

## *Hedge Fund Uses K3 for Trade Allocation and Routing*

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**Client: Global Hedge Fund**

**Application: K3 (v. Cobalt)**

**Implementation Time : 14 Days**

**Parallel Testing: 21 Days**

### *Business Problem*

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The hedge fund, with over \$1 Billion under management, is organized under a portfolio manager model. Each portfolio manager is responsible for a number of investor books. Every trade is allocated among portfolio manager books according to a specified percentage. Likewise the hedge fund portfolio managers are rapidly expanding into new products.

The Hedge Fund's challenge is three fold.

First, the expansion of products has created a significant IT bottleneck of feeding trades from ICE, CME and LME. The hedge fund uses an assortment of home-built and vendor products to feed trades from ICE, NYMEX and LME to the primary ETRM system of record. Portfolio managers are increasingly frustrated as the FIX feed did not provide full coverage to products and new products require IT staff to reconfigure the FIX feed for new products, the interface to the ETRM system or both. The default method for booking trades in the ETRM system is to use a template and forward raw exchange data to that template for booking. This has caused a mass proliferation of templates (over 1000) making it difficult to manage. In short the current framework is gating the growth of the organization due to limited IT resources necessary to make these changes.

Second, the process of allocating trades to each of the portfolio managers' books is a manual and time consuming process. Every trade is received directly the portfolio manager's general trader book. During the course of the day the portfolio manager trade is un-booked and then manually broken up and entered into the each client sub-book. This, by its nature is limiting the volume of trades that can be practicably managed on a daily basis.

Finally, operations must export client positions into a margin calculation system to correctly track margin by account. This is exceptionally important as each client receives a daily margin statement of allocated margin to their specific account. However, this requires that all manual allocations are complete prior to running the margin calculation.

### *Solution Set*

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The first step at solving the client's problem was standardizing the exchange engines. While Quick Fix and other FIX tools are cheap and useful, they can be very limited in terms of their robustness. Specifically, there were several limitations with the existing FIX engines. First, the QuickFix deployment was only set up for a limited amount of product coverage. Likely to achieve fast deployment several key trade types were never configured. Second, the QuickFix deployment had limited redundancy in terms of coordinating with the exchange trade queues. This opened the possibility of missed trades. K3 has a set of exchange feeds that have multiple layers of redundancy to ensure that no trade is ever missed. Through the user interface, operations can always see if K3 is in sync with deals sent from the exchange. Likewise, K3 comes pre-configured with full exchange product coverage right out of the box.

Once configured all trade types flow instantly into the downstream trading system. On a 3Ghz, 8MB server K3 processes approximately 130,000 trades per second. This is far greater than the 1000 trades per day executed by the hedge fund. As trades are executed on the exchange they are viewable with their downstream status, as to whether they were successfully booked. Likewise operations can automatically load the FCM drop files to reconcile.

The second problem, allocation requires the use of K3's Rules engine. The rules engine allows trades to be enriched prior to booking. Commonly, this is used for pending additional information on a trade based on certain criteria. For example, if Bob Jones is trading both gas and oil, he will want his gas trades to go to his gas sub-book and his oil trades to go to his oil sub-book. Thus a rule is created that states "If Trader =Bob Jones AND commodity =GAS...then set book to BobJonesGas." These simple rules make it easy to ensure that trades and other data meets its target properly enriched. In this case, however, we have a more complicated issue. The Portfolio Manager may trade 100 lots of crude. But that trade needs to be broken up and booked into each client book. To accomplish this K3 leverages a "plug-in." A plug-in rule allows the user to create a simple Java class with specific rules. In this case every trade done by the Portfolio Manager is first broken up into four separate trades and allocated by volume according to the parameters set in the plug -in. In other words, when the rules engine sees a trade by a particular portfolio manager, each trade is broken up and allocated according to investment parameters. Plug-ins are very simple to configure and enable operations to change allocation ratios as investment and redemptions change the client profiles.

Finally, all trades needed to be sent to a margin calculation to reconcile with the daily FCM margin statement. This was exceptionally important to the Hedge Fund as they were required to make regular statements to their clients relative to how much margin their respective positions consumed. K3 includes an advanced routing component that enables it to route trades to target destinations like the margin calculation service. In this case, K3 routed the trades automatically including their sub book to the margin system. Specifically, K3 was configured to rout trades automatically to both the downstream trading system of record as well as the margin system. At any point during the day operations could execute a margin calculation to receive updated margin. In fact, once the client understood the power of the routing logic, a third route was created to feed trades to the risk repository database. In short, K3 leveraged a multiplex function that fed three systems simultaneously. Unlike a standard interface, the routing engine does not require coding. It only requires a short route statement (in this case a 56 character string).



The result for the hedge fund is that traders are able to execute any authorized exchange trade. The trades are then automatically allocated to the trading system of record. Through routing, K3 was able to multiplex the trades to two other key targets including the margin system and risk database. This eliminated multiple manual upload processes, while also providing operations the ability to see the status of every trade and whether it had been properly booked.

Based on the manual nature of their previous process we estimate that the hedge fund eliminated approximately 10 person hours per day of manual booking effort. Likewise we estimate that the hedge fund eliminated over 500 person hours per year in IT effort required to update the FIX engines and interfaces. At an internal rate of 125.00 per hour we estimate the client saves about \$350,000. This does not include error correction as a result of manual intervention.

If you have issues with either retrieving trades from exchanges or enriching them to be booked correctly the first time, give us a call. We'd love to help you.

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