



**Tackling the system performance challenge at
multi strategy hedge funds**

September 2008

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Introduction

- CQS is a global asset management group with regulated investment operations in London, Hong Kong and New York.
- Current assets under management are just under \$10bn in a family of market-neutral, absolute return and directional funds, comprising hedge funds, multi-asset directional portfolios, loan portfolios and listed funds.
- New fund started in September – Global Volatility
 - Trade volatility of equity market indices and of individual equities within the world's major stock markets.
 - Fairly quantitative profile for being a fund.
 - Focus on managing valuation data easily.
 - Estimated 3-4% of positions requires exotic routines to calculate.

Technology

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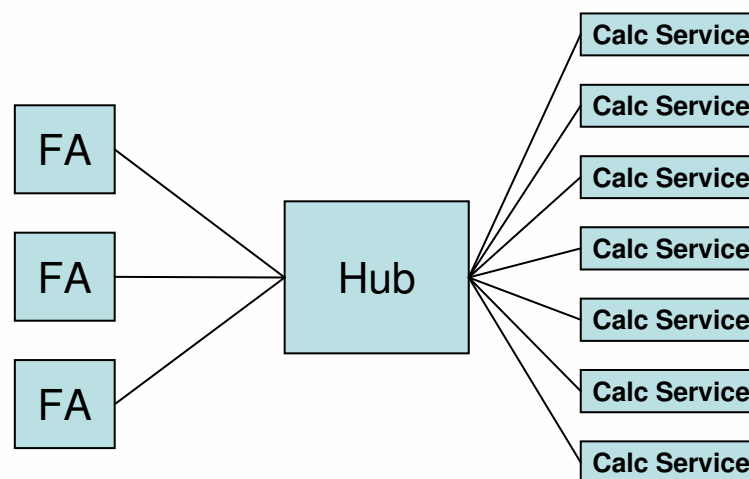
- SunGard Front Arena implementation
 - Corporate Bond and Single Name CDS analytics
 - Convertible analytics in Monis
 - Equity derivatives analytics in in-house built models
- Generic Analytics Framework
 - Trading Manager – spreadsheet like analytics workspace.
 - Arena Data Flow Language (ADFL)
 - High-tech Excel formulas
 - Python script language
 - Calc routines in C-DLLs
- Risk and PV calculations in the framework
 - Batch jobs with a run frequency of 15 min.
 - Real-time calculations

Equity Derivatives fund manager requirements

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- Monitor risk (big positions – high level of precision, smaller positions – lower level)
 - In some exotic cases good intuition is enough to make trading decisions.
 - If it is a complicated structure you can buy an option on it to limit the exposure.
- Real-time requirement
 - Portfolio risk
 - Valuation parameter
 - Gradually more and more applications on the desk.
- Model consists of implementations for Local Volatility (barrier opts, knock-outs), Finite Difference solver for PDE s, Monte Carlo simulations.
- The team of traders, analysts, quants is unlikely to extend beyond 20 people.

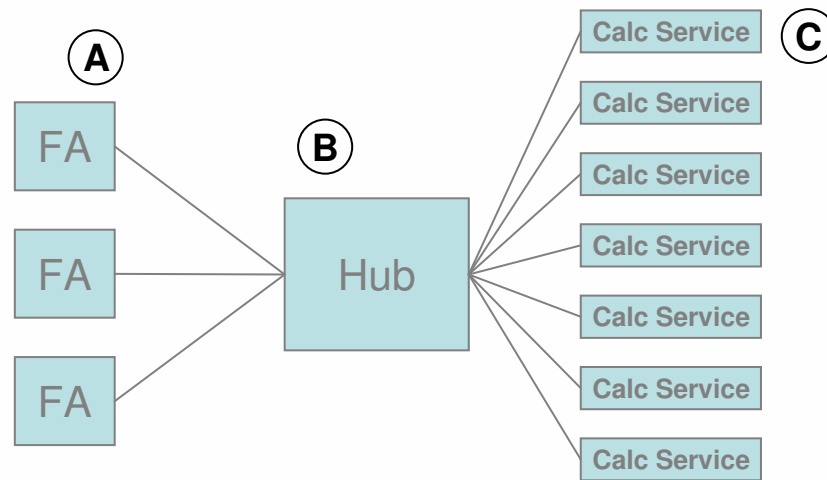
Concept for Remote Server Calculation



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- Front Arena trading workspace post calculation requests on the hub.
 - Asynchronous call
- The hub creates tasks which are given to Calculation Services.
- The result value is returned to the workspace.

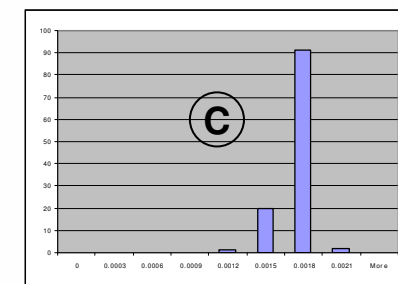
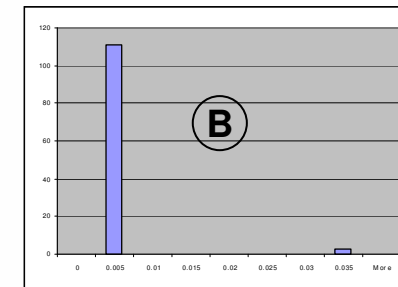
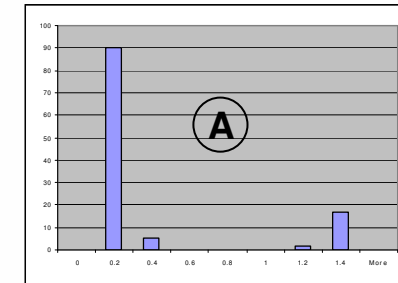
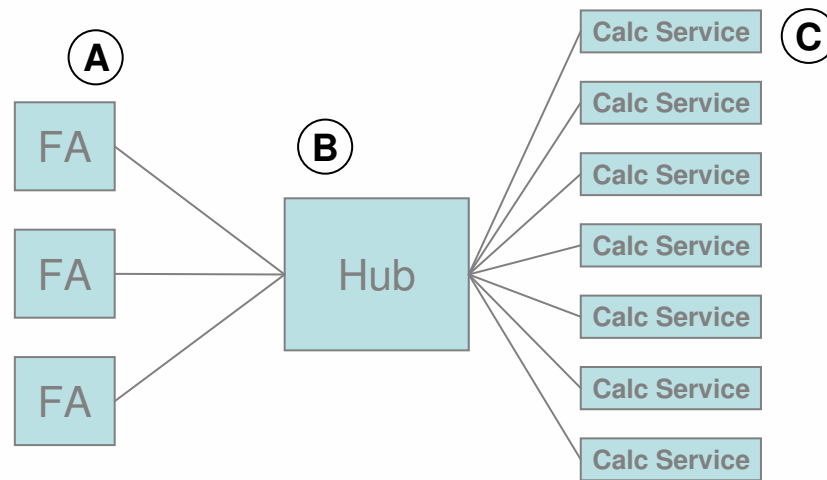
Remote Valuation – Variance Swap Example



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	Complete time (A)	Time in the hub (B)	DLL time (C)
Min	10.33	0.87	1.29
Avg	453.77	5.15	5.31
Max	1,396.15	76.91	70.93
Std	452.99	11.91	10.85

Remote Valuation – Variance Swap Example



	Complete time (A)	Time in the hub (B)	DLL time (C)
Min	10.33	2.25	1.58
Avg	453.77	1.77	1.48
Max	1,396.15	2.68	1.44

Remote Calculations

- Questions