

## Sun and Algorithmics

### Powering compute-intensive risk calculations and analytics

Accurate knowledge of current risk levels is a competitive advantage that financial institutions depend on to support informed decision making and fuel business growth. However, today's investment firms are grappling with increasingly complex financial instruments and market channels. Factor in the availability of global markets and financial services organizations face a level of complexity that can make it difficult for enterprises to manage investment risk at any given moment. In this environment, assessing risk levels can entail performing portfolio simulations and intricate business and financial instrument analysis. In addition, accurate risk calculations often require more intelligent what-if scenarios. The simulations and detailed analysis needed for analyzing and projecting multiple scenarios require complex calculations that can strain conventional compute resources.

Many users are turning to high-performance computing (HPC) to run increasingly complex, compute-intensive applications and obtain needed analyses in less time. Used by manufacturing and engineering, financial services, energy, life sciences, and education and research organizations alike, HPC provides the power to perform the type of calculations necessary to compete successfully.

#### **Algorithmics' financial risk management software**

Algorithmics offers a software suite that addresses market risk, credit risk, and asset and liability management (ALM) analytics. Intended for both trading and banking applications, the Algorithmics software helps organizations improve the consistency of

valuations, supports better decision making, and can reduce the associated costs of installation and maintenance. The range of risk analytics offered includes stress testing, simulation-based scenario generation, aggregation, drilling down, and portfolio optimization.

Key to the Algorithmics approach is a framework that supports individual functions—whether a credit or market risk analysis—yet maintains a single environment for managing risk across all banking activities. A unified data architecture supports access to comprehensive instrument coverage, multistep simulations, and high-performance analytics, including stochastic exposures, and makes the functionality and data available to the entire organization. With this approach, senior management can obtain enterprise-level information while the front office is utilizing cutting-edge tools and analytics.

#### **Sun™ Grid Engine software is the workhorse for compute-intensive analytics**

Many sophisticated risk analytics solutions are computationally intensive and require vast amounts of system resources. For this reason, many organizations facing tight deadlines or constrained compute resources are forced to compromise analysis quality by using fewer scenarios or time steps. In this scenario, management risks making compromised business decisions based on faulty information.

Sun Grid Engine software is the world's leading distributed resource manager, allowing enterprises to aggregate and maximize compute resources. Deploying

### Highlights

- Implement a solution with the power needed to successfully manage market, credit, and liquidity risk with Algorithmics' financial risk management software
- Utilize Sun™ Grid Engine software to aggregate and maximize compute resources for advanced calculations
- Perform greater quantities of more efficient computations swiftly
- Cut the amount of time and expense involved in completing risk calculations

Sun Grid Engine software makes it possible to distribute complex calculations across multiple processors and multiple machines to achieve optimum resource utilization, greater efficiency, and a higher level of user productivity. Pooling federated assets in this manner makes it possible for users to treat distributed systems as a single, powerful, large computational resource. Grids can be scaled from a collection of stand-alone systems to supercomputer-class clusters utilizing thousands of processors.

### Algorithmics software thrives on Sun Grid Engine software

Algorithmics software is engineered to run in a distributed grid environment. The software performs analytics calculations using Mark-to-Future workflow on a grid of computers. Each step in the workflow can be broken down into tasks that can be processed in parallel, with each task processed on a separate compute node. When all the compute nodes have completed their tasks, that step is complete and the workflow proceeds to the next step. Each step is processed in the same way until the entire workflow is complete.

### Faster, more efficient computations

Dividing complex market and credit risk calculations across multiple processors results in faster, more efficient computations. Large jobs can be completed in less time, getting more work done faster. With support for a broad range of financial instruments, an Algorithmics and Sun solution can help enterprises to calculate and analyze more sources of portfolio risk, resulting in greater levels of risk awareness.

### Comprehensive analytics

The solution supports an extensive range of simulation-based risk measures, such as Value at Risk (VaR), Earnings at Risk (EaR), Potential

Future Exposures (PFEs), and scenario-based profit and loss (P&L) estimates following specific curve shifts, index shocks, and stress tests. Users can also perform a variety of analytic functions, such as duration, spread duration, yields, and exposure calculations. Firms can analyze the sources of risk in a portfolio, including breaking the risk down by risk factor, virtual group, and individual security. The Sun Grid Engine software supports swifter completion of multiple scenarios needed to calculate risks, and avoids settling for single analytic runs due to lack of sufficient time.

### Reduced time and expenditures

The Sun and Algorithmics solution draws on a single, shared data architecture that integrates market and credit risk along with ALM measurement and analytics. All corporate data resides in a scalable, transparent database. Risk data is acquired only once and shared throughout the solution. Structuring the data in this manner increases efficiency and helps to yield faster returns with more consistent results. In addition, the costs of both processing time and maintenance can be significantly reduced. By contributing increased throughput, higher utilization, and overall lower system costs, a Sun Grid Engine and Algorithmics solution can help financial institutions to create value across the enterprise, strengthening their risk management system and capturing superior risk-adjusted returns.

### About Sun and Algorithmics

Algorithmics is the world's leading provider of enterprise risk solutions. Financial organizations from around the world use Algorithmics' software, analytics, and advisory services to help them make risk-aware business decisions, maximize shareholder value, and meet regulatory

### Learn More

For more information visit [sun.com](http://sun.com), [algorithmics.com](http://algorithmics.com), or contact your local Sun sales representative.

requirements. Supported by a global team of risk experts based in all major financial centers, Algorithmics offers proven, award-winning solutions for market, credit, and operational risk, as well as collateral and capital management.

Long a leader in providing hardware and software solutions to the financial services industry, Sun technology is deployed globally and forms the basis of trading operations for thousands of the world's leading financial institutions. Sun continues to innovate in providing robust and secure infrastructures for financial services solutions. In fact, Sun is a premier payments infrastructure partner for financial organizations worldwide.

Running Algorithmics software with Sun Grid Engine software on Sun platforms results in improved analytics for intelligent risk taking. The combined solution provides firms with faster, cost-effective computations that yield competitive advantages, including increased returns, lower capital requirements, and improved brand reputation. Indeed, proactive enterprise risk management solutions from Sun and Algorithmics help enterprises to avoid unforeseen and unmeasured risks and can deliver increased security in today's uncertain times.