oneZero FINANCIAL

FIX 4.4 Conformance Test Plan

Confidential and Proprietary

Version 1.2 – 1/12/2015

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Versions

Version Number	Date	Changes
1.0	12/12/2012	Initial Version
1.1	6/21/2014	Updated Test plan structure, added FIX tag numbers where appropriate to aid test participants.
1.2	3/31/2016	Added Querying Positions & Collateral Reports

Introduction

Purpose

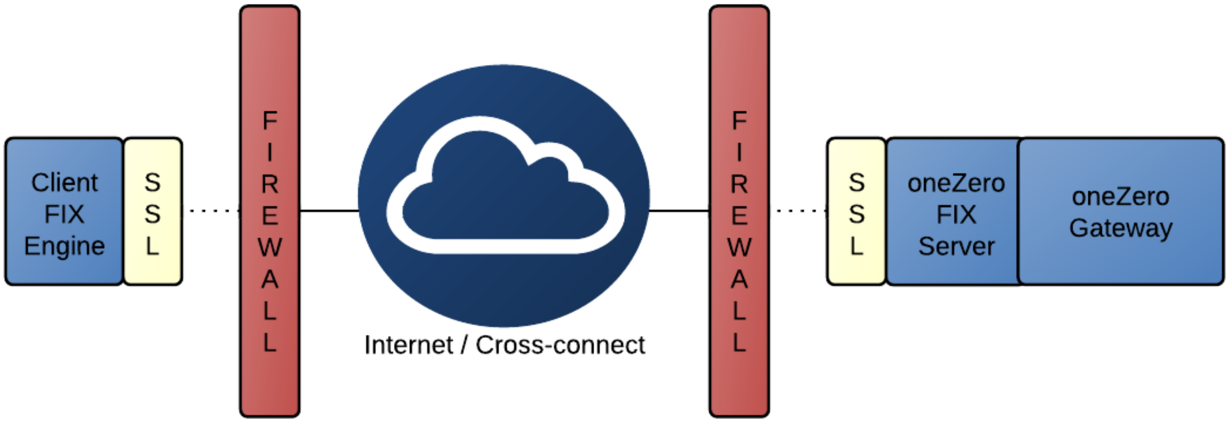
The purpose of this document is to outline the test cases necessary to verify the rules of engagement for interfacing with the oneZero Financial Systems Gateway via the Financial Information eXchange (FIX) protocol.

Functionality

The oneZero FIX 4.4 API is designed specifically for spot markets, specifically foreign exchange (FX) and contracts for difference (CFDs). The FIX API into oneZero's quote/trading routing engine are designed for the following functionalities:

- Connectivity and Authentication
- Quote Streaming (Subscription, Incremental Update)
- Order Execution

System Overview



References

More information on oneZero Financial Systems, LLC and the oneZero Financial Systems Gateway can be found at our website: www.onezero.com

Documentation and standards for the FIX Protocol are available from the FIX Protocol Limited organization via their website: www.fixprotocol.org

Connectivity and Authentication

Part 1: Test Cases

Please perform the test cases below, please note some will require assistance from oneZero.

Test Case	Results	
	Quoting	Trading
1.a) Client Opens Socket Connection to oneZero FIX Server on pre-defined port.	Pass / Fail	Pass / Fail
1.b) Client sends Logon (35=A).	Pass / Fail	Pass / Fail
1.c) oneZero sends Logon Response (35=A).	Pass / Fail	Pass / Fail
1.d) oneZero / Client Exchange Heartbeat Message (35=0).	Pass / Fail	Pass / Fail
1.e) Client sends Logout (35=5), oneZero acknowledges Logout Message (35=5).	Pass / Fail	Pass / Fail
1.f) oneZero sends Logout Message (35=5), Client acknowledges Logout Message (35=5).	Pass / Fail	Pass / Fail
1.g) Client sends Logon Message (35=A) with an invalid password (554), oneZero responds with Reject (35=5).	Pass / Fail	Pass / Fail
1.h) oneZero and Client reset sequence numbers on Trade/Quote sessions	Pass / Fail	Pass / Fail
1.i) Optional: oneZero and Client to test Resend Request (35=2) functionality by having each side modify sequence numbers to trigger resend requests.	Pass / Fail	Pass / Fail

Part 2: Verifying FIX Messaging

Using the logs generated by the scenarios in Part 1, please verify the FIX messages based on the criteria below.

FIX Message Criteria	Results	
	Quoting	Trading
2.a) BeginString (8) is always present and the first field.	Pass / Fail	Pass / Fail
2.b) BodyLength (9) is always present and the second field.	Pass / Fail	Pass / Fail
2.c) MessageType (35) is always present and the third field .	Pass / Fail	Pass / Fail
2.d) Verify MsgSeqNum (34), SenderCompID (49) and TargetCompID (56) are always present.	Pass / Fail	Pass / Fail
2.e) Verify Password (554) is present in Logon (35=A), but not any other message types.	Pass / Fail	Pass / Fail
2.f) In Verify ResetSeqNumFlag (141) is set appropriately for behavior agreed to in **1.h**. Verify Quoting is resetting every login.	Pass / Fail	Pass / Fail

Quote Streaming

Part 3: Test Cases

Please perform the test cases below, please note some will require assistance from oneZero

Test Case	Results
3.a) Client sends MarketDataRequest (35=V), oneZero responds with MarketDataSnapshot / Full Refresh (35=W), Client and oneZero verify pricing	Pass / Fail
3.b) Client sends MarketDataRequest (35=V) for multiple products, note if done in bulk or individual messages per symbol, Client and oneZero verify pricing	Bulk / Individual
3.c) Client sends MarketDataRequest (35=V) with unsupported symbol (XXX/YYY), oneZero responds with MaketDataRequestReject (35=Y). Client should acknowledge the reject, and should not attempt to re-subscribe to the unsupported symbol during active session.	Pass / Fail
3.d) oneZero sends a QuoteCancel (35=Z) to the client for a symbol they are currently receiving quotes for. Client should acknowledge receipt of the QuoteCancel msg without rejection back to oneZero Bridge.	Pass/Fail
3.e) Optional: Client sends MarketDataRequest (35=V) where SubscriptionRequestType (263) is “Unsubscribe” (2) to cancel streaming, oneZero and Client verify pricing stops.	Pass / Fail
3.f) Optional: Client sends MarketDataRequest (35=V) where Market Depth (264) > 1, oneZero sends multiple price bands to Client, oneZero and Client verify number and depth of price bands.	Pass / Fail

Part 4: Verifying FIX Messaging

Using the logs generated by the scenarios in Part 3, please verify the FIX messages based on the criteria below.

FIX Message Criteria	Results
4.a) In MarketDataRequest (35=V), MDReqID (262) is always present and unique per session.	Pass / Fail
4.b) In MarketDataRequest (35=V), MDUPdateType (265) is always present and has a value of 0 (Full Refresh).	Pass / Fail
4.c) In MarketDataRequest (35=V), NoMDEntryTypes (267) is always present and has a value of 2.	Pass / Fail
4.d) If using Bulk subscription in **3.b**, then in MarketDataRequest (35=V) NoRelatedSym (146) = the number of symbols requested, otherwise NoRelatedSym (146) = 1.	Pass / Fail
4.e) In MarketDataRequestReject (35=Y), verify MDReqID (262) matches MDReqID (262) from the MarketDataRequest (35=V) message being rejected.	Pass / Fail

Order Execution

Part 5: Test Cases

Please perform the test cases below, please note some will require assistance from oneZero

Test Case	Results
5.a) Client sends NewOrderSingle (35=D), oneZero responds with ExecutionReport (35=8), OrdStatus (39) is “Pending New” (A) and ExecType (150) is “Pending New” (A).	Pass / Fail
5.b) Client sends NewOrderSingle (35=D), oneZero responds with ExecutionReport (35=8) where ExecType (150) is “Trade” (F) and OrdStatus (39) is “Filled” (2), Client and oneZero verify trade economics.	Pass / Fail
5.c) Repeat **5.b** for each Time in Force (GTC,IOC,FOK) and Market Type (Limit, Market, PrevQuoted) the Client supports. Send orders with varying Symbol (55), Side (54) and OrderQty (38).	Pass / Fail
5.d) Client disconnects. Then reconnects and places additional orders, oneZero verifies ClOrdID (11) is unique across sessions in NewOrderSingle (35=D).	Pass / Fail
5.e) Cancel with Remainder: Client sends NewOrderSingle (35=D), oneZero sends ExecutionReport (35=8) where ExecType (150) is “Canceled” (4) and CumQty (14) is the filled amount, oneZero and Client verify trade economics.	Pass / Fail
5.f) Rejects: Client sends NewOrderSingle (35=D), oneZero sends ExecutionReport (35=8) where ExecType (150) is“Rejected” (8). Client and oneZero to verify OrdRejectReason (103).	Pass / Fail
5.g) Order Cancel: Client sends NewOrderSingle (35=D), oneZero holds the order in “New”, Client sends OrderCancelRequest (35=F), oneZero respond with ExecutionReport (35=8) with ExecType “Canceled” (4).	Pass / Fail
5.h) On Behalf of Comp ID (Optional): oneZero sets up an On Behalf Of Comp ID for the FixTaker. Client sends NewOrderSingle (35=D) with tag 115 set to the OBO id set up by oneZero.	Pass / Fail

Part 6: Verifying FIX Messaging

Using the logs generated by the scenarios in Part 5, please verify the FIX messages based on the criteria below.

FIX Message Criteria	Results
6.a) In NewOrderSingle (35=D), ClOrdID (11) is always present and unique across sessions.	Pass / Fail
6.b) In NewOrderSingle (35=D), for each trade in 5.b and 5.c, verify Symbol (55), Side (54), OrderQty (38), TimeInForce (59), and OrdType (40). If OrdType (40) = "Limit" (2), verify Price (44).	Pass / Fail
6.c) In ExecutionReport (35=D), where ExecType is "Trade" (F) and OrdStatus (39) is "Filled"(2), for each trade in **5.b** and **5.c**, verify Symbol (55), Side (54), OrderQty (38), TimeInForce (59), OrdType (40), LastPx (31), and CumQty (14).	Pass / Fail
6.d) For **5.e**, verify Client is using CumQty (14) for final fill amount.	Pass / Fail
6.e) For **5.g**, In OrderCancelRequest (35=F), verify OrigClOrdID (41) matches ClOrdID (11) from NewOrderSingle (35=D) Client is attempting to cancel.	Pass / Fail

Corporate Actions (OneZero Adapter Version 1.6.4)

Part 7: Test Cases

Please perform the test cases below, please note these will require assistance from oneZero

Test Case	Results
7.a) Setup a CFD Dividend to be sent out. Uncheck Schedule for Later	Pass / Fail
7.b) Client verifies receipt of the CFD Dividend (35=f). Check short value (333) & long value (332), currency (15), Corportate Action should be "A" (292), and symbol (55)	Pass / Fail

Query Positions (OneZero Adapter Version 1.7.0)

Part 8: Test Cases

Please perform the test cases below, please note some will require assistance from oneZero

Test Case	Results
8.a) Client sends RequestForPostions (35=AN), oneZero responds with RequestForPositionsAck (35=AO) & a number of PositionReports(35=AP). A Margin Account must be setup to perform this.	Pass/Fail
8.b) Client verifies receipt of the RequestForPositionAck (35=AO) and the number of PositionReport (35=AP) received.	Pass / Fail

Part 9: Verifying FIX Messaging

Using the logs generated by the scenarios in Part 5, please verify the FIX messages based on the criteria below.

FIX Message Criteria	Results
9.a) Verify RequestForPositions (35=AN) Tag 710 (PosReqID) is same for all response msgs RequestForPositionsAck(35=AO) & PositionsReport(35=AP)	Pass / Fail
9.b) Verify RequestForPositionsAck(35=AO) Tag 727 (TotalNumPosReports) equals the number of PositionReport (35=AP) messages client received	Pass / Fail
9.c) Verify PositionsReport (35=AP) Tag 728 (PosReqResult), Tag 448 (PartyID), & Tag 55 (Symbol) client processed matches margin position on conformance bridge.	Pass / Fail

Collateral Reports (OneZero Adapter Version 1.7.0)

Part 8: Test Cases

Please perform the test cases below, please note some will require assistance from oneZero

Test Case	Results
8.a) Client sends CollateralInquiry (35=BB), oneZero responds with CollateralInquiryACK (35=BG) & a number of CollateralReport (35=BA).	Pass/Fail
8.b) Client verifies receipt of the CollateralInquiryACK (35=BG) and the number of CollateralReport (35=BA) received.	Pass / Fail

Part 9: Verifying FIX Messaging

Using the logs generated by the scenarios in Part 5, please verify the FIX messages based on the criteria below.

FIX Message Criteria	Results
9.a) Verify CollateralInquiry (35=BB) Tag 909 (CollInquiryId) is same for all response msgs CollateralInquiryACK (35=BG) & CollateralReport (35=BA)	Pass / Fail
9.b) Verify CollateralInquiryACK (35=BG) Tag 911 (TotNumReports) equals the number of CollateralReport (35=BA) messages client received	Pass / Fail
9.c) Verify all CollateralReport (35=BA) messages: Tag 15 (Currency), Tag 53 (Quanity), Tag 448 (PartyID), Tag 8880 (OZAccountCurrency), Tag 8881 (OZAccountBalance), Tag 8882 (OZMarginUtilizationPercentage) client processed matches margin information on conformance bridge.	Pass / Fail