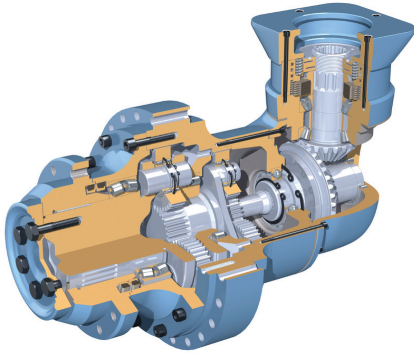


Platform™

Optimize your ANSYS® environment with Platform HPC Management Software



Benefits

- Reduced simulation time
- Improved productivity
- Reduced physical prototyping
- Simplified parallel job management
- Reduced IT costs
- Improved project-based accounting
- Optimized use of software licenses
- Easy Web based access to solvers

Let Platform Computing help you get the most out of your ANSYS computing environment

Contact your Platform sales or services representative today for more information on Platform LSF

Accelerating Engineering Simulations

The suite of tools from ANSYS, Inc. provides engineers with the capability to predict in software how product designs will behave in manufacturing and in real-world environments. Through improved simulation capability, organizations can achieve higher quality products and reduce the need for expensive physical prototyping. ANSYS software has become a key solution for modern manufacturers where the ability to get designs perfected faster is a key competitive requirement.

ANSYS, Inc. offers a range of sophisticated solvers for problems including fluid dynamics, electromagnetics, fluid structure interaction and explicit dynamic simulations. As engineers employ more sophisticated physics using larger datasets and run models with higher resolution, enormous amounts of compute power and data storage are required. To ensure product quality, many design centers employ stochastic techniques to validate designs under a variety of conditions requiring access to significant amounts of computing and storage resource. For leading firms running multiple solvers from ANSYS, Inc. as well as other simulators for computer-aided engineering applications, Platform LSF provides an ideal solution to simplify the configuration of a distributed computing environment while providing high performance at a reduced cost.

Platform LSF

Platform LSF is a collection of technologies essential for modern distributed CAE environments. Platform LSF provides ANSYS users with transparent access to computing resources ensuring that jobs complete faster and that compute resources are optimally used. Platform LSF includes advanced management of parallel jobs and also includes a web portal, an easy-to-use portal for ANSYS software and other CAE applications. Platform LSF also includes a collection of Platform developed XML web templates and integration scripts designed specifically for ANSYS and other distributed solvers. Using Platform LSF, site administrators can ensure that resources are shared between multiple projects optimally in accordance with configurable site policies. Platform LSF also allows administrators to supplement the rich capabilities offered by the ANSYS® Workbench™ environment exposing services via a customizable Web-based job submission and monitoring portal. The use of the Web portal enables collaborative engineering with remote teams as well as simplifying the handling of temporary scratch storage, which is a key issue for CAE environments that support multiple engineers and large numbers of simulation jobs.

How the Integration Works

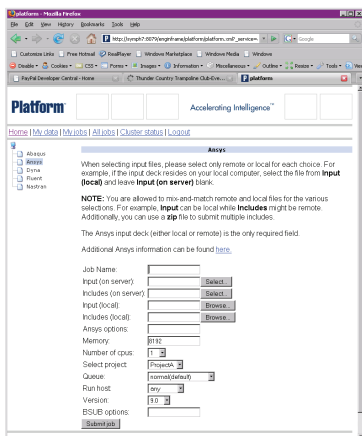
ANSYS, Inc. provides a seamless integration with Platform LSF in the ANSYS Workbench platform allowing users to easily take advantage of a shared cluster of heterogeneous computer systems. This integration is facilitated by the ANSYS Remote Solver Manager (RSM). In addition to providing users with mechanisms to manually distribute workloads to compute servers using technologies such as RCP/RSH and SSH/SCP, RSM allows a direct connection to be made to a Platform LSF cluster, removing the need to manually specify and configure individual compute hosts. ANSYS Workbench users can select from a variety of job submission queues, and if Platform LSF is selected via the ANSYS Workbench GUI as the workload management system of choice, jobs will simply map directly to a corresponding LSF level queue and be distributed to a larger Platform LSF managed computing cluster. Platform LSF Job File Templates are included with RSM that specify the properties of the integration (eg. AnsysLSF-Job.xml). If the queue definition is absent from the XML specification file (ie., <queue>normal</queue>), then Platform LSF will be passed the RSM queue name directly. ANSYS Workbench users can have access to the range of advanced policy management features offered by Platform LSF at the queue level, and site administrators can customize these policies to optimally meet the needs of their site.



Note regarding Platform OCS 4.4.0: This product includes software developed by the Rocks Cluster Group at the San Diego Supercomputer Center at the University of California, San Diego and its contributors.

Features Include:

- Comprehensive project and user-based reporting and accounting helping site administrators to understand exactly how resources are being used
- Fair-share scheduling capabilities intended to ensure that one user or group cannot monopolize the compute resources on a shared cluster
- Seamless management of parallel and sequential jobs allowing MPI based jobs to start automatically on compute nodes meeting resources requirements without the need to pre-select hosts
- Sophisticated scheduling policies that respect relative user and project priorities and support features such as advanced reservation and scheduling policies that can vary according to the time of day or day of week



The seamless integration with Platform LSF makes it easy for ANSYS Workbench users to enjoy the benefits of a sophisticated workload management system. Users need not be concerned with what physical computers simulations will be executed on. Platform LSF will always choose the best available host or collection of hosts, ensuring that compute resources are optimally used. ANSYS Workbench users will simply observe that their models run faster, and they will enjoy the ability to run more models concurrently.

For sites using solvers from ANSYS, Inc. outside of ANSYS Workbench in traditional batch modes, Platform LSF is also an excellent solution. Platform LSF is equally at home in Windows®, Linux® or UNIX® environments (or mixed environments) affording sites with the most flexibility in terms of platform choices. Platform LSF provides a rich set of resources and capabilities at the command-line level to help engineering environments get the very most out of their available computing resources.

Web Portal-based Job Management

Many CAE environments using ANSYS software employ their own in-house developed scripts and use batch computing techniques to run ANSYS solvers as well as other commercial and open-source simulators. Designed with just these environments in mind, Platform offers a web portal as a part of Platform LSF that is a framework-level solution allowing site administrators to quickly and easily build user-friendly interfaces to simulation tools in their high-performance computing environment.

In addition to the Web-portal solution, Platform LSF includes a number of pre-written application integrations for ANSYS as well as other popular mechanical and structural analysis solutions. Using the Web portal component, customers can be up and running quickly and easily with their own multi-application compute portal tailored to a CAE environment. These pre-written, pre-tested integration components serve as the basis for building your own job submission and management portal with your own corporate branding.

Using a simplified tool interface, engineers can focus on their own simulations rather than worrying about the semantics and complex command sets associated with various tools, scripts and job control mechanisms. The underlying complexity of these environments can be hidden from cluster users, and, by providing users with a defined interface to submit and monitor jobs, site administrators can exercise a high degree of control over their environments reducing operator error that often leads to problems on a shared cluster. Each simulation runs in it's own logical container, and intermediate files can be viewed dynamically via the portal allowing engineers to see how their simulation is progressing and package or download files of interest.

Platform LSF: Enabling Heterogeneous Computing Environments

For sites running multiple server environments, Platform LSF is an ideal tool since it can provide a unified view of resources irrespective of host operating systems and hardware architectures. For example, ANSYS Workbench users can run solvers transparently on Linux hosts as well as other Windows hosts without needing to be exposed to (or understand) the Linux shell.

Platform LSF

Supported Hardware

- Intel® EM64T
- AMD® AMD64

Supported OSs and Cluster Stack

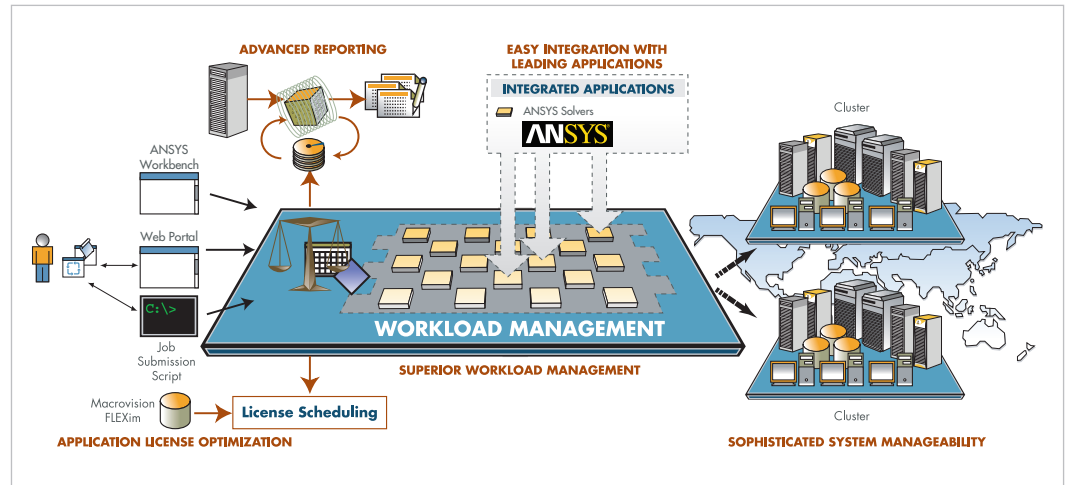
- Microsoft Windows 2000, 2003, XP
- Linux RHEL 3.0, 4.0 and 5.0
- Platform OCS – DE, Red Hat HPC Solution

Supported LSF versions

- Platform LSF version 7.x

MPI Implementations

- MVAPICH 0.9.4
- Intel MPI
- LAM/MPI 7.0.3
- MPICH-GM 1.2.5.10
- MICH-P4 1.2.5
- Totalview 6.7.0-1
- IBM AIX 5L PSSP 3.4 and 3.5
- IBM PE 3.2 and 4.1 on AIX 5.1 and 5.2 respectively
- Platform MPI



ANSYS and Platform Open Cluster Stack

Up until recently, for sites running Linux, organizations were left to select their own Linux cluster deployment and management solutions from a myriad of choices. Linux and the open source software movements have accelerated the unbundling of cluster building blocks, which include industry standard hardware, operating systems, cluster systems and workload management. The openness and flexibility of an unbundled software solution stack affords choice of hardware but eliminates single source vendor responsibility. As a result, it has been expensive and risky for users to deploy and manage Linux clusters using open source components.

Platform OCS enables a new class of users by simplifying Linux cluster application, deployment and management. Backed by global 24x7 enterprise support, Platform OCS is a modular and hybrid stack that transparently integrates open source and commercial software into a single consistent cluster operating environment. System administrators seeking to provision and easily manage a Linux computing environment to run ANSYS or other cluster-based services can benefit from the rich functionality of Platform OCS to simplify maintenance and reduce cost of ownership as the cluster grows.

ANSYS Software with Platform LSF

Whether your environment is simple or complex, running Windows or Linux, and regardless of the number of simulation tools that you employ, Platform LSF help ensure that computing resources are maximally used.

Platform LSF Support

Platform offers an array of support, professional services and consulting services aimed at helping you get the most out your Platform LSF investment and be up and running with ANSYS as quickly as possible.

Features	Benefits
24x7 hotline support	<ul style="list-style-type: none"> • Provides access to continuous support for production critical issues with a response time of less than one hour for severity 1 & 2 issues. • Minimizes downtime, saving time and money • Ensures maximum performance and availability of your Platform software and grid computing investment
eSupport	<ul style="list-style-type: none"> • Allows you to submit, monitor and update support tickets on-line • Offers flexibility and gives you more control of the issue resolution process • Coming soon: On-line access to our extensive knowledge base, FAQs and Technical Notes
Support Mailing List Subscription	<ul style="list-style-type: none"> • Patch and Product updates e-mailed to you on a monthly basis • Security Alerts sent as security issues arise • Notification of major issues of concern to our customers
Software Upgrades	<ul style="list-style-type: none"> • With new features and functions, you will always have access to cutting-edge technologies and industry leading-functionality • Access to performance and reliability enhancements ensures that your investment in Platform products will be maintained

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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For information on ANSYS software visit www.ansys.com

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