FASTMATCH

Accelerating Forex Trading to the Next Level

- Superior Quality Order Flow
- Fast Technology
- Innovative Functionality
- Transparency

# FIX STRAIGHT THROUGH PROCESSING SPECIFICATION

| Revision History | | |
|---|---|---|
| Version | Last Updated | Updates |
| 1.0 | November 16, 2015 | |
| | | |

# INTRODUCTION

## 1.1 PURPOSE

This document is provided as a guide for FASTMATCH clients, as to how the FIX Protocol may be used to establish connectivity with FASTMATCH for the purposes of Straight-Through Processing.

It is intended to provide a guideline for the purpose of getting trade event information over FX on the FASTMATCH platform using the FIX 4.2 version of the protocol. All counterparties will need to certify their trading system with FASTMATCH in the User Acceptance Testing ("UAT") environment before being called production ready.

Financial Information eXchange ("FIX") Protocol is a bi-directional messaging series developed for the purpose of transferring financial information in a timely matter. This document is intended as a supplement to the published FIX Protocol Specification, which may be found at http://www.fixprotocol.org.

## 1.2 CONTENT

Included in this document are the following:

- General definitions and specifications for clients using FIX to receive trade events.
- FIX message formats to be used and details of their expected parameters.

## 1.3 SCOPE

The FIX Interface provides and supports two distinct connections:

- STP. A Separate FIX session to receive trade information.

# 2 CONNECTIVITY

## 2.1 FASTMATCH MATCHING ENGINE LOCATIONS

FASTMATCH matching engine is located in Equinix NY4, LD4 and TY3 Data Centers:

- NY4, 755 Secaucus Road, Secaucus, NJ 07094
- LD4, 2 Buckingham Avenue, Slough, Berkshire, SL1 4NB
- TY3, 1-9-20 Edagawa Koto-Ku Tokyo 135-0051

## 2.2 CONNECTIVITY OPTIONS

- Clients have a choice of establishing cross-connect and internet connectivity to FASTMATCH NY4, LD4 and TY3 locations.
- Local cross-connect to FASTMATCH ECN cages in NY4, LD4 and TY3 data centers could be used for both Production and UAT access.
- Metro connections from other data centers are accepted.
- Order Entry and Market Data FIX traffic will be TCP based with unique target (IP:port) for each FIX session.
- No multicast traffic will travel via client connectivity.
- To start UAT certification process, client can establish the Internet connectivity to FASTMATCH.

## 2.3 CROSS-CONNECTIVITY

- All client cross-connect connectivity is 1Gpbs Multimode or Single-mode fiber.
- FASTMATCH will issue a client a LOA to connect to FASTMATCH ECN with up to two fiber cross-connects.
- To avoid delays, we ask a client to confirm the correct firm or third-party agent name to be used in LOA.
- If two cross-connects are ordered, then they will be connected the different access switches for redundancy.
- BGP is preferred choice even on a single cross-connect connection for support purposes. And static routing is accepted if client hardware cannot support BGP.
- FASTMATCH will advertise registered IP address space from a registered BGP ASN.
- Cross-connect will be addressed using RFC 1918 address space (preferred). Registered IP space could be used to avoid the IP address conflict.
- FASTMATCH will accept client's registered IP Address and BGP ASN. If required, FASTMATCH will assign client's server farm IP addresses and BGP ASN.

## 2.4 INTERNET CONNECTIVITY

Internet connectivity is available at NY4, LD4 and TY3 locations. There are two internet providers at every location. They may be utilized as main and failover connections. The main connection can be selected based on roundtrip statistics.

## 2.5 SYSTEM/SERVICE AVAILABILITY

### 2.5.1 SESSION AVAILABILITY:

Market hours for STP is the same as for streaming and trading: the market opens on Sunday at 5:30 PM NY time and closes on Friday at 5:00 PM NY time. The FIX trade service is off-line from 17:00:00 EST/EDT until 17:30:00 EST/EDT, Daily Monday through Thursday. During this time FASTMATCH resets the inbound and outbound FIX sequence numbers on all FIX trade sessions.

To successfully connect after 17:30:00 EST/EDT, STP sessions must send Logon messages with initial sequence numbers of one (1). FASTMATCH's reply Logon message will also have an initial sequence number of one (1).

FASTMATCH will send a Logout message to disconnect all active client sessions at 5:00 PM EST/EDT. Upon receiving the Logout message (35=5), a client should disconnect via a Logout message. Upon reconnecting to the FASTMATCH FIX Gateway, the inbound and outbound sequence numbers must be reset to one (1).

## 2.6 CONNECTING INTRADAY

For intraday logons, clients should maintain persistence and logon using the next sequence number. This will allow clients to trade information that occurred during a period of disconnection.

If required, a client can set ResetSeqNumFlag tag 141=Y and send Logon messages with an initial sequence number set to one (1). The FASTMATCH Logon reply message will also have an initial sequence number equal to one (1).

## 2.7 FIX PROTOCOL VERSIONS

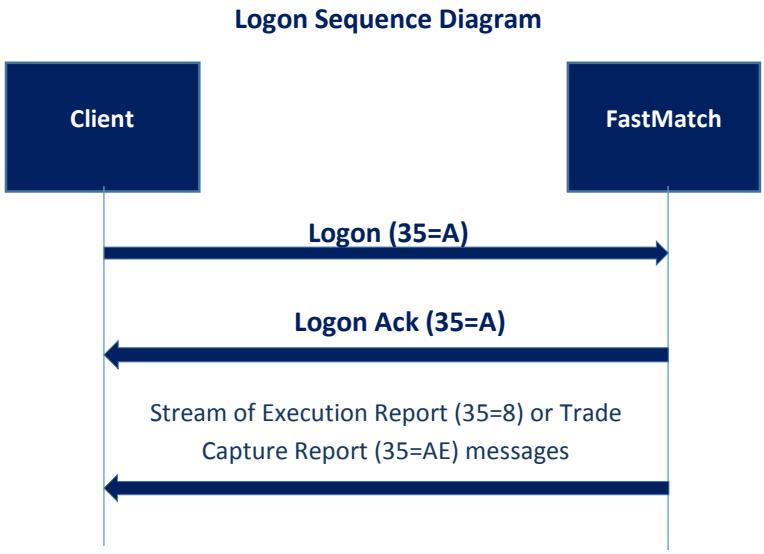
The FASTMATCH FIX Interface is based upon FIX 4.2 and FIX 4.4.

## 2.8 SUPPORTED MESSAGE SET

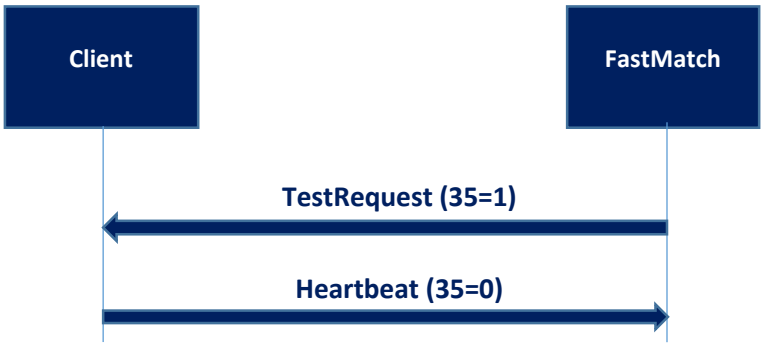
The supported message set is as follows:

### 2.8.1 SESSION LEVEL MESSAGES

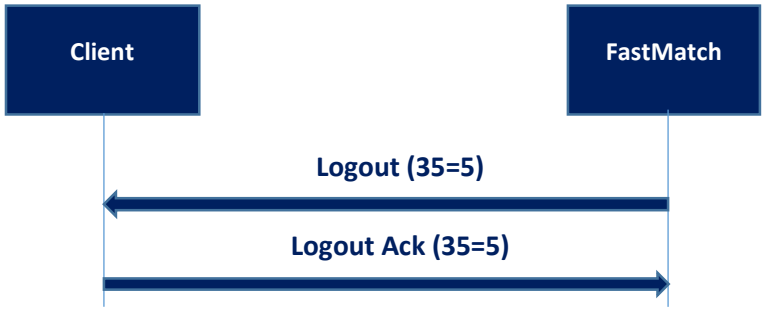
| Direction | Message Name | FIX Code | Purpose |
|---|---|---|---|
| In | Logon | A | Establish connection, trigger message sequence number reset. |
| In, Out | Heartbeat | 0 | Monitor connection status |
| In, Out | TestRequest | 1 | Inquire connection status |
| In/Out | Resend Request | 2 | The resend request is sent by the receiving application to initiate the retransmission of messages |
| In, Out | Reject | 3 | Reject a single invalid message (session reject) |
| In, Out | Logout | 5 | Disconnect |



HeartBeat Sequence Diagram




Logout Sequence Diagram




### 2.8.2 BUSINESS MESSAGES

Per client request FASTMATCH STP session can be configured for streaming either Execution Report (35=8) or Trade Capture Report (35=AE) messages.

| Direction | Message Name | FIX Code | Purpose |
|---|---|---|---|
| Out | Execution Report | 8 | To provide notification of: order fills and partial fills |
| Out | Trade Capture Report | AE | To provide notification of: order fills and partial fills |

## 2.9 FIX MESSAGE ENCRYPTION

Encryption of FIX messages themselves is not supported.

## 2.10 ESTABLISH CONNECTION / DISCONNECTION

### 2.10.1 CONNECT

Connection to the system is initiated by the client issuing a FIX Logon message.

If the connection can be accepted, then FASTMATCH will send a response Logon message (35=A) as an acknowledgement.

By default Fastmatch does not send TradingSessionStatus message on Logon. However in some cases clients can be configure to receive it.

### 2.10.2 DISCONNECT

Closing of a connection to the system is initiated by sending a Logout message (35=5) to the opposite party. This should then be acknowledged by the other party with a counter Logout message. Either the client or FASTMATCH may initiate disconnect.

### 2.10.3 PRICE CONVENTIONS

The number of decimal places given in published prices and honored upon prices on submitted orders will be configured by FASTMATCH. Market data precision will follow standard OTC spot market conventions. FASTMATCH supports one-tenth of a pip for market data and one-hundredth of a pip for trading. (i.e. 5 decimals for market data and 6 decimal for trading for EUR/USD and 3 and 4 decimals correspondingly for USD/JPY). If an order is placed with precision exceeding standard, it will be rounded down to the standard precision.

## 2.11 ORDER EXECUTION NOTIFICATIONS

On a successful login FASTMATCH will send a series of Execution Report or Trade Capture Report messages to the client to provide notification regarding order execution events.

Execution Report messages are used to indicate:

- Order partially filled
- Order filled

# 3 SESSION MESSAGE DEFINITIONS

## 3.1 LOGON (MSGTYPE = A)

| Tag | Fieldname | Req'd | Comments | Example |
|---|---|---|---|---|
| 35 | MsgType | Y | Defines message Type | A |
| 98 | EncryptMethod | Y | Allowed value: 0 (None) | 0 |
| 108 | HeartBtInt | Y | The heartbeat interval. This will be set by agreement between the client and FASTMATCH. | 30 |

| | | | | |
|---|---|---|---|---|
| 141 | ResetSeqNumFlag | N | Indicates both sides of the FIX session should reset sequence numbers. Should only be specified when this message is sent to instruct a sequence number reset. | Y |
| 554 | Password | N | This may be set for messages sent by the client, to initiate a connection. This field can be populated with the password that has been assigned by FASTMATCH for clients connecting over the internet. Not needed for messages used only to reset sequence numbers for an existing connection. | FASTMATCH Provided Password |

### 3.2 RESEND REQUEST

| Tag | Fieldname | Req'd | Comments | Example |
|---|---|---|---|---|
| 35 | MsgType | Y | Defines message Type | 2 |
| 7 | BeginSeqNo | Y | To request a single message: BeginSeqNo = EndSeqNo | 53 |
| 16 | EndSeqNo | Y | To request a range of messages: BeginSeqNo = first message of range, EndSeqNo = last message of range<br><br>To request all messages subsequent to a particular message: BeginSeqNo = first message of range, EndSeqNo = 0 | 57 |

## 4 FIX BUSINESS MESSAGE DEFINITIONS

Per client request FASTMATCH STP session can be configured for streaming either Execution Report (35=8) or Trade Capture Report (35=AE) messages.

### 4.1 EXECUTION REPORT (MSGTYPE = 8)

| Tag | Fieldname | Req'd | Comments | Example |
|---|---|---|---|---|
| 35 | MsgType | Y | Defines message Type | 8 |
| 11 | ClOrdID | Y | The ClOrdID of your order, except for Pending Cancels, where it will be the ClOrdID of the cancel request. | clientOrder_123 |
| 37 | OrderID | Y | Order ID assigned by FASTMATCH | FASTMATCHO_123 |
| 17 | ExecID | Y | Unique identifier of execution message as assigned by broker. Uniqueness must be guaranteed within a single trading day or the life of a multi-day order, but duplicates may occur for rejects. | 1 |
| 20 | ExecTransType | Y | 0 = New | 0 |
| 375 | ContraBroker | N | Identifies contra broker. Standard NASD market-maker mnemonic is preferred | CITI |
| 40 | OrdType | Y | OrdType | D |
| 150 | ExecType | Y | Describes the specific event. Valid values:<br>1 = Partially Filled<br>2 = Filled (FIX 4.2)<br>F = Trade (FIX 4.4.) | F |
| 39 | OrdStatus | Y | Describes the current state of the order:<br>1 = Partial Filled<br>2 = Filled | 2 |
| 55 | Symbol | Y | Currency pair in format CCY1/CCY2 | EUR/USD |
| 54 | Side | Y | Side of order values<br>1 = Buy | 1 |

| | | | | |
|---|---|---|---|---|
| | | | 2 = Sell | |
| 38 | OrderQty | Y | OrderQty represents the amount expressed in units of currency specified by the Currency field. Note OrderQty must be capable of representing large values with at least 2 decimal places. | 10000 |
| 44 | Price | N | Price at which the order was requested (if requested). | 1.12345 |
| 151 | LeavesQty | Y | Amount of units open for further execution. If the OrdStatus is Expired, or Rejected (in which case the order is no longer active) then LeavesQty could be 0, otherwise LeavesQty = OrderQty - CumQty.(Prior to FIX 4.2 this field was of type int) | 0 |
| 14 | CumQty | Y | Total number of units filled.(Prior to FIX 4.2 this field was of type int) | 0 |
| 32 | LastQty | N | Number of units filled in this fill | 0 |
| 15 | Currency | Y | Identifies currency used for the quantities | USD |
| 31 | LastPx | C | Price of this fill. Required on a fill or partial fill message<br><br>The price will be absent for order type 49=5 (MarketOnClose) for execution reports before fixing time. The price will be restated at closing | 1.123456 |
| 6 | AvgPx | Y | Average Fill Price. The price will be truncated to 6 decimal places. | 1.123456 |
| 64 | SettlDate | C | Value Date (YYYYMMDD). Required on a fill or partial fill message | 20110405 |
| 60 | TransactTime | N | UTC Time at which this was | 20110403- |

| | | | | |
|---|---|---|---|---|
| | | | executed | 18:06:23.551 |
| 75 | TradeDate | N | Date of the trade in YYYYMMDD format | 20110403 |
| 110 | MinQty | N | The minimum quantity to fill as was requested on the order. Will be used when sending partial fills, fills and order reject reports. | 600000 |
| 58 | Text | N | Explanations of Cancels | |
| 1 | Account | N | Client defined sub account. Must be mapped in advance with FASTMATCH | ACCOUNT1 |
| 1079 | MaturityTime | C | Auction time in the format HH:00 | 00:00 , 01:00,02:00 |
| 9200 | LiquidityIndicator | N | A = Added vs AutoEx<br>B = Added vs Stream<br>R = Removed vs AutoEx<br>S = Removed vs Stream<br>X = Routed Out | B |
| 9300 | ContraID | N | Numeric value of customer id on the other side of execution | 123 |
| 132 | BidPx | N | Bid in the market at the time of execution | 1.12345 |
| 133 | OfferPx | N | Offer in the market at the price of execution | 1.12346 |
| 9600 | LastMktPx | N | Last price in the market truncated to 5 decimals | 1.12346 |
| 9500 | Commission | N | Commission in USD that ECN will collect for a fill or partial fill (only for clients that receive a bill) | 1.23 |

## 4.2 TRADE CAPTURE REPORT <AE> MESSAGE

| Tag | Fieldname | Req'd | Comments | Example |
|---|---|---|---|---|
| 35 | MsgType | Y | Defines message Type | AE |
| 571 | TradeReportID | | Same as 17 | FX03:111615:03218347:B |
| 17 | ExecID | | Unique identifier of execution message as assigned by broker. Uniqueness must be guaranteed within a single trading day or the life of a multi-day order, but duplicates may occur for rejects. | FX03:111615:03218347:B |
| 570 | PreviouslyReported | | Indicates if the trade capture report was previously reported to the counterparty | N |
| 150 | ExecType | | Describes the specific event. Valid values:<br>1 = Partially Filled<br>2 = Filled (FIX 4.2)<br>F = Trade (FIX 4.4.) | 2 |
| 55 | Symbol | | Currency pair in format CCY1/CCY2 | GBP/USD |
| 32 | LastQty | | Number of units filled in this fill | 1000000 |
| 31 | LastPx | | Price of this fill. Required on a fill or partial fill message | 1.52042 |
| 15 | Currency | | Identifies currency used for the quantities | GBP |
| 120 | SettlCurrency | | Currency code of settlement denomination. | USD |
| 119 | SettlCurrAmount | | Total amount due expressed in settlement currency | 1520420 |

| | | | | |
|---|---|---|---|---|
| 39 | OrdStatus | Y | Describes the current state of the order:<br>1 = Partial Filled<br>2 = Filled | 2 |
| | | | | |
| 60 | TransactTime | | UTC Time at which this was executed | 20151116-21:44:46.595 |
| 64 | SettlDate | | Value Date (YYYYMMDD). Required on a fill or partial fill message | 20151118 |
| 75 | TradeDate | | Date of the trade in YYYYMMDD format | 20151116 |
| 552 | NoSides | | Always 1 | 1 |
| 54 | Side | | Side of order values<br>1 = Buy<br>2 = Sell | 1 |
| 37 | OrderID | | Order ID assigned by FASTMATCH | O11750.L8918 |
| 453 | NoPartyIDs | | Number of PartyID <448> (448), and PartyRole <452> (452) entries | 2 |
| 448 | PartyID | | Party identifier/code | JPML |
| 452 | PartyRole | | Order Originating Firm | 13 |
| 802 | NoPartySubIDs | | Number of PartySubID <523> (523)and PartySubIDType <803> (803) entries | 1 |
| 523 | PartySubID | | Sub-identifier (e.g. Clearing Account <1> for PartyRole <452> (452)=Clearing Firm) | JPMorgan1 |
| 803 | PartySubIDType | | Type of PartySubID <523> | 3 |
| 448 | PartyID | | Party identifier/code. | CITL |

| | | | | |
|---|---|---|---|---|
| 452 | PartyRole | | Identifies the type or role of the PartyID <448> | 14 |
| 802 | NoPartySubIDs | | Number of PartySubID <523> (523)and PartySubIDType <803> (803) entries | 1 |
| 523 | PartySubID | | Sub-identifier | 576 |
| 803 | PartySubIDType | | Type of PartySubID <523> | 1 |
| 7585 | MatchingType | | Matching Type | 1 |