

# GRID RISK MANAGEMENT APPLICATION

## INNOVATIVE SERVER ENGINE TECHNOLOGY BREAKTHROUGH PERFORMANCE

- **Critical Problem to Solve:** Global Risk Management System hitting performance ceiling, requiring cutting-edge server solution.
- **Services Experience:** "Capax really delivered some astonishing performance differentials – exceeded expectations."

### ABOUT CAPAX ALPHA

At Capax Alpha, a division of Capax Global, we specialize in meeting the specific needs of Hedge Funds and Alternative Investment companies. Our clients benefit from access to Capax Global's extensive network of over 700 of the world's best innovators, people who happen to be great with harnessing complex technology to serve business. We provide end-to-end solution delivery of whatever you need to make IT successful, including solution engagements that support product deployment to your custom requirements, application hosting, and technical staffing solutions.

### THE CAPAX GLOBAL DIFFERENCE

As a Capax Global division, you can expect the best from Capax Alpha. We offer the best technologists, the best business acumen, and the best consulting methods – so you obtain the best business results possible from consulting services.

### CONTACT INFORMATION

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## CAPAX ALPHA DELIVERS



### BUSINESS REQUIREMENT

The principal Equity risk management system employed globally by a major bank was experiencing severe performance problems and the internal database team had concluded the limitations of the existing Sybase technology was the principal problem. Capax brought in to re-engineer the data tier architecture and develop highly optimized application code to fully leverage it.

### THE CAPAX ALPHA SOLUTION

Capax outlined a multi-step program of system rearchitecture, which included a database migration from Sybase to SQL Server, and a rewrite of the majority of the application modules used by the risk models:

- position & account
- assumptions
- pricing
- market data
- marks & risk
- P&L
- securities
- volatility curves

One of the main objectives of the Capax program was to enhance the primary calculation engine:

- Capax rewrote the data model to increase performance and expand analytic range
- Capax reviewed and in many cases substantially rewrote every data access procedure
- Updated and simplified most of the update code including transaction boundaries
- Updated SQL joins for optimal performance

Another key objective of the Capax program was to expand Stressing capabilities

- Capax made modifications to facilitate additional types of stressing including rainbow
- Capax performance increases allowed for the addition of PAA calculations to the overnight batch instead of only the weekend
- Higher fidelity stressing was made possible by re-architecting the data tier to use much larger number of grid engines, delivering greater scaling (from 168 to over 300 to 400 engines) principally through data model and stored procedure changes

Capax also re-engineered the principal overnight batch job workflows for improved throughput and greater resiliency.

- Eliminated duplicate operations thus reducing processing times
- Decreased batch window from 10 hours required nightly to 3 hours nightly

As a result of this comprehensive program of improvements, Capax was able to deliver major business benefits:

- Two orders of magnitude better performance (over 2000% faster computation within Overnight Risk and Live Risk)
- Much higher precision Monte Carlo simulations
- Execution of higher precision types of stress testing
- Improved VaR Backtesting suite
- Expansion of the number of actively utilized grid nodes by 100-150%