

Market Data Platform FIX/FAST

Overview and SDK Navigation

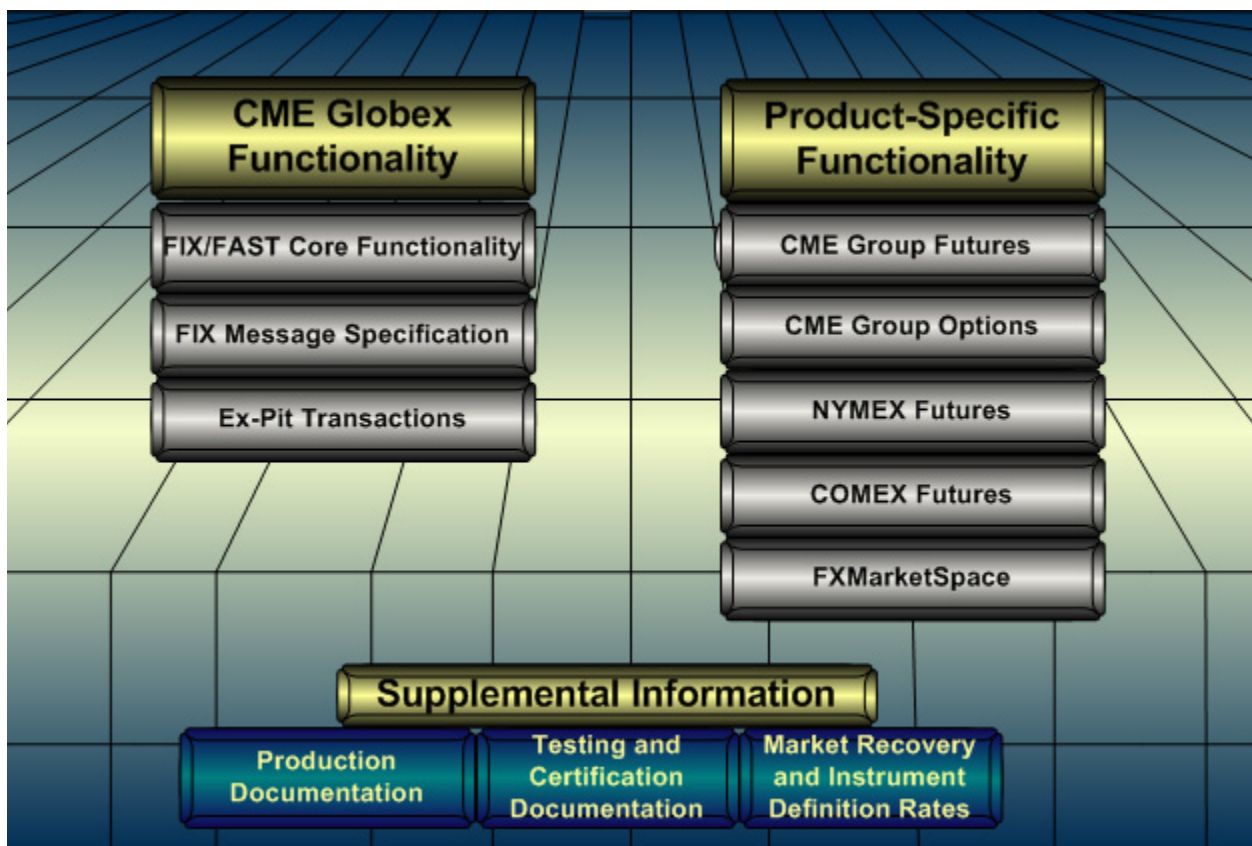
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1. MDP FIX/FAST Overview and SDK Navigation

Welcome to the Market Data Platform FIX/FAST overview and SDK Navigation module. This module contains an overview of Market Data Platform FIX/FAST and information on how to navigate the Market Data Platform FIX/FAST SDK.

1.1 Market Data Platform FIX/FAST SDK Navigation

This SDK is organized by the modules illustrated below. This page is the navigation point for the SDK; click on any module to access the documentation. Once you are in a module, you can return to this navigation point by clicking on SDK Home, located on the cover page of each module.



1.2 Market Data Platform Overview

Market Data Platform FIX/FAST is based on FIX and FAST for increased efficiency. FIX is used as the core message structure and syntax while FAST Protocol provides a boost in optimization.

Market Data Platform FIX/FAST also provides a new mechanism for delivering streaming data as it is produced by CME Globex rather than the discreet messages broadcast with RLC format. This allows data to traverse the architecture more rapidly as less overall processing is required. The data stream is subsequently converted into incremental instructions using FIX formats thereby reducing the overall quantity of data. The remaining data is compressed using the FAST Protocol as it is placed on the channel further reducing data volume. In addition, a robust recovery mechanism allows clients to rapidly rejoin the market or resynchronize their books.

Market Data Platform FIX/FAST consists of the following aspects which are described in more detail: streaming data, incremental messaging, FIX messaging format, FAST compression, and recovery.

1.2.1 Streaming Data

Streaming Data is the model for sending information from source to destination without pausing to decompose it into separate messages. Multiple events are contained in a single message. Data is streamed from CME Globex as it is produced and disseminated throughout the infrastructure without being broken into individual pieces. The result is reduced latency as overall processing efficiency increases and fewer I/Os are needed.

1.2.2 Incremental Messaging

An incremental approach to market data sends only the data necessary to convey the impact of a market event and is intended to significantly reduce data content. Rather than repainting the book with a single message, a minimum number of instructions are used to update the book. Add, change, delete, and overlay instructions are used to convey the action to be applied. Incremental messaging can be similar to an order-based feed in that each instruction corresponds to order activity, the primary difference being aggregation at a price level.

1.2.3 FIX Messaging Format

FIX is used as the new message format and lends itself well to the strategy of incremental messaging. The use of FAST mitigates the relative verbosity of FIX tag/value syntax. FIX provides efficient support for all CME market data requirements.

1.2.4 FAST Compression

FAST is a newly developed compression solution that removes redundant data and serializes what remains into a 7-bit binary format, reducing data size without introducing significant latency. FAST can reduce latency by decreasing the transfer time of data. FAST also leverages the bandwidth capacity by doubling the amount of data that can fit on an existing connection.

1.2.5 Recovery

Rapid recovery has become increasingly important as clients must be in the market at all times. The Market Data Platform FIX/FAST solution allows a client to re-enter the market segment by segment based on the preference of the client. The goal is to allow recovery of each market segment within 15 seconds or less. A client may choose to recover all segments concurrently, or re-establish the state one segment at a time (depending on trading priorities and bandwidth capabilities). Furthermore, the solution is designed to eliminate impact on the latency of the real-time feed by sending recovery data on separate channels. Recovery channels are used to deliver snapshots in an out-of-band fashion. Snapshots must be synchronized with the real time feed through a process of applying queued real-time updates.

1.3 Module Overview

CME Globex Functionality

- FIX/FAST Core Functionality - describes system architecture, incremental book management, statistics, FAST implementation, template overview, and recovery.
- FIX Message Specification - complete FIX message specification.
- Ex-Pit Transactions - Ex-Pit transactions are pre-arranged transactions occurring outside of the regular marketplace, including block, EFP and OTC trades. Ex-Pit transaction functionality facilitates market transparency by automating booking, and eliminating risk due to untimely transaction reporting.

Product-Specific Functionality

- CME Group Futures
- CME Group Options
- NYMEX Futures on CME Globex - this module contains information on NYMEX futures functionality available on CME Globex. For information on available products see: <http://www.nymexoncmeglobex.com>
- COMEX Futures on CME Globex - this module contains information on COMEX futures functionality available on CME Globex.
- FXMarketSpace - this module contains information on FXMarketSpace. For information on available products see: <http://www.fxmarketspace.com>

Supplemental Information

- Production Documentation - this module contains information on the process to successfully establish connections to the CME Production network.
- Testing and Certification Document - this module contains information on CME Globex testing and certification.
- Market Recovery and Instrument Definition Rates - this module contains information on MPS settings for Market Recovery and Instrument Definition channels.

1.4 Getting Started

Before using the various modules in the MDP FIX/FAST SDK, please note the following “typical” paths.

- If you are developing a client system for the first time, See “New Client System Development” on Page 4.
- If you are adding enhancements to an existing client system that is already using MDP FIX/FAST, See “Existing Client System Development” on Page 4.

1.4.1 New Client System Development

New clients should refer to the modules in the following order:

- FIX/FAST Core Functionality
- FIX Message Specification
- Ex-Pit Transactions (as applicable)
- Supplemental Information
- CME Group Futures (as applicable)
- CME Group Options (as applicable)
- NYMEX Futures (as applicable)
- COMEX Futures (as applicable)
- FXMarketSpace (as applicable)

1.4.2 Existing Client System Development

Existing clients who have already developed client systems with core functionality should refer to the modules in the following order:

- FIX Message Specification
- Ex-Pit Transactions (as applicable)
- Supplemental Information
- CME GroupFutures (as applicable)
- CME Group Options (as applicable)
- NYMEX Futures (as applicable)
- COMEX Futures (as applicable)
- FXMarketSpace (as applicable)
- iLink 2.X Core Functionality (as applicable)

1.5 Document Dates

A revision history table is located at the end of each module. The initial release of the module is the date that the module was initially created. If a module is updated, that date is noted on the cover page as the Last Update on the cover page and in the revision history table.

Table1. 1. Revision History

Initial Release	Version	Last Update	Author	Description
3/16/07	1.0	N/A	LM	Initial Release
3/16/07	1.1	8/6/07	LM	Removed references to phase 2. Added Recovery Module. Updated references and labels to Market Data Format and FIX/FAST (did not change technical content).
8/6/07	2.0	9/14/07	LM	Added “full SDK” sections to SDK Navigation diagram. Added the following sections: “Module Overview” on Page 3, and “Getting Started” on Page 4.
9/14/07	2.1	2/1/08	CR	Rebrand CME Group.
9/14/07	2.2	10/6/2008	DT	Added link to “Market Recovery and Instrument Definition Rates” in “Market Data Platform FIX/FAST SDK Navigation” on Page 1.

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