FROM HOURS TO MINUTES

Fast Analytic Solutions for the Financial Industry

THE APPLICATIONS OF IN-DATABASE ANALYTICS IN FINANCIAL INDUSTRY

With deep knowledge and experience in the Financial Services Industry, Fuzzy Logix has delivered analytical solutions to banks, brokerage firms, insurance companies, and hedge funds. These solutions address business-critical needs in soliciting and retaining customers, fraud detection, default prediction, risk management, econometric analysis, etc. The foundation of these applications is our powerful in- database analytics capability.

By leveraging Fuzzy Logix in-database analytics to run analytics completely within the database (data warehouse), where data already resides, we eliminate the need to move the data to separate analytical platforms, and as a result enable enormous processing efficiencies. Our customers have simplified and dramatically (by 70 percent reduced the cycle time for analytics, and are running their analytics (10 to 100 times) faster - all at a much lower cost.

Following are some customer case study examples enabled by Fuzzy Logix's in-database analytics.

CALCULATE RATE OF RETURN

Asset management firms or brokerage firms that manage investment portfolios for millions of customers generally have a month-end process to calculate the rate of return for each portfolio. These return measures are subsequently included in the monthly statements. This is typically a process that involves tens of millions of portfolios, years of transaction history, and billions of transactions. This type of rate of return calculations, based on massive data, often turn out to be a very onerous and lengthy process.

Since the account data and transaction data are typically already stored in a database, it makes sense to perform the rate of return calculations in-database.

We have a customer who used to rely on a Tandem (NonStop system) based application to calculate rate of return, taking 10 hours to finish a monthly process. They process tens of millions of portfolios, calculate both dollar-weighted and time-weighted returns for various time frames, and produce more than 10 different return measures for each portfolio.

Using DB Lytix (a library of UDFs provided by Fuzzy Logix), we moved their rate of return calculation process all in-database. This monthly process now takes less 20 minutes to finish.

The dramatically reduced cycle time brings these benefits:

- Shorter statement cycle time (10 hours to 20 min) allows customers to get their statements earlier, more time to QA the results and time to react to any issue in the production process

- Putting the calculation process in-database saves costs and lowers TCO (total cost of ownership)

EQUITY ANALYSIS

Analysts are often interested in performing analysis of individual stocks. The objective is to understand the fundamental as well as the technical factors influencing valuation. Typically, for individual equities the types of analysis that are performed are as follows:

- **Volume Weighted Average Price (VWAP)**
- **Liquidity Analysis – volume of stocks traded every 5 or 10 minutes, buy orders, sell orders, etc.**
- **Momentum – slow moving versus fast moving average, Bollinger bands**
- **Volatility – historical volatility, option implied volatility, GARCH volatility, volatility premium**
- **Performance – risk versus return, Capital Asset Pricing Model, Efficient Frontier**

Obviously, such analysis depends on a large volume of data and, at the same time, the analysis results have to be presented in split seconds. Naturally, in-database analytics is a good fit for these types of analysis wherein one does not have to move large volume of data to analytic servers, but can perform sophisticated analysis directly in the database with SQL queries.

POST-TRADE RISK MANAGEMENT

With volatilities as unpredictable as has been in the past few years, post-trade risk management has become even more important. The challenge with post-trade risk management is that one has to value a large number of securities across a large number of simulated scenarios to evaluate the Value-at-Risk (VaR).

With in-database analytics, we can provide the ability to value derivatives (equity, interest rate, foreign exchange, etc.) across millions of scenarios and calculate VaR in seconds. Using massively parallel processing architecture (MPP), entire client portfolios containing millions of positions can now be valued and the VaR can be calculated in minutes. Thus the objective of post-trade risk management with reasonably low cost infrastructure can be achieved with relative ease using in-database analytics.

One of our customers has such a VaR process, which extracts all the positions data from a database, performs simulation and calculations in MS Access, stores the results back to the database. They use a Greek-based approach to calculate VaR, and on an average day there are 200,000 positions and the process takes 3 hours to complete. Once implemented in-database, this process takes less than 5 minutes to execute. As such, they can run this VaR process several times a day, rather than only once a day.