

FIX SOLUTIONS SUITE

Connectivity to World Markets



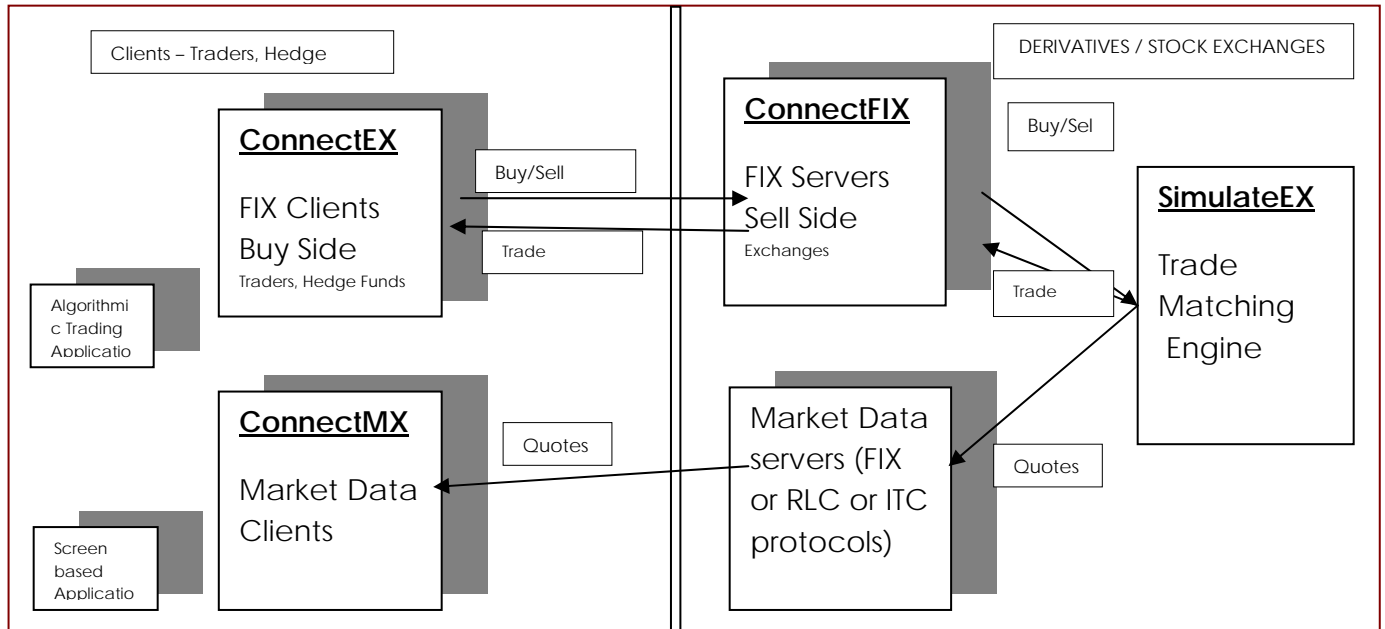
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Saven Technologies provides the following software tools that help the buy-side trading groups develop comprehensive trading solutions. The most important requirement for any electronic trading system is to have high speed, direct connectivity with an exchange for both trading and market data. High speed & reliably connectivity allows the trader to send the trades into the market and receive confirmations as quickly as possible.

- **ConnectEX:** Optimized, high speed and direct connectivity to exchanges.
- **ConnectMX:** High speed market data solution to receive real time market data from exchanges.
- **ConnectFIX:** FIX protocol based connectivity software that helps to connect and trade with any FIX compliant trading partners.
- **SimulateEX:** FIX protocol based trading exchange simulation software, that makes it easy to test trading software developed using **ConnectEX**
- **Supporting Tools** helps users with analyzing log files containing trading messages

These tools are designed to be scalable and be able to handle high trading volumes. Deployment of **ConnectEX** and **ConnectMX** on dedicated machines, allows the applications to have high speed dedicated connections for both trading and market data. These software tools are developed in Java programming language, allowing the applications to run on any platform.

The following diagram shows a typical deployment of the software, either connecting to an exchange for trading and market data or connecting to a simulated exchange.



Functional features:

- Certified with FIX compliant trading engines at CME, ICE and NYSE
- Provides top-of-book (best bid, best offer) information for all markets in real time
- Provides top 5 limits information for all markets in real time
- Implemented enhanced resend message processing feature
- Supports dynamic fault tolerance features, ensuring no single point of failure, providing uninterrupted connectivity with exchange

Typical usage scenarios:

- Algorithmic Traders, requiring high speed, direct connectivity to exchanges
- Core functionality of these tools are available as API(Application Program Interface), helping ISVs with faster development, and easier integration with their trading systems
- ISVs developing screen based trading systems, order management systems and execution management systems
- ISVs developing algorithmic trading systems
- Any buy side firms, proprietary trading firms, requiring connectivity to exchanges or other trading partners

Technical Features:

- Written in 100% pure Java programming language, and hence these can be deployed on any hardware to get the performance advantage of advanced server hardware
- Multi threaded, in order to handle high transaction throughput
- Integrate easily with any FIX based order management systems
- Provide a flexible API(application program interface) so that the tools can be easily integrated with other systems.
- Configurable, so that the exchange connection can be shared by multiple traders within a trading group or a physical location

ConnectEX

ConnectEX software provides specialized connectivity solutions that are optimized for individual exchanges. **ConnectEX** Software is FIX compliant and provides high speed, direct connectivity to any exchange with FIX protocol based electronic trading support. This software can be used to establish connectivity to an exchange, and send trades and receive trade confirmations in real time. The software is designed to be highly scalable, and handle the multiplying trading volumes.

Along with Orders and Cancels **ConnectEX** also supports Cancel Replaces (modify) and Order Status Request messages to be sent to exchanges. **ConnectEX** functionality can easily be tested in-house, using our **SimulateEX** software, which provides a FIX protocol based, exchange simulation environment.

ConnectEX is certified at Chicago Mercantile Exchange (CME), Inter Continental Exchange (ICE) and New York Stock Exchange (NYSE). The tool is flexible and can easily be connected to any sell side FIX compliant system. Our initial focus is connectivity to derivatives exchanges.

ConnectEX for CME:

- Certified with CME's iLink 2.X software
- Implemented CME's enhanced resend message processing feature
- Supports CME's dynamic fault tolerance features, ensuring no single point of failure, providing uninterrupted connectivity with CME

ConnectEX for ICE:

- Certified with ICE's FIX compliant trading engine
- Implemented Security Definition Request and Response functionality that helps clients to receive security definition information for currently traded instruments of different markets, like IPE Brent Futures, Electricity Futures etc.

ConnectFIX

ConnectFIX software can be used to develop any trading software between trading partners supporting FIX protocol. **ConnectFIX** software provides high speed connectivity between trading partners. This software can be used to exchange all types of FIX messages in real time. The software is flexible, and helps develop FIX based applications very quickly. For example, we are able to get the software to be certified with openfix.net (certification service provided by TransactTools), and also at New York Stock Exchange (NYSE), within a short period of time.

ConnectMX

ConnectMX software provides specialized market data solutions that are optimized for individual exchanges. Different exchanges support different market data message protocols. For example, CME provides market data in RLC format and ICE provides market data in FIX format. **ConnectMX** is designed to be scalable and be able to handle high market data volume.

Currently, **ConnectMX** is certified at Chicago Mercantile Exchange(CME) and Inter Continental Exchange (ICE)

ConnectMX for CME:

- Certified with CME's RLC based Market Data Platform
- Implemented all of the CME supported RLC messages, including administration and messages with information about pre-open, opening and closing of markets
- Provides tick by tick market data in real time
- Provides top-of-book (best bid, best offer) information for all markets in real time
- Provides top 5 limits information for all markets in real time

ConnectMX for ICE:

- Certified with ICE's FIX compliant market data platform
- Implemented all of the ICE supported market data messages, including administration and messages with information about pre-open, opening and closing of markets
- Provides tick by tick market data in real time
- Provides top-of-book (best bid, best offer) information for all markets in real time
- Provides complete book information for all markets in real time

SimulateEX

SimulateEX software provides a FIX based exchange simulation environment, which makes it easy for clients to develop and test their trading systems using **ConnectEX** software, especially during initial development phase. Even if a real exchange connection is available, having a simulation exchange environment will give more control on various testing scenarios.

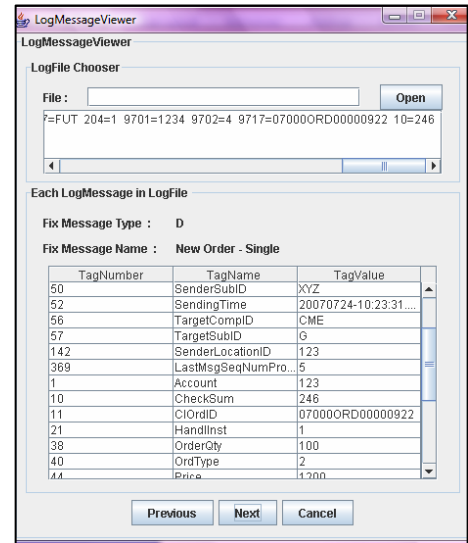
This software is implemented using a fully functional FIX server, which emulates sell-side/exchange-side FIX implementation. The simulated matching engine is flexible and allows making markets for any products.

Diagram shows a typical deployment of the software, connecting to a simulation exchange for trading.

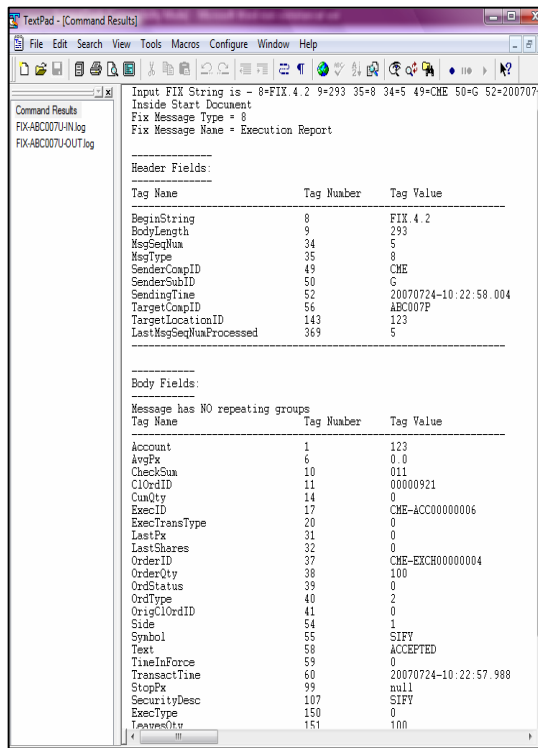
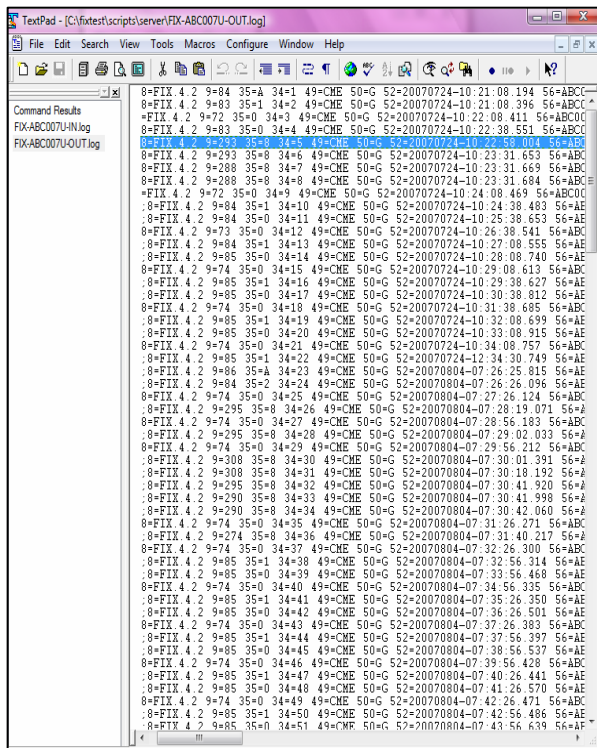
Support Tools

Both trading and market data solutions involve logging messages to log files we have developed some supporting tools that help with analyzing the log files. Usually the messages in the log files are encoded in particular protocol, and these tools provide a human-readable representation of these messages.

- FIXLogFileViewer:** This application allows users to open FIX protocol based log files, and browse each message. The following picture shows a FIX order message in the viewer.



- FIX message plug-in for TextPad:** This plug-in allows the user to get message information, while editing the FIX message log file using the TextPad application. The following picture shows, how a FIX message can be highlighted, and using a key-sequence the message description can be obtained.



- RLC message plug-in for TextPad:** This plug-in allows the user to get message information, while editing the RLC message (market data) log file using the TextPad application. The following picture shows, how an RLC market data message can be highlighted, and using a key-sequence the message description can be obtained.

