expenses. License costs dwarf the cost of computing infrastructure. It is essential, therefore, that the Resource Manager applies policy to the sharing of licenses. Platform LSF License Scheduler manages floating software licenses with policies for application license optimizing the usage of all application licenses across Platform LSF clusters by allocating licenses to users based on an organization's established distribution policy. By using Platform LSF License Scheduler, organizations can realize dramatic reductions in additional application license purchases and increase overall access to license resources.

### Platform Process Manager

Platform Process Manager enables customers to accurately design and monitor the scheduling and execution of grid-enabled workloads in real-time. Platform Process Manager delivers complete automation across a global, virtualized heterogeneous environment so that organizations can reach results sooner and ensure the reliability of complex mission-critical processes. It tailors complex workflows with multiple decision points and submits these as entities of work to the scheduler.

### Platform LSF MultiCluster

Platform LSF MultiCluster extends an organization's reach to share resources beyond a single Platform LSF cluster to span across various geographical locations. It provides a single machine image when connecting multiple hardware clusters together. With Platform LSF MultiCluster, local ownership and control is maintained ensuring priority access to any local cluster while providing global access across an enterprise grid. Organizations using Platform LSF MultiCluster complete workload processing faster with increased computing power, enhancing productivity and turnaround to results.





### Faster Time to Higher Quality and Reliable Results

The Platform LSF family of products ensures that all available resources are fully utilized to provide maximum computing power to accelerate the performance of the most demanding compute- and data-intensive applications. For example, chip designers can run more design verifications, dramatically reducing the time-to-market for new products. Automotive engineers are able to use advanced virtual product development techniques limiting the need for expensive physical tests and reducing warranty claims. Government researchers can accelerate the processing of large, complex, grand challenge computations with greater speed and reliability. To find Oil & Gas quickly, businesses are dependent on data – acquiring it, processing it, analyzing and interpreting it, doing simulation and visualization of reservoirs, and drilling in the right place to speed time to production. Pharmaceutical researchers use new software algorithms and approaches to drug discovery to translate genomic and proteomic information into biomedical, therapeutic, and prevention strategies.

### Leverage Investments in Existing Heterogeneous Resources

The Platform LSF family of products pools computational resources and manages application workload across highly distributed environments – from single and local departmental clusters to an enterprise-wide, globally dispersed, multi-cluster grid. Platform products enable support of any mix of hardware systems including desktops, servers and supercomputers.

### Reduce Operational & Infrastructure Costs

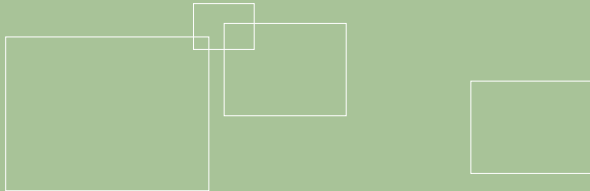
The Platform LSF family of products helps reduce the Total Cost of Ownership (TCO), while improving the return on IT investments (ROI). It enables IT to improve the service they provide to their stakeholders by better SLA management and greater flexibility, visibility and control of job scheduling. By ensuring maximum utilization of existing IT infrastructure, more work is done with fewer resources, reducing additional hardware and administration costs.

Unifying multiple systems including commodity-based hardware such as less expensive desktops or Linux-based servers, cost effectively creates a single dedicated grid with additional compute power. Cost savings on additional application licenses can be achieved by optimally sharing licenses across an organization.

### Improve User Productivity

The Platform LSF family of products fully utilizes hardware resources whether they are just down the hall or half way around the globe, to allow users to get more work done in a shorter amount of time. In addition, Platform products provide rich decision-support information, such as resource utilization trends, to ensure service levels are maintained and project goals are met, as user demand increases.

Platform products also increase the productivity of users including designers, researchers and scientists, enabling them to run more jobs, significantly reducing the time to market for new products.



# Platform™

## ABOUT PLATFORM COMPUTING

Platform Computing is the leading systems infrastructure software company that accelerates applications and delivers IT agility for increased business performance and reduced cost. Founded in 1992 Platform is a pioneer in HPC, Cluster and Grid Computing technologies. Platform has over 2,000 global customers and strategic relationships with Dell, HP, IBM, Intel, Microsoft, Novell, RedHat and SAS, along with the industry's broadest support for third-party applications. For more information, please visit [www.platform.com](http://www.platform.com)

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