



Client System Impact

FIX/FAST 2.0

Version 1.8
5/21/2010

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1. Introduction

Effective **Sunday June 6, 2010** (trade date **Monday, June 7, 2010**), CME Globex will begin disseminating market data in FIX/FAST 2.0 format. FIX/FAST 2.0 format is not backward compatible and all client systems **MUST** implement and certify FIX/FAST 2.0 format functionality to receive market data via CME Globex by **Saturday, June 5, 2010**. This document outlines the client system impacts and development considerations for developing to FIX/FAST 2.0 format.

Note: All FIX/FAST channels will be impacted by the template update. See “Template and Configuration File Modification” on Page 9.

Note: FIX/FAST 2.0 format is not backward compatible and all client systems **MUST** implement FIX/FAST 2.0 format functionality to receive market data via CME Globex by Sunday June 6, 2010.

1.1 Key Customer Dates and Events

When FIX/FAST 2.0 format enters the Production environment, FIX/FAST 1.6 format will still be available for a brief period to ensure that client systems can properly receive market data in FIX/FAST 2.0 format.

Production parallel channels are being made available for testing purposes only. CME Group recommends that any customers who use FIX/FAST 2.0 channels in production during the parallel testing also join the current FIX/FAST 1.6 channels. CME Group does not guarantee the availability of data on the FIX/FAST 2.0 production parallel channels and these markets will not be halted in case of any issues that affect only FIX/FAST 2.0 parallel channels.

CME Group will launch FIX/FAST 2.0 format in the Production environment on the CME Globex platform according to the following schedule:

- On **Saturday, April 24th, 2010**, CME Group made available a new config file for the Production environment, named **config20.xml**. This file contains the 5 production parallel channels utilizing the FIX/FAST 2.0 format. These channels had new IP addresses and ports. The balance of channels in this file are in the FIX/FAST 1.6 format with no IP or port changes. You may use the **config20.xml** file is now in Production.
- Mock trading sessions took place on **Saturday, May 1st and Saturday May 8th** to allow for testing of applications in the Production environment. The following channels were available for those mock trading sessions:
 - Channel 7 - CME Equity Futures
 - Channel 9 - CME Interest Rate Futures
 - Channel 10 - CME Interest Rate Options
 - Channel 11 - CME FX Futures
 - Channel 30 - NYMEX Crude Futures
- A final mock trading session will take place on **Saturday, June 5th**, to allow for testing of applications in the Production environment. All CME Globex channels will be broadcasting FIX/FAST 2.0 for this mock trading session.
- On **Sunday, May 9th, 2010**, 5 parallel FIX/FAST channels were rolled out in production. The FIX/FAST 1.6 channels are untouched and 5 parallel FIX/FAST 2.0 channels added, corresponding to the following FIX/FAST 1.6 channels:
 - Channel 7 - CME Equity Futures
 - Channel 9 - CME Interest Rate Futures
 - Channel 10 - CME Interest Rate Options
 - Channel 11 - CME FX Futures
 - Channel 30 - NYMEX Crude Futures

The **config20.xml** has new multicast addresses and ports for the FIX/FAST 2.0 channels.

- Channel 307 - CME Equity Futures
- Channel 309 - CME Interest Rate Futures
- Channel 310 - CME Interest Rate Options
- Channel 311 - CME FX Futures
- Channel 330 - NYMEX Crude Futures

- Client systems must be certified in the New Release Environment by **Saturday, June 5th, 2010**.
- Beginning **Sunday, June 6th, 2010**, all channels will disseminate market data in FIX/FAST 2.0 format and use the **config.xml** file. The legacy IP addresses and ports that disseminated data in FIX/FAST 1.6 format will now send data in FIX/FAST 2.0 format.

New Release Environment	Production Environment	Certification Environment
<p>Monday, February 1st, 2010 All current MDP FIX/FAST channels start broadcasting exclusively in FIX/FAST 2.0 format.</p> <p>Saturday, June 5th, 2010 Client systems must be certified in the New Release Environment by.</p> <p>Tuesday & Thursday 9:00 a.m. Order Book Resets: Current method</p> <ul style="list-style-type: none"> • Channel 9 - Interest Rate futures <p>New Method</p> <ul style="list-style-type: none"> • Channel 7 - Equity futures • Channel 8 - Equity options 	<p>Saturday, April 24th, 2010</p> <ul style="list-style-type: none"> • Enhanced config20.xml file available. • New templates.xml file available. 	To Be Announced
	<p>Saturday, May 1st, 2010</p> <ul style="list-style-type: none"> • Mock trading session 1 	
	<p>Saturday May 8th, 2010</p> <ul style="list-style-type: none"> • Mock trading session 2 	
	<p>Saturday June 5th, 2010</p> <ul style="list-style-type: none"> • Mock trading session 3 	
	<p>Sunday, May 9th, 2010 to Friday, June 4th, 2010</p> <ul style="list-style-type: none"> • New production parallel channels launched, sending market data in FIX/FAST 2.0 format. These channels will also be available in FIX/FAST 1.6 format until Friday, June 4th, 2010. • Remaining channels continue sending market data in FIX/FAST 1.6 format 	
	<p>Sunday, June 6th, 2010</p> <ul style="list-style-type: none"> • All market data sent in FIX/FAST 2.0 format • Market data is no longer sent in FIX/FAST 1.6 format. 	

FIX/FAST 2.0 format will be launched on Brazilian Mercantile and Futures Exchange BOVESPA (Bolsa de Mercadorias & Futuros) for client system development according to the schedule below.

New Release Environment	Production Environment	Certification Environment
Saturday, April 17th, 2010	Sunday, June 6th, 2010	To Be Announced

More detailed information on the launch schedule will be announced in the CME Globex Notices; please see www.cmegroup.com/globexnotices.

For more information on environment access and setup support, please contact your Global Account Management representative.

CME Group Global Account Management (GAM)

312.634.8700 (Chicago)

00 44 207 796 7100 (London)

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OR

For more information on development and certification testing, please contact CME Group Certification Support for Electronic Trading (CSET).

Certification Support for Electronic Trading (CSET)

+1 312 930 2322

email: cset@cmegroup.com

1.2 Testing and Certification Requirements

All customers must complete a mandatory certification in AutoCert+. Before attempting certification, thorough testing in the New Release environment is strongly recommended. The availability date for certification of FIX/FAST 2.0 in AutoCert+ will be announced in the CME Globex Notice.

For more information on testing and certification, refer to the documents at the following location:

<http://www.cmegroup.com/certsdk>

1.3 Client System Impact Summary

Please see the applicable sections within this document for detailed descriptions of all system impacts.

- **Preamble** - The Preamble will be found before all FAST messages and will provide the sequence number and a sub-channel identifier for the related FAST message. See "Preamble" on page 11 for more information.
- **Order Book Reset** - In the unlikely event of a CME Group dual component failure, order books on the channel may be corrupted. In this situation, it will be possible to reset and refresh the order book. See "Order Book Reset" on page 15 for more information.
- **Multiple Order Book Depth per Channel** - It will be possible to receive market data for instrument order books of different depths on a single channel. See "Multiple Order Book Depth per Channel" on page 19 for more information.
- **Trading Statistics Reset Based on Market State Value** - There will be a new value in the Market State (tag 35-MessageType=f) message to indicate when statistics should be reset. See "Trading Statistics Reset Based on Market State Value" on page 20 for more information.
- **Instrument-Level State in Snapshot** - A new tag in the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message will contain the instrument state. See "Instrument-Level State in Snapshot" on page 21 for more information.
- **Dynamic User Defined Spread (UDS) Instrument Delete** - If an instrument is deleted mid-week, the Security Definition (tag 35-MessageType=d) message will indicate the deletion on the Incremental feed and will be deleted from the Instrument Definition feed. Also, the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message for the instrument will be removed from the Market Recovery feed, if it exists. See "Dynamic User Defined Spread (UDS) Instrument Delete" on page 23 for more information.
- **Security Definition (tag 35-MessageType=d) Message Enhancements** - FIX/FAST 2.0 format will include new tags and values for enhancements to the Security Definition (tag 35-MessageType=d) message. See "Security Definition (tag 35-MessageType=d) Message Enhancements" on page 25 for more information.
- **Template Enhancements** - Several enhancements will result in new templates. See "Template Enhancements" on page 29 for more information.
- **Configuration File Modifications** - Configuration changes will be necessary for client systems still receiving FIX/FAST 1.6 format market data from **Sunday, April 25th, 2010 to Friday, May 7th, 2010**. See "Configuration File Modifications" on page 9 for more information.
- **Last Trade Data Block** - The Exchange Best will no longer be sent or cause an update to the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message. Only the Last Best Price will be found in the Last Best Price data block. See "Last Trade Data Block" on page 30 for more information.
- **Trade Volume for CME Globex Calculated Price Instruments** - Spread legs calculated by CME Globex will now be included in the total trade volume for market recovery. See "Trade Volume for CME Globex Calculated Price Instruments" on page 31 for more information.
- **Settlement Price Types** - CME Globex will begin sending three types of settlement prices in the Market Data Incremental Refresh (tag 35-MessageType=X) message. They will be: the Net Change Preliminary Settlement, the Actual Preliminary Settlement, and the Final Settlement. See "Settlement Price Types" on page 33 for more information.

1.4 Template and Configuration File Modification

This release will result in new templates and configuration files.

The templates and configuration files must be downloaded from the ftp site as described in the CME Globex FIX/FAST SDK.

Refer to the sections below for additional information:

<http://www.cmegroup.com/globex/files/SDKFFCore.pdf>

- Section 4: Template Overview
- Section 2.1.2: Services - "Template Dissemination and Market Data Configuration."

1.4.1 Configuration File Modifications

On **Saturday, April 24th, 2010**, CME Group will make available a new config file for the Production environment, named **config20.xml**. This file will contain 5 channels utilizing the FIX/FAST 2.0 format. These channels will have new IP addresses and ports. The balance of channels in this file will be in the FIX/FAST 1.6 format with no IP or port changes. The earliest customers may use the **config20.xml** file in Production is **May 9th, 2010**.

On **May 9th, 2010** the following channels will begin disseminating data in the FIX/FAST 2.0 format in the Production environment and should leverage the production **config20.xml** file. If customer systems need to continue to use the FIX/FAST 1.6 format for these channels, they must access the **config.xml** file for multicast information. The **config20.xml** will have new multicast addresses and ports.

- Channel 307 - CME Equity Futures
- Channel 309 - CME Interest Rate Futures
- Channel 310 - CME Interest Rate Options
- Channel 311 - CME FX Futures
- Channel 330 - NYMEX Crude Futures

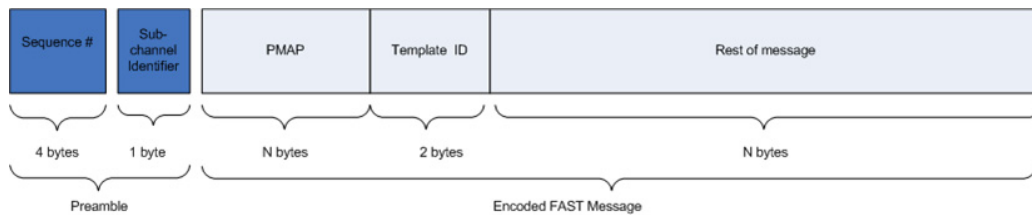
2. Client System Impacts

This section outlines the client system impacts and development considerations for FIX/FAST 2.0 functionality on CME Globex.

Note: FIX/FAST 2.0. is not backward compatible and all client systems MUST implement FIX/FAST 2.0 format functionality to receive market data via CME Globex by Sunday, June 6th, 2010.

2.1 Preamble

The Preamble will provide the sequence number and sub-channel identifier for the related FAST message. The Preamble consists of 5 non-FAST encoded bytes in Big Endian format that will be found before all FIX/FAST messages on all feeds (Incremental, Market Recovery, Instrument Definition, and TCP Replay). The Preamble will be found before the FAST encoded message, and will contain the sequence number and sub-channel identifier. Processing of the Preamble is optional and FAST messages will not be impacted by it.



2.1.1 Preamble Sequence Number

The Preamble sequence number is a 4 byte, unsigned integer representing the value distributed in tag 34-SeqNum of the related FAST message. The Preamble sequence number can be used during the arbitration process to determine whether any messages have been missed without decoding the FAST message, reducing processing time.

2.1.2 Preamble Sub-Channel Identifier

The sub-channel identifier is 1 unsigned byte found between the Preamble sequence number and the FAST message. It will be used to identify the sub-channel for all FAST messages. This will make it possible to process only the messages which carry market data for certain sub-channels and ignore all other sub-channels.

The sub-channel identifiers will be mapped to group codes in the **config20.xml** file.

Note: In the New Release Environment, all sub-channel identifiers associated with the group codes will initially appear as 1. All administration messages will be 0.

2.1.2.1 Example: Sub-Channel Identifier Assignment

ES (sub channel 2) = E-mini S&P 500 Futures

NQ (sub channel 3) = E-mini NASDAQ 100 Futures

Sample XML Data

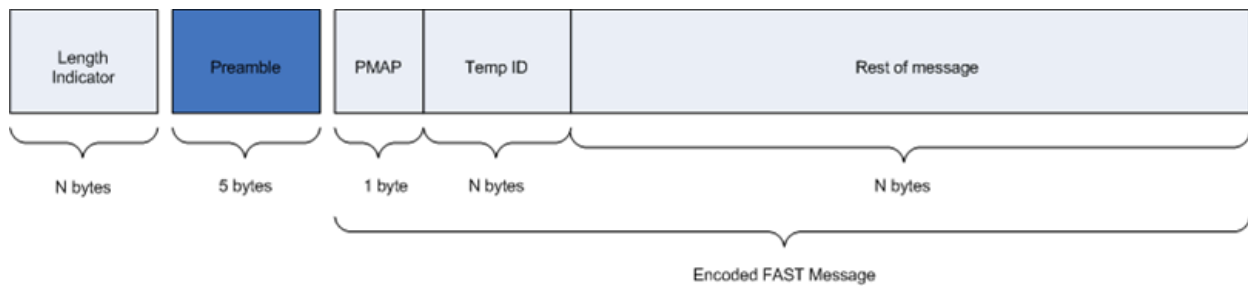
```
<channel id="7" label="CME Globex Equity Futures">
  <products>
    <product code="NQ">
      <group code="NQ">
        <subchannel>3</subchannel>
      </group>
    </product>
    <product code="FXN">
      <group code="FX">
        <subchannel>1</subchannel>
      </group>
    </product>
    <product code="FIN">
      <group code="FS">
        <subchannel>1</subchannel>
      </group>
    </product>
    <product code="EFE">
      <group code="EF">
        <subchannel>1</subchannel>
      </group>
    </product>
    <product code="ES">
      <group code="ES">
        <subchannel>2</subchannel>
      </group>
    </product>
    <product code="MD">
      <group code="MD">
        <subchannel>1</subchannel>
      </group>
    </product>
  </products>
</channel>
```

2.1.3 Preamble Implementation for TCP Replay

The TCP Replay feed will contain 3 different types of message formats:

- **Raw FIX message** - Logon (tag 35-MsgType=A) - Customer to CME Group, Logout (tag 35-MsgType=5) - Customer to CME Group, and Market Data Request (tag 35-MsgType=V).
- **Length Indicator + Generated Preamble + FAST message** - Logon (tag 35-MsgType=A) - CME Group to Customer, Logout (tag 35-MsgType=5) - CME Group to Customer, Heartbeat (tag 35-MsgType=0).
- **Length Indicator + Original Preamble + FAST message** - All requested messages for recovery.

Note: Replayed FIX/FAST messages will contain their original Preambles.



A sample message flow for TCP Replay requests is shown below to illustrate these different formats.



2.2 Order Book Reset

Order Book Reset will provide a process for synchronizing order books in the unlikely event of a CME Group dual component failure. In this scenario, order books on the channel may be “corrupted”.

Note: CME Globex will leverage the new Order Book Reset method for all markets except NYMEX and COMEX futures and CME and CBOT Interest Rate futures. Refer to "Order Book Reset - Prior to FIX/FAST 2.0" on page 18 for more information.

A new valid tag 269-MDEntryType=J value will be added to the Market Data Incremental Refresh (tag 35-MsgType=X) message to identify an Order Book Reset occurrence.

Table 2.1. Market Data Incremental Refresh (tag 35-MsgType=X) Message

Tag	FIX Name	Format	Valid Values	Description
269	MDEntryType	Char (1)	0 = Bid 1 = Offer 2 = Trade 4 = Opening Price 5 = Closing Price 6 = Settlement Price 7 = Trading Session High Price 8 = Trading Session Low Price E = Simulated Sell F = Simulated Buy J = Order Book Reset M = Prior N = Session High Bid O = Session Low Offer	Type of Market Data entry.

The steps to detect this condition and recover are shown below:

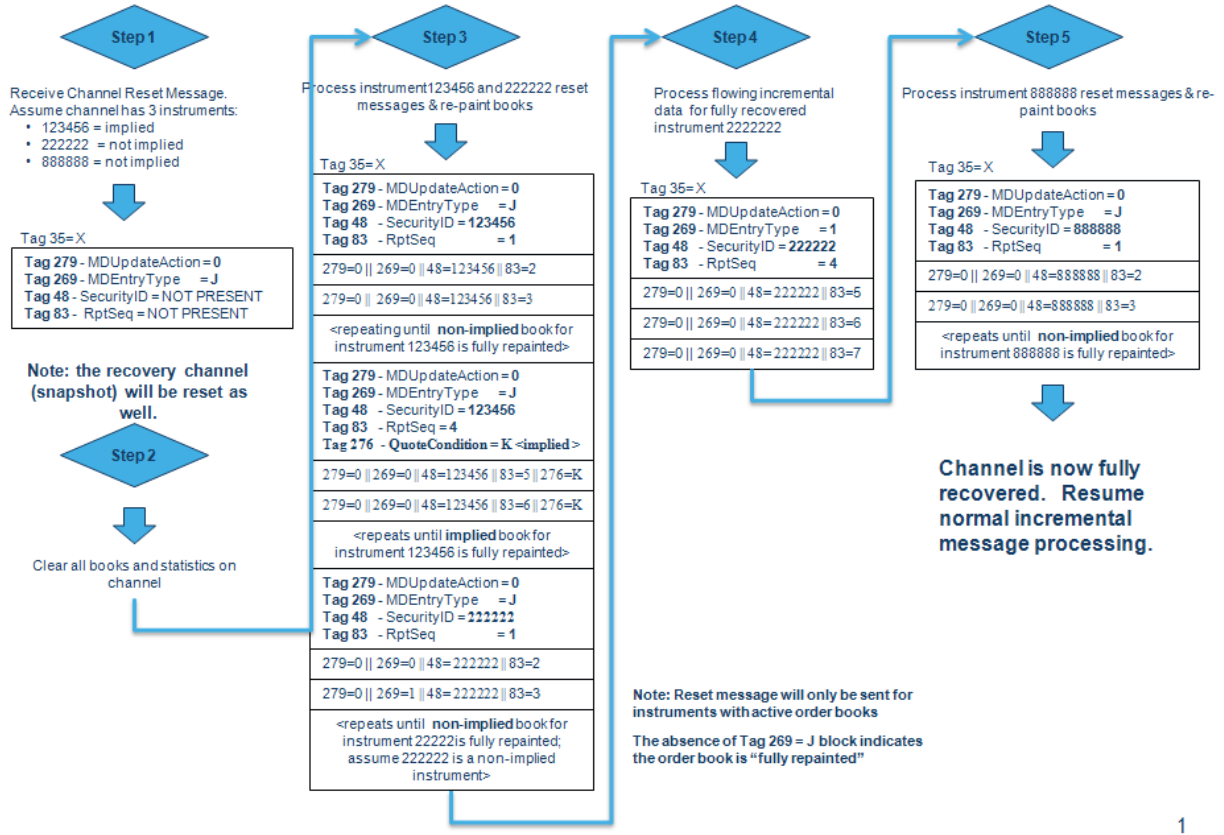
1. The Market Data Incremental Refresh (tag 35-MsgType=X) message, Order Book Reset data block is sent down the Incremental feed with tag 269-MDEntryType=J to indicate that there has been a dual component failure and the order books on the channel are corrupted.
2. The client system must empty all order books for the impacted channel.

Note: When the Order Book Reset data block is received, no order entry actions should be taken based on the data found in the order book. The order book and all statistics for the instrument should be emptied on the client system.

3. The Market Data Snapshot Full Refresh (tag 35-MsgType=W) message on the Market Recovery feed will be deleted for impacted instruments.
4. Market Data Incremental Refresh (tag 35-MsgType=X) messages will be sent to populate all price levels in the order books.
 - The first data block will contain tag 269-MDEntryType=J and tag 48-SecurityID, followed by data blocks for each level of the order book as identified in tag 48-SecurityID.
 - Client systems should leverage tag 269-MDEntryType=J in combination with tag 48-SecurityID to determine that a book for the instrument identified in tag 48-SecurityID has been recovered.
5. Once a book has been recovered for an instrument (identified by tag 48-SecurityID), CME Globex will disseminate incremental real-time market data for that instrument, and client systems can process data for that instrument. At this point, other instruments on the channel may still be going through the recovery process.

Note: Tag 83-RptSeq is reset to 1 for each instrument repeating group.

Order Book Reset Process



2.2.1 Order Book Reset - Prior to FIX/FAST 2.0

The existing Order Book Reset method will continue to be used for NYMEX and COMEX futures and CME and CBOT Interest Rate futures.

In the current Order Book Reset method, and for NYMEX and COMEX futures and CME and CBOT Interest Rate futures going forward, CME Globex does NOT send the new value J in tag 269-MDEntryType to identify an Order Book Reset. The only indication that market data for an instrument is being resent is that tag 83-RptSeq will be reset to 1 for an instrument repeating group.

If the order books on a channel are corrupted, take the following steps to detect this condition and recover:

1. The Market Data Snapshot Full Refresh (tag 35-MessageType=W) message on the Market Recovery feed will be deleted for impacted instruments.
2. Market Data Incremental Refresh (tag 35-MessageType=X) messages will be sent to populate all price levels in the order books.
 - The first data block will contain tag 48-SecurityID, followed by data blocks for each level of the order book as identified in tag 48-SecurityID.

Note: Tag 83-RptSeq is reset to 1 for each instrument repeating group.

3. Once a book has been recovered for an instrument (identified by tag 48-SecurityID), CME Globex will disseminate incremental real-time market data for that instrument, and client systems can process data for that instrument. At this point, other instruments on the channel may still be going through the recovery process.

2.3 Multiple Order Book Depth per Channel

Beginning with this release, it will be possible to deliver market data for instrument order books with different book depths on a single channel, for better bandwidth efficiency. For example, on Channel 7, Instrument A can have a 5-deep order book, while Instrument B has a 10-deep order book. Tag 264-MarketDepth in the Security Definition (Tag 35-MessageType=d) message must be referenced to obtain the book depth of an instrument.

Example - Multiple Order Book Depths

Market Data Channel	Instrument	Book Depth
Channel 7	Instrument A	5-Deep
Channel 7	Instrument B	10-Deep

2.4 Trading Statistics Reset Based on Market State Value

Statistics are sent on the Incremental Feed with the Market Data Incremental Refresh (tag 35-MessageType=X) message as they occur throughout a trading session. Certain statistics are also made available on the Market Recovery Feed with the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message. With this release, statistics will be removed at the end of a trading session from the Market Recovery Feed on the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message.

A new value is being added in the Security Status (tag 35-MessageType=f) Message to indicate the end of a trading session, and trigger the process to remove statistics from the Market Recovery Feed on the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message.

Table 2.2. Security Status (tag 35-MessageType=f) Message

Tag	FIX Name	Format	Valid Values	Description
1174	SecurityTradingEvent	Int (2)	1 = Trading Halt/Stop Spike 2 = Resume/open 4 = End of Trading Session	Indicates the trading status applicable to the transaction.

The following process will take place:

1. A Security Status (tag 35-MessageType=f) message will be sent, containing the following tags:
 - Tag 326-SecurityTradingStatus set to 18 = Not available for trading (end of session)
 - Tag 1174-SecurityTradingEvent set to 4 = End of trading
2. CME Globex will remove the following statistics from the Market Recovery Feed on the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message:
 - Session High Bid (tag 269-MDEntryType=N)
 - Session Low Offer (tag 269-MDEntryType=O)
 - Opening Price (tag 269-MDEntryType=4)
 - Trading Session High Price (tag 269-MDEntryType=7)
 - Trading Session Low Price (tag 269-MDEntryType=8)
 - Trade Volume (tag 1020-TradeVolume) for the Last Trade data block (tag 269-MDEntryType=2)
3. Client systems can choose to reset the statistics.

Statistics will not be sent in the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message on the Market Recovery feed until activity on the Incremental feed creates new statistics.

Note: Tag 75-TradeDate indicates the session date of the trade referenced in this message.

2.5 Instrument-Level State in Snapshot

Beginning with this release, tag 1682-MDSecurityTradingStatus, will be added to the header of the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message. Tag 1682-MDSecurityTradingStatus will contain trading status for each instrument. The benefit of this is that, in the event of a mid-week join or recovery, the state for an instrument can be immediately identified.

For more information on trading states, refer to the Electronic Trading Concepts document:

<http://www.cmegroup.com/globex/files/ElectronicTradingConcepts.pdf>

Table 2.3. Market Data Snapshot Full Refresh (tag 35-MessageType=W) Message - New Tag

Tag	FIX Name	Format	Valid Values	Description
1682	MDSecurityTradingStatus	Int (2)	2 = Trading Halt 5 = Price Indication 17 = Ready to trade (start of session) 18 = Not Available for trading (end of session) 20 = Unknown or Invalid 21 = Pre-Open 22 = Opening Rotation 24 = Pre-Cross 25 = Cross 26 = No-Cancel	Identifies the state of the instrument.

Currently in the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message, it is not possible to receive the latest state for an instrument. An instrument could be in the trading halt state, but the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message would indicate that the instrument state was continuous trading mode. With this release, the instrument state will be available in the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message.

Table 2.4. Instrument State in FIX/FAST 1.6 Format vs. FIX/FAST 2.0 Format

Event	Market Data Snapshot Full Refresh (tag 35-MessageType=W) Message	
	FIX/FAST 1.6	FIX/FAST 2.0
An instrument enters the trading halt state.	Tag 336-TradingSessionID is set to 2=Continuous Trading Mode	Tag 1682-MDSecurityTradingStatus will be set to 2 = Trading Halt

ALSO, THE FOLLOWING TAG WILL NO LONGER BE SENT IN THE MARKET DATA SNAPSHOT FULL REFRESH (TAG 35-MSGTYPE=W) MESSAGE.

Table 2.5. Market Data Snapshot Full Refresh (tag 35-MsgType=W) message

Tag	FIX Name	Format	Valid Values	Description
336	TradingSessionID	String (1)	0 = Pre-opening 1 = Opening Mode 2 = Continuous Trading Mode	Identifier for Trading Session.

2.6 Dynamic User Defined Spread (UDS) Instrument Delete

Beginning with this release, the Globex Control Center (GCC) will delete erroneous UDS instruments to make tag 48-SecurityID values available for assignment to newly created UDS instruments. Each UDS is identified by tag 48-SecurityID. A range of tag 48-SecurityID values is reserved for UDS creation. Currently, it is possible for all available tag 48-SecurityID values to be assigned to existing UDS instruments, preventing the creation of new UDS instruments. Client systems must delete the instruments from their product database to insure no impact from the reassignment of the tag 48-SecurityID values to new instruments.

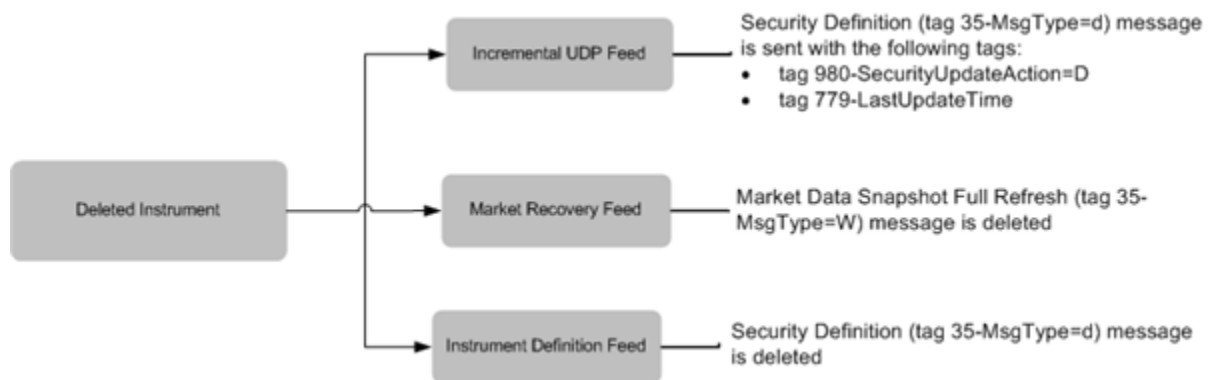
Note: This deletion is not related to contract expiration.

When a UDS instrument is deleted, the Security Definition (tag 35-MsgType=d) message will be updated on the Incremental feed and deleted from the Instrument Definition feed. Also, the Market Data Snapshot Full Refresh (tag 35-MsgType=W) message for the deleted instrument, if it exists, will be removed from the Market Recovery feed. Client systems must also delete the instrument so that newly-created instruments can be recognized.

When dynamically managed, after a Security Definition (tag 35-MsgType=d) message for an instrument is deleted, the tag 48-SecurityID value for the deleted instrument can be reassigned after the product session is complete.

Note: CME Group strongly recommends that client systems manage tag 48-SecurityID dynamically.

However, for this release, tag 48-SecurityID will not be reused until the next trading session.



The following feeds will be impacted:

- **Incremental Feed**

The Security Definition (tag 35-MsgType=d) message for that instrument will be sent down the Incremental feed with two new tags. Tag 980-SecurityUpdateAction will be set to D, and tag 779-LastUpdateTime will include the date and time of the deletion.

Table 2.6. Security Definition (tag 35-MsgType=d) Message

Tag	FIX Name	Format	Valid Values	Description
980	SecurityUpdateAction	Char (1)	D=Delete M=Modify [under development]	Included in the message on the Incremental feed when a mid-week deletion occurs.
779	LastUpdateTime	UTCTimeOnly (17)		Timestamp of when the instrument was deleted.

- **Market Recovery Feed**

The Market Data Snapshot Full Refresh (tag 35-MsgType=W) message for the unavailable instrument will be removed, if it exists, from the loop on the Market Recovery feed. Tag 911-TotNumReports will be updated to reflect the new number of reports.

- **Instrument Definition Feed**

The Security Definition (tag 35-MsgType=d) message for the unavailable instrument will be removed from the Instrument Definition feed.

2.7 Security Definition (tag 35-MsgType=d) Message Enhancements

FIX/FAST 2.0 will include new tags and tag values to provide more information in the Security Definition (tag 35-MsgType=d) message. These tags will contain the following information:

- Quantity Type
- Spread Leg Identification
- Settlement Price Type
- Tags Under Development

2.7.1 Lot Types Rules Repeating Group

Beginning with this release, the Security Definition (tag 35-MsgType=d) message will contain more information about quantities for available contracts. The Security Definition (tag 35-MsgType=d) message will contain one repeating group for each available quantity type for the instrument. The quantity type will determine the minimum trading quantity allowed for order entry. There can be a maximum of 2 quantity types per instrument.

Tag 1093-LotType and **tag 1234-NoLotTypeRules** will be included in the Security Definition (tag 35-MsgType=d) message. Tag 1093-LotType is a new tag, while tag 1231-MinLotSize currently appears in the Security Definition (tag 35-MsgType=d) message. Tag 1231-MinLotSize will be implemented within the Lot Type Rules repeating group, which begins with tag 1093-LotType. The value of tag 1093-LotType will determine how the value in tag 1231-MinLotSize should be interpreted.

The (→) symbol designates repeating groups within the message.

Table 2.7. Lot Type Rules Data Block

Tag	FIX Name	Format	Valid Values	Description
1234	NoLotTypeRules	NumInGroup (2)		Number of quantity types in the upcoming repeating group.
→1093	LotType	Char(1)	4=Round lot (NYMEX Variable Quantity Products)	The quantity type used for the leg of the spread. This tag is required to interpret the value in tag 1231-MinLotSize.
→1231	MinLotSize	Qty(19)		Minimum quantity accepted for order entry. • If tag 1093-LotType=4, this value is the minimum quantity for order entry expressed in the applicable units, specified in tag 996-UnitOfMeasure, (e.g., megawatts). This existing tag will be found in repeating groups for lots.

Note: NYMEX Variable Quantity Products are available on CME Globex. Refer to the NYMEX Variable Quantity Products Client System Impact document <http://www.cmegroup.com/globex/files/varqtyproducts.pdf> for more information. To enhance this existing functionality two tags were added.

2.7.2 Spread Leg Identification

Security Definition (tag 35-MessageType=d) messages generated for UDS instruments will contain the tags shown below. The tags will provide more information about the legs of spreads, which can be used for front end display purposes. They will appear in the repeating groups found after tag 555-NoLegs. Beginning with this release, tag 5795-LegSecurityGroup will be used to identify the product code for the leg of the spread instead of tag 600-LegSymbol. For this release, tag 600-LegSymbol will always be set to [N/A]. Tag 620-LegSecurityDesc will be added to the Security Definition (tag 35-MessageType=d) message and will contain the leg security description.

Note: The changes regarding this feature will impact naming conventions for User Defined Spreads if client systems leverage the values found in tag 600-LegSymbol. See Section 2.3: “Naming a CME Globex Unrecognized Options Spread” of the Market Data Platform FIX/FAST: Options” document <http://www.cmegroup.com/globex/files/SDKFFOptions.pdf> for more information.

Table 2.8. Security Definition (tag 35-MessageType=d) Message

Tag	FIX Name	Format	Valid Values	Description
→600	LegSymbol	String (6)	[N/A]	Spread instrument security symbol. Only sent for spreads. Note: For this release, this value will always be set to [N/A].
→5795	LegSecurityGroup	String(10)		The product code for the leg. (e.g., ES)
→620	LegSecurityDesc	String (20)		Leg security description (e.g., ESM0 C1130)

2.7.3 Settlement Price Type

Tag 731-SettlPriceType will be added to the Security Definition (tag 35-MessageType=d) message to indicate whether the settlement price is a preliminary CME Globex settlement or the final settlement.

Table 2.9. Security Definition (tag 35-MessageType=d) Message - New Tag

Tag	FIX Name	Format	Valid Values	Description
731	SettlPriceType	String (3)	<p>1=Final</p> <p>100 = Actual Preliminary for instruments not subject to settlement price rounding;</p> <p>Net Change Preliminary for instruments subject to settlement price rounding (e-mini, e-micro, and miNY products)</p> <p>101 = Actual Preliminary for instruments subject to settlement price rounding (e-mini, e-micro and miNY products)</p>	Indicates whether settlement price is preliminary or final.

Note: Tag 731-SettlPriceType works in conjunction with tag 1150-TradingReferencePrice.

Note: For instruments subject to settlement price rounding and having an on-tick Actual Preliminary, the settlement price will be the same for tag 731-SettlPriceType=100 and tag 731-SettlePriceType=101.

2.7.4 Tags Under Development

The following tags will be added to the Security Definition (tag 35-MessageType=d) message template for future CME Group implementation.

Table 2.10. Security Definition (tag 35-MessageType=d) Message

Tag	FIX Name	Format	Valid Values	Description
454	NoSecurityAltID	NumInGroup(1)		<p>Number of entries in AltID group.</p> <p>This tag is under development</p>
→455	SecurityAltID	String(150)		<p>Expanded instrument description.</p> <p>This tag is under development</p>

Table 2.10. Security Definition (tag 35-MessageType=d) Message

Tag	FIX Name	Format	Valid Values	Description
→456	SecurityAltIDSource	String(1)		Identifies class or source of the tag 455-SecurityAltID value. This tag is under development
→1093	LotType	Char(1)	2=TBD 3 =TBD	The quantity type used for the leg of the spread. This tag is required to interpret the value in tag 1231-MinLotSize. These tag values are under development. See Table 2.7 on Page 25 for valid values.

2.8 Template Enhancements

The following enhancements will impact the templates for FIX/FAST 2.0.

2.8.1 Template Versioning

The **templates.xml** file will be versioned each time an update is made. This will allow customers to determine whether the client system has the latest templates or if they need to download and apply the new **templates.xml** file.

The version number will change whenever there is a change to the template, such as a(n):

- addition/removal/modification of a FIX tag
- addition/removal/modification of a FIX tag value
- addition of a new template

2.8.2 FIX Tag Name Change

The name of tag 1180-AppFeedID will be changed to tag 1180-AppIID. Client systems must handle this tag appropriately to identify messages originating from the TCP Replay feed and receive channel ID information.

This name change will impact the following message types:

- Logout (tag 35-MessageType=5) message
- Logon (tag 35-MessageType=A) message
- Security Definition (tag 35-MessageType=d) message
- Market Data Request (tag 35-MessageType=V) message

2.8.3 FIX Version Update

The version of FIX being implemented by CME Globex will change from version 5.0 Service Pack 1 to version 5.0 Service Pack 2. Currently, the constant value for tag 1128-AppVerID is set to 8=FIX version 5.0 Service Pack 1. Beginning with this release, the constant value for tag 1128-AppVerID will always be 9=FIX version 5.0 Service Pack 2 in the template for messages containing the tag.

2.9 Last Trade Data Block

Currently, the Last Best Price data block can carry market data for a last trade price or for an exchange best bid/ask price. When there is a change in one of those two values, the Market Data Snapshot Full Refresh (tag 35-MsgType=W) message is updated.

Beginning with this release, the Last Best Price data block will only be used to send market data for the last trade price and will now be called the Last Trade data block. Tag 276-QuoteCondition will not be sent as part of the Last Trade data block. As a result, the Market Data Snapshot Full Refresh (tag 35-MsgType=W) message will no longer be updated because of a new Exchange Best (tag 276-QuoteCondition=C) value for an instrument.

Note: No other message types will be impacted by this enhancement.

Table 2.11. FIX Syntax for Last Trade Data Block on the Market Data Snapshot Full Refresh (tag 35-MsgType=W) Message

Tag	FIX Name	Value	Description
22	SecurityIDSource	8	Identifies source of tag 48-SecurityID value. This value is always 8 for CME and is required if tag 48-SecurityID is specified.
48	SecurityID		Unique instrument ID as qualified by the exchange per tag 22-SecurityIDSource.
83	RptSeq		Sequence number per Instrument update.
279	MDUpdateAction	0	0 = New. Type of Market Data update action.
269	MDEntryType	2	2 = Trade
270	MDEntryPx	9550.00	Price of the Market Data Entry.
273	MDEntryTime		Time of Market Data Entry.
274	TickDirection	0 = Plus Tick 2 = Minus Tick	Identifier for Trading Session.
451	NetChgPrevDay		Net change from previous day's closing price vs. last traded price.
1020	TradeVolume		Total traded volume since the beginning of the session.

The following tag will no longer be sent in the Market Data Snapshot Full Refresh (tag 35-MsgType=W) message in FIX/FAST 2.0.

Table 2.12. Last Best Price Data Block - Removed Tags

Tag	FIX Name	Format	Valid Values	Description
277	TradeCondition	MultipleValueString 2 (1)	U=Exchange Best	Space-delimited list of conditions describing a trade. Tag 277 is not sent for a last trade price.

2.10 Trade Volume for CME Globex Calculated Price Instruments

Currently, volume for legs of spreads with prices calculated by CME Globex are ignored when calculating the value of tag 1020-TradeVolume in the Market Data Snapshot Full Refresh (tag 35-MessageType=W) message. Beginning with this release, volume for legs of spreads with prices calculated by CME Globex will be included in the calculation of the total session trade volume. Legs of spreads with prices calculated by CME Globex in the Market Data Incremental Refresh (tag 35-MessageType=X) message contain the following tags:

- tag 279-MDUpdateAction=0 (New)
- tag 269-MDEntryType=2 (Trade)
- tag 277-TradeCondition=1 (Price calculated by CME Globex)
- tag 1020-TradeVolume (Total traded volume since the beginning of the session)

3. Settlement Price Types

CME Globex will begin sending three types of settlement prices in the Market Data Incremental Refresh (tag 35-MessageType=X) message:

- Actual Preliminary Settlement
- Net Change Preliminary Settlement
- Final Settlement.

The e-mini, e-micro, and miNY products use the preliminary settlement price of their corresponding full-sized product. When the full-sized product has a smaller minimum tick increment than the corresponding e-mini, e-micro, or miNY product, the preliminary settlement price may be off-tick. To accommodate this off-tick preliminary settlement price, all products that settle to another product's settlement price (the e-mini, miNY, and micro products) are evaluated for settlement price rounding and the resulting Net Change Preliminary settlement price, rounded if required, is then sent to customers. For products that do not have a settlement price rounding evaluation, tag 286-OpenCloseSettleFlag=101 indicates an Actual Preliminary settlement price and tag 286-OpenCloseSettleFlag=100 indicates Net Change Preliminary settlement price.

In the following example, the E-mini S&P 500 Future settles to the S&P 500 Future settlement price:

Product	Minimum Tick Increment
S&P 500 Future (tag 1151-SecurityGroup=SP)	0.10
E-mini S&P 500 Future (tag 1151-SecurityGroup=ES)	0.25

1. The S&P 500 Future settles at 1213.60.
2. The E-mini S&P 500 Future settlement price of 1213.60 is sent and marked as an Actual preliminary settlement price (tag 286-OpenCloseSettleFlag=101).
3. The settlement price 1213.60 is evaluated for rounding and must be rounded to 1213.50 to align with the E-mini S&P 500 Future minimum tick increment.
4. The E-mini S&P 500 Future settlement price of 1213.50 is sent and marked as a Net Change preliminary settlement price (tag 286-OpenCloseSettleFlag=100).

When the Actual preliminary settlement price is on-tick for the e-mini, e-micro, and miNY products, CME Globex will continue to send a Net Change preliminary settlement price with the identical settlement price. For example:

1. The S&P 500 Future settles at 1213.50.
2. The E-mini S&P 500 Future settlement price of 1213.50 is sent and marked as an Actual preliminary settlement price (tag 286-OpenCloseSettleFlag=101).
3. The settlement price 1213.50 is evaluated for rounding and is not required to align with the E-mini S&P 500 Future minimum tick increment.
4. The E-mini S&P 500 Future settlement price of 1213.50 is sent and marked as a Net Change preliminary settlement price (tag 286-OpenCloseSettleFlag=100).

All other (“non-rounded”) products are settled to their own trade prices and are always on-tick. For these products, only the Actual Preliminary is sent. For non-rounded products, that is, those that do not have a settlement price rounding evaluation, tag 286-OpenCloseSettleFlag=100 indicates an Actual Preliminary settlement price. Tag 286-OpenCloseSettleFlag=101 is not sent for these products since their settlement prices are always on-tick.

Refer to the following link for more information on settlement prices: <http://www.cmegroup.com/market-data/settlements/>.

The following tables show the tags that will be included in the Market Data Incremental Refresh (tag 35-MsgType=X) message for each settlement price type.

Table 3.1. E-mini, e-micro, and miNY Products: Net Change Preliminary Price

Tag	FIX Name	Format	Sample Value	Description
75	TradeDate	LocalMkt Date (8)	20100615	Indicates current session date in YYYYMMDD format.
64	SettleDate	LocalMkt Date (8)	20100614	Settlement Date to which this price applies in YYYYMMDD format.
286	OpenCloseSettle Flag	Int (3)	100	Flag to indicate the type of entry The following value is now available: 100 = Net Change Preliminary
269	MDEntryType	Char (1)	6	Type of Market Data entry. 6 = Settlement Price

Table 3.2. E-mini, e-micro, and miNY Products: Actual Preliminary Price

Tag	FIX Name	Format	Sample Value	Description
75	TradeDate	LocalMkt Date (8)	20100615	Indicates current session date in YYYYMMDD format.
64	SettleDate	LocalMkt Date (8)	20100614	Settlement Date to which this price applies in YYYYMMDD format.
286	OpenCloseSettle Flag	Int (3)	101	Flag to indicate the type of entry The following value is now available: 101 = Actual Preliminary
269	MDEntryType	Char (1)	6	Type of Market Data entry. 6 = Settlement Price

Table 3.3. Non-rounded Products: Preliminary Settlement

Tag	FIX Name	Format	Sample Value	Description
75	TradeDate	LocalMkt Date (8)	20100615	Indicates current session date in YYYYMMDD format.
64	SettleDate	LocalMkt Date (8)	20100614	Settlement Date to which this price applies in YYYYMMDD format.
286	OpenCloseSettleFlag	Int (3)	100	Flag to indicate the type of entry The following value is now available: 100 = Actual Preliminary
269	MDEntryType	Int (1)	6	Type of Market Data entry. 6 = Settlement Price

Table 3.4. Final Settlement

Tag	FIX Name	Format	Sample Value	Description
75	TradeDate	LocalMkt Date (8)	20100309	Indicates session date of trade referenced in this message in YYYYMMDD format.
64	SettleDate	LocalMkt Date (8)	20100309	Settlement Date for the instrument. The format is YYYYMMDD
269	MDEntryType	Int (1)	6	Type of Market Data entry. 6 = Settlement Price

Note: The final settlement will not contain tag 286-OpenCloseSettleFlag.

See "Settlement Price Type" on page 26 for information on enhancements to the Security Definition (tag 35-MsgType=d) Message related to settlement price types.

3.1 Revision History

Version	Date	Author	Description
1.0	1/15/2010	DT	Initial Release
1.1	2/1/2010	CR	Updates to timeline and additional updates throughout document.
1.2	2/5/2010	DT	<ul style="list-style-type: none"> • Added information about CME Globex Notices to "Testing and Certification Requirements" on page 7. • Clarified description of Last Best Price data block in "Last Trade Data Block" on page 30. • Made minor text updates to "Last Trade Data Block" on page 30 and Table 2.11, "FIX Syntax for Last Trade Data Block on the Market Data Snapshot Full Refresh (tag 35-MessageType=W) Message," on page 30.
1.3	2/22/2010	DT	<ul style="list-style-type: none"> • Updated format for tag 779-LastUpdateTime to UTCTimeOnly (17) in "Dynamic User Defined Spread (UDS) Instrument Delete" on page 23. • Added value M=Modify [under development] for tag 980-SecurityUpdateAction in "Dynamic User Defined Spread (UDS) Instrument Delete" on page 23. • Added note to "Last Trade Data Block" on page 30. • Changed repaint to refresh throughout.

Version	Date	Author	Description
1.4	3/31/2010	DT	<ul style="list-style-type: none"> • Updated settlement price type bullet item in "Client System Impact Summary" on page 8. • Updated "Preamble" on page 11 to state that Preamble is in Big Endian format. • Updated PMAP in the diagram in "Preamble" on page 11 to have variable bytes. • Updated PMAP in the diagram in "Preamble Implementation for TCP Replay" on page 13 to have variable bytes. • Updated Temp ID in the diagram in "Preamble Implementation for TCP Replay" on page 13 to have variable bytes. • Made updates throughout "Security Definition (tag 35-MsgType=d) Message Enhancements" on page 25. • Updated Table 2.7, "Lot Type Rules Data Block," on page 25. • Updated "Settlement Price Type" on page 26. • Added 1093-LotType=2,3 to "Tags Under Development" on page 27 • Added "Settlement Price Types" on page 33. • Updated tag 75-TradeDate description throughout.

Version	Date	Author	Description
1.5	4/14/2010	DT	<ul style="list-style-type: none"> • Updated dates for Brazilian Mercantile and Futures Exchange BOVESPA (Bolsa de Mercadorias & Futuros) in "Key Customer Dates and Events" on page 4. • Added bullet for Settlement Price Types to list in "Client System Impact Summary" on page 8. • Added note to "Order Book Reset" on page 15 • Added section "Order Book Reset - Prior to FIX/FAST 2.0" on page 18. • Added that enhancements for spread leg identification are only for UDS instruments in "Spread Leg Identification" on page 26. • Added note about tag 286-OpenCloseSettleFlag after Table 3.3, "Non-rounded Products: Preliminary Settlement," on page 35.
1.6	4/27/2010	NU	<ul style="list-style-type: none"> • Updated Table 2.9 on Page 27. • Updated "Settlement Price Types" on page 33 - replaced Rounded and Non-Rounded Preliminary Settlement with Actual and Net Change Preliminary Settlement.
1.7	5/5/10	NU	<ul style="list-style-type: none"> • Updated section "Introduction" to include new mock trading date and production parallel channel information.
1.8	5/21/2010	DT	<p>"Key Customer Dates and Events" on page 4</p> <ul style="list-style-type: none"> • updated first, second, fourth and fifth bullets. • added third bullet about mock trading on Saturday, June 5th. <ul style="list-style-type: none"> • Updated bullet above table on page 5. • Added Tuesday and Thursday 9:00 a.m. Order Book Resets information to New Release Environment column of table on page 5.