FIX
Specification

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1. References

Document	Author	Version	Issue Date

Please note that documents could take the form of discussions, interviews, presentations, workshops, white papers, etc.

2. Version Control

Version	Author	Date	Reason for Changes
Ver.01 Rev.00	A. Murrell	17 September 2014	Creation of document.
Ver.01 Rev.01	H. Shibambo	11 October 2017	Updated comments for tag 269 in **Market Data Snapshot/Full Refresh (W)**.
Ver.01 Rev.02	H. Shibambo	20 October 2017	Added fields (75, 140, 273, 44) to the **Market Data Snapshot/Full Refresh (W)**.
Ver.01 Rev.03	H. Shibambo	28 November 2017	Added new security request type to **Security Definition Request (c)**. Updated instrument block. Added security group tag to instrument. Updated tag(269) information for market data request message.
Ver.01 Rev.04	H. Prevot	27 March 2018	Updated **Market Data Request (V)** with clarification on request input vs request response. Updated **Market Data Snapshot/Full Refresh (W)** relating to revised message structure.
Ver.01 Rev.05	H. Prevot	19 April 2018	Corrected tag numbers on **Party Details List Report (CG)**.
Ver.01 Rev.06	H. Prevot	30 April 2018	Added MDSubBookType tag 1173 values for Off-screen/Report Only Trades on **Market Data Snapshot/Full Refresh (W)**.
Ver.01 Rev.07	C. Marais	11 May 2018	Added reference to miniFIX in introduction. Added **Appendix D – Tag Special Values**. Added Tag 21 on **Order Cancel/Replace Request (G)**. Added Tag 55 on **Order Cancel Request (F)**. Added Tag 11 on **Test Request (1)**. Added Tag 56 on **Logon (A)**. Added Tags 54 and 11 on **Order Status Request (H)**.
Ver.01 Rev.08	C. Marais	23 August 2018	Added tags 455(SecurityAltID), 456(SecurityAltIDSource) to **Security**

Version	Author	Date	Reason for Changes
			Definition (d) message, and 454 (NoSecurityAltID).
Ver.01 Rev.09	C Marais	22 October 2018	Added Commodities to **Appendix B – Component Blocks**.
Ver.01 Rev.10	C Marais	13 November 2018	Edited Commodities in **Appendix B – Component Blocks**.
Ver.01 Rev.11	F. Makhubele	22 December 2018	For **Order Cancel/Replace Request (G)** in the comments column of Tag 41, Replaced the “ClOrdID” by “ExecID”.
Ver.01 Rev.12	C Marais	10 January 2019	Updated Maturity date tag in **Order Cancel/Replace Request (G)**.
Ver.01 Rev.13	H Prevot	17 September 2019	Removed tags 1529, 1530, 1531 and 1534 used to provide client CSD balances from **Party Details List Report (CG)** due to severe performance degradation in populating the CSD balances. Included Account BPID and SCA numbers under tag 1517.
Ver.01 Rev.14	H. Prevot	19 September 2019	Removed Reference to Stop Limit Orders on New Order Single as the ATS no longer supports stop orders. Added clarification under issuing of new SenderCompIDs. Added clarification on OrderStatusRequest tag 54 -Side.
Ver.01 Rev. 15	H. Prevot	26 September 2019	Added MarketSegmentSubType (2544) to **Security Definition (d)**. Added Factor (228) to **Security Definition (d)**. Added MarketSegment Group Information, NoMarketSegments (1310), MarketID (1301) and MarketSegmentID (1300) to **Security Definition (d)**.
Ver.01 Rev. 16	H. Prevot	26 November 2019	Removed tag 11 (ClOrderID) from **Order Status Request (H)** as it is not used. Removed reference to stop order for tag 40 (OrdType) **Order Cancel/Replace Request (G)**. Added additional information on usage of OrderCapacity (528).

Version	Author	Date	Reason for Changes
			Removed HandleInst (21) from **Order Cancel/Replace Request (G)** as it is not used. Added possible values for ExecType (150) on **Execution Report (8)**. Added possible values for ExecType (150) on **Trade Capture Report (AE)**. Added possible values for TrdType (828) on **Trade Capture Report (AE)**. Added clarification on MDEntryType (269) subscription for **Market Data Request (V)**. Corrected NoPartyIDs tag number on **Party Details List Report (CG)** to tag 453 (NoPartyIDs). Updated supported values under tag 452 (PartyRole) on **Party Details List Report (CG)**.
Ver.01 Rev. 17	Y. Ayvazyan	21 August 2020	Component Block in **Order Mass Action Request (CA)** has been removed as its not required.
Ver.01 Rev.18	Y. Ayvazyan	02 September 2020	Adding further description of Subscription Request Type for the Tag 263 under **Market Data Request (V)** message.
Ver.01 Rev.19	Y. Ayvazyan	07 October 2020	Correction from “6” to “5” under **Market Data Request (V)** Tag 269 MDEntryType. *Quote: “When subscribing the 5 the latest available closing price will be returned again including indicators for that date*”. Addition to Tag 54 Side Side of the market (buy or sell) to indicate: 1 = Buy 2 = Sell
Ver.01 Rev.20	Y. Ayvazyan	07 October 2020	Adding note under the **Market Data Request (V)** Tag 263 SubscriptionRequestType.
Ver.01 Rev. 21	Y. Ayvazyan	25 November 2020	Adding Futures Instruments section for Future Markets under **Appendix B – Component Blocks**. B.1 Instrument Component Block.

Version	Author	Date	Reason for Changes
Ver.01 Rev. 22	Y. Ayvazyan	14 December 2020	Adding Tag 54 Side of the market (buy or sell) 1 = Buy 2 = Sell **Order Cancel/Replace Request (G)** & **Order Cancel Request (F)** message. Adding Tag 41 **NOTE:** OrderID or ExecID of the order to be replaced must use. (OrderID i.e., Exchange assigned **Unique Order ID**) **Order Cancel/Replace Request (G)** message. Adding explanation on use of the Tag 59 with values as: 3 – Immediate or Cancel (Fill and Kill) 4 – Fill or Kill Under **New Order Single (D)** message. Tag 59 TimeInForce must be Mandatory (Y) for **Order Cancel/Replace Request (G)**. Removing from Tag 59 TimeInForce from **Order Cancel/Replace Request (G)** 3 – Immediate or Cancel 4 – Fill or Kill Removing Tag 541 MaturityDate from the **Order Cancel/Replace Request (G)** message as it is already included within the Component Block.
Ver.01 Rev.23	E. Pfaff	28 December 2020	Added OrdType (Tag 40) to **Market Data Snapshot/Full Refresh (W)**.

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4. Introduction

The purpose of this document is to provide participants with the knowledge and technical details necessary for accessing and using the MITS trading system.

The FIX specification provides essential information for participants and independent software vendors in the functional design of their application in order to interface with the MITS platform using the FIX protocol. This document is designed to supplement the FIX protocol documentation that can be found at www.fixprotocol.org rather than be a complete and self-sufficient reference.

The MITS platform utilises FIX 5.0 SP2.

The target audience of this specification is the business or Information Technology level of an organisation interested in the functional design of the MITS FIX platform.

It should be noted, that the MITS platform can also be interfaced to, using a Native specification. It is therefore advised that developers identify the needs of their application and decide if their implementation is better suited to a FIX or Native implementation of the MITS platform.

NOTE: The workflows described in some sections of this document are not a comprehensive guide to every message that should be expected when interacting with the MITS system. They serve merely as a guide to both positive and negative responses that could be expected. Additional messages, depending on the scenario could also be returned.

5. Service Description

5.1 Description of Trading Phases

The MITS system can be configured to run in various trading phases. In each of these phases, certain changes to behaviour should be noted in terms of processing messages, as well as noting which type of messages are allowed in these phases. The user can determine the schedule of trading phases which has been implemented by the exchange by requesting the Trading Session List from this interface specification.

The MITS system is available 24 hours a day, and sessions can be established at any point during this time. Order entry, trade capture and post trade services are restricted based on the phases below. All other messages are allowed and will be serviced at any time of the day.

A description of the available phases is noted below:

5.1.1 Open Auction

The open auction phase allows order entry for limit orders. No market orders, or execution orders are permitted during this phase. The order books for odd and all or nothing order types are also closed during this time. No fills will be recorded during this phase, until the close of the Open Auction is reached. Thereafter all fills which can be satisfied at the crossing price will be sent to all parties. Multi-leg strategy orders are not allowed during an auction period.

After the close of the Open Auction, continuous trading will resume for the duration of the trading session. Any orders remaining after the close of the auction will remain on the order book.

5.1.2 Instrument Open and Close

The Instrument Open and Close time indicate to the user when the order book is open for order entry, order modification and order cancellation. Post trade and trade capture messages will also be allowed from the opening of the instrument. The close of the instrument only defines the close of the order book, trade capture and post trade messages are still allowed to continue.

5.1.3 Intraday Auction

The instrument may or may not be configured to have up to 3 intraday auctions. During the start and close of these phases, no executions can be performed, and no odd, or all or nothing order types are permitted. At the close of the intraday auction, fills which are possible at the crossing price will be sent to the relevant users. Any orders remaining after the close of the intraday auction will remain on the order book. Multi-leg strategy orders are not allowed during an auction period.

5.1.4 Administration Period Close

After the closing of the instrument, a period may be made available for post trade messages. This is known as the administrative period. It starts at the time the instrument closes and continues until the administration period close. During this period, no order entry can be performed, but trade capture and post trade messages are still available.

5.1.5 Option Exercise

The Option Exercise phase defines the period in which Position Maintenance Requests are allowed to be serviced.

5.1.6 Overnight Administration

The Overnight Administration phase defines the period which normally takes place before Instrument Open which is reserved for users to send trade capture messages for trades concluded overnight. The order book will remain closed during this period.

5.1.7 Closing Auction

The instrument may be configured to include a closing auction. This period is typically defined before the close of the instrument. No executions can be performed, and no odd or all or nothing order types are permitted. At the close of the closing auction, fills which are possible at the crossing price will be sent to the relevant users. Multi-leg strategy orders are not allowed during an auction period.

5.2 Description of Instruments

The MITS system is a multi-asset platform and based on the exchange's implementation, could include either one or more of the following asset classes:

- Bonds
- Equities
- Futures
- Options
- Strategies

It should be noted that, depending on the asset class used in this specification, different fields become mandatory when defining the instrument. Please refer to **Appendix B – Component Blocks** for details on how to populate the instrument correctly.

5.3 Description of Party Types and Accounts

The MITS system validates all party codes and account codes and must be registered parties and accounts with the exchange. In order to obtain a list of all valid parties and accounts, the user can send a Party Details List Request which will return the following information:

- All Executing Firms available in the market. Only the executing firm your SenderCompID is associated with at the exchange can be used as an Executing Firm. All other executing firms can be used as the Contra Firm for trade captures or any other appropriate message types.
- All Executing Traders linked to the SenderCompIds Executing firm. These are the only Executing Traders which can be used by this SenderCompId
- All Accounts linked to the SenderCompIds Executing firm. These are the only client accounts which can be used in the Account field in all messages. However, if the user wishes to input a free text proprietary account, for use as a profit center or portfolio, a 5-character sub account can be entered in the account field. Alternatively, for proprietary accounts, the executing firm can be used as an account.

6. FIX Messages Supported

The following table lists the FIX messages that are supported by the MITS FIX Gateway.

Message Name	Message Type	Message Direction	Message Function
Administrative Messages			
Logon	A	Inbound Outbound	Authenticates a user establishing a session to the gateway.
Logout	5	Inbound Outbound	Can be used to terminate a session, or indicates a gateway initiated disconnection from the gateway.
Reject	3	Outbound	Indicates a rejection on a session level from the gateway.
Resend Request	2	Inbound	Can be used to request a re-transmission of messages on a FIX session.
Sequence Reset (Gap Fill)	4	Inbound Outbound	Can be used or sent by the gateway to reset the sequence number range on the session.
Test Request	1	Inbound Outbound	Verifies sequence numbers or session status.
Heartbeat	0	Inbound Outbound	Can be used in periods of inactivity to monitor session status to/from the gateway.
Business Message Reject	j	Outbound	Indicates a rejection of a message due to business validation.
Order Management Messages			
New Order - Single	D	Inbound	Used to submit orders onto the central order book.
Order Cancel request	F	Inbound	Used to cancel a single order from the order book.

Order Cancel / Replace Request	G	Inbound	Used to modify an existing order on the order book.
Order Cancel Reject	9	Outbound	Indicates a rejection of an Order Cancel Request.
Order Status Request	H	Inbound	Can be used to request the status of a single order or all orders.
Order Mass Action Request	CA	Inbound	Used to request the cancellation of all orders on the order book.
Execution Report	8	Outbound	Acts as confirmation of an order entry, modification, cancellation or fill of an order on the order book.
Trade Capture and Reporting			
Trade Capture Report Request	AD	Inbound	Can be used to retrieve all matched trades from the gateway for a given date.
Trade Capture Report	AE	Inbound Outbound	Can be used to report a trade to the gateway, and also serves as a trade confirmation for a matched trade on the gateway.
Trade Capture Report Ack	AR	Outbound	Acts as confirmation of a reported trade being processed by the gateway.
Position Report	AP	Outbound	Used to indicate the current state of a position following a matched trade.
Post Trade Administration			
Position Maintenance Request	AL	Inbound	Used on Option positions to exercise or abandon an option position.
Allocation Instruction	J	Inbound	Can be used to allocate a trade to a different account.
Market Data			
Market Data Request	V	Inbound	Used to subscribe or request market data for a list of instruments.
Market Data Snapshot / Full Refresh	W	Outbound	Indicates the current snapshot of an instrument in response to the Market Data Request or unsolicited based on subscription.
News	B	Outbound	Sent unsolicited from the gateway to indicate exchange messages.
Reference Data Messages			
Party Details List Request	CF	Inbound	Used to request a list of Party information for the user. This will include all available members, traders and client accounts.
Party Details List Report	CG	Outbound	Sent in reply to a Party Details List Request.
Trading Session List Request	BI	Inbound	Used to request a list of all Trading Sessions on the gateway.
Trading Session List	BJ	Outbound	Is sent in response to a Trading session List Request, and includes all the trading sessions on the gateway.
Security Definition Request	c	Inbound	Used to request a definition of all instruments on the gateway.
Security Definition	d	Outbound	Sent in response to a Security Definition Request.

7. Session and Infrastructure Messages

This section defines the FIX Session and Infrastructure messages. This section also describes the FIX Session establishment actions.

The FIX Session Level messages are:

- Logon
- Logout
- Reject
- Resend Request
- Sequence Reset (Gap Fill)
- Test Request
- Heartbeat

The FIX Infrastructure messages are:

- Business Message Reject

7.1 FIX Session Establishment

7.1.1 Logon and Authentication

A FIX session must be established and authenticated with the gateway before the further exchange of messages is allowed. The session is established using the Logon message and requires that a valid SenderCompID (49) which defines the party initiating the session, and a password. A FIX session will not be established if authentication processing fails. The SenderCompID supplied must be a valid username as supplied by the exchange. The password supplied is done in clear text on the Logon message, and no encryption mode is used. A successful Logon attempt will be responded to by the Gateway with a Logon message type. All logon failures return a Logout message with an appropriate reason code and may include additional text which provides additional information regarding the failure.

7.1.2 FIX Session SenderCompID, Username and Passwords

The SenderCompID (49) and session password are always required for authentication with the gateway and must be included in the Logon message. Both the SenderCompID and session password can have a maximum length of 16 characters. The SenderCompID will be issued to the API user by the relevant exchange.

It should be noted that the default behaviour of the MITS gateway is a session based and drop copy gateway. The SenderCompID used in a FIX session is linked to a firm on the exchange. Any messages destined for that firm are sent to all sessions which are authenticated for that firm.

7.1.3 Changing FIX Session Passwords

Passwords can be changed using the FIX session Login messages and the following will apply:

- Passwords used for the gateway session authentication must be changed on a periodic basis as they have a limited lifetime. Passwords can be changed programmatically using the Logon message only at session establishment and only while they are valid. If the password has expired or cannot be changed programmatically, it must be changed manually by Business or Technical Operations.
- To change the FIX session password at logon time, both the current password and the new password must be included in the FIX Logon message. In addition, the SenderCompID (49), and the current password must be valid otherwise authentication will fail.
- The current password is sent using the Password (554) field in the Logon message.

- Provided the SenderCompID and current password are valid, the new password is checked against the password policy for compliance. If the new password complies, it becomes the password to be used for the next session logon, the existing session will be authenticated and can continue. If the new password does not comply with the password policy, then an error status and message is returned in the Logout message, and the session is then terminated.

7.2 Logon (A)

The logon message authenticates a user establishing a connection to a remote system. The logon message must be the first message sent by the application requesting to initiate a FIX session.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = A	
98	EncryptMethod	Y	(Always Unencrypted)	Int
108	HeartBtInt	Y	Note same value used by both sides.	Int
141	ResetSeqNumFlag	N	Indicates if both sides of a FIX session should reset sequence numbers.	Boolean
1137	DefaultAppVerID	Y	Only valid value is '8' – FIX50SP1	String
554	Password	Y	Indicates the current password for the supplied SenderCompId in clear text.	String
925	NewPassword	N	Only supplied when the user wishes to change their password.	String
56	TargetCompID	N	Specifies the receiving firm.	String
58	Text	N	Used in response to a logon to indicate successful logon and any warnings on number of days until password expiry.	String
Standard Trailer		Y		

7.3 Logout (5)

The logout message initiates or confirms the termination of a FIX session. Disconnection without the exchange of logout messages should be interpreted as an abnormal condition.

The logout format is as follows.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 5	
58	Text	N	Indicates the reason for the disconnect.	String
Standard Trailer		Y		

7.4 Reject (3)

The reject message should be issued when a message is received but cannot be properly processed due to a session-level rule violation. An example of when a reject may be appropriate would be the receipt of a message with invalid basic data (e.g. MsgType=&) which successfully passes de-encryption, CheckSum and BodyLength checks.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 3	
45	RefSeqNum	Y	MsgSeqNum of the rejected message	SeqNum
371	RefTagID	N	The tag number of the FIX field being referenced	Int
372	RegMsgType	N	The MsgType of the FIX message being referenced	String
373	SessionRejectReason	N	Code to identify reason for a session-level reject message	Int
58	Text	N	Free format text string	String
Standard Trailer		Y		

7.5 Resend Request (2)

The resend request is sent by the receiving application to initiate the retransmission of messages. This function is utilised if a sequence number gap is detected, if the receiving application lost a message, or as a function of the initialisation process.
The resend request can be used to request a single message, a range of messages or all messages subsequent to a particular message.

The resend request format is as follows.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 2	
7	BeginSeqNo	Y	Starting range of the sequence numbers requested	SeqNum
16	EndSeqNo	Y	Ending range of the sequence numbers requested.	SeqNum
Standard Trailer		Y		

7.6 Sequence Reset (Gap Fill) (4)

The Sequence Reset message has two modes: Gap Fill mode and Reset mode.

Gap Fill mode
Gap Fill mode is used in response to a Resend Request when one or more messages must be skipped over for the following reasons:
During normal resend processing, the sending application may choose not to send a message (e.g. an aged order). During normal resend processing, a number of administrative messages are skipped and not resent (such as Heart Beats, Test Requests). Gap Fill mode is indicated by GapFillFlag (tag 123) field = “Y”. If the GapFillFlag field is present (and equal to “Y”), the MsgSeqNum should conform to standard message sequencing rules (i.e. the MsgSeqNum of the Sequence Reset GapFill mode message should represent the beginning MsgSeqNum in the GapFill range because the remote side is expecting that next message sequence number).

Reset mode
Reset mode involves specifying an arbitrarily higher new sequence number to be expected by the receiver of the Sequence Reset-Reset message and is used to establish a FIX session after an unrecoverable application failure.
Reset mode is indicated by the GapFillFlag (tag 123) field = “N” or if the field is omitted.

The Sequence Reset format is as follows.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 4	
123	GapFillFlag	N	Indicates if GapFill Mode should be applied	Boolean
36	NewSeqNo	Y	Indicates the new sequence number for the session.	SeqNum
Standard Trailer		Y		

7.7 Test Request (1)

The test request message forces a heartbeat from the opposing application. The test request message checks sequence numbers or verifies communication line status. The opposite application responds to the Test Request with a Heartbeat containing the TestReqID.

The TestReqID verifies that the opposite application is generating the heartbeat as the result of Test Request and not a normal timeout. The opposite application includes the TestReqID in the resulting Heartbeat. Any string can be used as the TestReqID (one suggestion is to use a timestamp string).

The test request format is as follows.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 1	
112	TestReqID	Y	Identifier for the test request	String
11	ClOrdID	Y	Identifier for the Order assigned by the trader	String
Standard Trailer		Y		

7.8 Heartbeat (0)

The Heartbeat monitors the status of the communication link and identifies when the last of a string of messages was not received.

When either end of a FIX connection has not sent any data for [HeartBtInt] seconds, it will transmit a Heartbeat message. When either end of the connection has not received any data for (HeartBtInt + “some reasonable transmission time”) seconds, it will transmit a Test Request message. If there is still no heartbeat message received after (HeartBtInt + “some reasonable transmission time”) seconds then the connection should be considered lost and corrective action be initiated. If HeartBtInt is set to zero then no regular heartbeat messages will be generated. Note that a test request message can still be sent independent of the value of the HeartBtInt, which will force a Heartbeat message.

Heartbeats issued as the result of Test Request must contain the TestReqID transmitted in the Test Request message. This is useful to verify that the Heartbeat is the result of the Test Request and not as the result of a regular timeout.

The heartbeat format is as follows.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 0	
112	TestReqID	N	Required when the heartbeat is the result of a Test Request message	String
Standard Trailer		Y		

7.9 Business Message Reject (j)

The Business Message Reject message can reject an application-level message which fulfils session-level rules and cannot be rejected via any other means. Note that if the message fails a session-level rule (e.g. body length is incorrect), a session-level Reject message should be issued.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = j	
372	RefMsgType	Y	The MsgType of the FIX message being reference	String
380	BusinessRejectReason	Y	Will always be 0	Int
58	Text	N	Indicates the error text of the reject.	String
Standard Trailer		Y		

8. Order Management

The order management category consists of the following messages:

- New Order Single
- Order Cancel Request
- Order Cancel Replace Request
- Order Cancel Reject
- Order Status Request
- Order Mass Action Request
- Execution Report

8.1 Description of Order Management

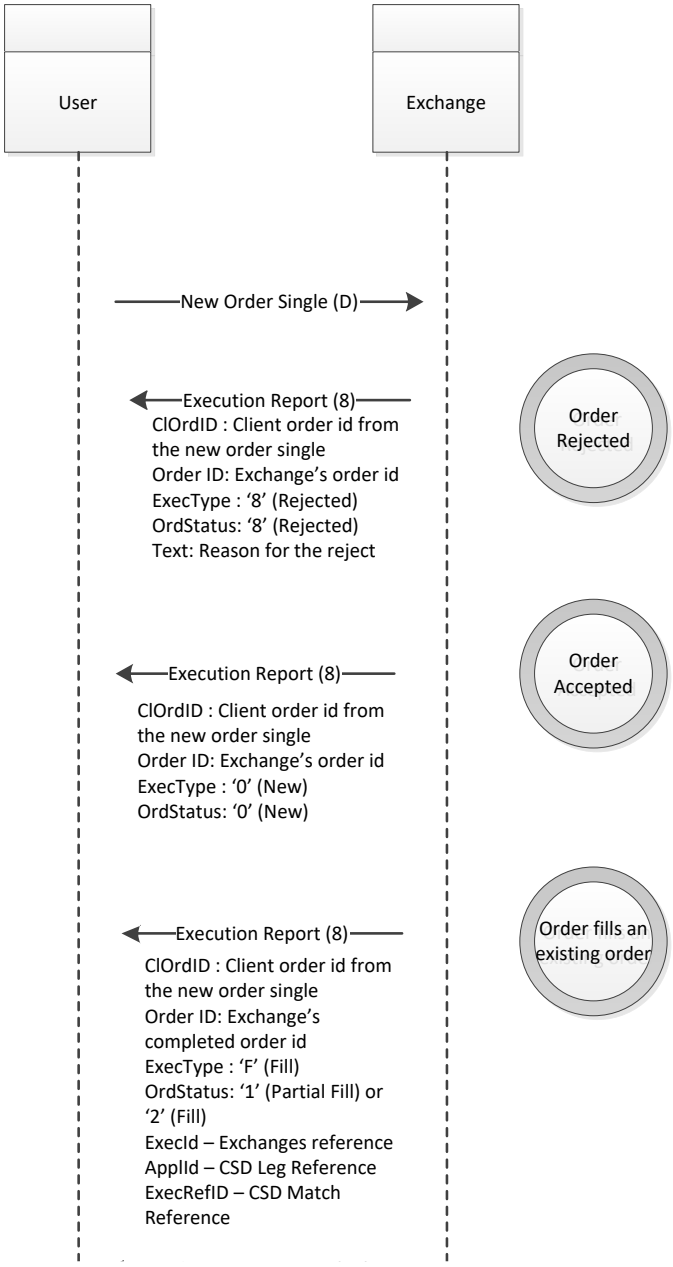
8.1.1 Normal Day Order

To enter an order, the user sends a New Order Single message. The MITS system will validate the following fields and reject the message with a Business Message Reject if they are deemed incorrect. In the case that the MITS system successfully accepts the message but is rejected due to market validation such as price limits, etc., the MITS system will return an Execution Report with a Reject status. The FIX session layer will reject messages with a Session Level Reject for structural problems with the message or absence of mandatory fields:

TAG	Field Name	Validation Performed
Standard Header		
11	ClOrdID	Can only be 9 characters long.
453	Party Group	Must have 2 parties supplied in all cases.
448	Party ID	Must be either 4 or 6 characters long.
452	Party Role	Can only be 1 – Executing Firm or 12 - Executing Trader
1	Account	Can only be 4, 5 or 6 characters long.
18	ExecInst	Only 'G – all or nothing' is supported if supplied.
38	OrderQty	For derivative instruments, the exchange may validate initial margin requirements on an order basis and reject the order if the Account does not have sufficient limits. For fixed income instruments, the exchange may validate against short selling, and validate that the Account has sufficient balance at the CSD for sell orders.
40	OrdType	Only 1 – Market Orders and 2 – Limit orders are supported. In the case of market orders, if the market order could not be satisfied, it will be rejected.
44	Price	The exchange may reject limit orders if the price is outside of the daily price movement limit. Furthermore, prices may be rejected for limit orders when the price is 0 or negative on instruments which do not support these levels.
54	Side	Only 1 – Buy or 2- Sell are valid values.
59	TimeInForce	Only 0 – Day, 3 – Immediate or cancel, 4 – Fill or Kill, 6 – Good till date types are supported.
528	OrderCapacity	Only A – Agency or P – Principal are supported.
58	Text	Can only be 9 characters long.
Standard Trailer		

In the case of successful order entry, the MITS system will respond with an Execution Report with a New status. If the new order matches an order already on the order book, the MITS system will respond with an Execution Report indicating a Fill or Partial Fill status.

Work Flow:



8.1.2 Time in force Orders

The following describes the expected behaviour for the supported time in Force Orders.

8.1.2.1 Immediate or Cancel

The immediate or cancel order type is used as an execution instruction to fill what is available on the order book for the given criteria and cancel any remainder. This order will either result in a Fill, or will be rejected with an Execution Report of type Reject, if no fill was possible for the supplied criteria.

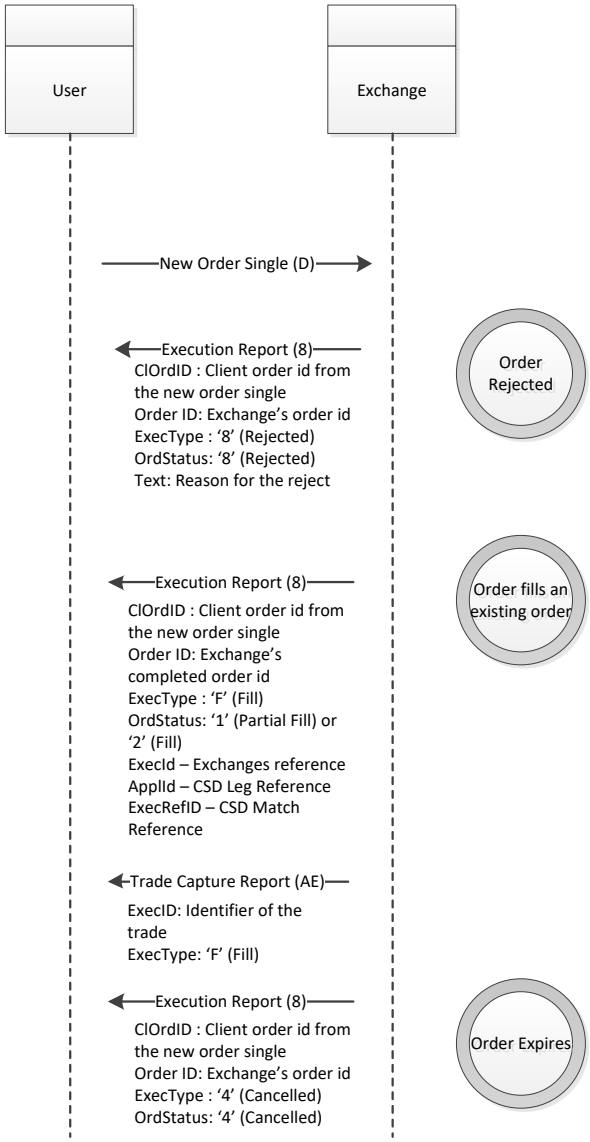
8.1.2.2 Fill or Kill

The fill or kill order type is used as an execution instruction to fill the criteria of the order submitted or cancel the order. This order will either result in a Fill or will be rejected with an Execution Report of type Reject, if no fill was possible for the supplied criteria.

8.1.2.3 Good till date

Orders can be submitted with defined life spans. These orders will enter the order book as normal limit orders and will remain on the order book for the supplied date or time instruction for as long as the order is not filled. If the order is filled during its time on the order book, it will no longer respect the date or time parameter. Example, if a good till date order is supplied to remain on the order book until the end of the week, if it is filled before it reaches this time span, it will not appear on the order book the next day. The following life spans are supported:

- **Good Till Date** – The Expire Date field is required, and must contain a date greater than today. This order will automatically be placed onto the order book at the start of every day's trading session for the duration of the Expire Date. No execution report will be sent for the cancellation of this order when it reaches the end of its time span.
- **Good Till Time** – The Expire Time field is required, and must contain a time greater than the current time. This time is only applied to the current session, and when the time supplied is reached, the order will automatically be cancelled. An execution report will be sent with a cancelled status when the order reaches the end of its time span.



8.2 Order Modification

Order modification is accomplished using the Order Cancel Replace Request message. An order modification is not a delta change to order instructions; the values set in the Cancel Replace represent the requested new order state. An Execution Report will relay the new state of the order.

- Fields not set in the Cancel Replace *will be reset*. To keep the original value, the same field must be set with the same value in the Cancel Replace.
- The required fields must be set regardless of if they can be changed or not.

8.2.1 Order Attributes allowed to change

Although the FIX protocol allows for virtually all the Order attributes to be changed, there are limitations as to what the gateway allows. The following attributes are allowed to change:

- OrderQty (38)
- DisplayQty (111)
- Price (44)
- OrdType (40)
- TimeInForce (59)
- ExpireDate (432)
- ExpireTime (126)
- Account (1)
- ExecInst (18)

Note: Any change to the price of an order, or increasing quantities, will result in the order losing its priority in the market.

8.2.2 Order Identification

In an Order Cancel Replace Request, the order can be identified by its prior ClOrdID using OrigClOrdID (41).

8.3 Order Cancellation

- If the user wishes to cancel a single previously sent order, the Order Cancel Request message is used.
- Execution Reports are issued relaying the status of the cancelled order.
- In some cases, orders may be cancelled in the system without prior request by the user. These will be sent as unsolicited Execution Reports to the client.

8.3.1 Order Identification

In an Order Cancel Request the order can be identified by its prior ClOrdID using OrigClOrdID (41).

8.3.2 Order Status

Order state changes are divulged in Execution Report messages. Every state change is communicated in a separate Execution Report. The OrdStatus (39) field specifies the state.

8.4 New Order Single (D)

The new order message type is used by institutions wishing to electronically submit instruments orders for execution.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = D	
11	ClOrdID	Y	Unique identifier for the order. Uniqueness of an order is not validated or checked by the gateway. It is advised that users ensure uniqueness of the ClOrdID in a single day.	String
453	Party Group	Y	Must include 2 party entries.	
448	Party ID	Y	Identifier of the Party.	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader	Integer
Component Block - Instrument				
1	Account	Y	Indicates the principal account for the order. Can only be a firm account, client account or sub account.	String
18	ExecInst	N	Only 'G' – All or None is supported.	Char
38	OrderQty	Y	Indicates the quantity of the order. For Fixed Income instruments the quantity supplied must consider the configured contract Factor. For example if the configured contract Factor is 100,000 then each unit or "quantity" represents a factor of 100,00.So should a face value of 1,000,000 need to be traded then a OrderQty of 10 must be supplied.	Decimal
40	OrdType	Y	Indicates the type of order. Values supported are: 1 – Market Order 2 – Limit Order	Char
44	Price	Y/N	Nor required for Market Orders, otherwise indicates the value of the order. For yield based products this value will be the Yield.	Decimal
54	Side	Y	Side of the market (buy or sell) 1 = Buy 2 = Sell	Char
60	TransactTime	Y	Time of order creation.	UTCTimeStamp
59	TimeInForce	Y	Supported values are: 0 – Day (or session) 6 – Good till date **NOTE:** **Tag 59** = 3 (Immediate or Cancel Fill and Kill) OR **Tag 59** = 4 Fill or Kill can be satisfied if there is already an active order on the stack. It cannot be executed as the initial offer.	Char
432	ExpireDate	N	Indicates the date in format YYYYMMDD at when the order will expire.	String

TAG	Field Name	Required	Comments	Format
126	ExpireTime	N	Indicates the time at which the order should expire on the current day. Cannot be used in conjunction with ExpireDate.	UTCTimeStamp
1138	DisplayQty	N	In the case of Iceberg orders, the display quantity should contain the quantity displayed to the market, and OrderQty should then be set to the total iceberg quantity.	Decimal
528	OrderCapacity	Y	Indicates the capacity in which the order was placed. Field used for surveillance and informational purposes only and has no functional attributes. Only accepted values are: A – Agency P – Principal	Char
58	Text	Y	Supplies a secondary reference for the order.	String
Standard Trailer		Y		

8.5 Order Cancel Request (F)

The order cancel request message requests the cancellation of an order currently active on the order book. The request will only be accepted if the order can successfully be withdrawn from the Exchange without executing.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = F	
11	ClOrdID	Y	Unique, identifies the cancel request.	String
41	OrigClOrdID	Y	The ClOrdID of the order to be cancelled.	String
453	Party Group	Y	Must include 2 party entries.	
448	Party ID	Y	Identifier of the Party.	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader	Integer
Component Block – Instrument				
54	Side	Y	Side of the market (buy or sell) 1 = Buy 2 = Sell	Char
55	Symbol	N	Descriptive representation of the instrument	String
60	TransactTime	Y	Time the request was initiated.	UTCTimeStamp
Standard Trailer		Y		

8.6 Order Cancel/Replace Request (G)

The order cancel/replace request is used to change the parameters of an existing order.

Do not use this message to cancel the remaining quantity of an outstanding order, use the **Order Cancel Request (F)** message for this purpose.

Cancel/Replace will be used to change any valid attribute of an open order (i.e. reduce/increase quantity, change limit price, change instructions, etc.).

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = G	
11	ClOrdID	Y	Unique identifier for the request.	String
41	OrigClOrdID	Y	**NOTE:** OrderID or ExecID of the order to be replaced must use. (OrderID i.e. Exchange assigned **Unique Order ID**)	String
453	Party Group	Y	Must include 2 party entries	
448	Party ID	Y	Identifier of the Party	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader	Integer
Component Block – Instrument				
1	Account	Y	Indicates the principal account for the order. Can only be a firm account, client account or sub account.	String
18	ExecInst	N	Only 'G' – All or None is supported.	Char
38	OrderQty	Y	Indicates the quantity of the order. For Fixed Income instruments indicates the nominal value.	Decimal
40	OrdType	Y	Indicates the type of order. Values supported are: 1 – Market Order 2 – Limit Order	Char
44	Price	Y/N	Nor required for Market Orders, otherwise indicates the value of the order. For yield based products this value will be the Yield.	Decimal
54	Side	Y	Side of the market (buy or sell) 1 = Buy 2 = Sell **NOTE:** This cannot be different to the original order.	Char
60	TransactTime	Y	Time of order creation.	UTCTimeStamp
59	TimeInForce	Y	Supported values are: 0 – Day (or session) 6 – Good till date	Char
126	ExpireTime	N	Indicates the time at which the order should expire on the current day. Cannot be used in conjunction with ExpireDate.	UTCTimeStamp
1138	DisplayQty	N	In the case of Iceberg orders, the display quantity should contain the quantity displayed to the market, and OrderQty should then be set to the total iceberg quantity.	Decimal
528	OrderCapacity	Y	Indicates the capacity in which the order was placed. Only accepted values are: A – Agency P – Principal	Char
58	Text	N	Supplies a secondary reference for the order.	String
Standard Trailer		Y		

8.7 Order Cancel Reject (9)

The order cancel reject message is issued by the Exchange upon receipt of a cancel request or cancel/replace request message which cannot be honoured. Filled orders cannot be changed.

Refer to the Text (58) field for specific information on the reason for the rejection.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 9	
11	ClOrdID	Y	The CliOrdID of the order which failed cancellation. Will be set to “NONE” when the CliOrdID was indeterminable.	String
37	OrderID	Y	The OrderID of the order which failed cancellation. Will be set to 0 when the OrderID was indeterminable.	String
39	OrdStatus	Y	Describes the current status of the order.	Char
60	TransactTime	T	Time of the order cancellation request rejection.	UTCTimeStamp
102	CxlRejReason	Y	Only 99 will be returned. Refer to Text for the reason.	Int
434	CxlRejResponseTo	Y	Identifiers the type of request that a Cancel reject is in response to.	Char
58	Text	N	Indicates the reason for the reject.	String
Standard Trailer		Y		

8.8 Order Status Request (H)

The order status request message is used by the broker/participant to generate an order status message back from the Exchange. Only orders which are currently active or suspended on the order book can be returned in this request.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = H	
37	OrderID	Y	The OrderID of the order which is requested. Specify “0” to return all order statuses.	String
54	Side	Y	Side of the order. 1 = Buy 2 = Sell Required but not used. Either Buy or Sell can be specified.	Char
Standard Trailer		Y		

8.9 Order Mass Action Request (CA)

The Order Mass Action Request message can be used to request the cancellation of all orders currently active on the order book.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = CA	
11	ClOrdID	Y	Unique Identifier for the request.	String
1373	MassActionType	Y	Only 3 – Cancel orders is supported	Int
1374	MassActionScope	Y	Only 7 – All orders is supported	Int
60	TransactionTime	Y	Time of the mass action request	UTCTimeStamp
Standard Trailer		Y		

8.10 **Execution Report (8)**

The execution report message is used to:

1. Confirm the receipt of an order
2. Confirm changes to an existing order (i.e., accept cancel and replace requests)
3. Report order status information
4. Report fill information on working orders
5. Report fill information on tradable or restricted tradable quotes
6. Report on rejected order

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = 8	
11	ClOrdID	Y	Unique Identifier of the order.	String
17	ExecID	Y	Identifier issued by the exchange for the execution.	String
880	TrdMatchID	N	Identifies a filled trade reference from the CSD for fixed income instruments.	String
19	ExecRefId	N	Identifies a match reference from the CSD for fixed income instruments.	String
18	ExecInst	N	Only 'G' will be supplied if the order is an all or nothing type.	Char
37	OrderID	Y	Identifier issued by the exchange for this order.	String
150	ExecType	Y	Type of execution being reported. Possible values are: 0 = New 4 = Cancelled 5 = Replaced 8 = Rejected	Char
453	Party Group	Y	May include 2 or 3 party entries.	
448	Party ID	Y	Identifier of the Party.	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader, or 17 – Contra Firm	Integer
Component Block – Instrument				
1	Account	N	Indicates the principal account for this execution.	String
14	CumQty	Y	Total Matched quantity	Decimal
31	LastPx	N	Price of this fill	Decimal
32	LastQty	N	Quantity bought or sold on this fill	Decimal
38	OrderQty	N	Quantity ordered	Decimal
39	OrdStatus	Y	Describes the current state of an order.	Char
40	OrdType	N	Type of the order	Char
44	Price	N	Price of the order	Decimal
54	Side	Y	Side of the market	Char
59	TimeInForce	N	Indicates the time in force of the order.	Char
60	TransactTime	Y	Time of execution	UTCTimeStamp
75	TradeDate	N	Indicates the date of the trade in YYYYMMDD format.	String
432	ExpireDate	N	Specified if the TimeInForce is good till date.	String
64	SettlDate	N	Specified if instrument is a bond or equity type in YYYYMMDD format.	String

TAG	Field Name	Required	Comments	Format
103	OrdRejReason	N	Supplied when execution type is rejected.	Int
151	LeavesQty	Y	Indicates quantity still open for further execution.	Decimal
236	Yield	N	Supplied when the instrument is a bond.	Decimal
381	GrossTradeAmt	N	Total amount traded expressed in units of currency. Calculated on Price*LastQty	Decimal
1138	DisplayQty	N	Supplied when the order type is an iceberg order.	Decimal
168	EffectiveTime	N	Indicates the timeout on order.	Int
Standard Trailer		Y		

9. Trade Capture Reporting

Trade Capture reports and position reports are used for a variety of purposes and include:

- Confirmation of a trade captured on the exchange.
- Facility to report trades to the exchange.
- Confirmation of a position update.

9.1 Trade Capture Messages

The Trade Capture category of messages consists of the following:

- Trade Capture Report
- Trade Capture Report Ack

9.2 Trade Report Request Messages

- Trade Capture Report Request
- Trade Capture Report
- Position Report Request
- Position Report

9.3 Description of Trade Reporting as a Facility to Report Trades to the Exchange

Trade Capture reports are used to report a trade to the exchange that was concluded off market. These trades can take the form of 2 different types:

- Internal Trades – these are trades reported between the member/broker and their client.
- Market Trades – these are trades reported between the member/broker and another member/broker in the market.

9.3.1 Internal Trades

The structure of the Trade Capture Report message is defined below and should be adhered to in order to successfully process this message.

9.3.1.1 Party Definition

The Party Group (453) must include 3 groups:

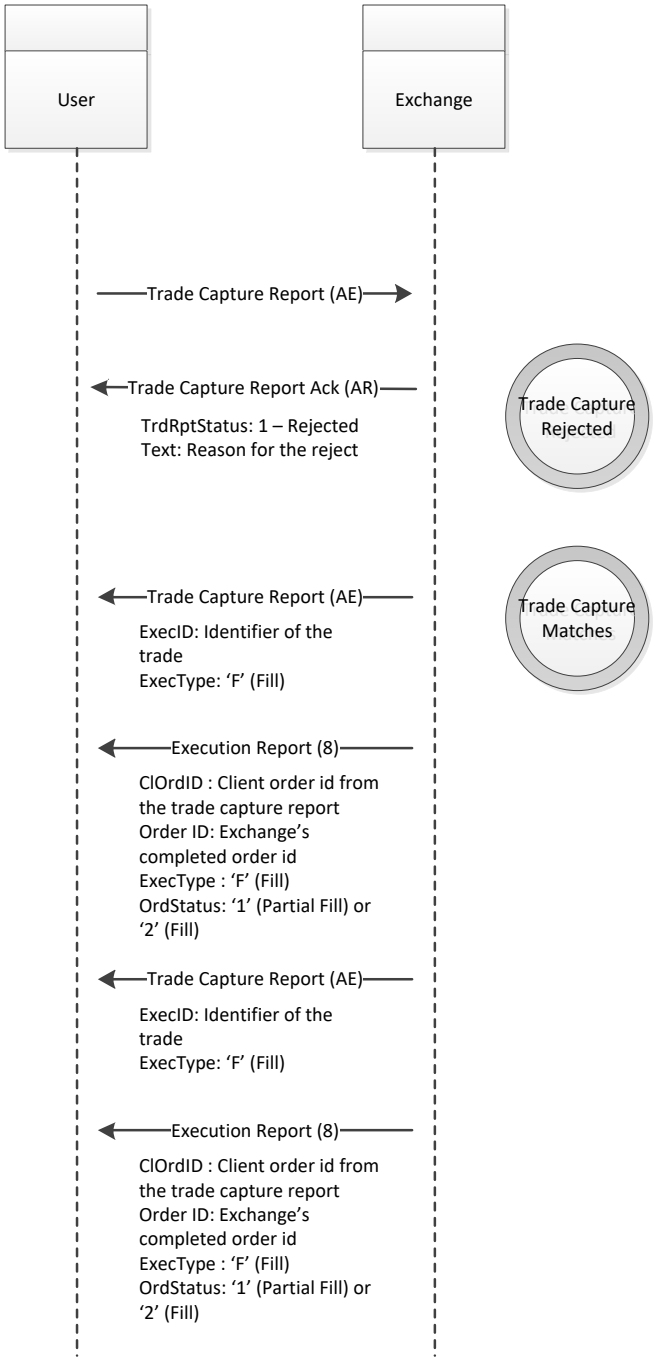
- Executing Firm – This should be set to the user's member/broker code.
- Executing Trader – This should be set to the user's dealer/trader code.
- Contra Firm – This should be set to the client account code who is counterparty to this trade.

Depending on the nature of the trade, the Account (1) should be set to either:

- The broker code if the broker is principal to the trade.
- A broker sub account if the sub account is principal to the trade.
- A client account, if the client is principal to the trade, and is transaction against a different client to that of the counterparty (Contra Firm).

9.3.1.2 Work Flow

It is important to note, that an internal trade will match immediately and the result will be a set of matched trades. In the case the Trade Report is rejected, a Trade Capture Report Ack will be sent with TrdRptStatus of Rejected.



9.3.2 Market Trades

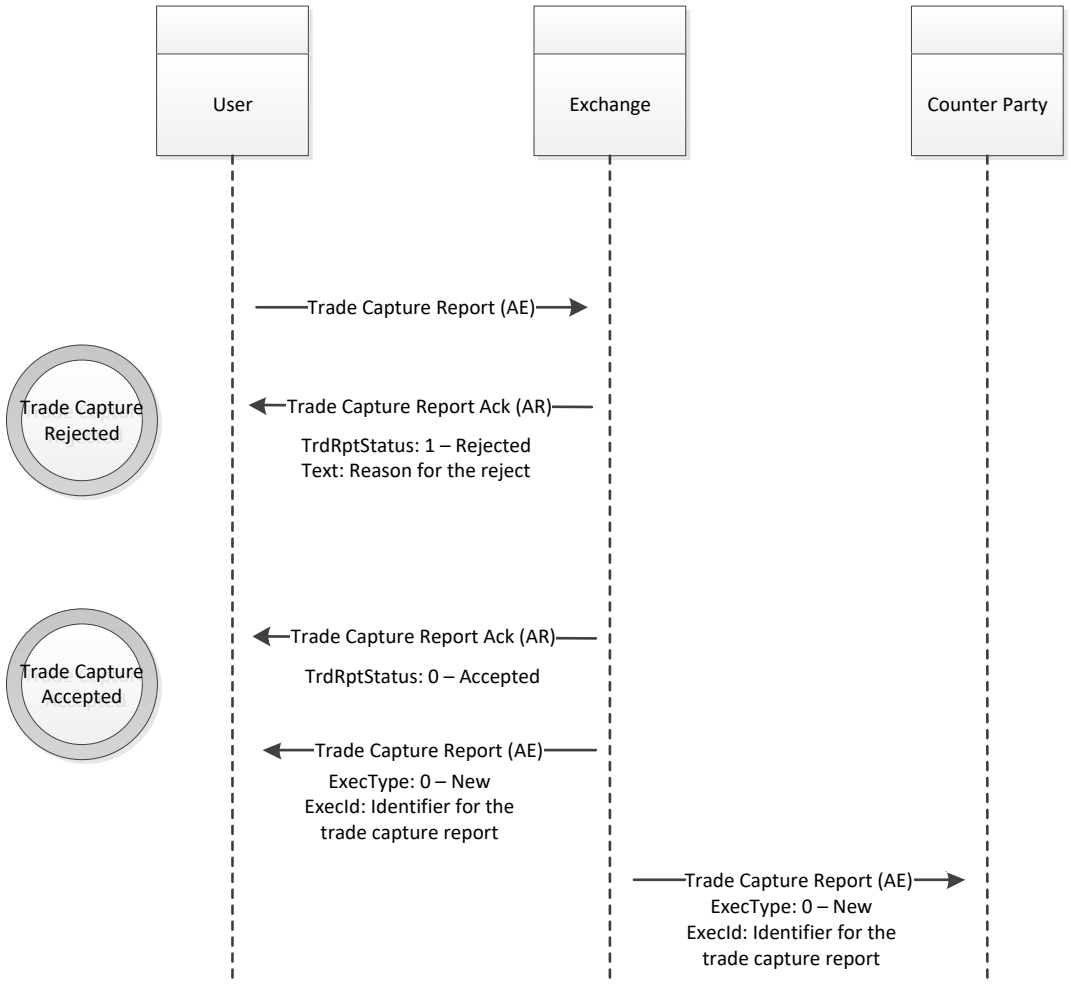
A market trade is a trade capture which requires confirmation/acceptance from a counter party in order to create the matched trade.

The trade capture for a market trade takes place in 2 stages:

9.3.2.1 Initiation

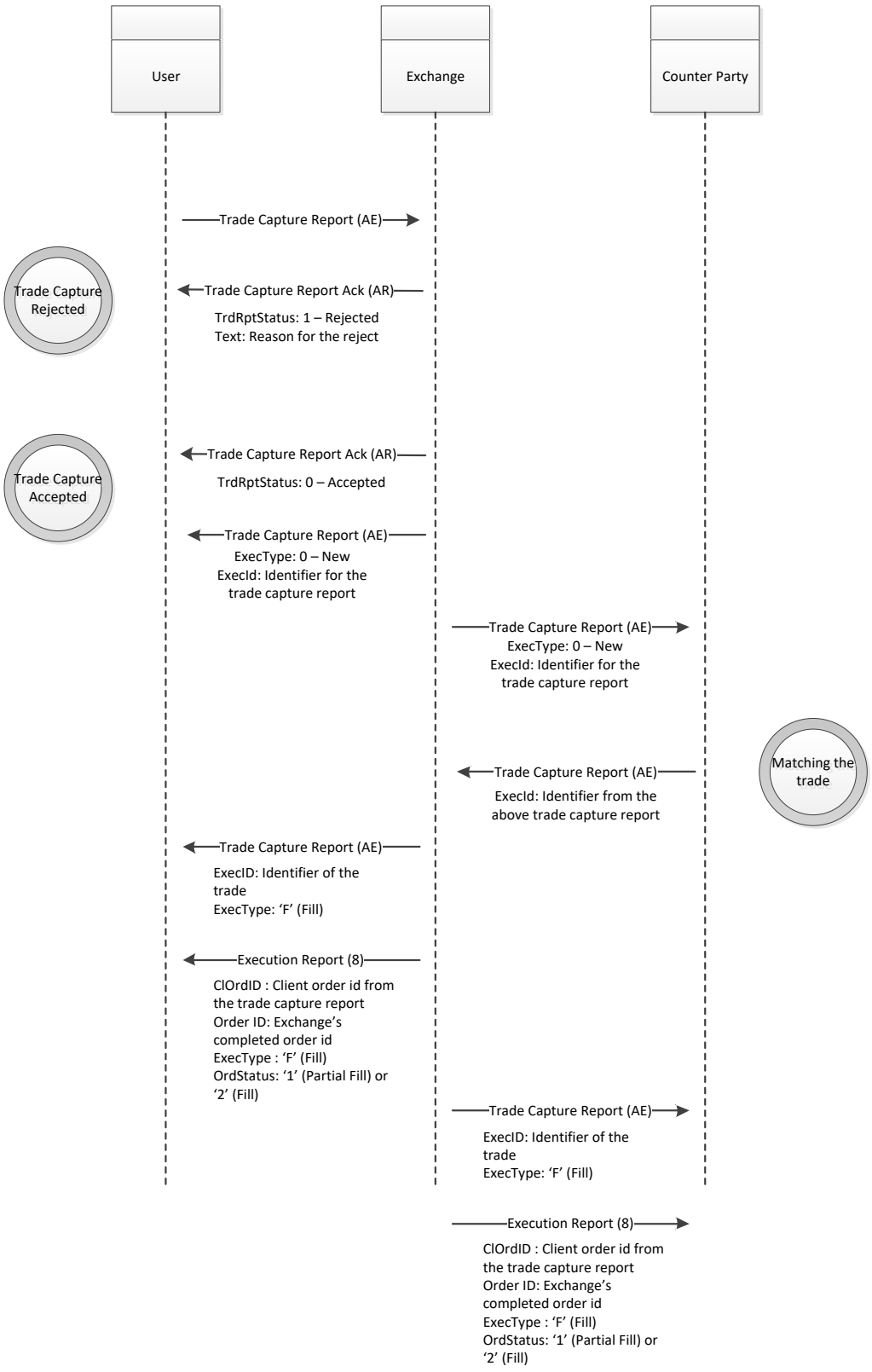
The initiation stage is where the Initiator of the trade report, captures their leg of the trade. In doing so, the counter party firm to the trade report will receive a Trade Capture Report with a New status, and an ExecId which is the unique identifier for their leg of the trade.

The counter party then needs to accept this information as correct to match the trade. This is discussed under the second stage “Matching a trade”.



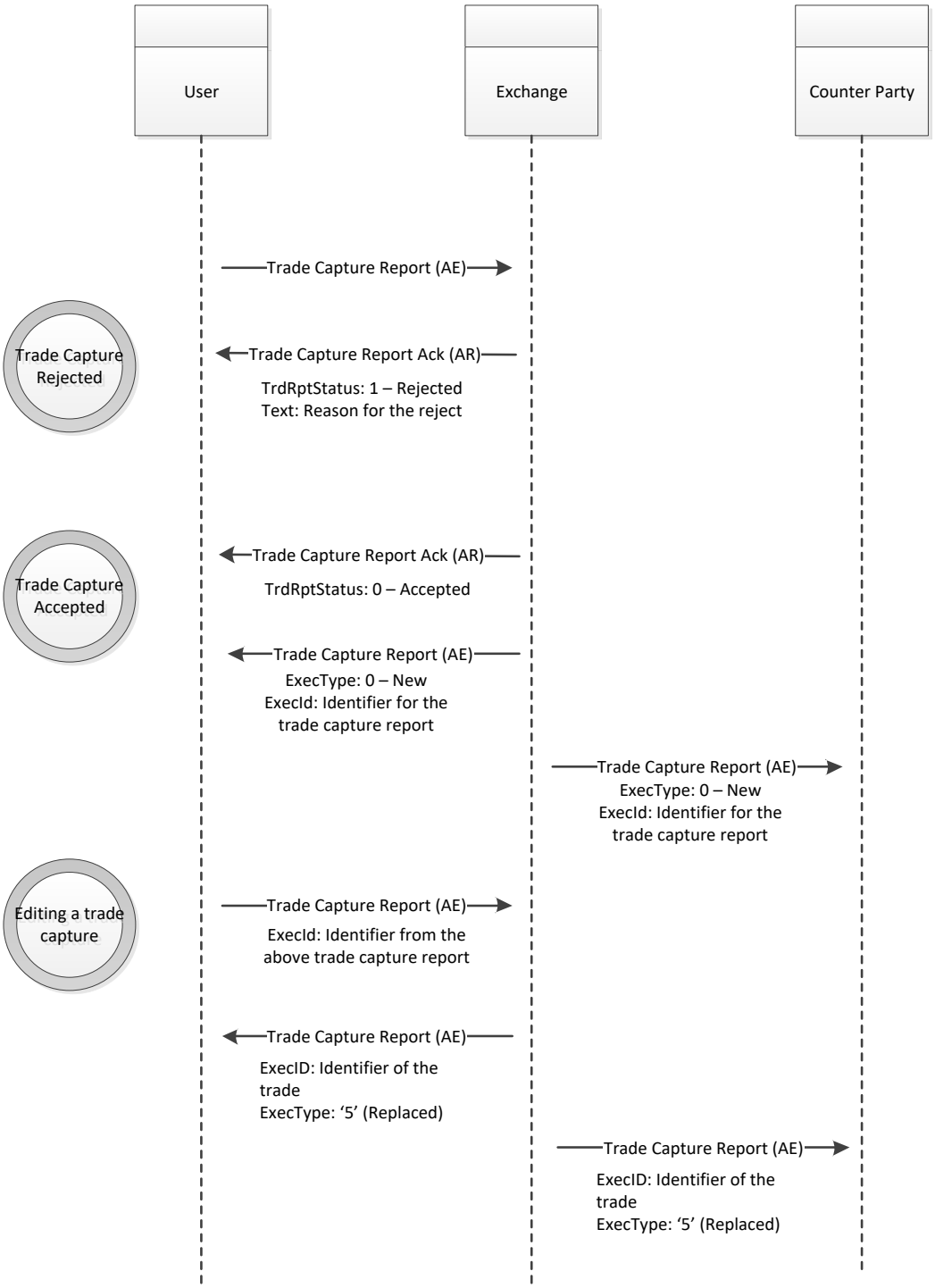
9.3.2.2 Matching a trade

When matching a trade, the counter party simply needs to submit a Trade Capture Report with the ExecId filled in with the identifier of the trade capture report they want to match (i.e. the ExecId of the Trade Capture Report they received from the initiator).



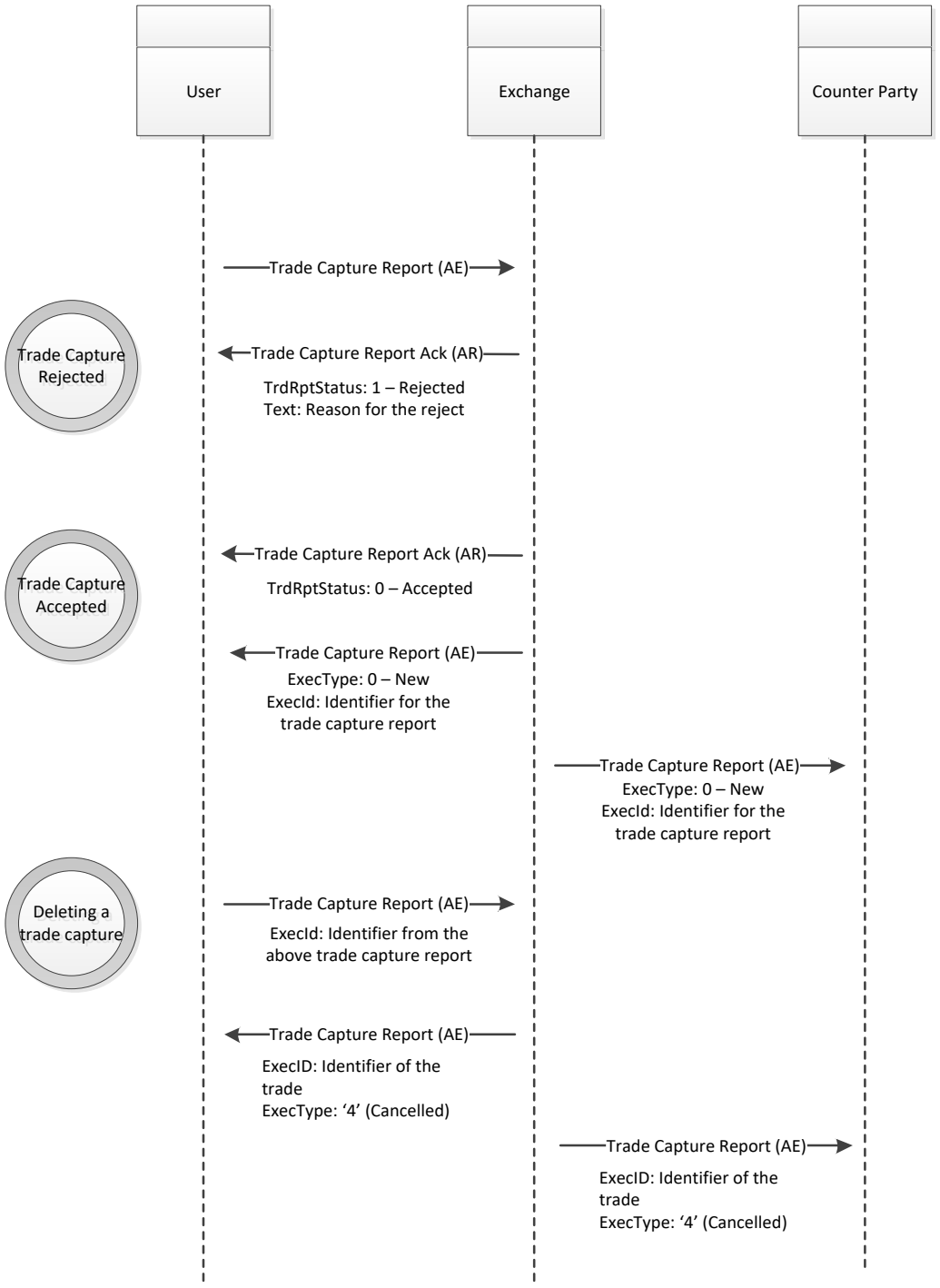
9.3.2.3 Editing a Trade Capture

To edit the details of an existing trade capture report, the user simply sends a Trade Capture Report with the modified details and fills in an ExecId of the identifier of the trade capture they would like to edit. A trade capture report will be sent to acknowledge the update to the trade capture. The counterparty will then receive an updated Trade Capture Report with the new details.



9.3.2.4 Deleting a Trade Capture

To delete the details of an existing trade capture report, the user simply sends a Trade Capture Report with the modified details and fills in an ExecId of the identifier of the trade capture they would like to delete. In addition to this, the TradeReportType should be set to 3 – Decline. A Trade Capture report will be sent with an ExecType of 4 – Cancelled will be sent to acknowledge the delete. The counterparty will also be sent a Trade Capture report to indicate the same.



9.4 Trade Capture Report (AE)

The Trade Capture Report is used to report trades to the exchange.

The response to the Trade Capture Report consists of one or more Trade Capture Reports if the trade matches immediately or a Trade Capture Report Ack and a Trade Capture Report if the counterparty to the trade is required to accept their leg.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = AE	
17	ExecID	N	Indicates on an outgoing confirmation the identifier of the trade report from the exchange.	String
150	ExecType	N	Indicate the type of execution. Only F = Trade is supported.	Char
Component Block – Instrument				
748	TotNumTradeReports	N	Will always be set to 1	Integer
828	TrdType	N	Type of trade. Only 1 = Block Trade is supported.	Integer
574	MatchType	N	Type of match. Only 2 = Two-Party Trade Report is supported.	String
236	Yield	N	For bond instruments indicates the captured yield.	Decimal
31	LastPx	Y	Traded price.	Decimal
32	LastQty	Y	Traded quantity.	Decimal
60	Transacttime	N	Time of trade capture report.	UTCTimeStamp
64	SettlDate	N	Settlement date of the trade in YYYYMMDD format.	String
75	TradeDate	N	Indicates the trade date of the trade.	String
552	Sides Group	Y	Only 1 side is supported.	
54	Side	Y	Side of the order.	Char
11	ClOrdID	N	Client order id for this leg of the trade report.	String
1	Account	Y	Principal on this leg of the trade report.	String
453	Party Group	Y	Must include 3 party entries	
448	Party ID	Y	Identifier of the Party.	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader, or 17 – Contra Firm	Integer
1188	Volatility	N	For option instrument, indicates the volatility.	Decimal
194	LastSpotRate	N	For option instruments, indicates the futures reference price.	Decimal
381	GrossTradeAmt	N	Indicates the cash value of the trade.	Decimal
573	MatchStatus	Y	Indicates 1 if the trade capture report is not yet accepted by the counterparty	Char
Standard Trailer		Y		

9.5 Trade Capture Report Ack (AR)

The Trade Capture Report Ack is used to confirm receipt of a Trade Capture Report.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = AR	
571	TradeReportID	N	Indicates the identifier assigned by the exchange for the trade capture report.	String
856	TradeReportType	N	Indicates the current status of the trade report. Will only be 2 - Accept	Integer
939	TrdRptStatus	N	Indicates if the trade report was accepted or not.	Integer
Component Block – Instrument				
Standard Trailer		Y		

9.6 Trade Capture Report Request (AD)

The Trade Capture Report Request can be used to retrieve all matched trades from the exchange. The response to this message will be a series of Trade Capture Reports for each trade. In order to request Trade Capture Reports for previous days, the user can supply a Trade Date of the date they are requesting for, in the NoDatesGroup. The default date for this request is the current date, if this is not supplied.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = AD	
568	TradeRequestID	Y	Unique identifier for the request.	String
569	TradeRequestType	Y	Only 0 – All trades is accepted	Integer
580	NoDatesGroup	N	Only 1 date is accepted	
75	TradeDate	N	Indicates the date for this request	String
Standard Trailer		Y		

9.7 Request for Positions (AN)

The Request for positions message can be used to retrieve all positions from the exchange for your user. The response to this message will be a series of Position Reports for each position. Note, positions are only returned for derivative type instrument.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = AN	
710	PosReqID	Y	Unique identifier for the request.	String
724	PosReqType	Y	Only 0 – Positions is accepted.	Integer
715	ClearingBusinessDate	Y	Date of the request in YYYYMMDD format.	String
60	TransactTime	Y	Time of the position request.	UTCTimeStamp
Standard Trailer		Y		

9.8 Position Report (AP)

The position report is returned in response to a Request for Positions, and will return all derivative instruments' open positions.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = AP	
721	PosMaintRptID	Y	Unique identifier for the position report	String
724	PosReqType	Y	Only 0 – Positions is accepted	Integer
715	ClearingBusinessDate	Y	Date of the request in YYYYMMDD format	String
453	Party Group	Y	Will include 2 parties	
448	Party ID	Y	Identifier of the Party	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader	Integer
Component Block - Instrument				
1	Account	Y	Indicates the principal on the position	String
702	Positions Group	Y	Will always include 4 positions	
703	PosType	Y	Will be one of the following: SOD – Start of day quantity	Decimal
704	LongQty	N	Will only be included if the position quantity is positive	Decimal
705	ShortQty	N	Will only be included if the position quantity is negative	Decimal
706	PosQtyStatus	Y	Will always be set to 1 - Accepted	Integer
976	QuantityDate	Y	Will be set to the date of the position in YYYYMMDD format	String
Standard Trailer		Y		

10. Post Trade Administration

10.1 Position Maintenance Request (AL)

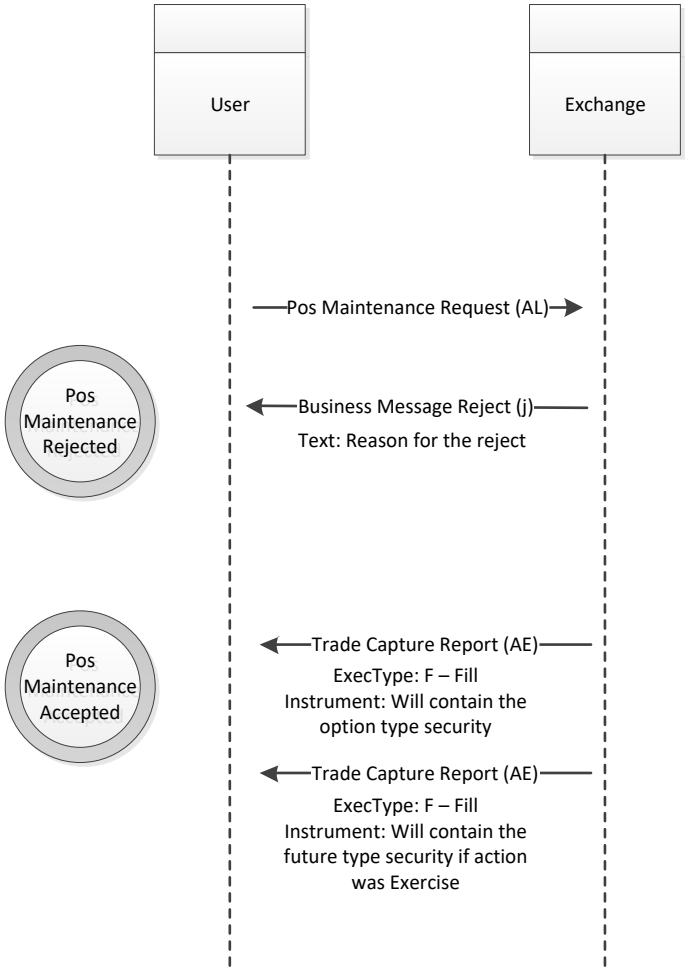
The position maintenance request message is only available for option instruments and allows the user to either exercise or abandon a position on an option. Only long positions can be exercised or abandoned.

The response to a Position Maintenance Request will be a series of trade capture reports to close the specified long quantity on the option position. If the PosTransType is an Exercise, a further series of trade capture reports will be sent to open the required future positions for the Long Qty specified.

NOTE: Depending on the nature of the counterparty positions, the user may receive multiple series of trade capture reports which in totality make up the LongQty, and not necessarily just one trade capture report.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = AL	
709	PosTransType	Y	Indicates the type of position maintenance. Only values supported: 1 – Exercise 2 – Do not exercise (abandon)	Integer
58	Text	Y	Used as an additional reference for this action.	String
453	Party Group	Y	Will include 2 parties	
448	Party ID	Y	Identifier of the Party	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader	Integer
Component Block - Instrument				
1	Account	Y	Indicates the principal on the position	String
710	PosReqID	Y	Identifier for this position maintenance request.	String
702	Positions Group	Y	Only 1 position is accepted	
704	LongQty	N	Indicates the amount of the position to action	Decimal
Standard Trailer		Y		

Work Flow:



10.2 **Allocation Instruction (J)**

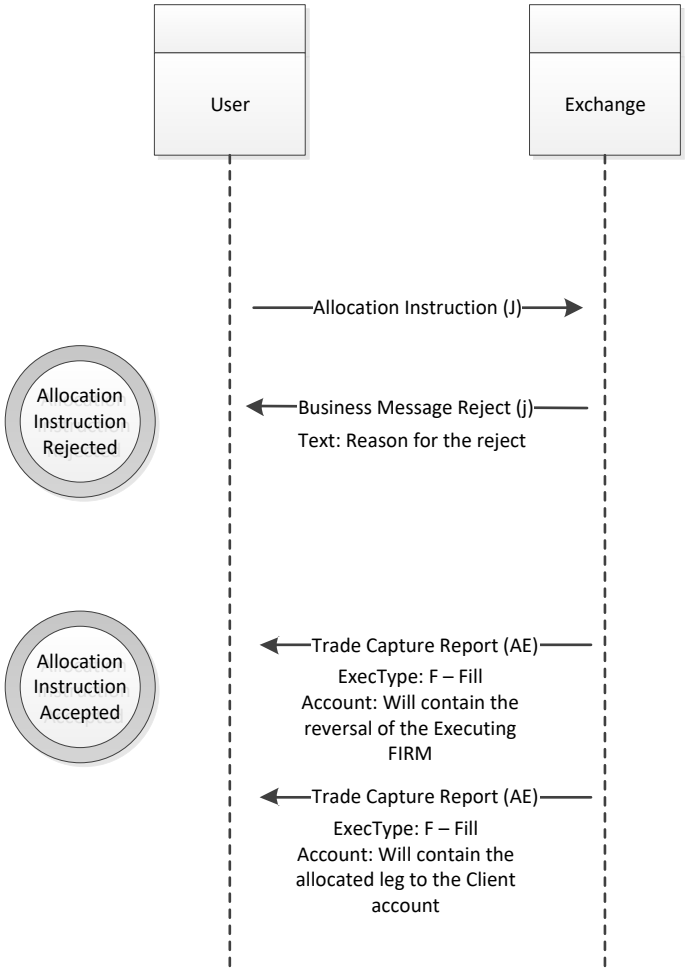
The allocation instruction message allows a user to allocate a trade to a client account. This instruction can only be performed on trades where the Account is an Executing Firm. Trades already on a client account, cannot be allocated further.

The response to an Allocation Instruction will be a series of trade capture reports.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = J	
58	Text	Y	Used as the reference for this action.	String
453	Party Group	Y	Will include 2 parties	
448	Party ID	Y	Identifier of the Party	String
452	Party Role	Y	Indicates the type of the party. Must be either 1 – Executing Firm or 12 – Executing Trader	Integer
Component Block – Instrument				
1	Account	Y	Indicates the principal on the position	String
466	BookingRefID	Y	Identifier for this allocation instruction.	String
78	Allocation Group	Y	Only 1 allocation group is accepted	

TAG	Field Name	Required	Comments	Format
467	IndividualAllocID	Y	Indicates the ExecId of the Trade Capture Report to allocate	String
79	AllocAccount	Y	The principal to which this trade should be allocated to	String
80	AllocQty	Y	The quantity to be allocated	Decimal
366	AllocPrice	Y	The price at which to do the allocation. NOTE: for yield traded instruments this should a yield amount	Decimal
Standard Trailer		Y		

Work Flow:



11. Market Data

The market category consists of the following messages:

- Market Data Request
- Market Data Snapshot/Full Refresh
- News

11.1 Market Data Request (V)

A successful Market Data Request returns one or more Market Data messages containing one or more Market Data Entries. Each Market Data Entry is a Bid, an Offer, a Trade associated with an instrument, the opening, closing, or settlement price of an instrument, the buyer or seller, the value of an index, the trading session high price, low price, or VWAP, or the trade volume or open interest in an instrument.

A request for an order book snapshot should either include an MDEntryType (269) of Bid (0), Offer (1) or Trade (2). An order book snapshot will always contain the details for both sides of the order book as well as any previous trades recorded during the trading session regardless if the request was done using either Bid (0), Offer (1) or Trade (2). A separate message will be sent along with the order book snapshot that contains trade and market statistics information.

In order to retrieve the latest available closing prices, the MDEntryType can be set to '5' – Closing Price. This will then return the latest available closing prices (either from the day before, or the current day if the closing prices for the current day have been made available). The closing prices for securities across all asset classes will be sent in response regardless of the security specified in the request messages.

In order to request and subscribe to the latest index values, the MDEntryType can be set to '3' – Index Value. This will then return a snapshot off the latest index values. The response will always include the latest values for all indices regardless of the index that was specified in the request.

Market Data Entries usually have a price and a quantity associated with them. The market data request message format is as follows.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = V	
262	MDReqID	Y	Identifier for the market data request	String
263	SubscriptionRequestType	Y	Indicates if you would like to subscribe or unsubscribe. Possible options are: 0 = Snapshot 1 = Snapshot + Updates (Subscribe) 2 = Disable previous Snapshot + Update Request (Unsubscribe) **NOTE:** Tag 263 = 2 (Unsubscribe) will **NOT** apply when Tag 269 is set to "5 (Closing Price) ". *"Closing Price"* file download takes place as part of the **Market Data Snapshot/FullRefresh (W) message response** every time Tag 269 is set to "5" regardless of the **Subscription Request Type**	Char
264	MarketDepth	Y	Is required by FIX but is not processed on the request	Int

267	Market Data Entry Type Group	Y	Only 1 group is accepted	
269	MDEntryType	Y	Only the following is made available 0 – Bid 1 – Offer 2 – Trade 3 – Index Value 5 – Closing Price When subscribing to either 0, 1 or 2 all order book, trade, and indicator (OHLC) information will be returned. When subscribing to 3 only index information will be returned. When subscribing the 5 the latest available closing price will be returned including indicators for that date.	Char
146	Related symbol group	Y	A maximum of 40 entries is accepted	
Component Block – Instrument				
Standard Trailer		Y		

11.2 **Market Data Snapshot/Full Refresh (W)**

The Market Data messages are used as the response to a Market Data Request message.

After a Market Data Request, when a Bid or Offer is added, changed, or deleted or a trade is recorded every update to a Market Data Entry results in a new Market Data Snapshot message that contains the entirety of the data requested for that instrument, not just the changed Market Data Entry. In other words, both sides of the market, or just one side in the case of a request of only bids or offers, for the depth requested, must be sent in one FIX Market Data Snapshot message.

A Market Data Snapshot message may contain several trades, an index value, opening, closing, settlement, high, low, and/or VWAP price for one instrument, as well as the traded volume and open interest, but only for one instrument per message.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = W	
1021	MDBookType	N	Always be set to 2 – Price Depth	Integer
1173	MDSubBookType	N	Indicates the originating board for this snapshot: 0 – Normal Board 1 – Odd Lot Board 2 – All or Nothing Board 3 – Off-screen/Report Only	Integer
264	MarketDepth	N	Indicates the number of depth entries on this snapshot.	Integer
75	TradeDate	N	Indicates the date of this snapshot	String
451	NetChgPrevDay	N	Indicates the change from the last traded price to the opening price.	Decimal
541	MaturityDate	N	Maturity Date of the current Settlement Cycle.	Date
Component Block – Instrument				
268	Market Data Entries Group	N		
269	MDEntryType	Y	Only the following is made available. 0 – Bid 1 – Offer 2 – Trade	Char

			3 – Index Value 4 – Opening Price 5 – Closing Price 6 – Settlement Price 7 – Trading Session High Price 8 – Trading Session Low Price 9 – Trading Session VWAP B – Trade Volume C – Open Interest/Market Cap D – Underlying Composite Price J – Empty Book X – Cash Rate (Used for volatility) e – Previous Closing Price	
270	MDEntryPx	N	Indicates the price on this depth item	Decimal
271	MDEntrySize	N	Indicates the quantity on this depth item	Decimal
273	MDEntryTime	N	Time of Market Data Entry	UTCTimeStamp
278	MDEntryID	N	Unique Market Data Entry identifier.	String
40	OrdType	N	Indicates the type of order. 2 = Limit 3 = Stop Order a = Iceberg b = All or Nothing	Char
288	MDEntryBuyer	N	If the MDEntryType is 0 indicates the buyer's firm code	String
289	MDEntrySeller	N	If the MDEntryType is 1 indicates the seller's firm code.	String
44	Price	N	Indicates the index price	Decimal
140	PrevClosePx	N	Indicates the opening index price	Decimal
1024	MDOriginType	N	Used to describe the origin of the market data entry. 0 = On-book 1 = Off-book	Integer
Standard Trailer		Y		

11.3 **News (B)**

The news message is a general free format message between the Exchange and participant.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = B	
42	OrigTime	N	Time of the news message	UTCTimeStamp
148	Headline	Y	Specifies the headline text	String
1300	MarketSegmentID	N	Taken from FIX5.0 SP2	String
1301	MarketID	N	Taken from FIX5.0 SP2	String
33	Lines of Text Group	Y		
58	Text	Y	Text message of the news	String
Standard Trailer		Y		

12. Reference Data

The reference data category consists of the following messages:

- Trading Session List Request
- Trading Session List
- Security Definition Request
- Security Definition
- Party Details List Request
- Party Details List Report

12.1 Trading Session List Request (BI)

The Trading Session List Request is a message used to retrieve the list of all trading sessions on the market.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = BI	
335	TradSesReqID	Y	Identifier for the request	String
263	SubscriptionRequestType	Y	Required by FIX but not processed.	Char
Standard Trailer		Y		

12.2 Trading Session List (BJ)

The Trading Session List Request is a message used to retrieve the list of all trading sessions on the market.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = BJ	
335	TradSesReqID	Y	Identifier used for the request	String
386	Trading Sessions Group	Y		
336	TradingSessionID	Y	Identifier for the trading session	String
340	TradSesStatus	Y	Always 2 – Open	Int
341	TradSesStartTime	Y	Starting time of the session	UTCTimeStamp
345	TradSesEndTime	Y	End time of the session	UTCTimeStamp
1326	TradingSessionDesc	Y	Description of the trading session	String
Standard Trailer		Y		

12.3 Security Definition Request (c)

The Security Definition Request message is used to request a list of all instruments on the exchange. The reply to this message will be a series of Security Definition records for each instrument.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = c	
320	SecurityReqID	Y	Identifier used for the request	String
321	SecurityRequestType	Y	8 – All securities supported 2 – Index Codes	Integer
Standard Trailer		Y		

12.4 **Security Definition (d)**

The Security Definition message is sent in reply to a Security Definition Request and will list the details of an instrument. A user may also receive this record unsolicited when a new instrument is created on the exchange.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = d	
320	SecurityReqID	Y	Identifier used for this record	String
322	SecurityResponseId	N	Identifier for this message	Integer
323	SecurityResponseType	N	Always 1 – Accept Security proposal as-is	Integer
Component Block – Instrument				
225	IssueDate	N	Date of issue for this instrument	String
228	Factor	N	Indicates the Quantity Multiplier for Fixed Income Securities.	Decimal
1194	ExerciseStyle	N	For option instruments always 0 – European	Integer
2544	MarketSegmentSubType	N	Identifier used indicator the linked market “Sector”. Request list of available sectors and their ID’s from the Exchange.	String
1310	NoMarketSegments	N	Indicates number of Market Segments Groups that the Security belongs to. Will always be 1.	Integer
1301	MarketID	N	Identifies the market which lists and trades the instrument.	String
1300	MarketSegmentID	N	Identifies the market segment, which lists and trades the instrument. I.e., The board the security is listed on.	String
231	ContractMultiplier	N	For fixed income instruments indicates the par value.	Decimal
969	MinPriceIncrement	N	Minimum price increment for this instrument.	Decimal
1193	SettlMethod	N	Indicates if this product is cash or physically settled.	Char
107	SecurityDesc	N	A description of the instrument.	String
15	Currency	N	Indicates the settlement currency for this instrument.	String
223	CouponRate	N	For bond instruments indicates the coupon rate paid.	Decimal
55	Symbol	N	Indicates the market representation of the instrument.	String
1151	SecurityGroup	N	Indicates the trading session sequence which the security will be traded on.	String
455	SecurityAltID	N	ISIN of the instrument	String
456	SecurityAltIDSource	N	Always 4 – ISIN	String
454	NoSecurityAltID	N	Always 1 – Number of entries	Integer
Standard Trailer		Y		

12.5 Party Details List Request (CF)

The Party Details List request is used to request a list of all party information for the user. This will include all firms, trader and client accounts.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = CF	
1505	PartyDetailsListRequestID	Y	Identifier used for the request	String
1506	Party List Response Group	Y	Only 1 group is supported	
1507	PartyListResponseType	Y	Only 1 – Return only party information is supported	Integer
Standard Trailer		Y		

12.6 Party Details List Report (CG)

The Party Details List Report is sent in reply to a Party Details List Request, and includes all firms, traders and client accounts. Each message is populated with a maximum of 50 clients at a time.

TAG	Field Name	Required	Comments	Format
Standard Header		Y	MsgType = CG	
1510	PartyDetailsListReportID	Y	Identifier used for the report	String
893	Last Fragment	Y	Indicates if this is the last fragment of the transmission	Boolean
453	Party List Group	Y	Number of PartyID (448), PartyIDSource (447), and PartyRole (452) entries in the repeating group.	Integer
452	PartyRole	Y	Only values 1 – Executing Firm, 3 – ClientID and 12 – Executing Trader are supported	Integer
448	PartyID	Y	Indicates the identifier for this party	String
447	PartyIDSource	Y	Only D – Proprietary/Custom is supported.	Char
1516	Party Alt Group	N	Number of party alternative identifier entries.	
1517	PartyAltID	N	Indicates in specific order the name of the party the account code at the CSD, account BPID and account SCA number.	String
1562	Related Party Group	N	Total number of PartyListGrp returned.	
1563	RelatedPartyID	N	Indicates the ID of the related party	String
1565	RelatedPartyRole	N	Only values 1 – Executing Firm, 12 – Executing Trader are supported	Integer
Standard Trailer		Y		

Appendix A – Standard Header and Trailer

A.1 Standard Header

The standard message header format is as follows.

TAG	Field Name	Required	Comments	Format
8	BeginString	Y	FIXT.1.1 (always unencrypted, must be first field in message)	String
9	BodyLength	Y	(Always unencrypted, must be second field in message)	Length
35	MsgType	Y	(Always unencrypted, must be third field in message)	String
1128	ApplVerID	N	Specifies the service pack release being applied at the message level. The only valid value is '8' = FIX50SP1	String
49	SenderCompID	Y	(Always unencrypted). Identifies the firm sending the message.	String
56	TargetCompID	Y	(Always unencrypted). Identifies the firm receiving the message.	String
34	MsgSeqNum	Y	(Can be embedded within encrypted data section.)	SeqNum
43	PossDupFlag	N	Always required for retransmitted messages, whether prompted by the sending system or as the result of a resend request. (Can be embedded within encrypted data section.)	Boolean
97	PossResend	N	Required when message may be duplicate of another message sent under a different sequence number. (Can be embedded within encrypted data section.)	Boolean
52	SendingTime	Y	Can be embedded within encrypted data section.	UTCTimeStamp
122	OrigSendingTime	N	Required for message resent as a result of a ResendRequest. If data is not available set to same value as SendingTime (can be embedded within encrypted data section.)	UTCTimeStamp

A.2 Standard Trailer

Each message, administrative or application, is terminated by a standard trailer. The trailer is used to segregate messages and contains the three-digit character representation of the Checksum value.

The standard message trailer format is as follows.

TAG	Field Name	Required	Comments	Format
10	CheckSum	Y	(Always unencrypted, always last field in message)	String

Appendix B – Component Blocks

B.1 Instrument Component Block

The Instrument component block contains all the fields commonly used to describe an instrument or instrument. The Instrument component block can be used to describe any asset type supported by FIX.

The Instrument component, when part of a transaction that is inbound to the Exchange must always contain the following fields for all asset classes:

- Symbol (55) (required by FIX but not processed. supply any value)
- SecurityID (48)
- SecurityType (167)
- MaturityDate (541)

In addition to the above the following fields are additionally required for different instrument types:

Option Instruments:

- StrikePrice (202)
- PutOrCall (201)
- SecurityType (167) (must be set to “OPT”)

Delta Neutral Option Strategies:

- StrikePrice (202)
- PutOrCall (201)
- SecurityType (167) (only value “MLEG” is supported)

Calendar Spreads:

- SecurityType (167) (only value “MLEG” is supported)
- SecuritySubType (762) (must be set to “Calendar”)
- UnderlyingInstrument Group (711)
  - UnderlyingMaturityDate (542)
  - UnderlyingSecurityID (309)

Product Spreads:

- SecurityType (167) (only value “MLEG” is supported)
- SecuritySubType (762) (must be set to “Product”)
- UnderlyingInstrument Group (711)
  - UnderlyingMaturityDate (542)
  - UnderlyingSecurityID (309)

Bond Instruments:

- SecurityType (167) (must be set to “CORP”)
- MaturityDate (541) (must be set to the settlement date of the transaction)

Future Instruments:

- SecurityType (167) (must be set to “FUT”)
- MaturityDate (541) (must be set to the Expiery date of the transaction)

Cash Equities and other Fixed Income Instruments:

- SecurityType (167) (must be set to “CS”)
- MaturityDate (541) (must be set to the settlement date of the transaction)

Commodity Instruments:

- SecurityType (167) (must be set to “CASH”)

Instrument Component Block:

TAG	Field Name	Required	Comments	Format
55	Symbol	Y	Required by FIX but not processed. supply any value	String
48	SecurityID	Y	Identifier for the instrument as used by the gateway.	String
22	SecurityIdSource	Y	Only a value of 8 = Exchange Symbol is supported	String
762	SecuritySubType	N	Used to identify strategy instruments.	String
167	SecurityType	Y	Indicates type of instrument. Valid values: CS = Common Stock FUT = Future COPR = Corporate Bond (This value is used to represent any category of Bond) OPT = Option	String
541	MaturityDate	Y	Specifies the maturity date, expiry date, or settlement date of an instrument. For equities and bonds use settlement date of current cycle excluding weekends and public holidays.	String
202	StrikePrice	N	Strike Price for an Option.	Price
201	PutOrCall	N	Indicates whether an option instrument is a put or call.	Integer
711	Underlying Instrument Group	N		
309	UnderlyingSecurityID	N	Indicates the other instrument involved in the strategy. For calendar spreads should be set to the same as the SecurityID.	String
542	UnderlyingMaturityDate	N	Indicates the other instruments’ maturity date. For product spreads should be set to the same as the MaturityDate.	String

Appendix C – FIX Data Types

Data types (with the exception of those of type "data") are mapped to ASCII strings as follows.

int	Sequence of digits without commas or decimals and optional sign character (ASCII characters "-" and "0" - "9"). The sign character utilises one byte (i.e. positive int is "99999" while negative int is "-99999"). Note that int values may contain leading zeros (e.g. “00023” = “23”). Examples: 723 in field 21 would be mapped int as |21=723|. -723 in field 12 would be mapped int as |12=-723| The following data types are based on int.	
	Length	int field representing the length in bytes. Value must be positive.
	TagNum	int field representing a field's tag number when using FIX "Tag=Value" syntax. Value must be positive and may not contain leading zeros.
	SeqNum	int field representing a message sequence number. Value must be positive.
	NumInGroup	int field representing the number of entries in a repeating group. Value must be positive.
	DayOfMonth	int field representing a day during a particular month (values 1 to 31).
float	Sequence of digits with optional decimal point and sign character (ASCII characters "-", "0" - "9" and "."); the absence of the decimal point within the string will be interpreted as the float representation of an integer value. All float fields must accommodate up to fifteen significant digits. The number of decimal places used should be a factor of business/market needs and mutual agreement between counterparties. Note that float values may contain leading zeros (e.g. “00023.23” = “23.23”) and may contain or omit trailing zeros after the decimal point (e.g. “23.0” = “23.0000” = “23” = " 23."). Note that fields which are derived from float may contain negative values unless explicitly specified otherwise. The following data types are based on float.	
	Qty	float field capable of storing either a whole number (no decimal places) of “shares” (instruments denominated in whole units) or a decimal value containing decimal places for non-share quantity asset classes (instruments denominated in fractional units).
	Price	float field representing a price. Note the number of decimal places may vary. For certain asset classes, prices may be negative values. For example, prices for options strategies can be negative under certain market conditions (see FIX Specifications Volume 7: FIX Usage by Product for asset classes that support negative price values).
	PriceOffset	float field representing a price offset, which can be mathematically added to a "Price". Note the number of decimal places may vary and some fields such as LastForwardPoints may be negative.
	Amt	float field typically representing a Price times a Qty
	Percentage	float field representing a percentage (e.g. 0.05 represents 5% and 0.9525 represents 95.25%). Note the number of decimal places may vary.
char	Single character value, can include any alphanumeric character or punctuation except the delimiter. All char fields are case sensitive (i.e. m != M). The following fields are based on char.	
	Boolean	char field containing one of two values: 'Y' = True/Yes 'N' = False/No
String	Alpha-numeric free format strings, can include any character or punctuation except the delimiter. All String fields are case sensitive (i.e. morstatt != Morstatt).	
	MultipleCharValue	string field containing one or more space delimited single character values (e.g. |18=2 A F|).

MultipleStringValue	string field containing one or more space delimited multiple character values (e.g. |277=AV AN A|).
Country	string field representing a country using ISO 3166 Country code (2 character) values (see FIX Specifications Volume 6 - Appendix 6-B).
Currency	string field representing a currency type using ISO 4217 Currency code (3 character) values (see FIX Specifications Volume 6 - Appendix 6-A).
Exchange	string field representing a market or exchange using ISO 10383 Market Identifier Code (MIC) values (see FIX Specifications Volume 6 - Appendix 6-C).
MonthYear	string field representing month of a year. An optional day of the month can be appended or an optional week code. Valid formats: YYYYMM YYYYMMDD YYYYMMWW Valid values: YYYY = 0000-9999; MM = 01-12; DD = 01-31; WW = w1, w2, w3, w4, w5.
UTCTimestamp	string field representing Time/date combination represented in UTC (Universal Time Coordinated, also known as “GMT”) in either YYYYMMDDHH:MM:SS (whole seconds) or YYYYMMDD-HH:MM:SS.sss (milliseconds) format, colons, dash, and period required. Valid values: YYYY = 0000-9999, MM = 01-12, DD = 01-31, HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second) (without milliseconds). YYYY = 0000-9999, MM = 01-12, DD = 01-31, HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second), sss=000-999 (indicating milliseconds). Leap Seconds: Note that UTC includes corrections for leap seconds, which are inserted to account for slowing of the rotation of the earth. Leap second insertion is declared by the International Earth Rotation Service (IERS) and has, since 1972, only occurred on the night of Dec. 31 or Jun 30. The IERS considers March 31 and September 30 as secondary dates for leap second insertion, but has never utilised these dates. During a leap second insertion, an UTCTimestamp field may read "1998123123:59:59", "19981231-23:59:60", "19990101-00:00:00". (see http://tycho.usno.navy.mil/leapsec.html)
UTCTimeOnly	string field representing Time-only represented in UTC (Universal Time Coordinated, also known as "GMT") in either HH:MM:SS (whole seconds) or HH:MM:SS.sss (milliseconds) format, colons, and period required. This special-purpose field is paired with UTCDateOnly to form a proper UTCTimestamp for bandwidth-sensitive messages. Valid values: HH = 00-23, MM = 00-60 (60 only if UTC leap second), SS = 00-59. (without milliseconds) HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second), sss=000-999 (indicating milliseconds).

	UTCDateOnly	string field representing Date represented in UTC (Universal Time Coordinated, also known as “GMT”) in YYYYMMDD format. This specialpurpose field is paired with UTCTimeOnly to form a proper UTCTimestamp for bandwidth-sensitive messages. Valid values: YYYY = 0000-9999, MM = 01-12, DD = 01-31.
	LocalMktDate	string field representing a Date of Local Market (as opposed to UTC) in YYYYMMDD format. This is the “normal” date field used by the FIX Protocol. Valid values: YYYY = 0000-9999, MM = 01-12, DD = 01-31.
	data	string field containing raw data with no format or content restrictions. Data fields are always immediately preceded by a length field. The length field should specify the number of bytes of the value of the data field (up to but not including the terminating SOH). **Caution:** The value of one of these fields may contain the delimiter (SOH) character. Note that the value specified for this field should be followed by the delimiter (SOH) character as all fields are terminated with an “SOH”.

Appendix D – Tag Special Values

Using special tag values, you are able to create dynamic messages and ensure that the values sent are valid.

TAG	DESCRIPTION
$ASK	Ask user for tag value.
$UNIQUE	Generate a unique number.
$LASTUNIQUE	Last generated unique number.
$TIMESTAMP	Current UTC timestamp.
$DATE	Current UTC date in YYYYMMDD format.
$DATE[DAYS]	Current UTC date in YYYYMMDD format with Days offset. E.g. $Date[2], Date[-2]
$RNDNUM[LOW,HIGH/STEP]	Generate a random number between specified values. E.g. $RNDNUM[10, 11, 0.25]
$RNDSTR[FIRST,NEXT,…,LAST]	Generate a random string from a set of specified set of strings. E.g. $RNDSTR[EUR,USD,JPY]
$SEC[TAG]	Use the value from a selected tag.

13. Sign-off

All parties signing this document acknowledge that they have read, understood and are committed to this document, including all attached schedules and diagrams.

Name:	_____	**Name:**	_____
Designation:	_____	**Designation:**	_____
Project Role:	_____	**Project Role:**	_____
Signature:	_____	**Signature:**	_____
Date:	_____	**Date:**	_____
Name:	_____	**Name:**	_____
Designation:	_____	**Designation:**	_____
Project Role:	_____	**Project Role:**	_____
Signature:	_____	**Signature:**	_____
Date:	_____	**Date:**	_____