Platform™
The Power of Sharing

PreEmption Management Solution for Platform LSF® clusters

Increase application performance and throughput with Librato SmartSuspend

Benefits:

- Deliver high priority jobs while maintaining maximum resource utilization and SLAs
- Increase job throughput by leveraging idle cycles of critical resources
- Accelerate time to market
- Guarantee project completion times by allocating resources according to business priority
- Reduce capital investment and data center operating expenses
- Enable global resource allocation and management
- Optimize the use of expensive application licenses

Highlights:

- Suspends batch job and frees memory, CPUs, and application licenses
- Completely transparent to application and operating system
- Integrated seamlessly with Platform LSF and Platform LSF License Scheduler
- SmartSuspend technology incurs less than 0.1% performance overhead
- Supports both serial and parallel batch applications using Ethernet MPICH and HP-MPI

Solving resource management challenges

Managing finite compute resources and making sure their utilization is optimized can prove to be a challenging endeavour. In compute environments where resources are shared among different, often globally-dispersed groups, instances of 100% license utilization are common. This leads to user complaints about a lack of licenses to complete critical work. Often, the peaks in license utilization are cyclical, occurring during times of high demand, and are therefore both predictable, and expensive to mitigate.

The PreEmption Management solution addresses the challenge of priority-based pre-emption in mission-critical production environments by combing innovative technologies from Platform Computing and Librato. This solution will benefit any organization using Platform LSF that needs to save capital and operating expenses in the data center.

The PreEmption Management solution delivers clean-release resource suspension technology that that effectively and reliably frees up resources for use by priority workloads. The solution dynamically liberates memory, application licenses, CPUs, network and storage I/O. Platform LSF and Platform LSF License Scheduler, together with SmartSuspend, provide for the proper suspension and resumption of these jobs by intelligently managing the necessary system resources, allowing a clean release of application licenses and subsequent resumption of jobs when requisite resources are available again.

Meet job scheduling SLAs

SmartSuspend enhances Platform LSF and Platform LSF License Scheduler's ability to provide a priority guarantee for a given job without wasting valuable time and compute cycles. A high priority job now can always be guaranteed full access to hardware resources on the execution host, since suspension of lower priority jobs will free up all of the system resources they hold, including system memory and application licenses. This is different from standard suspension methods because the memory is not left to the OS kernel to be swapped out. Removing the dependency on configured swap space also allows the suspension of jobs running on diskless nodes or hosts with insufficient swap space, as SmartSuspend will write memory to either local or network storage.

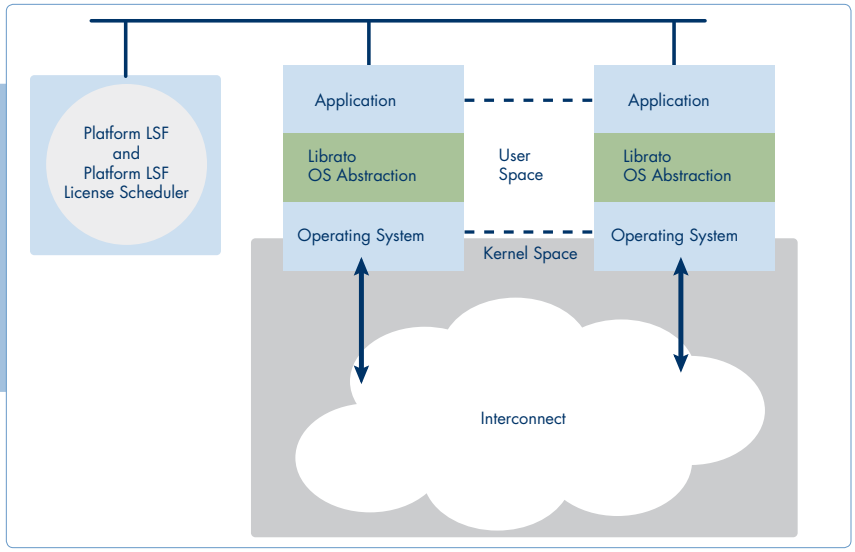

Figure 1: PreEmption Management solution architecture

Eliminate resource waste

With SmartSuspend there is no longer a need to kill running jobs in order to accommodate higher priority jobs. Platform LSF and Platform LSF License Scheduler can more comprehensively suspend lower priority running jobs and resume them later from where they left off, thereby saving valuable time and compute cycles. Unlike conventional job suspension solutions, this solution frees all resources consumed by a job, including system memory.

Make optimal use of application licenses

Technical computing application licenses can be very costly and to remain competitive enterprises must make the best use of the licenses they have purchased. Except for Platform LSF and Platform LSF License Scheduler, conventional job suspension methods do not free up unused application licenses when a job is suspended, leaving these costly resources allocated and in use but idle, even though the job using them has been suspended. Together with SmartSuspend, this application dependency has been removed. As a result, lower priority jobs have to be killed in order to free up the license or extra application licenses need to be purchased. With Platform LSF, Platform LSF License Scheduler and SmartSuspend in place, neither of these undesirable choices is required.

Reduce total cost of ownership

Management of computing resources such as CPU, memory and licenses can be a costly and laborious undertaking without automation. With Platform LSF and Platform LSF License Scheduler, various workloads are intelligently scheduled against existing resources without manual intervention. SmartSuspend further complements this automation by faithfully managing resources from workloads that have been suspended by Platform LSF and Platform LSF License Scheduler to ensure the completion of more mission-critical workloads. The solution is well integrated and works out of box. This allows organizations to focus on process and policies as opposed to the mechanics and development time of building and troubleshooting multiple discrete technologies. Total cost of ownership is significantly reduced compared to conventional, passive static methods of resource management.

Librato SmartSuspend – a lightweight resource optimization solution for computing environments that enables the safe suspension of a running job in order to run a higher priority job.

Platform LSF – a highly scalable workload management system that intelligently schedules workloads according to policies to maximize productivity by reducing application run-times and optimizing resources in a controlled heterogeneous environment.

Platform LSF License Scheduler – provides intelligent application license consumption optimization for both Platform LSF clusters and non-Platform LSF workloads by allocating a virtualized pool of FLEXnet-based licenses to users based on established distribution policies.

Platform™

Platform Computing provides software that dynamically connects IT resources to workload demand according to business policies. Over 2,000 of the world's largest organizations rely on our solutions to improve IT productivity and reduce data center costs. Platform has strategic relationships with Dell™, HP, IBM®, Intel®, Microsoft®, Red Hat®, and SAS®. Building on 17 years of market leadership, Platform continues to help data centers be more efficient, responsive and dynamic. Visit www.platform.com

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