DERIVATIVES TRADING MANAGEMENT

Client Overview

Our client is into derivatives trading market and handles electronic trading for a leading stock exchange operating for private investors in Europe. In addition to the investment products investors can trade in equities, bonds, investment fund units and participation certificates through this electronic trading system. About 100,000 trades are executed each day by 120 international trading participants through the client exchange organization.

Engagement Situation

Our client' derivatives trading engine processes more than 100K trades per day which amount to about a billion dollar in value. Accurate processing of this large amount of data was an implicit requirement combined with consistent speed and reliability for the trading platform. It was thus imperative to provide a product that is robust, secure and capable of accommodating competitive needs of these large transactions in real time.

Our client was looking for a technology partner that has experience in this specific domain with exposure to FIX (Financial Information Exchange) protocol. Xoriant was an appropriate match with the client requirements to develop a solution that can significantly improve the system capacity and reduce manual processes in order to deliver higher productivity.

Key Requirements

Considering the volume of transactions and the cost of any interruption or error in the transactions, our client solution has the following requirements:

- Ability to automate existing transactional processes to improve productivity and minimize errors caused due to manual operations
- Flexibility to scale with the growing number of trading partners and accommodate 100 additional trading participants in a highly secure environment
- Ability to access about a million investment and leverage products of different categories with different rule set

Xoriant's Contribution

Xoriant team of experts was involved in end-to-end development of the solution right from identifying the technology stack, architecture design to testing and documentation. Use of SOAP and Restful webservices were used to provide scalability and flexibility which made it easier to move the system incrementally to the latest versions of the framework. Xoriant QA experts leveraged in-house Xoriant Test Automation Framework (XTAF) to automate integration, end-to-end and unit testing of the trading management system. Developing these simulators facilitated parallel executions leading to effective development testing. Xoriant DevOps experts implemented extensive version control usages and moved to continuous integration of code automating the build deployments for faster release and quality deliverables using Jenkins and SONAR.

The solution considered key trading conditions like request for quote with target-price, Order driven (market, limit, stop loss, stop buy, OCO, Trailing etc.) with features like off-exchange trading, pre and post-trading order management, real-time price information, immediate trade execution confirmation at a fixed price etc. Additional features like partial order fill support, trade settlement aggregation or netting capability and a competitive user interface to match with the industry standards in the trading domain gave the client a first mover advantage over other competitors.

Key Solution Highlights

- Solution covers the conventional processes of trading and also other functions like order crossing, condition based trading etc. with high performance
- System is designed to be capable of processing of about 100K trades /day with requests and responses from hundreds of end customers
- TIBCO RV is used for seamless exchange of middleware events
- FIX protocols is used to enable real-time relay of changes in the prices and other data changes, communicated seamlessly to and from other systems in a distributed environment
- IBM MQ adopted for communicating messages of events and trade dynamics to end customers

- Infrastructure Support:
  - Ensured minimal issues through a rigorous test automation and debugging setup
  - Solution ensures secured transaction capability and robustness to handle millions of transactions at any given point of time without any downtime
  - Local environment was setup to mimic real components like database, applications, messaging servers
  - 24x7 backup for power, internet, biometric access controlled office and a dedicated domain server provided for security and 100% availability

Architecture Diagram
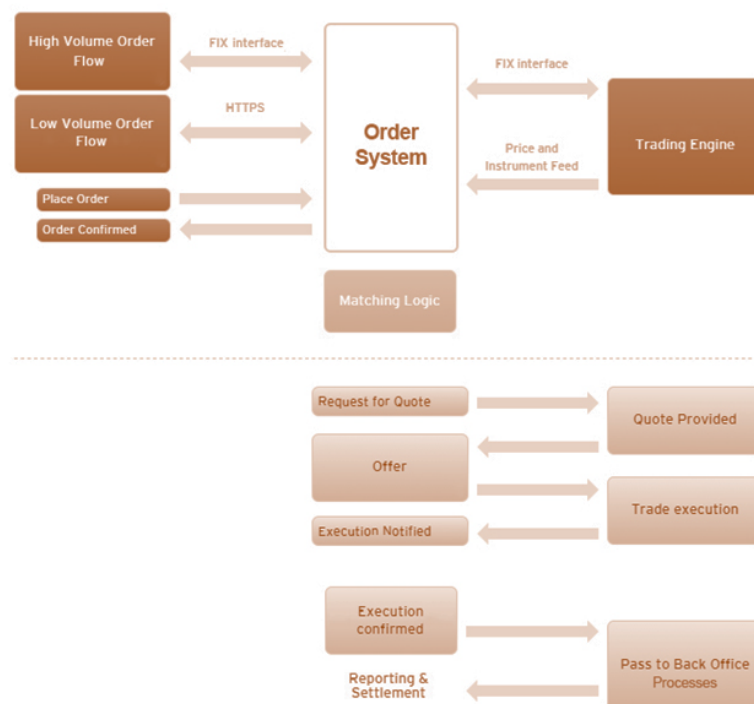
Tools & Technologies

- Java, EJB, , Hibernate, Spring, AngularJS, JUnit
- Messaging: JMS, IBM MQ, Tibco RV
- Webservices : SOAP and Restful
- Tools : Jenkins, SONAR, Verifix, SVN
- Database: SQL

Benefits to the Client

- Efficient, timely and cost-effective trading with real-time information at hand reaching to a broader market of over 50% more trading partners through an embedded solution
- Data processing time and relay of updates to end customers was reduced to few milliseconds
- Gained a first mover advantage by introducing event based trading and other additional functions
- Increased robustness and scalability of the system enabled client to handle larger volumes of small size transactions effectively