

FIX/FAST Market Data software for CME's Market Feed

Saven completed FIX/FAST Market Data processor for CME's market data feed. This software contains multiple components that can be used by clients for both real-time market data processing and for building historical market data store. CME broadcasts market data using IP Multicast protocol. CME's products are grouped into logical groups which are broadcast on separate channels. Within each channel, market data messages are distributed over A and B feeds providing a real time backup for clients, in case of missed messages on a feed.

CME sends MarketDataSnapshot (35=W), MarketDataIncrementalRefresh (35=X) and SecurityDefinition (35=d), News (35=B) etc over a specific channel associated with the product group. Snapshot and Incremental refresh are interpreted to create a top-5 level book view of each market.

Implementation Details

The primary component that receives messages over IP multicast channels is the FastFixServer. This is a multi-threaded java server program that loads channel definitions, and A and B feed information within each channel, from a configuration xml file. In order to optimize the storage space FastFixServer saves the raw FIX/FAST binary messages into respective log files. The server also has implemented logic to listen on both A and B feeds, and handles any missing sequence numbers on the A feed. Once a message is converted to regular FIX market data message, it is published over a JMS (JavaMessageService) message bus, to be consumed by different CMEFastFixFeedHandler applications.

The purpose of the feed handler is to interpret the raw FIX messages, and create a top-5 level book view. In case of missed messages, the feed handler synchronizes itself automatically, using the Snapshot messages. Once a snapshot message is processed, top-5 level book is maintained by using only the Incremental Refresh messages. As the real time messages are processed, relevant market data information is notified using a MarketDataNotifier interface (which has methods like bestBid(), bestOffer() etc.), which can be implemented appropriately by different clients.

This feed handler also contains logic to log tick-by-tick snapshot of the 5 levels of the book, and all the trades into separate log files. Feed handlers can also restore data from the raw FIX log files created by the FastFixServer, and hence it can be used for historical analysis. This feature can also be used in back-testing scenarios.

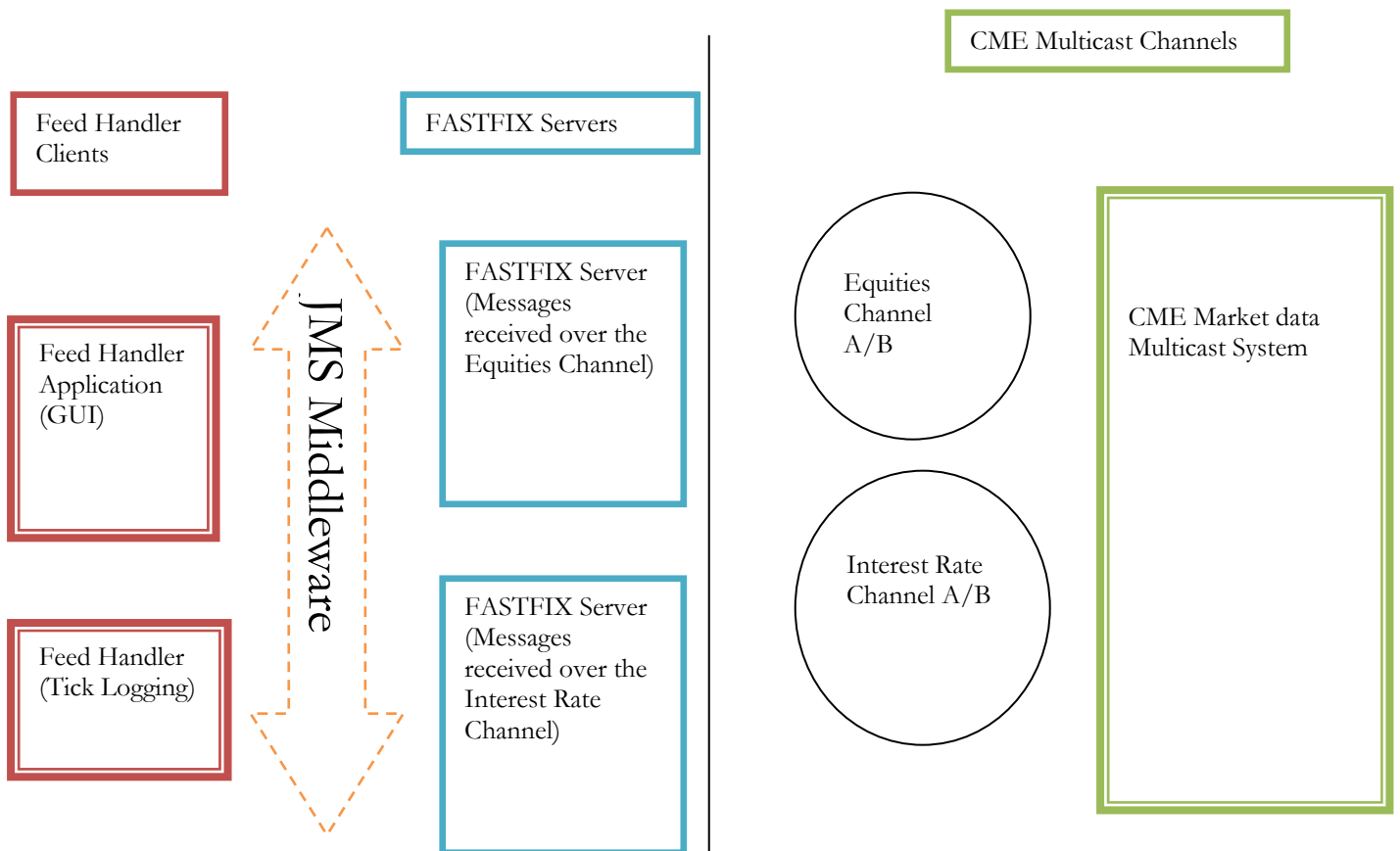
FIX/FAST Historical Quote Data Collection and Analysis Software

The primary purpose of this software is to collect and store real time raw market data from all of CME's market data channels. This stored data is processed by various components to provide the following functionality to clients

- generate tick-by-tick order book (top-5 market levels) data formatted appropriately
- generate files containing all time and sales data
- generate bar data files at configurable bar intervals, like 10 seconds, 1 minute etc

- Along with the above core modules, the following utility modules are written to optimize the storage space utilization for the market data.
- Utility that reads all the market data files and informs if any messages are missed over A or B feeds
- Utility that consolidates all the instrument definition (security definition) by eliminating duplicate information
- Utility that helps synchronizes data between A and B feed log files, and create one set of files, eliminating the need to store the log files from B feed.

The following diagram shows different modules of FIX/FAST real time market data software implementation.



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