

Commodity trading beyond the speed of light

How new technology is changing the landscape of commodity trading

Gary Craze discusses the effects of high-speed trading on volatility, how an interactive trading environment functions, and why data access, collection and analysis will never be the same

In the financial markets, it has been estimated that a one-millisecond advantage in a large brokerage firm's trading application can be worth as much as \$100 million a year. With the growing volatility in commodity markets, commodity traders and commodity risk managers are now seeing many of the technologies already being applied in financial trading circles rapidly migrating into the commodity trading space.

Buzzwords like 'grid computing', 'real-time connectivity' and 'interactive trading environments' are the keystones of the future of commodity trading. The operational nirvana for a commodity-oriented enterprise would be to bring their traders and risk managers into a new interactive paradigm, where live markets, trader's intuition, underlying portfolios and robust analytics collaborate to bring a level of trading efficiency and competitiveness they have only dreamt of in the past.

What does this new interactive paradigm look like? Let's start with the basic foundation.

Grid computing

The term grid computing has been around since the early 1990s, and was popularised in the latter part of the decade as scientists and researchers looked for a way to increase their computing power without breaking the bank. Instead of the traditional, outrageously expensive supercomputer, the approach was to



In addition to being powerful, grid computing has the advantage of being flexible, scalable and affordable

link together many relatively inexpensive desktop computers in a networked grid and distribute process-intensive applications among them to greatly enhance their processing power, thus reducing the time needed to complete a critical processing job.

Fast-forward about 10 years, and we now find grid computing as the preferred method for many process-intensive tasks, especially in financially oriented environments such as trading. Today, traditionally highly intensive computing tasks that consumed expensive resources and had extremely long run times are now processed in parallel over many less expensive servers. In addition to the obvious advantage of speed and lower cost is the flexibility afforded to an enterprise by allowing them to infinitely scale the size of the grid to their specific needs.

The end-result is that the traditional 'batch' and 'end-of-day' processes are eliminated. Profit and loss (P&L) data, counterparty exposure and market exposure can be instantly displayed for risk managers, schedulers and traders, enabling complete transparency of every impact to their portfolios.

Real-time connectivity

The next key to the puzzle is real-time connectivity to the market-pricing entities, trading exchanges and logistics providers. With many market pricing entities such as LIM, Platts and Bloomberg offering web services, commodity traders now have the benefit of real-time market pricing integrated directly into their trading desk applications. Likewise, real-time connectivity to commodity exchanges such as the Chicago Mercantile Exchange, New York Mercantile Exchange and Intercontinental Exchange now allow traders to see real-time market data, submit or cancel market bids and offers, change existing orders and pull trades among many other critical trading functions. Additionally, as enterprises join together their electronic trading environments, the ability to participate in virtual over-the-counter (OTC)-type exchanges that live outside the traditional commodity exchange services is enabled.

The final real-time connectivity function is the ability for enterprises to interface with logistics entities such as pipelines, power generation and power transmission providers and other external logistics providers to further enhance the automated flow of the physical commodities, as well as automate the flow of the associated external financial transactions back into the

corporate financial systems. The ability for an enterprise to do this is enormously advantageous in terms of being able to see both their external physical and financial positions in real-time. The result is a greatly enhanced view of the overall risk management of an enterprise, on both the financial and physical aspects of their commodities.

The interactive trade environment

The final piece of the puzzle, and arguably the most critical that grid computing and real-time connectivity provides, is the interactive trade environment (ITE). To put it succinctly, an ITE gives traders and risk managers the ability to simulate transactions, optimise portfolios and execute strategies to live markets. An ITE enables traders and marketers to view existing positions and to dynamically optimise them based on live markets. P&L, value-at-risk, mark-to-market exposure and other metrics are continuously updated. Optimised scenarios can be ranked and allow a trader to quickly identify the most profitable outcomes.

The ITE in more detail

The first feature that an ITE offers is the ability to provide a real-time evaluation of market data, positions and exposure. Once that data has been analysed, overall trading strategies can be created based on the type of strategy such as a hedge, speculative or basis. Strategies can be further defined such as forward or swap, and objectives can be defined such as target profit or maximum loss.



An ITE can provide dynamic, real-time analysis and optimisation of your trading strategies

Following the evaluation of the data and the creation of an overall strategy, the strategy can be optimised based on items such as position liquidation, risk management via trading limits and liquidation metrics such as market value and market risk.

Now that the trader has the strategy, the additional power of grid computing really shines by allowing the strategy to

be simulated on a multitude of variables such as price, basis, volatility, quantity, currency and even weather.

Once the strategy has been proven through simulation, it can be routed through the commitment phase where various criteria can be implemented, such as converting the prospective position to an offer, screening the strategy for limits and approval via risk management, credit and logistics criteria and defining the scope of the strategy by determining items such as the execution method.

Now the trader has a fully analysed, optimised, simulated and authorised strategy. The next step is execution. The ITE can enable functionality such as order management, where bids and offers are automatically matched to strategy orders, automatic execution to the connected exchanges take place and portfolios can be automatically optimised based on criteria such as optimal supply and optimal markets.

Lastly, the ITE can provide automation of the confirmation phase, where exchange trades are automatically downloaded from the exchange and confirmed, OTC seller trade confirmations are generated and transmitted and OTC buyer trades are automatically received and validated.

Into the future

The power that grid computing, real-time connectivity and ITE offer commodity traders and risk managers is only now being realised. The ability to greatly enhance the overall risk management functions of an enterprise, on both the financial and physical aspects of their commodities, is becoming an overarching corporate mandate in the growing volatility of the commodity markets. Welcome to commodity hyperspace.

About the author

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