



Quote MTF

ITCH 4.0 Specification

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Revision History

Date	Version	Author	Description of Change
28 June, 2011	1.00	Corina Visescu	Document created. Changed all Numeric fields to Integer and assigned 4 bytes length to each. Added the Order Replace Message. Removed long form messages due to binary fields are used.
6 July, 2011	1.00	Corina Visescu	Added solution for the Order Replace section if a client changes the price. Replaced Symbol with Instrument ID for identification.
9 August 2011	1.00	Corina Visescu	Added Reserved field under the System event message. Added Shortable and Market message types under Stock Directory. Changed the value of the Instrument ID to Integer in the Stock trading action table. Removed of the Side Indicator message type and replaced it with Reserved. Changed explanations for Order Reference Number message type in both the Order delete message table and the Order cancel message table. Changed explanation for Match Number message type in the Broken trade message table.
29 September 2011	1.01	Corina Visescu	Added Clearing Exempt indicator in Order Executed and Trade messages.



1. Overview

Quote MTF ITCH 4.0 is a direct data feed product offered by Quote MTF, which features the following data elements:

- 1) **Order level data:** Quote MTF will provide its full order depth using the standard ITCH format. ITCH uses a series of messages of order messages to track the life of a customer order. As an added feature, ITCH 4.0 message formats might support Quote MTF market participant attribution in the future.
- 2) **Trade messages:** To ensure that customers have complete information about Quote MTF order flow, ITCH 4.0 supports a trade message to reflect a match of a non-displayable order in the Quote MTF system. ITCH 4.0 also supports a separate trade message to reflect Quote MTF cross transactions.
- 3) **Administrative messages**, such trading actions and symbol directory messages:
 - a) **Trading action** messages are used to inform market participants when a security is halted or released for trading.
 - b) **Symbol Directory** messages provide basic security data such as the market tier and Financial Status Indicator.
 - c) **Event controls**, such as start of day, end of day and emergency market halt/resume.

2. Architecture

The ITCH 4.0 feed is made up of a series of sequenced messages. The messages that make up the ITCH 4.0 protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

Quote MTF offers the ITCH 4.0 data feed in SoupTCP protocol as well as QTP protocol option. Please refer to Quote MTF SoupTCP specification document and Quote MTF QTP specification document for the detail of protocol.

ITCH is an outbound market data feed only. The ITCH protocol does not support order entry. For information on Quote MTF order entry protocols, please refer to the Fix Connectivity Manual of the Quote MTF website.



3. Data types

All integer fields are unsigned big-endian (network byte order) binary encoded numbers. All alpha fields are left justified and padded on the right with spaces. Prices are integer fields and are given in decimal format with 5 whole number places followed by 5 decimal digits.

3.1 Security Identification

Instruments are identified by 2-bytes Instrument ID assigned by QMTF. The whole list of Instrument IDs, the mapping from Instrument ID to ISIN and the mapping from Instrument ID to Security Symbols can be obtained from QMTF's website in CSV format or from "Stock Directory" message being sent at start-of-day.

4. Message Formats

The ITCH feed is composed of a series of messages that describe orders added to, removed from, and executed on Quote MTF as well as disseminates Stock trading action and Stock Directory information.

4.1 Time Messages

For bandwidth efficiency reasons, Quote MTF will use separate time stamp messages for the ITCH 4.0 product. The messages will be sequenced so that data feed recipients can apply the time stamps properly. The time stamp is broken into two separate messages: seconds and milliseconds. Please note that the timestamp for new seconds will always be immediately followed by a time stamp for new milliseconds.

4.1.1 Seconds Message

This message is sent every second for which at least one ITCH 4.0 message is being generated.



Seconds message

Name	Offset	Length	Value	Notes
Message Type	0	1	"T"	Seconds Message.
Reserved	1	3	Alphanumeric	Reserved
Second	4	4	Integer	Number of second since midnight.

4.1.2 Milliseconds Message

This message is sent every millisecond for which at least one ITCH 4.0 message is being generated.

Milliseconds message

Name	Offset	Length	Value	Notes
Message Type	0	1	"M"	Milliseconds Message.
Reserved	1	3	Alphanumeric	Reserved
Millisecond	4	4	Integer	Number of milliseconds since last second.

4.2 System Event Message

The system event message type is used to signal a market or data feed handler event. The format is as follows:

System event message

Name	Offset	Length	Value	Notes
Message Type	0	1	"S"	System Event Message.
Event Code	1	1	Alphanumeric	See System Event Codes below.
Reserved	2	2	Alphanumeric	Reserved

Quote MTF supports the following event codes on a daily basis.

System event codes – daily

Code	Explanation
"O"	<i>Start of Messages.</i> Outside of time stamp messages, the start of day message is the first message sent in any trading day.



"P"	<i>Start of Pre-Open.</i> This event message is intended to indicate pre-open market hours; orders are accepted but can only be executed after market open.
"Q"	<i>Start of Market hours.</i> This message is intended to indicate that Market Hours orders are available for execution.
"M"	<i>End of Market hours.</i> This message is intended to indicate that Market Hours orders are no longer available for execution.
"C"	<i>End of Messages.</i> This is always the last message sent in any trading day.

4.3 Stock Related Messages

At the start of each trading day, Quote MTF disseminates stock directory messages for all active symbols.

Market data redistributors should process this message to populate the Financial Status Indicator (required display field) and the Market Category (recommended display field) for Quote MTF-listed issues.

4.3.1 Stock directory

Stock directory

Name	Offset	Length	Value	Notes
Message Type	0	1	"R"	Stock Directory Message
Round Lots Only	1	1	Alphabetic	Indicates if QMTF system limits order entry for issue "Y" = only round lots are accepted in this stock "N" = odd/mixed lots are allowed
Stock	2	10	Alphanumeric	Denotes the security symbol used for Quote MTF in Uniform MTF Symbol format.
Round Lot Size	12	4	Integer	Indicates the number of shares that represent a round lot for the issue
Instrument ID	16	2	Integer	QMTF internal instrument identifier
Shortable	18	1	Alphanumeric	Indicates the short status of security. "E" is short exempt. "S" is shortable. "N" is non shortable.



Market	19	1	Alphanumeric	Indicates the listing market of security.
ISIN	20	12	Alphanumeric	Indicates the ISIN of the security
Currency	32	3	Alphabetic	Indicates currency for the symbol
Reserved	35	1	Alphanumeric	Reserved

4.3.2 Stock Trading Action

Quote MTF uses this administrative message to indicate the current trading status of a security to the trading community.

Securities may be halted in the Quote MTF system for both regulatory and operational reasons.

After the start of system hours, Quote MTF will use the Trading Action message to relay changes in trading status for an individual security. Messages will be sent when a stock is halted, is released for quotation, or is released for trading.

Stock trading action

Name	Offset	Length	Value	Notes
Message Type	0	1	"H"	Stock Trading Action Message.
Trading State	1	1	Alphabetic	"H" = Halted "T" = Trading on Quote MTF
Instrument ID	2	2	Integer	QMTF internal instrument identifier

4.3.3 Add Order Message

An Add Order Message indicates that a new order has been accepted by the Quote MTF system and was added to the displayable book. The message includes a day-unique Order Reference Number used by Quote MTF to track the order.

The following message will be generated for orders in the Quote MTF system.



Add order message

Name	Offset	Length	Value	Notes
Message Type	0	1	"A"	Add Order Message.
Buy/Sell Indicator	1	1	Alphabetic	The type of order being added. "B" = buy order. "S" = sell order.
Instrument ID	2	2	Integer	QMTF internal instrument identifier, to which order has been added
Order Reference Number	4	4	Integer	The unique reference number assigned to the new order. The order reference number is increasing, but not necessarily sequential.
Shares	8	4	Integer	The total number of shares associated with the order being added to the book.
Price	32	4	Integer	The display price of the new order. Refer to Data Types for field processing notes.

4.3.4 Modify Order Messages

Modify Order messages always include the Order Reference Number of the Add Order to which the update applies. To determine the current display shares for an order, ITCH 4.0 subscribers must deduct the number of shares stated in the Modify message from the original number of shares stated in the Add Order message with the same reference number. Quote MTF may send multiple Modify Order messages for the same order reference number and the effects are cumulative. When the number of display shares for an order reaches zero, the order is dead and should be removed from the book.

If the client changes the price on an order to replace and this change produces trades, therefore: 1. An Order Delete message is sent for the original order; 2. Send execution report(s); 3. Send add order for the remaining quantity with the new price.

4.3.4.1 Order Executed Message



This message is sent whenever an order on the book is executed in whole or in part. It is possible to receive several Order Executed Messages for the same order if that order is executed in several parts. The multiple Order Executed Messages on the same order are cumulative.

By combining the executions received via Order Executed Messages and Trade Messages, it is possible to build a complete view of all executions that happen on Quote MTF.

Order executed message

Name	Offset	Length	Value	Notes
Message Type	0	1	"E"	Order Executed Message.
Clearing Exempt	1	1	Alphabetic	The value of this field is set to "Y" if the trade was a clearing exempt self-trade, otherwise it is set to "N".
Reserved	2	2	Alphanumeric	Reserved
Order Reference Number	4	4	Integer	The order reference number associated with the executed order.
Executed Shares	8	4	Integer	The number of shares executed.
Match Number	12	4	Integer	The Quote MTF generated day-unique Match Number of this execution. The match number is also referenced in the Trade Break Message.

4.3.4.2 Order Delete Message

This message is sent whenever an order on the book is being cancelled. All remaining shares are no longer accessible so the order should be removed from the book.

Order delete message

Name	Offset	Length	Value	Notes
Message Type	0	1	"D"	Order Delete Message.
Reserved	1	3	Alphanumeric	Reserved
Order Reference Number	4	4	Integer	The reference number of the order being canceled. References a previously sent Add Order Message.



4.3.4.3 Order Replace Message

This message is sent whenever an order on the book has been canceled-replaced. Order replaced means that either the order quantity increased or the price has changed and the order loses its priority and becomes the last one on its price level. All remaining shares from the original order are no longer valid. The new order details are provided for the replacement, along with a new order reference number which will be used henceforth. Since the side, stock symbol and attribution (if any) cannot be changed by an Order Replace event, these fields are not included in the message.

Order replace message

Name	Offset	Length	Value	Notes
Message Type	0	1	"U"	Order Replace Message.
Reserved	1	3	Alphanumeric	Reserved
Original Order Reference Number	4	4	Integer	The original reference number of the order being replaced.
New Order Reference Number	8	4	Integer	The new reference number for this order at time of replacement.
Shares	12	4	Integer	The new total displayed quantity.
Price	16	4	Integer	The new display price for the order.

4.3.4.4 Order Cancel Message

This message is sent whenever an order on the book is modified as a result of a partial cancellation. Partial cancellation happens when the order quantity drops, price stays the same and the order will not lose its priority.

Order cancel message

Name	Offset	Length	Value	Notes
Message Type	0	1	"X"	Order Cancel Message.
Reserved	1	3	Alphanumeric	Reserved



Order Reference Number	4	4	Integer	The reference number of the order being reduced. References a previously sent Add Order Message.
Cancelled Shares	8	4	Integer	The number of shares to be removed from the display size of the order as the result of a cancellation

4.3.4.5 Trade Message

The Trade Message is designed to provide execution details for normal match events involving non-displayable order types.

Since no Add Order Message is generated when a non-displayed order is initially received, Quote MTF cannot use the Modify Order message for all matches. Quote MTF therefore developed this message to indicate when a match occurs between non-displayable order types. A Trade Message is transmitted each time a non-displayable order is executed in whole or in part. It is possible to receive multiple Trade Messages for the same order if that order is executed in several parts. Trade Messages for the same order are cumulative.

Trade Messages should be included in Quote MTF time-and-sales displays as well as volume and other market statistics. Since Trade Messages do not affect the book, however, they may be ignored by firms just looking to build and track the Quote MTF display.

Trade message

Name	Offset	Length	Value	Notes
Message Type	0	1	"P"	Trade Message Identifier
Clearing Exempt	1	1	Alphabetic	The value of this field is set to "Y" if the trade was a clearing exempt self-trade, otherwise it is set to "N".
Instrument ID	2	2	Integer	QMTF internal instrument identifier
Order Reference Number	4	4	Integer	The unique reference number assigned to the order on the book being executed.
Shares	8	4	Integer	The number of shares being matched in this execution.



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Price	12	4	Integer	The match price of the order. Refer to Data Types for field processing notes.
Match Number	16	4	Integer	The QMTF generated day-unique Match Number for this trade. The Match Number is referenced in the Trade Break Message.

4.4 Broken Trade/Order Execution Message

The Broken Trade Message is sent whenever an execution on Quote MTF is broken. An execution may be broken if it is found to be “clearly erroneous” pursuant to Quote MTF’s Clearly Erroneous Policy. A trade break is final; once a trade is broken, it cannot be reinstated.

Firms that use the ITCH feed to create time-and-sales displays or calculate market statistics should be prepared to process the broken trade message. If a firm is only using the ITCH feed to build a book, however, it may ignore these messages as they have no impact on the current book.

Broken trade message

Name	Offset	Length	Value	Notes
Message Type	0	1	“B”	Broken Trade Message.
Reserved	1	3	Alphanumeric	Reserved
Match Number	4	4	Integer	The Quote MTF Match Number of the execution that was broken. This refers to a Match Number from a previously transmitted Order Executed Message or Trade Message.