HOW SELL-SIDE FIRMS MAKE PROGRESS

ENHANCING SELL-SIDE OFFERINGS

As the securities and capital markets industry matures, sell-side brokers must continually seek new ways to enhance their offerings. Algorithmic trading has become a key tool to attract new clients and drive increased order flow from existing clients whose commissions are a critical source of broker revenue. To fully exploit the opportunities available via algorithms, many institutions are turning to the Progress® Apama® Algorithmic Trading Platform. Apama enables next-generation algorithmic trading by providing traders in both sell-side and buy-side institutions with full control over the composition, deployment, and ongoing evolution of unique, proprietary trading strategies.

This case study explores the experiences of a Tier-1 broker that found its equities trading operation struggling with the limitations of a custom-developed algorithmic offering. Lacking the flexibility to quickly develop new trading strategies and the scalability needed to deliver adequate performance, the broker turned

CHALLENGE

Gain new business and grow revenue from existing clients by implementing an algorithmic trading solution that develops and implements trading strategies flexibly, quickly, and easily with fast execution performance

SOLUTION

Progress® Apama® Algorithmic Trading Platform

BENEFIT

Dramatically reduced time to deploy new algo strategies, low latency, reliable execution, the ability to enable clients to capitalize on opportunities when they happen.

to the Apama platform. With its new system in place, the broker has transformed a laggard trading desk into one that has achieved significant increases in both new clients and order flow.

FALTERING SYSTEM, FLAGGING PERFORMANCE

Prior to Apama, the broker had been using a custom-developed algorithmic system that delivered a limited set of well-defined algorithmic strategies for equities trading. The trading desk employed these strategies to handle customer orders routed to the broker via FIX or over the telephone. Upon receipt of an order, a trader would execute a selected strategy, specifying two-to-five parameters. For example, traders might opt for a VWAP (Volume Weighted Average Price) strategy that enabled selection of trade volume, start and end times, and the number of clips into which the order should be split.

Over the 18 month period following system launch, a number of limitations became apparent, attributable to the lack of system flexibility and inconsistent performance. As customer experience with algorithms grew, they began to request features that (because of system architecture) the broker either could not deliver or could not deliver in a timely fashion.

Transforming these client requests into coded strategies was a cumbersome, error-prone process involving the customer and the broker's client-facing staff and IT organization. On occasion, an algorithm delivered by the broker did not meet customer requirements because of miscommunication or because of a change in requirements during the development process.

Algorithmic strategies were developed entirely in C++ and integrated with a supporting infrastructure of market data feeds and order management systems to create an end-to-end solution. This meant that each algorithm operated as its own independent application with no set of commonly accessible, shared services. The lack of modularity meant that creating new strategies—and modifying existing ones—was time-consuming and resource-intensive. Delivering new algorithms often took more than 90 days. In addition to inflexibility, performance issues emerged. Execution performance proved inconsistent, varying with the algorithm invoked and market activity at the time. Elapsed time between identification of trade opportunity and order transmission averaged an unacceptable 300ms, with latencies exceeding one second not being uncommon. Such latency diminished algorithm effectiveness since market conditions often changed before an opportunity could be exploited. The broker's order flow was left prey to competitors whose trading algorithms better matched customer requirements and delivered more consistent execution.

Deciding on a New Solution

After an internal review of its existing system and a series of interviews with clients, the broker identified a set of key requirements needed for incorporation in a new algorithmic trading platform.

A 90-day proof-ofconcept confirmed Apama had the functionality, tools for strategy development, and integration facilities.

- Algorithms should be accessible to both internal sales traders and the clients themselves. Clients should be able to run trading strategies independently of the sales trader and monitor the parameters of an executing strategy. Access to algorithms should be available to the client via a broker-supplied, front-end interface as well as via FIX.
- Development of new algorithms must be accelerated. The broker targeted a 10-day window for development, testing, and deployment of a strategy. Client-facing staff should have a degree of autonomy to create new strategies. In addition, different variants of a core broker strategy should be available to different clients.
- Execution performance must improve and be consistent. An order should be placed within 15ms of detection of the triggering market conditions.
- There must be a common integration mechanism for market data and order management systems that would be available to all algorithms.

The broker considered three approaches to meet the requirements:

1. Internal system development—While this would leverage the broker's considerable IT resources and ensure that the end solution matched requirements exactly, there remained the prospect of long

development cycles (echoing its current experience) and ongoing inflexibility that made this choice unattractive.

2. Packaged algorithms delivered within an order management system—This would deliver rapid initial deployment, but there were concerns this would not provide the flexibility to respond to evolving customer requirements. Furthermore, the broker was wary of the duplication of front-and-back end technology that a new order management system would have with its already installed systems.

3. Extensible algorithmic platform and supporting tools—Deploy a vendor-source algorithmic platform, but with integration into the existing order management infrastructure. Here the concern was whether there was a viable vendor with the technology foundation coupled with the market expertise needed to deliver.

After a careful review, the broker chose the third option, selecting the Progress Apama Algorithmic Trading Platform from Progress Software. The broker confirmed its choice with a 90-day proof-of-concept that found the Apama platform had the core functionality, tools for adapting trading strategies, and facilities for integration with its existing infrastructure.

THE SOLUTION

As deployed by the broker, the Apama platform is integrated with both the Reuters Market Data System (RMDS) and a Fidessa order management system from royalblue. Within the Apama environment, an Event Correlator provides the engine that monitors market data from RMDS and executes the algorithmic analysis and correlation, issuing orders for placement and management in the market via Fidessa. This algorithmic platform operates on a 4-way Pentium IV that is running Red Hat Advanced Server 3.

The broker creates, tests, and deploys new and modified algo strategies with the Progress® Apama® Event Modeler, a graphical environment that greatly simplifies the process (see Figure 1). The broker's traders use strategy dashboards that are generated by this tool in conjunction with its order management system blotter to execute algorithms on behalf of clients.

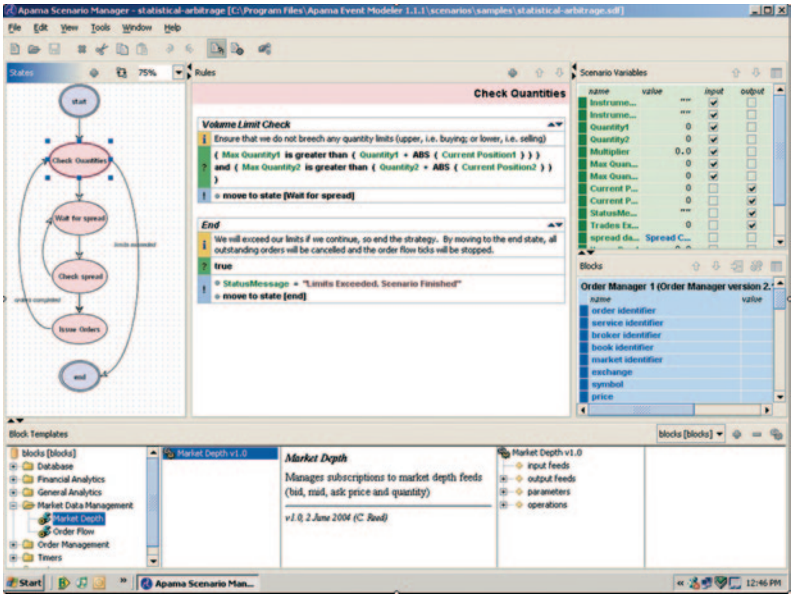

Figure 1:

Progress Apama Event Modeler

Clients themselves can create algorithmic trading instances through a Web-browser-based dashboard without the need to call upon the broker's traders. These dashboards, securely connected through https, provide clients with a real-time view of strategy execution. Alternatively, clients can interact with the algorithmic trading system using FIX, either programmatically or through their existing buy-side order management system. As the strategy executes, information is fed back through FIX so that the connected system can itself see the current state of any strategy instance.

Strategy Evolution and Testing

A key requirement for the broker was to shorten the time needed to transform the concept for a new strategy (as expressed by a trader or a client) into a production deployment, a process that took an unwieldy 90+ days in the current system. Reducing this time period required both tools and a testing environment that could develop and back-test new strategies before going live.

Using a "shadow" system that is integrated with RMDS and a market simulator built within Apama (see Figure 2), the broker can now develop and test algorithms before making them available to clients. Apama incorporates a Progress® Apama® SmartBlock™ capability that enables creation of prepackaged "blocks" of business logic and coding that can be plugged into trading scenarios via the graphical Modeler interface. The broker has leveraged this facility to create specific testing "blocks" that define metrics (Profit & Loss, Value-at-Risk, etc.) against which prospective trading strategies can be tested. These ensure that algorithms better match customer requirements. The broker now reports achieving a 10-day development-to-production period, with modifications to existing strategies often available to a client in less than a day.

This Tier 1 broker is now a leader with algorithmic tools that empower both its clients and its own traders.

Performance and Flexibility Achieved

The other key deficiency with the internal system was trade execution latency. With Apama, latency has been reduced to an average of 10ms from the aforementioned 300ms, with more consistent, predictable performance. The execution improvement and consistency has allowed the broker to concentrate on the performance of its market connectivity, the focus of ongoing work.

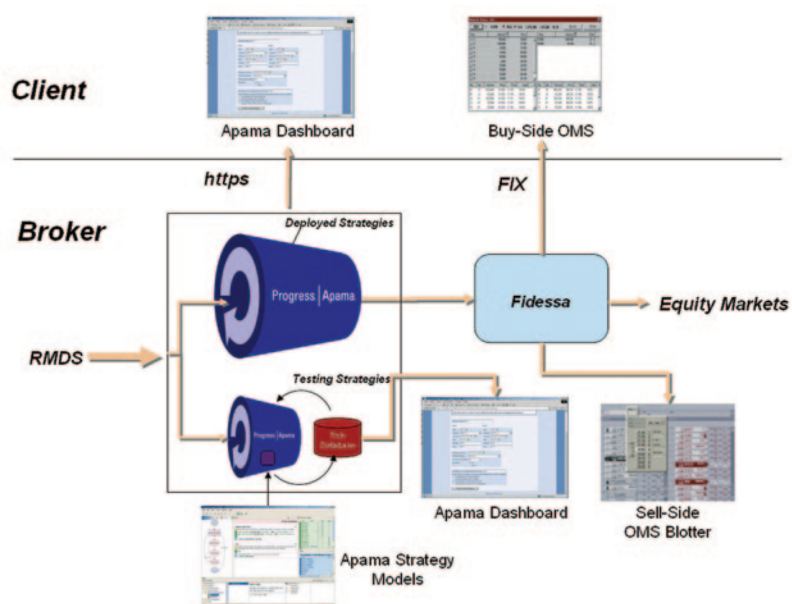

Figure 2:
Trading architecture using Progress Apama

To date, the broker has deployed more than 20 core algorithmic trading strategies. In many instances, there are multiple variations of a specific strategy in use by individual customers who have requested modification of the core algorithms to their specific requirements. Order flow from existing customers has risen and the broker is acquiring new business.

The broker has already planned the next phase of innovation, intended to support integrated access to multiple asset types from within the same strategy. This new feature will allow clients to exploit hybrid, multi-asset strategies, for example to trade an equity, while hedging the exposure with a future. Such cross asset strategies will allow the broker clients to electronically execute strategies that are more closely aligned with their standard practices.

SUMMARY

The Tabb Group projects the compounded growth rate for algorithmic trading to be exponential. With this growing usage has grown the competition amongst sell-side algorithmic providers. Merely offering a suite of algorithms is not enough when availability from numerous sources means that “off the shelf” algorithms are commoditized.

This Tier 1 broker foresaw the need to provide an algorithmic platform that delivered both the flexibility to meet buy-side requirements and the performance that delivers execution when the buy-side pulls the trigger. It recognized that buy-side order flow goes to the sell-side organization that delivers the unique algorithms that a buy-side client needs when the client needs it. Otherwise the availability of algorithms from others will ensure that order flow goes elsewhere. And with that order flow, so also goes the profits.

With the Apama trading platform, this broker has changed its market perception from laggard to leader. It has staunched the loss of order flow to competitors with tools that empower both clients and its own traders, dramatically shortening the time it takes to deploy new algo strategies. And with the Apama execution environment, the broker now delivers low latency, reliable execution that enables clients to capitalize on opportunities when they happen.

PROGRESS SOFTWARE

Progress Software Corporation (NASDAQ: PRGS) is a global software company that enables enterprises to be operationally responsive to changing conditions and customer interactions as they occur. Our goal is to enable our customers to capitalize on new opportunities, drive greater efficiencies, and reduce risk. Progress offers a comprehensive portfolio of best-in-class infrastructure software spanning event-driven visibility and real-time response, open integration, data access and integration, and application development and management—all supporting on-premises and SaaS/cloud deployments. Progress maximizes the benefits of operational responsiveness while minimizing IT complexity and total cost of ownership.

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