FXSpotStream

FSS Rules of Engagement

Version 1.5.10

Contents

1. Document History

Version No.	Date	Author	Change Description
0.1	2012/03/15	Fabien Romeo	Initial Draft
0.2	2012/03/22	Rina RATSIMBAZAFY	Review
1.0.0	2012/03/22	Rina RATSIMBAZAFY	First version
. . .	. . .	. . .	. . .
1.3.3	2017/01/26	Houssem Maalej	Add the possibility to send trade rejection details for limit orders. Clarification on MDEntryPositionNo (tag 290) Remove BusinessMessageReject from dictionary. Fixed typo on tag 167 (Should not be in a group)
1.3.4	2017/03/24	Houssem Maalej	Clarification on connectivity options Remove ONI and TNX from supported tenors list. Add supported tenors per LP
1026	2017/05/12	Fabien Romeo	Add clarifications on PartyID and limit orders
1.3.6	2017/08/07	Houssem Maalej	Tag 1166 (QuoteMsgID) Clarification on RFS Spot.
1.3.7	2017/10/09	Fabien Romeo	Added State Street
1.3.8	2017/10/20	Houssem Maalej	Add State Street precisions. Clarification on limit orders Add note on HSBC book sweeping
1.4.0	2017/11/02	Houssem Maalej	Addition of MIFID tags Addition of VWAP capability for CS
1.4.1	2017/11/09	Houssem Maalej	Updated MIFID tags Updated fix dictionary
1.4.2	2017/12/04	Houssem Maalej	Updated MIFID tags
1.4.3	2018/02/26	Houssem Maalej	Addition of Market orders Addition of Market data throttling option Make tag 1166 (QuoteMsgID) optional. Updated MIFID tags for UBS
1.4.4	2018/05/15	Houssem Maalej	Make price conditional on orders. Added currency precision for BTMU. Added tag 18 on Execution report. Update fix dictionary: tag 55 inside group 146 for 35=V message. Clarification on ExpireTime for QuoteRequest.
1.4.5	2019/01/31	Houssem Maalej	Added Broken Dates section. Added NDF Transactions section. Change the notify bank rejects option on limit orders. Make tag 6203 conditional on NewOrderSingle and QuoteResponse Clarification on timestamp tags Make tag 40 conditional for MarketDataRequest. Clarification on tag 18 Move currency pairs section to an appendix. Update fix dictionary

Version No.	Date	Author	Change Description
1.4.6	2019/06/04	Raju Dantuluri	Update LastPx2 description in ExecutionReport to say, “Far Leg”. Include contra quantities in Execution Report. ReferenceEquivalentQty (7012) and ReferenceEquivalentQty2 (7013) Add support of IM Tenors by SCB Tag 64 made Conditional in MarketDataSnapshotFullRefresh message. Added StaleOrder and ExceededMaxOrderLimit errors in Trading Errors section. Addition of 2 Rounding Strategies in Appendix A. Fix Precisions change for BTMU for GBPJPY and ZARJPY FSS.xml - Remove list of enums in Tags 63 & 9999 and replace with string. FSS.xml – Update Currency and Price tags to be consistent with NOS.
1.4.7	2019/10/09	Raju Dantuluri	Added new options for TimeInForce tag in NewOrderSingle aonmessage. 0=Day and A=GFT Added new options for ExecInst tag in NewOrderSingle message. 2=Work, G=AON Added new tag 1629 (ExposureDuration) in NewOrderSingle message to specify the expiration time for GFT orders. Added support of IM Tenors by BNP Fixed discrepancies between FSS.XML and the messages listed in Sections 9 through 13.
1.4.8	2020/01/27	Tom San Pietro	Added support for pre-trade allocations. New Order Single: Tag 64 (SettlDate). It is required for some LPs who provide it on their MD. NewOrderSingle: Tag 6203 (FixingDate). Not required for Limit/Market orders Execution Report: Added the new options for tags ExecInst and TimeInForce added previously to NOS. Execution Report: Update language for Tag 30 (LastMkt) MarketDataRequest: Tag 1614 (ThrottleInterval) should be > 0 MarketDataRequest: Remove example with Symbol including tenor in the message. MarketDataRefresh: Tag 278: Not provided for Limit Order subscriptions. MarketDataRefresh: Tag 64 only provided if sent by LPs. CcyPair Precisions Update: USD/INR – NDF precision. change from 4 to 3. USD/RUB – missing for BAML. 4 for Spot. 6 for NDF
1.4.9	2020/09/15	John Hawkins	Moved 48=SecurityID, 22=SecurityIDSource, 7637=SecurityID2 and 7636=SecurityIDSource2 from Allocation component to main body of the message. Effected NewOrderSingle Message (Type D), QuoteResponse (Type AJ) and ExecutionReport Message (Type 8) messages.
1.5.0	2020/09/24	Raju Dantuluri John Hawkins	Added Allocation Repeating Group Usage section. Added Appendix C. FIX Messages with Allocations. Added New LPs: Barclays and Societe Generale.

Version No.	Date	Author	Change Description
1.5.1	2021/01/14	Tom San Pietro	Tag 272 (MDEntryDate) removed from MarketDataSnapshotFullRefresh and MarketDataIncrementalRefresh messages. The MDEntryDate is always the current calendar date and is also now contained in the MDEntryTime which is now an epoch time. Tag 273 (MDEntryTime) on MarketDataSnapshotFullRefresh and MarketDataIncrementalRefresh message changes to a long value and now set as epoch time to microsecond precision. Tag 58 (text) removed from MarketDataRequestReject message. On ESP mkt data sessions only, Tag 52 (SendingTime) in the FIX message header will now include microsecond precision. Format: YYYYMMDD HH:mm:ss.SSSSSS Tag 9122 (MDEntryOrigTime) has been removed from MarketDataSnapshotFullRefresh and MarketDataIncrementalRefresh messages. It is no longer supported.
1.5.2	2021/04/28	Raju Dantuluri	Updated PM tables with correct precision for XAU/USD PM Table updates: XAGUSD 6->4, XAUUSD 4->2, XPDUSD&XPTUSD 4->3
1.5.3	2021/10/11	Raju Dantuluri	Updated Tag 15 description in New Order Single message for term currency trading support. Added MiFID related tags and values to Quote Request, New Order Single and Execution Report messages.
1.5.4	2022/02/03	Raju Dantuluri	Added support of IM Tenors by STS in Section 6. Updated language for Tag 1026 in NOS to indicate that it is recommended to send it if provided on the market data since some providers require it on the order. Removed Tag 2376 in NOS and QR messages as it is no longer required to be sent when sending the LEI. Updated FSS.XML with recent updates.
1.5.5	2022/09/21	Raju Dantuluri	Added support of IM Tenors by CS in Section 6. Updated Table in section 7.3 to indicate additional LPs, CS/CITI/STS's support for broken date for ESP.
1.5.6	2023/02/03	Raju Dantuluri	Updated MiFID related tags in NOS, QR, and ER messages. The client facings MiFID tags were normalized across all providers. Added tag 29 (LastCapacity) to ER message. Please refer to the "FSS - MiFID Addendum" document for details on LP specific MiFID Tags/values and the MiFID related changes. Removed TradingSessionList (Message Types BI, BJ, and BS) and SecurityList (Message Types x and y) messages as they are no longer supported. The table in Appendix A for "FX Currency Pairs with Tenors" has been updated to show the fields and values that are to be used on a subscription request. Clarification of depth position (tag 290) in incremental update Included the FIX dictionary xml files as an attachment. This was previously displayed in Appendix B

Version No.	Date	Author	Change Description
1.5.7	2023/05/12	Takeshi Akiyama	VWAP table in 7.3 updated. Added BARX and BNP. Broken date table in 7.3. updated. Added COBA. FX currency pairs table in Appendix 1 updated with additional pairs. Re-instated TrdRegPublicationReason(2670)=12 as valid value in Execution Report (Type 8). Support for additional tags. NewOrderSingle(35=D): UTIPrefix(20001), UTIID(20002), UTIPrefix(20003), UTIID2(20004) Additional values accepted for TrdRegPublicationReason(2670).
1.5.8	2023/09/12	Takeshi Akiyama	Added support for NatWest Markets as Liquidity Provider. Clarified maximum size for MDEntryID(278) and MDEntryRefID(280) for Type W and Type X messages. FSS FIX dictionary is available on demand. Updated table in 3.3.1 Liquidity Providers Execution Capabilities. BARX supports IOC on previously quoted orders. Updated table in 7.3 Provider Support for ESP Broken Date Settlement. STS now supports NDF broken date for ESP. Clarification of Liquidity Providers who use Arithmetic rounding for VWAP in Appendix A III. NotifyTradeRejects(9023) is available for market orders as well as limit orders. Appendix A III. Updated ccy precision for CNHJPY, DKKJPY, HKDJPY, MXNJPY, SEKJPY, THBJPY, and USDILS.
1.5.9	2023/12/07	Takeshi Akiyama	Added ESP support for Wells Fargo as Liquidity Provider. RFS support will be available in Q1 2024. Appendix A III. Simplified price precision table for Liquidity Providers who doesn't support VWAP orders on Full Amount protocol.
1.5.10	2024/02/20	John Hawkins Takeshi Akiyama	Clarification of optional UTI tags addition on NewOrderSingle(35=D): Only UTIPrefix(20001) and UTIID(20002) are supported. Appendix A III. Updated ccy precision - CAD/CNH, CNH/JPY, DKK/HUF, DKK/JPY, EUR/ILS, EUR/ZAR, HKD/JPY, JPY/AUD, JPY/CAD, JPY/CHF, JPY/CNH, JPY/DKK, JPY/EUR, JPY/GBP, JPY/HKD, JPY/HUF, JPY/MXN, JPY/NOK, JPY/NZD, JPY/SEK, JPY/SGD, JPY/TRY, JPY/USD, JPY/ZAR, MXN/JPY, SEK/JPY, THB/JPY, USD/BRL, USD/CNH, USD/COP, USD/IDR, USD/ILS, USD/MYR, USD/PEN.

2. Introduction

2.1. Purpose

This document has been prepared with the purpose of providing a description of how FSS FIX Protocol engine is designed and how the connectivity with FSS FX Trading Platform can be established for the purpose of electronic Foreign Exchange Trading.

3. Summary

FSS FIX sessions are based on FIX 4.4 and follow an order driven market model where clients request tradable FX price streams and submit orders with reference to a previously sent price or limit orders.

Two methods are supported for receiving prices and executing trades:

- Executable Streaming Pricing (ESP)
- Request For Streams (RFS)

Each method requires dedicated FIX sessions. In other words, it is not possible to request quotes (RFS) on ESP sessions, and conversely, it is not possible to subscribe to an ESP on RFS sessions.

3.1. Executable Streaming Pricing (ESP)

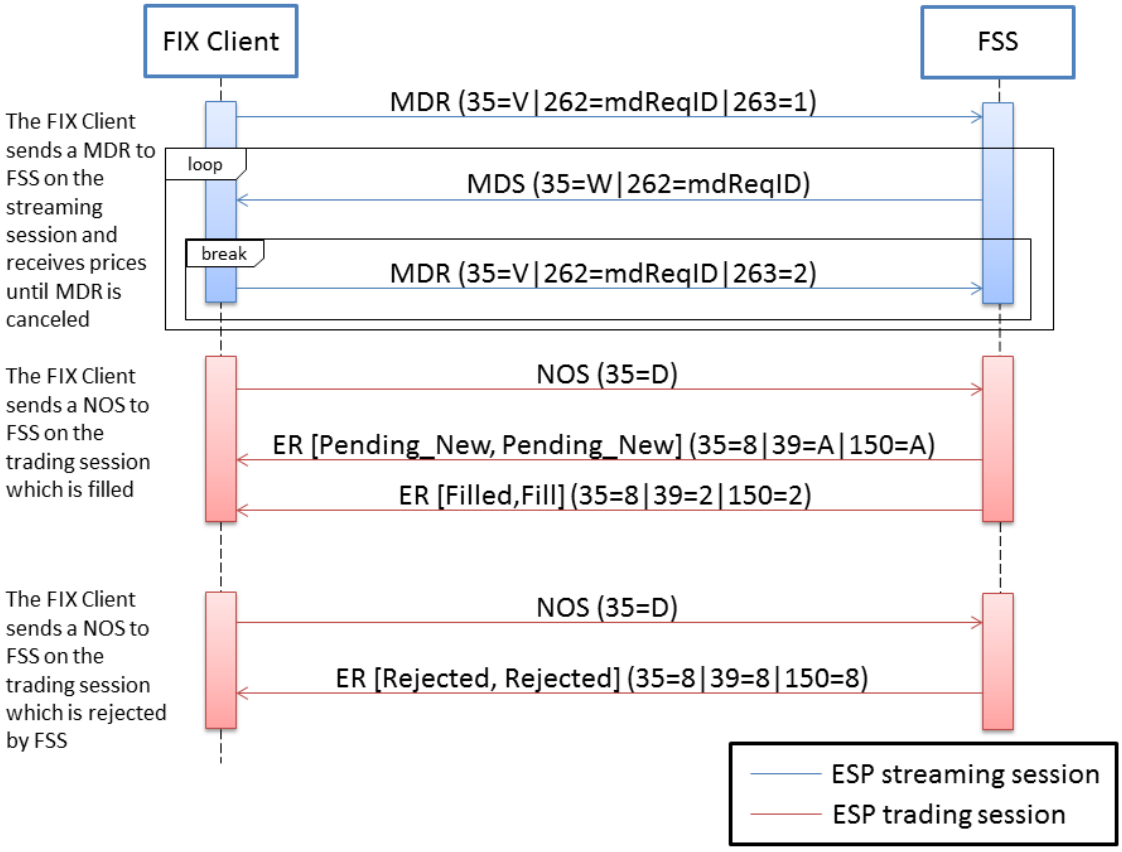
The following product is supported in the ESP mode:

- Spot
- Forward
- NDF

For ESP, there are two separate FIX sessions:

- **Market Data/Streaming Session:** Session for sending/receiving security information and rates.
- **Orders/Trading Session:** Session for order submission and trade execution. Messages are transactional and persistent with no lost messages allowed. The server resends order session messages in response to a resend request from the client. In order to enable this latter feature, the client must logon on (35=A) with tag 141=N (see section 9.1).

The following diagram depicts the basic workflow:



3.2. Request For Streams (RFS)

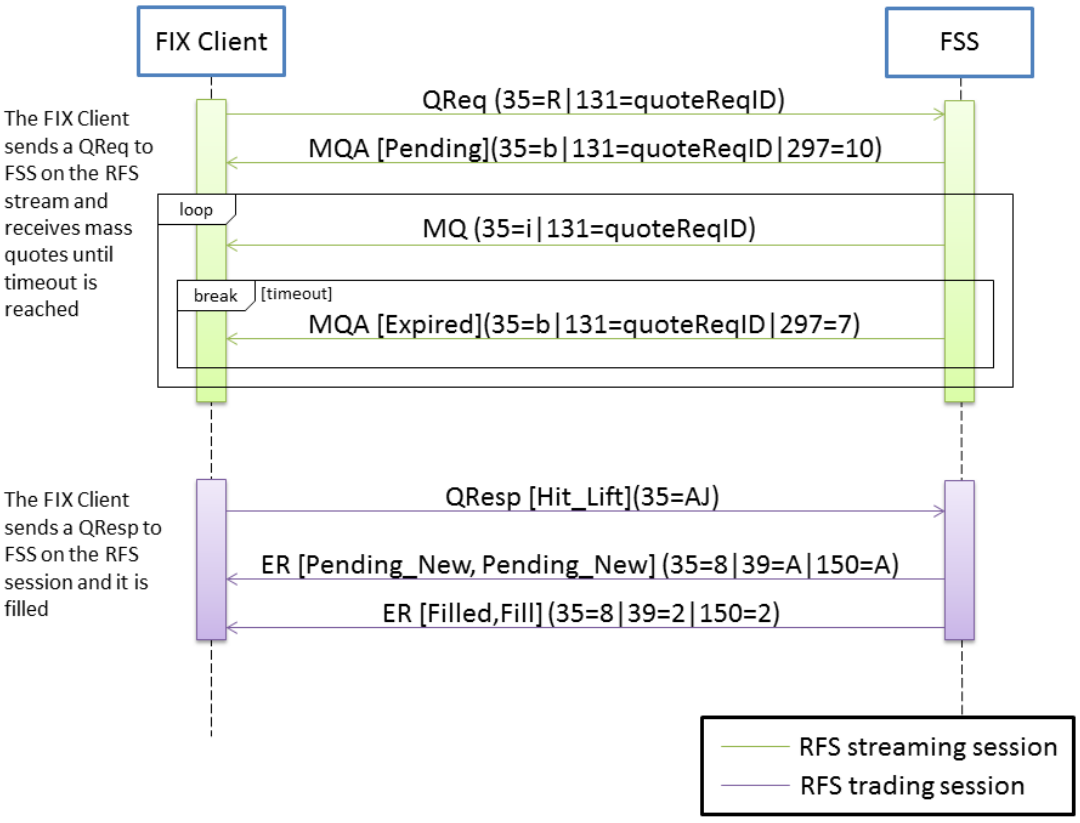
The RFS mode supports the following products:

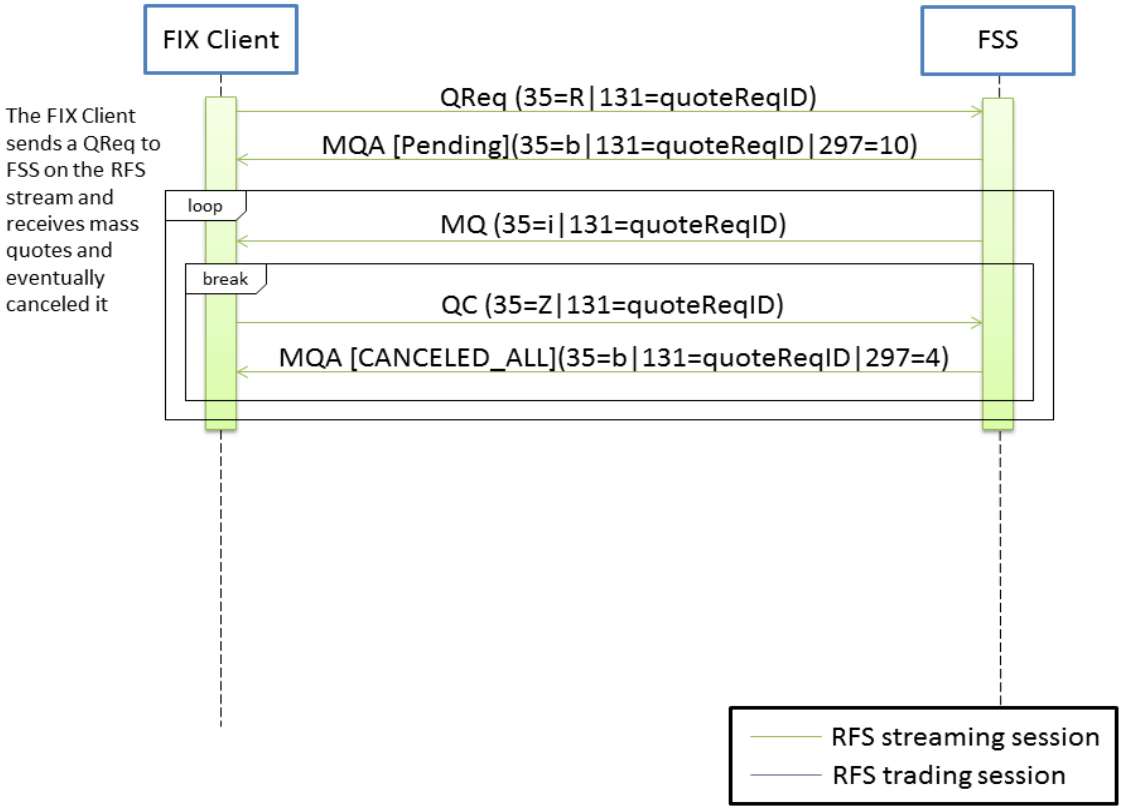
- Spot
- Forward
- Swap
- NDF

For RFS, prices and trades are exchanged on two separate sessions:

- **RFS Streaming Session**: Session for requesting/receiving quotes.
- **RFS Trading Session**: Session for trading on quotes. Messages are transactional and persistent with no lost messages allowed. The server resends order session messages in response to a resend request from the client. In order to enable this latter feature, the client must logon on (35=A) with tag 141=N (see section 9.1).

The following diagrams depict the basic workflows:





3.3. Liquidity Providers

FSS FX Trading Platform provides liquidity from the following banks[1]:

Liquidity Provider ID	Liquidity Provider Name
BAML	Bank of America
BARX	Barclays
BNP	BNP Paribas
BTMU	MUFG Bank
CITI	Citi
COBA	Commerzbank
GS	Goldman Sachs
HSBC	HSBC
JPMC	JPMorgan Chase
MS	Morgan Stanley
NWM	NatWest Markets
SCB	Standard Chartered
SGSP	Societe Generale
STS	State Street
UBS	UBS
WFNA	Wells Fargo

[1] Note that only a subset of the LP may be available in SIM environment.

The codes above are used to identify the Liquidity Providers in the different FIX messages.

3.3.1. Liquidity Providers Execution Capabilities

Previously Quoted Orders

The following table lists the different execution capabilities supported by the liquidity providers for previously quoted orders:

LP	FOK	IOC	Slippage	VWAP
BAML	✓		✓	
BARX	✓	✓		✓
BNP	✓			✓
BTMU	✓			
CITI	✓			✓
COBA	✓			✓
GS	✓			
HSBC	✓		✓	✓
JPMC	✓			✓
MS	✓	✓	✓	✓
SCB	✓			
NWM	✓			✓
SGSP	✓			
STS	✓	✓		✓
UBS	✓	✓		✓
WFNA	✓	✓		

- FOK: Fill-Or-Kill orders, the execution is either fully filled or rejected.
- IOC: Immediate-Or-Cancel orders, the execution can be either fully filled, partially filled, or rejected.
- Slippage: allows clients to specify a discretion offset up to which they will accept the execution in their disfavor.
- VWAP: in passthrough mode, allows the client to send a unique order with VWAP prices calculated on the target liquidity provider's entries.

For the technical details of each capability, please refer to section 14.

Limit Orders (DMA Strategy)

The liquidity providers supporting Limit Orders via DMA strategy are listed in the following table with the available Time-In-Forces:

LP	Aggressive orders		Resting orders	
	FOK	IOC	GTC	GTD
GS[2]			✓	✓
JPMC	✓			
MS[2]		✓	✓	✓

- Aggressive orders:
  - FOK: Fill-Or-Kill orders, the execution is either fully filled or rejected.

[2] Not available yet.

  - IOC: Immediate-Or-Cancel orders, the execution can be either fully filled, partially filled, or rejected. Note that multiple partially filled execution reports can be received.
- Resting orders:
  - GTC: Good-Till-Cancel orders rest on the LP side until cancelation or execution.
  - GTD: Good-Till-Date orders rest on the LP side until the given date or execution.

4. Connectivity

Clients have multiple options to connect the Service:

- Xconnect: Available in Equinix Datacenters, clients can choose between 1g or 10g Xconnects and are able to use Single Mode Fiber (SMF) or Multi-Mode Fiber (MMF)
- Extranet: Clients can establish a connection via TNS, BT Radianz or TMX Atrium
- VPN – Clients can connect using a secured tunnel via the internet. VPN connections with Microsoft Server devices are not supported.
- Public Internet (NY2 Only) – Connections over Public Internet must be secured using SSL/TLS version 1.2 or better. SSL v1 and v2 are not supported. Clients can use a self-signed certificate and FSS does not have a restriction on key length.

4.1. Simulator

This environment should be used for the purposes of testing on the FSS Simulators.

Only a subset of the 15 LPs is available in the SIM environment.

4.2. UAT

This environment should be used for the purposes of testing with the FSS FIX Engine and the Bank UAT environment.

4.3. Production

The client should use this environment to connect with the FSS FIX Engine and Bank Production environment. The production environment is composed of a primary server and a secondary/redundant server.

5. Overview of Supported Trading Protocols

Trading on the platform follows an order driven market model where clients request tradable price streams and submit orders with a reference to a previously quoted price.

There are three trading protocols that are supported on the platform, and the following is an overview on how to trade with them using the FSS FIX Trading API. There are further details and examples in the appropriate sections.

5.1. Executable Streaming Prices (ESP)

5.1.1. Option 1: Full Amount

On this protocol a client makes quote requests for specific quantities. The FSS system works out the appropriate and best price for the requested size from each LP depending on the rules of engagement for the liquidity provider's price feed. The client will receive a quote with the best bid and offer from across all their providers for each of the requested sizes. When the client submits an order the FSS system will submit the entire order from the client to a single LP based on the full amount quote the client is trading on.

- To receive full amount price quotes, clients submit a "MarketDataRequest" (Type V) message with the interested currency pair and the interested quantity(ies). Depending on the available liquidity and on the characteristics of the client's account profile, clients should begin receiving "MarketDataSnapshotFullRefresh" (Type W) messages with prices and sizes for the interested currency pair and the interested quantity(ies). The price for each requested quantity is calculated by aggregating available quantities for each LP which the client is permissioned for and then by selecting the best price among these LPs.

- To trade on a quoted price, clients submit a "NewOrderSingle" message with the "MDEntryID" tag set to the respective "MarketDataSnapshotFullRefresh" "MDEntryID" tag. Order responses will be encapsulated in "ExecutionReport" messages.

5.1.2. Option 2: Passthrough

On this protocol FSS essentially "pass through" all the quotes a client receives from their liquidity providers. The client places orders against specific quotes and FSS passes those orders through to the liquidity provider. FSS makes no attempt to enforce any rules of engagement and just provides primarily a connectivity and protocol translation service via a normalized API. Clients have complete control over order execution, they can use the options available at order placement to either direct their full amount to a single LP or target a combination of the best bids and offers across their fokavailable liquidity provider quotes.

- To receive pass-through price quotes, clients submit a "MarketDataRequest" (Type V) message specifying the currency pair, the update type, and the level 3 book depth they would like to receive. The depth refers to the number of underlying bids and offers that will be present and not the number of price levels. After a successful request, the client should receive a "MarketDataSnapshotFullRefresh" (Type W) message. The best prices are shown first. The depth corresponds to the maximum number of entries that can be shown. Depending on the

update type requested, the client will subsequently receive additional full snapshot messages or will receive incremental updates.

- To trade on a quoted price, clients should submit a “NewOrderSingle” message with the “QuoteID” tag set to the respective MDEntryID” tag or the quote being targeted. Order responses will be encapsulated in “ExecutionReport” messages.

5.1.3. Option 3: Limit

On this protocol FSS will manage a “book” of prices on behalf of the client and when a client submits an order the FSS system will look for a match based on price, quantity, and any other relevant match criteria. Larger orders from the client have the potential to be split up and hit multiple quotes, from one or more LPs, until the order size is satisfied or there are no more quotes that meet the limit price and other match criteria. If a client wants the full amount of their order to go to a single liquidity provider and receive a single execution they can do this by specifying a TIF of FOK or using the ExecInst option of AON with a TIF such as DAY or GTC that can result in a resting order if a match is not immediately available.

- To build a limit order price book, clients submit a “MarketDataRequest” (Type V) message specifying an OrdType of Limit (40=2) along with the currency pair, the update type, and the level 3 book depth they would like to subscribe to. For limit order subscriptions clients can optionally choose to just have the book populated on the FSS servers and not receive any market data. The depth refers to the number of underlying bids and offers that will be present and not the number of price levels. After a successful request, the client should receive a “MarketDataSnapshotFullRefresh” (Type W) message. Prices are ordered in price time priority. Depending on the update type requested, the client will subsequently receive additional full snapshot messages or will receive incremental updates.

- To trade on a quoted price, clients should submit a “NewOrderSingle” message with their acceptable limit price. The FSS system will look for the best price available in the client’s limit order price book that meets the limit price and other matching criteria. Order responses will be encapsulated in one or more “ExecutionReport” messages.

5.2. Request For Streams (RFS)

RFS allows clients to request Spot, Forwards and Swaps on a specified currency pair.

The QuoteRequest can be either one-way or two-way.

- To subscribe to a quote stream, clients should submit a “QuoteRequest” (Type R) message with the interested currency pair and the interested amount and the settlement type as defined in section 6). The stream is open for a maximum of 120s or until a “QuoteResponse” is sent by the client.

- To trade on quote, clients should submit a “QuoteResponse” message “Hit/Lift” with both “QuoteReqID” and “QuoteID.” Only one response could be sent per quote request. After the response has been sent the quote stream is closed and no new quote will be sent to the client.

5.2.1. Spot/Forward

As a client, I want to either do one-way or two-way quotes.

For two-way quotes, the currency corresponds to the quantity.

As a client, I want to send a quote request to:

- Either buy 1M EUR and sell the equivalent in USD
- Ether sell 1M EUR and buy the equivalent in USD

-> I send Symbol(55)=EUR/USD, Currency(15)=EUR, Quantity=1M

-> I will receive both bid and offer quotes with prices for quantities in EUR.

- On the bid entries, as a client, I can either

-> Sell 500k EUR and buy the equivalent amount in USD: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k

-> Buy 500k USD and sell the equivalent amount in EUR: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k

- On the offer entries, as a client, I can either

-> Buy 500k EUR and sell the equivalent amount in USD: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k

-> Sell 500k USD and buy the equivalent amount in EUR: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k

As a client, I want to send a quote request to:

- Either buy 1M USD and sell the equivalent in EUR
- Either sell 1M USD and buy the equivalent in EUR

-> I send Symbol(55)=EUR/USD, Currency(15)=USD, Quantity=1M

-> I will receive both bid and offer quotes with prices for quantities in USD.

- On the bid entries, as a client, I can either

-> Sell 500k EUR and buy the equivalent amount in USD: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k

-> Buy 500k USD and sell the equivalent amount in EUR: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k

- On the offer entries, as a client, I can either

-> Buy 500k EUR and sell the equivalent amount in USD: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k

-> Sell 500k USD and buy the equivalent amount in EUR: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k

For a one-way quote, I will provide a Side that corresponds to the action I want to do on the specified currency:

As a client, I want to send a quote request to buy 1M EUR and sell the equivalent in USD: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=1M

-> I will receive offer entries with a price for a quantity defined in EUR.

-> As a client, I want to buy 500k EUR and sell the equivalent USD: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k

-> As a client, I want to sell 500k USD and buy the equivalent EUR: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k

As a client, I want to send a quote request to buy 1M USD and sell the equivalent in EUR: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=1M

-> I will receive bid entries with a price for a quantity defined in USD.

-> As a client, I want to sell 500k EUR and buy the equivalent USD: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k

-> As a client, I want to buy 500k USD and sell the equivalent EUR: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k

As a client, I want to send a quote request to sell 1M EUR and buy the equivalent in USD: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=1M

-> I will receive bid entries with a price for a quantity defined in EUR.

-> As a client, I want to sell 500k EUR and buy the equivalent USD: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k

-> As a client, I want to buy 500k USD and sell the equivalent EUR: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k

As a client, I want to send a quote request to sell 1M USD and buy the equivalent in EUR: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=1M

-> I will receive offer entries with a price for a quantity defined in USD.

-> As a client, I want to buy 500k EUR and sell the equivalent USD: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k

-> As a client, I want to sell 500k USD and buy the equivalent EUR: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k

5.2.2. Swap

As a client, I want to either do one-way or two-way quotes.

For two-way quotes, the currency corresponds to the OrderQty.

The action ALWAYS refers to the far leg from a client's point of view.

As a client, I want to send a quote request to :

- Either buy 1M EUR Far and sell the equivalent in USD Far, Sell 2M in EUR Near and Buy the equivalent in USD Near
- Either sell 1M EUR Far and buy the equivalent in USD Far, Buy 2M in EUR Near and Sell the equivalent in USD Near

-> I send Symbol(55)=EUR/USD, Currency(15)=EUR, Quantity=1M, Quantity2=2M

-> I will receive both bid and offer quotes with prices for quantities in EUR.

- On the bid entries, as a client, I can either

-> Sell 500k EUR Far and buy the equivalent amount in USD Far, buy 700k EUR Near and sell the equivalent amount in USD Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k, Quantity2=700K

-> Buy 500k USD Far and sell the equivalent amount in EUR Far, sell 700k USD Near and buy the equivalent amount in USD Near: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k, Quantity2=700K

- On the offer entries, as a client, I can either

-> Buy 500k EUR Far and sell the equivalent amount in USD Far, sell 700k EUR Near and buy the equivalent amount in USD Near: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k, Quantity2=700K

-> Sell 500k USD Far and buy the equivalent amount in EUR Far, buy 700k USD Near and sell the equivalent amount in EUR Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k, Quantity2=700K

As a client, I want to send a quote request to:

- either buy 1M USD and sell the equivalent in EUR
- either sell 1M USD and buy the equivalent in EUR

-> I send Symbol(55)=EUR/USD, Currency(15)=USD, Quantity=1M

-> I will receive both bid and offer quotes with prices for quantities in USD.

- On the bid entries, As a client, I can either

-> Sell 500k EUR and buy the equivalent amount in USD: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k

-> Buy 500k USD and sell the equivalent amount in EUR: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k

- On the offer entries, As a client, I can either

-> Buy 500k EUR and sell the equivalent amount in USD: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k

-> Bell 500k USD and buy the equivalent amount in EUR: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k

For a one-way quote, I will provide a Side that corresponds to the action I want to do on the specified currency for the far leg:

As a client, I want to send a quote request to buy 1M EUR Far and sell the equivalent in USD Far, sell 2M EUR Near and buy the equivalent in USD Near: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=1M, Quantity2=2M

-> I will receive offer entries with a price for a OrderQty defined in EUR.

-> As a client, I want to buy 500k EUR Far and sell the equivalent USD Far, sell 700k EUR Near and buy the equivalent USD Near: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k, Quantity2=700K

-> As a client, I want to sell 500k USD Far and buy the equivalent EUR Far, buy 500k USD Near and sell the equivalent EUR Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k, Quantity2=700K

As a client, I want to send a quote request to buy 1M USD Far and sell the equivalent in EUR Far ,buy 2M USD Near and buy the equivalent in EUR Near: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=1M, Quantity2=2M

-> I will receive bid entries with a price for an OrderQty defined in USD.

-> As a client, I want to sell 500k EUR Far and buy the equivalent USD Far, buy 700k EUR Near and sell the equivalent USD Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k, Quantity2=700K

-> As a client, I want to buy 500k USD Far and sell the equivalent EUR Far, sell 700k USD Near and buy the equivalent EUR: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k, Quantity2=700K

As a client, I want to send a quote request to sell 1M EUR Far and buy the equivalent in USD Far, buy 1M EUR Near and sell the equivalent in USD Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=1M, Quantity2=2M

-> I will receive bid entries with a price for an OrderQty defined in EUR.

-> As a client, I want to sell 500k EUR Far and buy the equivalent USD Far, buy 700k EUR Near and sell the equivalent USD Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=EUR, Quantity=500k, Quantity2=700K

-> As a client, I want to buy 500k USD Far and sell the equivalent EUR Far, sell 700k USD Near and buy the equivalent EUR Near: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=USD, Quantity=500k, Quantity2=700K

As a client, I want to send a quote request to sell 1M USD Far and buy the equivalent in EUR Far, buy 1M USD Near and sell the equivalent in EUR Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=1M, Quantity2=2M

-> I will receive offer entries with a price for a OrderQty defined in USD.

-> As a client, I want to buy 500k EUR Far and sell the equivalent USD Far, sell 700k EUR Near and buy the equivalent USD Near: Symbol(55)=EUR/USD, Side(54)=Buy(1), Currency(15)=EUR, Quantity=500k, Quantity2=700K

-> As a client, I want to sell 500k USD Far and buy the equivalent EUR Far, buy 700k USD Near and sell the equivalent EUR Near: Symbol(55)=EUR/USD, Side(54)=Sell(2), Currency(15)=USD, Quantity=500k, Quantity2=700K

6. Tenors

The next table lists the supported tenors:

Tenor ID	Tenor Description
TOD	Today
TOM	Tomorrow
SP	Spot
SNX	Spot next
D2	Spot + 2 days
D3	Spot + 3 days
D4	Spot + 4 days
W1	1 week
W2	2 weeks
W3	3 weeks
M1	1 month
M2	2 months
M3	3 months
M4	4 months
M5	5 months
M6	6 months
M7	7 months
M8	8 months
M9	9 months
M10	10 months
M11	11 months
Y1	1 year
M13	13 months
M14	14 months
M15	15 months
M16	16 months
M17	17 months
M18	18 months
M19	19 months
M20	20 months
M21	21 months
M22	22 months
M23	23 months
Y2	2 years
Y3	3 years
Y4	4 years
Y5	5 years
Y6	6 years
Y7	7 years
Y8	8 years
Y9	9 years
Y10	10 years
Y15	15 years
Y20	20 years
Y25	25 years
Y30	30 years
IM1	The next IMM maturity date from the current trade date
IM2	The 2nd IMM maturity date from the current trade date
IM3	The 3rd IMM maturity date from the current trade date

Tenor ID	Tenor Description
IM4	The 4th IMM maturity date from the current trade date

6.1. Supported Tenors per LP

Tenor	BAML	BARX	BNP	BTMU	CITI	COBA	GS	HSBC	JPMC	MS	NWM	SCB	SGSP	STS	UBS	WFNA
TOD	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
TOM	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
SP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SNX	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓[3]	✓	✓	✓	✓	✓
D2										✓					✓	
D3										✓					✓	
D4										✓					✓	
W1	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
W2	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
W3	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
M1	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
M2	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
M3	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
M4	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
M5	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
M6	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
M7		✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
M8		✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
M9	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
M10		✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
M11		✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Y1	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓[3]	✓	✓	✓	✓	✓
M13																
M14																
M15	✓	✓	✓			✓	✓			✓		✓	✓		✓	✓
M16																
M17																
M18	✓	✓	✓			✓	✓			✓	✓[3]	✓	✓		✓	✓
M19																

[3] Only supported in RFS.

Tenor	BAML	BARX	BNP	BTMU	CITI	COBA	GS	HSBC	JPMC	MS	NWM	SCB	SGSP	STS	UBS	WFNA
M20																
M21		✓	✓			✓	✓			✓		✓			✓	✓
M22																
M23																
Y2	✓	✓	✓			✓	✓		✓	✓	✓[3]	✓	✓	✓	✓	✓
Y3	✓	✓					✓		✓	✓	✓[3]				✓	✓
Y4	✓	✓					✓		✓	✓	✓[3]				✓	✓
Y5	✓	✓					✓		✓	✓	✓[3]				✓	✓
Y6							✓		✓	✓	✓[3]				✓	✓
Y7							✓		✓	✓	✓[3]				✓	✓
Y8							✓		✓	✓	✓[3]				✓	✓
Y9							✓		✓	✓	✓[3]				✓	✓
Y10							✓		✓	✓	✓[3]				✓	✓
Y15							✓			✓					✓	
Y20							✓			✓					✓	
Y25							✓			✓					✓	
Y30							✓			✓					✓	
IM1	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	
IM2	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	
IM3	✓		✓		✓			✓	✓	✓		✓	✓		✓	
IM4	✓		✓		✓			✓	✓	✓		✓	✓		✓	

7. Support for Trading on Broken Dates

7.1. RFS Protocol

Trading for broken dates is supported on FSS with the RFS protocol and broadly supported by liquidity providers. For the RFS protocol tag 63 is used on quote requests and responses to request and trade for either standard settlement or broken dates.

➢ SettlType	63	Y	Standard tenor type as described in table 6) or YYYYMMDD for a broken date. For swaps, this refers to the near leg.

7.2. ESP Protocol

In addition to supporting trading to standard settlement dates, FSS now supports trading for broken date settlement dates for forward outright and NDF transactions on the ESP protocol. FSS support for broken dates on the ESP protocol is dependent on the capabilities of each of the service's liquidity providers. Clients that intend to take advantage of this capability of the FSS FIX API should review which providers support this capability.

On market data requests clients need to indicate they are looking for pricing on a broken date and specify the specific settlement date they want pricing for. That settlement date will then be carried forward on quotes, orders, and execution reports including execution reports received via the FSS drop copy.

All clients without exception will need to discuss the use of trading on broken dates on the ESP protocol with each individual provider to get their agreement to support this capability for them.

7.3. Provider Support for ESP Broken Date Settlement

Provider ID	Provider Name	Fwd Outrights	NDFs
BAML	Bank of America	✓	✓
BARX	Barclays	✓	✓
BNP	BNP Paribas	✓	✓
BTMU	MUFG Bank	x	x
CITI	Citi	✓	✓
COBA	Commerzbank	✓	✓
GS	Goldman Sachs	✓	✓
HSBC	HSBC	✓	✓
JPMC	JPMorgan Chase	✓	✓
MS	Morgan Stanley	✓	✓
NWM	NatWest Markets	✓	✓
SCB	Standard Chartered	✓	✓
SGSP	Societe Generale	✓	✓
STS	State Street	✓	✓
UBS	UBS	✓	✓
WFNA	Wells Fargo	x	✓

7.4. Requesting Market Data for ESP Broken Dates

When requesting quotes for a broken date tag 63 (SettlType) must have a value of 'B' (Broken Date) and tag 64 must be set to the value date being requested in YYYYMMDD format on the MarketDataRequest. Tag 64 is a part of the NoRelatedSym repeating group in the MarketDataRequest message.

Broken date market data requests are supported for all supported streaming protocols: Full Amount, Pass Through, and Limit Orders.

7.4.1. Market Data Request

Tag Name	Tag #	Req'd	Description
NoRelatedSym	146	Y	Specifies the number of repeating symbols. Valid value: 1
➢ Symbol	55	Y	The CCY pair requested. Must be the same for all elements in the group.
➢ SettlType	63	C	Standard tenor type as described in table 5 or a value of 'B' for a broken date request. Required for a broken date market date request.
➢ SettlDate	64	C	Required if tag 63 = 'B'. Should not be specified and will be ignored in all other cases. Format is YYYYMMDD.
SecurityType	167	C	Required for an NDF, valid value = FXNDF

7.4.2. Market Data Snapshot Full Refresh

Tag Name	Tag #	Req'd	Description
Symbol	55	Y	The Ccy Pair being quoted.
SettlType	63	C	Required and will have a value of 'B' when quote is for a broken date.
SettlDate	64	Y	Will be a tenor code when quote is for a standard tenor and will be a value date in the format YYYYMMDD when quote is for a broken date and tag 63 = 'B'.
SecurityType	167	C	Required for an NDF, valid value = FXNDF
NoMDEntries	268	Y	Number of entries in the Market Data message. It is the number of liquidity bands. It can be set to 0 if there is no entry visible. The client must clear the depth in this case and ensure that no more order is sent.
➢ SettlDate	64	Y	The value date in the format YYYYMMDD.
➢ FixingDate	6203	N	For an NDF, fixing date expressed in the format YYYYMMDD.

7.4.3. Market Data Incremental Refresh

Tag Name	Tag #	Req'd	Description
Symbol	55	Y	The Ccy Pair being quoted.
SettlType	63	C	Required and will have a value of 'B' when quote is for a broken date.
SettlDate	64	Y	Will be a tenor code when quote is for a standard tenor and will be a value date in the format YYYYMMDD when quote is for a broken date and tag 63 = 'B'.
SecurityType	167	C	Required for an NDF, valid value = FXNDF
NoMDEntries	268	Y	Number of entries in the Market Data message. It is the number of liquidity bands. It can be set to 0 if there is no entry visible. The client must clear the depth in this case and ensure that no more order is sent.
➢ SettlDate	64	Y	The value date in the format YYYYMMDD. Only provided if New or Change and if different from previous value.
➢ FixingDate	6203	N	For an NDF, fixing date expressed in the format YYYYMMDD.

7.5. Managing Broken Date ESP Market Data Requests

FSS support for broken dates on the ESP protocol is dependent on the capabilities of each of the service's liquidity providers. Clients that intend to take advantage of this capability of the FSS FIX API need to review which providers support this capability.

Clients can use the PartyID repeating group in the market data request message to control which of their providers will be included in broken date market data requests.

Tag Name	Tag #	Req'd	Description
NoPartyIDs	453	N	Repeating group below should contain unique combinations of PartyID, PartyIDSource, and PartyRole
➢ PartyID	448	C	Used to identify source of PartyID. Valid values are listed in Liquidity Provider ID (section 2.3). Required if NoPartyIDs > 0.
➢ PartyIDSource	447	C	Required if NoPartyIDs > 0. Valid value = D.
➢ PartyRole	452	C	Required if NoPartyIDs > 0. Valid value: 35 = Liquidity Provider (codes are listed in section 2.3)

Users of the FSS API are advised to target requests for broken date pricing of NDFs and Fwd Outrights only at providers that support broken date pricing. The FSS service will not reject market data requests solely based on provider capabilities. Even in cases where a request targets no provider that supports broken date pricing, the market data request will not be rejected on that basis.

7.6. Placing Orders for ESP Broken Date Settlement

When placing orders for broken date settlement the use of tags 63 and 64 is required. Tag 63 must have a value of 'B' for Broken and tag 64 must contain the value date for settlement in the format YYYYMMDD.

Tag Name	Tag #	Req'd	Description
SettlType	63	C	Required and will have a value of 'B' when order is for a broken date. Otherwise, will be a valid tenor code.
SettlDate	64	Y	Value date in the format YYYYMMDD when quote is for a broken date and tag 63 = 'B'.

8. NDF Transactions

The FSS service supports NDFs for both RFS and ESP protocols. FSS support for NDF transactions is dependent on the capabilities of each of the service's liquidity providers. Clients that intend to take advantage of this capability of the FSS FIX API should review which providers support NDFs on their intended protocol and settlement dates.

When trading NDFs clients need to pay particular attention to individual provider requirements regarding specifying the NDF fixing date on orders. When placing orders with providers that require the fixing date it must be provided when the order is sent to FSS. Whether mandatory or optional the expectation should be that the provider will validate any fixing date provided and reject the order if the fixing date does not match what they consider to be the correct fixing date for the value date specified on the order.

For the ESP protocol, as per the table below no provider currently requires the fixing date to be specified on orders. In a majority of cases the fixing date will be included by the provider on NDF quotes.

For the RFS protocol provider requirements around the fixing date are more varied. In certain cases, the fixing date is required on the quote request. Some providers also require the fixing date on RFS orders or quote responses. Clients that do not have the ability to reliably calculate the correct fixing date may not be able to send NDF RFS requests to all their providers. To avoid rejects, when possible, clients should consider always specifying the fixing date on their RFS quote requests and orders. In some cases, the liquidity provider will include the fixing date on their quotes.

When placing orders and requesting quotes for NDFs tag 167 (SecurityType) must be set to FXNDF.

8.1. Provider NDF Fixing Date Handling

LP	ESP			RFS			
	MD Request	MD Snapshot	Order	Quote Request	Quote	Order / Quote Response	Comments regarding Fixing Date
BAML	N/A	Y	O	O	Y	O	Will be validated if provided.
BARX	N/A	Y	O	O	Y	O	
BNP	N/A	O	N	O	Y	N	Can be provided on an ESP quote by BNP upon client request. On RFQ request, will be validated if provided.
CITI	N/A	Y	N	N	Y	N	
COBA	N/A	N/A	N/A	Y	Y	Y	
GS	N/A	Y	N	O	Y	Y	For RFS quote request can only specify value date or fixing date.
HSBC	N/A	Y	O	N	Y	O	Optional on orders, will be validated if provided.
JPM	N/A	O	O	O	N	O	JPM will use default if not specified. Present on MD snapshot if MDUpdateAction is New(0)
MS	N/A	O	O	O	Y	O	If fixing date provided, must be the same as on the quote.
NWM	N/A	Y	O	O	Y	O	If fixing date provided, must be the same as on the quote.
SCB	N/A	Y	O	O	Y	O	The fixing date is optional although SCB strongly recommends it be sent. Will be validated if provided.
SGSP	N/A	Y	O	O	Y	O	
STS	N/A	Y	O	Y	N	Y	
UBS	N/A	O	N	N	O	N	
WFNA	N/A	Y	Y				

O – Optional Y – Mandatory N – Not a supported tag N/A – Feature or capability not supported

9. Pre-Trade Allocations

Pre-Trade allocations are supported by FSS on both the ESP and RFS protocols. Support of pre-trade allocations is contingent on what the targeted liquidity providers support and all the necessary configuration required by client's, FSS, and the liquidity providers.

9.1. Provider Support for Pre-Trade Allocations

Provider ID	Provider Name	Pre-Trade ESP	Pre-Trade RFS
BAML	Bank of America	✓	✓
BARX	Barclays	✓	✓
BNP	BNP Paribas	✓	
CITI	Citi		✓
COBA	Commerzbank	✓	✓
GS	Goldman Sachs	✓	✓
HSBC	HSBC		✓
JPMC	JPMorgan Chase	✓	✓
MS	Morgan Stanley	✓	✓
SCB	Standard Chartered		✓
SGSP	Societe Generale	✓	✓
STS	State Street		✓
UBS	UBS		✓

9.2. Allocations on RFS Quote Request vs Order

Certain liquidity providers may require that allocations be specified on an RFS quote request. FSS supports a client's ability to specify allocations on quote requests and will pass them through to the liquidity providers that require them and do so in a manner that does not disclose the direction of the ultimate order.

	BAML	BARX	BNPP	CITI	COBA	GS	HSBC	JPMC	MS	SCB	SGSP	STS	UBS
Allocations req'd on quote request					✓		✓					✓	
Allocations req'd on order	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

○ Full Amount Requirement

Pre-trade allocations can only be supported on full amount order protocols. FSS does not provide any support of pre-trade allocations on trading protocols and/or order options that result in FSS taking a single client order and routing multiple underlying orders to one or more providers.

Orders that meet the full amount requirement meet the following criteria:

- RFS, Pass Through or Full Amount protocol orders where the entire quantity of the order is allocated.

- Limit Orders with a TIF of FOK or an ExecInst of AON where the entire quantity of the order is allocated.

9.3. Allocation Repeating Group Usage

An allocation group must contain unique combinations of AllocAccount <79>, AllocQty <80> **or** AllocQty2 <20011>, AllocSide <20009> and optional fields IndividualAllocID <467>, AllocUTIPrefix<20005> and AllocUTI <20006>.

AllocQty <80> and AllocQty2 <20011> cannot appear in the same group, and AllocQty2 <20011> is used exclusively for swap far leg allocations.

SWAP Allocation Example

Below is an example of a swap with four allocations; two allocations are on the near leg and two allocations are on the far leg.

Tag	Field Name	Value
70	AllocID	Allocation ID 1
78	NoAllocs	4
79	AllocAccount	Account 1
80	AllocQty	10000000
20009	AllocSide	1 = Buy
467	IndividualAllocID	Allocation 1
79	AllocAccount	Account 2
80	AllocQty	10000000
20009	AllocSide	1 = Buy
467	IndividualAllocID	Allocation 2
79	AllocAccount	Account 1
20011	AllocQty2	10000000
20009	AllocSide	2 = Sell
467	IndividualAllocID	Allocation 3
79	AllocAccount	Account 2
20011	AllocQty2	10000000
20009	AllocSide	2 = Sell
467	IndividualAllocID	Allocation 4

10. Session

To establish each session, a “Logon” message is sent. You may request to reset the sequence numbers (tag “ResetSeqNumFlag” set to ”Y”). A successful login will result with a “Logon” message sent back.

The Logon message for the streaming session must contain the ResetOnLogon flag set to Y as there is no store. MarketDataSnapshot will not be retransmitted if a gap is detected. Instead, a SequenceReset will be sent back on reception of a ResendRequest.

10.1. Logon Message Definition (Type A)

Tag Name	Tag #	Req’d	Description
EncryptMethod	98	Y	Has to be 0 (None)
HeartBtInt	108	Y	Heartbeat interval in seconds
ResetSeqNumFlag	141	N	Set to “Y” to reset sequence numbers. This should be the default for market data sessions. Set to “N” (or not sent) to not reset sequence numbers. This should be the default for trading sessions in order to allow guaranteed delivery.
Username	553	N	UserID or username.
Password	554	N	Password or passphrase.

An example of a FIX logon message on a streaming session:

8=FIX.4.4|9=93|35=A|34=1|49=STR.NY.SIM.CLIENT|52=20150212-04:31:38.971|56=FSS|141=Y|98=0|108=35|10=087|

An example of a FIX logon message on a trading session:

8=FIX.4.4|9=90|35=A|34=1850|49=TRD.NY.SIM.CLIENT|52=20150212-04:31:38.972|56=FSS|141=N|98=0|108=35|10=169|

10.2. Logout Message Definition (Type 5)

Tag Name	Tag #	Req’d	Description
Text	58	N	Will contain a description for failed logins or unsolicited logouts.

An example of a FIX logout message:

8=FIX.4.4|9=57|35=5|49=CLIENT|56=FSS|34=51|52=20101026-18:46:40|10=082|

11. ESP Market Data

To be able to receive market data, clients need to submit a MarketDataRequest message. Subscriptions and unsubscriptions are made for a single currency pair. If the subscription is successful, clients will start receiving prices. If the subscription fails, a reject message will be sent back to the client. Clients need to unsubscribe to stop receiving market data.

In the event that the FIX server is unable to send any more prices, it will send a reject message back, and the initial subscription is invalidated. Clients will need to re-subscribe to receive prices again.

Depending on the chosen trading protocol(s), different subscription types should be sent in order to receive prices for the three supported trading protocols:

- Full Amount
- Passthrough
- Limit Orders

Note that when using multiple trading protocols, a Liquidity Provider may price each protocol differently. For instance, the Full Amount protocol may be priced differently than the Passthrough protocol.

11.1. Subscribing to Market Data

In response to a successful subscription request the FIX Server will send out MarketDataSnapshots. Otherwise, the FIX Server will send out a MarketDataRequestReject with the request ID and a reject reason code.

All MarketDataRequest messages are for a single currency pair which must be specified in tag 55.

Each subscription request needs to have a unique identifier, set via tag “MDReqID,” which will be referenced in quote messages to the client. It is also used to unsubscribe from market data.

Optional PartyIDs can be specified to restrict the set of liquidity providers the subscription request is for. If no PartyID is specified, then the request will be considered to be for all the Liquidity Providers that the client is configured for. It is possible to reuse the same “MDReqID” in order to update the list of Liquidity Providers in the subscription.

A user needs to determine if they want to always receive full snapshot messages or receive an initial snapshot and then incremental updates. Both FullSnapshot only and FullSnapshot with Incremental updates are supported and relevant for all 3 supported trading protocols.

In the case of a subscription with MDUpdateType = 0 (Full Refresh), all market data prices are sent to clients using “MarketDataSnapshotFullRefresh” messages. Each message represents the complete book of liquidity on a currency pair and is a complete replacement of the book of prices.

In the case of a subscription with MDUpdateType = 1 (Incremental Refresh), market data prices are sent to clients using both “MarketDataSnapshotFullRefresh” and “MarketDataIncrementalRefresh” messages. The first update is always a “MarketDataSnapshotFullRefresh” message which represents the current snapshot of pricing for the considered currency pair. Subsequent updates only convey the data points that have changed (i.e., a delta from the previous snapshot) and are sent using

"MarketDataIncrementalRefresh." The tag MDEntryRefID (280) is used to identify the entries that have changed or need to be deleted. In certain cases, a "MarketDataSnapshotFullRefresh" message can be sent after a "MarketDataIncrementalRefresh" message. A full refresh should always be considered a complete replacement of the book of prices, including when it is an empty snapshot.

Each message may contain multiple market data entries (MDEntriesNo repeating group) which need to be applied.

11.1.1. Market Data Subscription Options for the Full Amount Protocol

When making a full amount market data subscription the request must include the custom NoRequestedSize repeating group. The request must list each size that a user wants quoted. The client will receive quotes with the best bid and offer from across all their providers for each of the sizes.263

The full amount protocol only quotes the best bid and offer for each size across all of a client's liquidity providers so the market depth option on a subscription request is irrelevant.

11.1.2. Market Data Subscription Options for the PassThrough Protocol

To limit the quantity and size of market data messages they receive a client has the option of using the market depth option. The depth refers to the number of underlying bids and offers that will be present in full snapshot messages and not the number of price levels. The best prices are shown first.

11.1.3. Market Data Subscription Options for the Limit Order Protocol

In order to trade limit orders, a MarketDataRequest message with 40=2 **MUST** be sent and accepted before submitting any trade requests. A single market data request can be used to subscribe to all liquidity provider quotes that a user is permissioned for, this is done by not specifying specific providers in the optional PartyID repeating group. A user can limit the liquidity providers their limit order can match with by using the PartyID repeating group to list the providers they want in their limit order book of prices.

When making a MarketDataRequest the user can ask to receive market data messages or alternatively just have the market data used to build the limit order book of prices on the FSS servers and not receive any of the price quotes. To receive the quotes the user sets the SubscriptionRequestType tag to 1 (263=1). Setting 263=Z suppresses the price quotes from being sent to the user and the user will receive an empty market data snapshot when the subscription request is successful.

To limit the quantity and size of market data messages they receive a client has the option of using the market depth option. The depth refers to the number of underlying bids and offers that will be present in full snapshot messages and in the limit order price book and not the number of price levels.

Regardless of whether or not the client elects to not receive the limit order quotes or limits the depth, the limit order book on the FSS servers will be populated for the full depth of book from the liquidity provider included in market data subscriptions.

11.2. FSS Supported Stream Options

FSS supports two price stream options that are critical to how the quoted pricing is to be interpreted.

11.2.1. Tiered Quote

Market Data quotes are presented as tiered in size bands and a client order must be matched to a single size tier in the quote stack based on the order quantity.

11.2.2. Order Stack

Market Data quotes are viewed as individual quantities available at the specified prices, with all of the quantities simultaneously available at the quoted prices. The total quantity available is the sum of the entries in the order stack and a client order can be simultaneously matched to multiple entries in the order stack.

VWAP

If supported by the LP, FSS or FSS clients can submit a single order based on a VWAP calculation that incorporates multiple quotes in the order stack.

Users of the Full Amount do not need to pay attention to the stream options as this is managed by the FSS system before they receive their quotes for the requested sizes.

The Limit Order book on the FSS servers will also handle the stream options correctly, however, if the limit order user is tracking the book when receiving quotes then to remain in sync with the FSS server's book of prices they will also need to understand and properly interpret the stream option for each of their LPs.

Pass-Through clients need to understand which stream options their price streams are configured for to properly interpret the liquidity. This is critical for clients that want to trade for sizes beyond the top of book quote from each of their LPs.

Incorrectly interpreting a liquidity provider quote can have a dramatic impact on the perception of available liquidity. The example below demonstrates the importance of understanding the difference between a tiered quote and an order stack-based quote.

Example Quote	
Qty	**Price**
1	1.1212
2	1.1214
3	1.1216

Quote Interpretation	**Tiered Quote**	**Order Stack**
Max Qty Avail:	3	6
Client Price for 1M	1.1212	1.1212
Client Price for 2M	1.1214	1.1213
Client Price for 3M	1.1216	1.12133
Client Price for 4M	NA	1.1214
Client Price for 5M	NA	1.12144
Client Price for 6M	NA	1.12147

11.3. Pre-Trade Mid-Market Rates

Some liquidity providers mandate that certain clients receive a pre-trade mid-market rate when quoting certain instruments. When a Liquidity Provider provides a midrate, it will be sent to the client.

On incremental update messages, this pre-trade mid-rate entry will not have a normal lifecycle (CREATE, CHANGE, DELETE) on the MDUpdateAction. Instead, the MDUpdateAction will always be CHANGE and the MDEntryRefID will not be provided.

11.4. Unsubscribe from Market Data

To unsubscribe from prices, a “MarketDataRequest” message is sent with the unique identifier used in the initial subscription request, the Symbol, and the tag “SubscriptionRequestType” set to “Unsubscribe” (2).

If the subscription removal is successful, the client will stop receiving market data immediately.

However, if the request was unsuccessful, a “MarketDataRequestReject” message will be sent back to the client that contains the request ID and a reject reason code.

11.5. MarketDataRequest Message Definition (Type V)

Tag Name	Tag #	Req'd	Description
MDReqID	262	Y	A unique identifier supplied by the client.
SubscriptionRequestType	263	Y	Use SnapshotAndUpdates (1) to subscribe to prices and Unsubscribe (2) to unsubscribe. Snapshot (0) requests are not supported. Use NoMarketFeedback (Z) to request for trading only. 1 = SnapshotAndUpdates 2 = Unsubscribe Z = NoMarketFeedback (Trading only)
NoPartyIDs	453	N	Repeating group below should contain unique combinations of PartyID, PartyIDSource, and PartyRole
➢ PartyID	448	Cond	Used to identify source of PartyID. Valid values are listed in Liquidity Provider ID (section 8). Required if NoPartyIDs > 0.
➢ PartyIDSource	447	Cond	Required if NoPartyIDs > 0. Valid value = D.
➢ PartyRole	452	Cond	Required if NoPartyIDs > 0. Valid value: 35 = Liquidity Provider (codes are listed in section 3.3)
NoRelatedSym	146	Y	Specifies the number of repeating symbols. Valid value: 1
➢ Symbol	55	Y	The CCY pair requested. Must be the same for all elements in the group.
➢ SettlType	63	C	Standard tenor type as described in table 5 or a value of 'B' for a broken date request. Required for a broken date market date request.
➢ SettlDate	64	C	Required if tag 63 = 'B'. Should not be specified and will be ignored in all other cases. Format is YYYYMMDD.
SecurityType	167	C	Required for an NDF, valid value = FXNDF
MarketDepth	264	N	Depth of market for Book Snapshot. Required for "Option 2" (Pass-through). Valid values: 0 = Full Book Depth 1 = Top of Book N>1 = Report best N quotes. The depth refers to the number of underlying bids and offers that will be present and not the number of price levels
MDUpdateType	265	Y	Specifies the type of Market Data update. Valid values: 0 = Full Refresh 1 = Incremental Refresh
NoRequestedSize	9000	N	Number of size
➢ RequestedSize	9001	N	The size of the quote. Required for "Option 1" (Full amount).
OrdType	40	Cond	Price Stream type. Required for Limit and Market Orders. Valid value: 2 = Limit

Tag Name	Tag #	Req'd	Description
ThrottleTimeInterval	1614	N	Can be used to request throttling of market data. The value of the time interval in milliseconds in which the rate throttle is applied. If set, the value must be > 0. Otherwise please omit. For example, a value of 5 would set the throttle to 5 milliseconds.

Here is an example of MarketDataRequest message for "Option 1" (Full Amount):

8=FIX.4.4|9=222|35=V|49=Client|56=FSS|34=46|262=MDReqID|263=1|265=0|146=1|55=EUR/USD|9000=1|9001=3000000|10=222|

Here is an example of MarketDataRequest message for "Option 2" (Passthrough):

8=FIX.4.4|9=222|35=V|49=Client|56=FSS|34=46|262=MDReqID|263=1|264=6|265=0|146=1|55=EUR/USD|10=112|

Here is an example of MarketDataRequest message with a reduced distribution containing JPMC and BAML only:

8=FIX.4.4|9=222|35=V|49=Client|56=FSS|34=46|262=MDReqID|453=2|448=JPMC|447=D|452=35|448=BAML|447=D|452=35|263=1|264=6|265=0|146=1|55=EUR/USD|10=112|

Please note that FXSpotStream does not assign LP pricing to specific FIX sessions.

If a client would like to see pricing from a specific LP or subset of LPs on one FIX session, they will need to code to the above example.

Please contact FSS Support for more details regarding this or any other example.

For ESP forward subscriptions, two alternatives are possible:

Example: subscribe to EUR/USD 1 Month

8=FIX.4.4|9=222|35=V|49=Client|56=FSS|34=46|262=MDReqID|263=1|264=6|265=0|146=1|55=EUR/USD|63=M1|10=112|

Here is an example of an NDF subscription:

8=FIX.4.4|9=222|35=V|49=Client|56=FSS|34=46|262=MDReqID|263=1|264=6|265=0|146=1|55=USD/INR|63=M1|167= FXNDF|10=112|

11.6. MarketDataRequestReject Message Definition (Type Y)

Tag Name	Tag #	Req'd	Description
MDReqID	262	Y	The original unique identifier supplied by the client.
MDReqRejReason	281	N	Reject reason code.

11.7. MarketDataSnapshotFullRefresh Message Definition (Type W)

Tag Name	Tag #	Req'd	Description
MDReqID	262	Y	The original unique identifier supplied by the client.
Symbol	55	Y	The Ccy Pair being quoted.
SettlType	63	C	Required and must have a value of 'B' when quote is for a broken date
SettlDate	64	Y	Tenor code when quote is for a standard tenor and a value date in the format YYYYMMDD when quote is for a broken date and tag 63 = 'B'.
SecurityType	167	C	Required for an NDF, valid value = FXNDF
QuoteMsgID	1166	C	Unique identifier of the market data snapshot. Clients who have migrated to the low latency architecture will always receive this tag
NoMDEntries	268	Y	Number of entries in the Market Data message. It is the number of liquidity bands. It can be set to 0 if there is no entry visible. The client must clear the depth in this case and ensure that no more order is sent.
➢ MDEntryType	269	Y	Side of this liquidity level 0 = Bid 1 = Offer H = Mid-Rate
➢ MDEntryRefID	280	Cond	Refers to a previous MDEntryRefID. Used in the case of a subscription (type V) with Incremental Refresh Updates (MDUpdateType = 1). This ID must be unique for a couple MDReqID/Side. This does not apply to Pre-Trade Mid-Rate who are not going to have MDEntryRefID. Maximum size ULL sessions : 19 characters Legacy sessions: 255 characters
➢ MDEntryPositionNo	290	Cond	Display position of a bid or offer, numbered from most competitive to least competitive, per market side. Only present in the case of a subscription with MDUpdateType = 1 (Incremental Refresh)

Tag Name	Tag #	Req'd	Description
➢ MDEntryID	278	Cond	Identifier for this market data entry. Used in previously quoted orders to reference the quote when submitting an order to hit this entry. It is provided on all subscriptions except in case of limit order subscriptions and when MDEntryType = H. Maximum size ULL sessions : 20 characters Legacy sessions: 255 characters
➢ MDEntryPx	270	Y	The price of this liquidity level. In case of forwards, it is the all-in rate.
➢ MDEntrySize	271	Cond	The size of this liquidity level. Provided unless MDEntryType = H.
➢ MDEntryTime	273	Cond	The time that this liquidity level on this quote was received from the LP. This is a long value from the epoch at microsecond precision. Provided unless MDEntryType = H.
➢ Currency	15	Cond	The currency that MDEntryPx and MDEntrySize tags refer to. Provided unless MDEntryType = H.
➢ MinQty	110	N	Minimum quantity of an order to be executed.
➢ MDEntryOriginator	282	Y	The ID of the liquidity provider as defined in section 3.3
➢ SettlDate	64	Cond	The value date in the format YYYYMMDD. Only provided if New or Change and if different from previous value. However, it is only provided if the LP sends the settlement date.
➢ MDEntrySpotRate	1026	N	For forwards, the spot rate when available.
➢ FixingDate	6203	N	For NDF, fixing date expressed in the format YYYYMMDD.

11.8. MarketDataIncrementalRefresh Message Definition (Type X)

Tag Name	Tag #	Req'd	Description
MDReqID	262	Y	The original unique identifier supplied by the client.
Symbol	55	Y	The Ccy Pair being quoted.
SettlType	63	C	Required and must have a value of 'B' when quote is for a broken date.
SettlDate	64	Y	Tenor code when quote is for a standard tenor and a value date in the format YYYYMMDD when quote is for a broken date and tag 63 = 'B'.
SecurityType	167	C	Required for an NDF, valid value = FXNDF

Tag Name	Tag #	Req'd	Description
QuoteMsgID	1166	C	Unique identifier of the market data snapshot. Clients who have migrated to the low latency architecture will always receive this tag
NoMDEntries	268	Y	Number of entries in the Market Data message. It is the number of liquidity bands. It can be set to 0 if there is no entry visible. The client must clear the depth in this case and ensure that no more order is sent.
➢ MDEntryType	269	Y	Side of this liquidity level 0 = Bid 1 = Offer H = Mid-Rate
➢ MDUpdateAction	279	Y	Type of Market Data update action. 0 = New 1 = Change 2 = Delete
➢ MDEntryRefID	280	Cond	Refers to a previous MDEntryRefID. This does not apply to Pre-Trade Mid-Rate who are not going to have MDEntryRefID. Maximum size ULL sessions : 19 characters Legacy sessions: 255 characters
➢ MDEntryID	278	N	Identifier for this market data entry. Used in previously quoted orders to reference the quote when submitting an order to hit this entry. Only provided if New or Change if different from previous value. Maximum size ULL sessions : 20 characters Legacy sessions: 255 characters
➢ MDEntryPositionNo	290	N	Display position of a bid or offer, numbered from most competitive to least competitive, per market side. Only provided if New or Change.
➢ MDEntryPx	270	N	The price of this liquidity level. Only provided if New or Change if different from previous value.
➢ MDEntrySize	271	N	The size of this liquidity level. Only provided if New or Change if different from previous value.
➢ MDEntryTime	273	N	The time that this liquidity level on this quote was received from the LP. This is a long value from the epoch at microsecond precision.
➢ Currency	15	N	The currency that MDEntryPx and MDEntrySize tags refer to. Only provided if New or Change if different from previous value.
➢ MinQty	110	N	Minimum quantity of an order to be executed. Only provided if New or Change if different from previous value.

Tag Name	Tag #	Req'd	Description
➢ MDEntryOriginator	282	N	The ID of the liquidity provider as defined in section 3.3. Only provided if New or Change if different from previous value.
➢ SettlDate	64	C	The value date in the format YYYYMMDD. Only provided if New or Change and if different from previous value. However, it is only provided if the LP sends the settlement date.
➢ MDEntrySpotRate	1026	N	For forwards, the spot rate when available.
➢ FixingDate	6203	N	For NDF, fixing date expressed in the format YYYYMMDD.

11.9. Market Data Incremental Refresh Examples

When subscribing to incremental refresh, the first message received is of type MarketDataSnapshotFullRefresh (35=W) and represents the current snapshot of the market. The MDEntryRefID (280) tag is specified on all new entries for future reference in subsequent updates.

Note that the MDEntryRefID is unique for a given subscription and the side. You can potentially receive the same MDEntryRefID twice in the same MarketDataSnapshot, one for a bid entry and one for an offer entry. Two market data snapshots from different subscriptions could also have the same MDEntryRefID. The MDEntryRefID unicity is for a given MDReqID and Side.

When updating the price book, MDEntryPositionNo (290) should not be used to identify price entry, as the depth position will be sent for incremental price entry only. Client will need to deduce the new position for existing price entry.

Initial Image

Tag Name	Tag #	Value	Description
Header		W	Snapshot Full Refresh (Initial Image)
MDReqID	262	123	My request ID
Symbol	55	EUR/USD	The instrument, CCY Pair.
SettlDate	64	SP	SPOT
QuoteMsgID	1166	456	The MDS ID
NoMDEntries	268	4	Number of repeating entries
➢ **MDEntryType**	**269**	**0**	**A BID side entry**
➢ MDEntryRefID	280	A	MDEntryRefID
➢ MDEntryID	278	0.B	MDEntryID
➢ MDEntryPositionNo	290	0	Depth Position
➢ MDEntryPx	270	1.312598	Price
➢ MDEntrySize	271	2000000	Quantity
➢ MDEntryTime	273	1617979341123000	Time
➢ Currency	15	EUR	Currency
➢ MDEntryOriginator	282	COBA	Liquidity Provider
➢ SettlDate	64	20130105	Value Date
➢ **MDEntryType**	**269**	**0**	**A BID side entry**
➢ MDEntryRefID	280	B	MDEntryRefID
➢ MDEntryID	278	1.B	MDEntryID
➢ MDEntryPositionNo	290	1	Depth Position
➢ MDEntryPx	270	1.312593	Price
➢ MDEntrySize	271	5000000	Quantity
➢ MDEntryTime	273	1617979341124000	Time
➢ Currency	15	EUR	Currency
➢ MDEntryOriginator	282	CITI	Liquidity Provider
➢ SettlDate	64	20130105	Value Date
➢ **MDEntryType**	**269**	**1**	**An OFFER side entry**
➢ MDEntryRefID	280	A	MDEntryRefID
➢ MDEntryID	278	0.O	MDEntryID

Tag Name	Tag #	Value	Description
➢ MDEntryPositionNo	290	0	Depth Position
➢ MDEntryPx	270	1.312648	Price
➢ MDEntrySize	271	2000000	Quantity
➢ MDEntryTime	273	1617979341125000	Time
➢ Currency	15	EUR	Currency
➢ MDEntryOriginator	282	CITI	Liquidity Provider
➢ SettlDate	64	20130105	Value Date
➢ **MDEntryType**	**269**	**1**	**An OFFER side entry**
➢ MDEntryRefID	280	B	MDEntryRefID
➢ MDEntryID	278	1.O	MDEntryID
➢ MDEntryPositionNo	290	1	Depth Position
➢ MDEntryPx	270	1.312653	Price
➢ MDEntrySize	271	5000000	Quantity
➢ MDEntryTime	273	1617979341126000	Time
➢ Currency	15	EUR	Currency
➢ MDEntryOriginator	282	COBA	Liquidity Provider
➢ SettlDate	64	20130105	Value Date
Trailer			

The above message creates the resulting order book

BID				OFFER			
MDEntry PositionNo	**MDEntry RefID**	**MDEntry Px**	**MDEntry Size**	**MDEntry PositionNo**	**MDEntry RefID**	**MDEntry Px**	**MDEntry Size**
0	A	1.312598	2M	0	A	1.312648	2M
1	B	1.312593	5M	1	B	1.312653	5M

Adding a Market Data Entry

Tag Name	Tag #	Value	Description
Header		X	Incremental Refresh (Update)
MDReqID	262	123	My request ID
Symbol	55	EUR/USD	The instrument, CCY Pair.
SettlDate	64	SP	SPOT
QuoteMsgID	1166	789	The MDS ID
NoMDEntries	268	1	Number of repeating entries
➢ **MDEntryType**	**269**	**0**	**A BID side entry**
➢ MDUpdateAction	279	0	New
➢ MDEntryRefID	280	C	MDEntryRefID
➢ MDEntryID	278	2.B	MDEntryID
➢ MDEntryPositionNo	290	2	Depth Position
➢ MDEntryPx	270	1.312592	Price
➢ MDEntrySize	271	3000000	Quantity
➢ MDEntryTime	273	1617979341127000	Time

Tag Name	Tag #	Value	Description
➢ Currency	15	EUR	Currency
➢ MDEntryOriginator	282	COBA	Liquidity Provider
➢ SettlDate	64	20130105	Value Date
Trailer			

The above message creates the resulting order book:

BID				OFFER			
MDEntry PositionNo	**MDEntry RefID**	**MDEntryPx**	**MDEntry Size**	**MDEntry PositionNo**	**MDEntry RefID**	**MDEntry Px**	**MDEntry Size**
0	A	1.312598	2M	0	A	1.312648	2M
1	B	1.312593	5M	1	B	1.312653	5M
2	C	1.312592	3M				

Updating a Market Data Entry

Tag Name	Tag #	Value	Description
Header		X	Incremental Refresh (Update)
MDReqID	262	123	My request ID
Symbol	55	EUR/USD	The instrument, CCY Pair.
SettlDate	64	SP	SPOT
QuoteMsgID	1166	890	The MDS ID
NoMDEntries	268	1	Number of repeating entries
➢ **MDEntryType**	**269**	**0**	**A BID side entry**
➢ MDUpdateAction	279	1	Change
➢ MDEntryRefID	280	B	MDEntryRefID
➢ MDEntryPositionNo	290	1	Depth Position
➢ MDEntrySize	271	7000000	Quantity
➢ MDEntryTime	273	1617979341124000	Time
Trailer			

The above message creates the resulting order book:

BID				OFFER			
MDEntry PositionNo	**MDEntry RefID**	**MDEntryPx**	**MDEntry Size**	**MDEntry PositionNo**	**MDEntry RefID**	**MDEntry Px**	**MDEntry Size**
0	A	1.312598	2M	0	A	1.312648	2M
1	B	1.312593	7M	1	B	1.312653	5M
2	C	1.312592	3M				

Removing a Market Data Entry

Tag Name	Tag #	Value	Description
Header		X	Incremental Refresh (Update)

MDReqID	262	123	My request ID
Symbol	55	EUR/USD	The instrument, CCY Pair.
SettlDate	64	SP	SPOT
QuoteMsgID	1166	901	The MDS ID
NoMDEntries	268	1	Number of repeating entries
➢ **MDEntryType**	**269**	**0**	**A BID side entry**
➢ MDUpdateAction	279	2	Delete
➢ MDEntryRefID	280	A	MDEntryRefID
Trailer			

The above message creates the resulting order book:

BID				OFFER			
MDEntry PositionNo	**MDEntry RefID**	**MDEntryPx**	**MDEntry Size**	**MDEntry PositionNo**	**MDEntry RefID**	**MDEntry Px**	**MDEntry Size**
0	B	1.312593	7M	0	A	1.312648	2M
1	C	1.312592	3M	1	B	1.312653	5M

Clearing the Depth

Tag Name	Tag #	Value	Description
Header		W	Snapshot Full Refresh (Clear Cache)
MDReqID	262	123	My request ID
Symbol	55	EUR/USD	The instrument, CCY Pair.
SettlDate	64	SP	SPOT
QuoteMsgID	1166	012	The MDS ID
NoMDEntries	268	0	Number of repeating entries
Trailer			

The above message creates the resulting order book:

BID				OFFER			
MDEntry PositionNo	**MDEntry RefID**	**MDEntryPx**	**MDEntry Size**	**MDEntry PositionNo**	**MDEntry RefID**	**MDEntry Px**	**MDEntry Size**

12. Orders

12.1. Submitting Orders

To submit a new order, the client needs to send a "NewOrderSingle" message. The side of the orders is interpreted as being:

- Submitted from the client's perspective,
- Related to the currency in which the quantity is specified (tag 15).

In other words, if the quantity is expressed in the base currency, the client will buy on offer prices, and sell on bid prices. Conversely, if the quantity is expressed in the term currency, the client will sell on offer prices and buy on bid prices.

It is possible, using the PartyID group, to indicate on the NewOrderSingle a value to identify the trader who is placing the order. This value will be passed to the bank when supported by the bank and will be returned in the Execution Report. This could be used either by the client or by the bank for statistics about the individuals who placed orders.

12.2. Previously Quoted Orders

Each previously quoted order (40=D) will need to reference the unique reference and the price of a previously sent price.

Available liquidity differs depending on the market data subscription. Subscribing to all available liquidity returns distinct liquidity bands all of which can be traded separately[4]. Using the Full Amount protocol, the user subscribes by stating one or more quantities in the NoRequestedSize repeating group on the MarketDataRequest message which would return different prices from the underlying available liquidity; in this case only one band can be traded at a time.

12.3. Limit Orders

Limit orders are supported on the FSS trading API. Client orders are matched on the FSS servers, and the matches occur at the best prices available in the client specific book of prices. Orders are only sent to a liquidity provider when a provider's quote matches the limit price and other match criteria specified on the client order.

Different TIF (Time in Force) options are available for limit orders:

- TIF options for aggressive orders
  - 3 = Immediate Or Cancel (IOC)

[4] Note that Morgan Stanley and HSBC prefer that when a client sweeps the book using the Pass Through mode, it is done from the top level down. This will help ensure (but not guarantee in *every* scenario) that the trades reach them in the proper sequence and significantly reduce the chance of rejects.

The order goes through a single match cycle. All matches are sent to liquidity providers. Any remaining balance is cancelled. If an LP declines to fill an order the order is cancelled, no subsequent attempt is made to find a match.

- 4 = Fill or Kill (FOK)
  In order to match the limit price must be available from a single liquidity provider with a single fill. If no match meets that requirement the order is cancelled. If an LP declines to fill an order the order is cancelled, no subsequent attempt is made to find a match.

- TiF options for resting orders
  - 1 = Good Till Cancel (GTC)

    The order remains active until filled, it is cancelled by the user, or the end of the trading week arrives at this point the order is automatically cancelled.

  - 6 = Good Till Date (GTD)

    The order remains active until the full quantity is fulfilled or the specified Date & Time is reached, at which point the order is cancelled.

  - A = Good For Time (GFT)

    Order remains active until the full quantity is fulfilled or the specified time has elapsed at which point the order is cancelled. The time is specified as an integer and represents the number of seconds the order is open before it expires. The clock starts counting down from the time the order first enters the book for a match cycle.

  - 0 = Day (or session)

    The order remains active until the full quantity is fulfilled or the end of the trading date is reached, at which point the order is cancelled. The end of the trading day is considered 5:00 PM New York Time. 5:00PM New York time on Sunday is an exception and is not considered the end of a trading day. Day orders entered prior to 5PM on calendar date Sunday will remain open until calendar day Monday at 5PM New York time.

Orders with a TIF of GTC, IOC, or FOK that are not filled will have an OrdStatus of Canceled (39=4) and ExecType of Canceled (150=4)

Orders with a TIF of GTD, DAY, or GFT that are not filled will have an OrdStatus of Expired (39=C) and ExecType of Expired (150=C)

A resting limit order can be active at most until the end of the week and an execution report canceled will eventually be sent at the end of the week to notify this fact.

Clients are required to make market data subscriptions to populate the price book as described in section 11.3. The FSS system supports the ability for clients to place orders including the PartyID repeating group When an order includes a list of one or more liquidity providers in the PartyID repeating group, the order will be limited to only matching with a liquidity provider specified in the repeating group and with quotes currently in the user's limit order price book.

12.3.1. Receive Bank Rejects Details

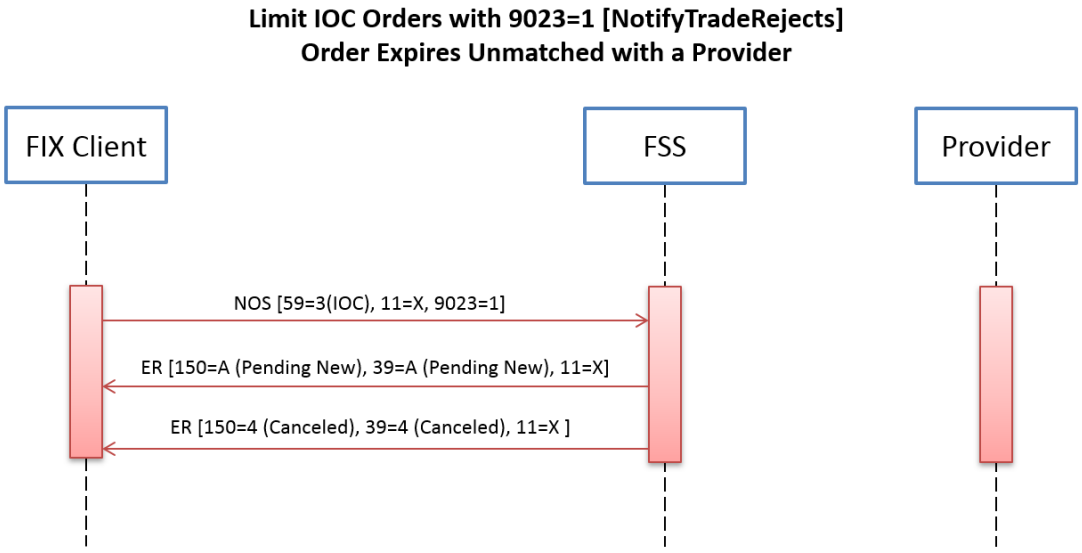
For an aggressive Limit order, if there is no provider price that matches the order's limit price, the order is cancelled. If there is a limit price match, the client order can be routed to one or more providers. Each of those providers may either fill the order or decline to fill the order. By default, if a client order is cancelled, the client cannot determine the difference between an order that did not match on price and an order that matched but the liquidity provider declined to fill the order.

Resting limit orders remain open until they are either entirely filled or the client submits an order cancel request or expire for GTD orders. While resting orders are open, they can be matched with a liquidity provider, if the provider fills or partially fills the order the client is notified of the fill, if the provider declines to fill the order that is routed to them, the client order remains open, and no feedback is sent to the client.

The FSS FIX API provides clients an option to request feedback whenever a liquidity provider declines to fill a trade request. They do this by specifying tag 9023=1 on the new order single message.

Limit Aggressive Order Expires Unmatched with a Provider:

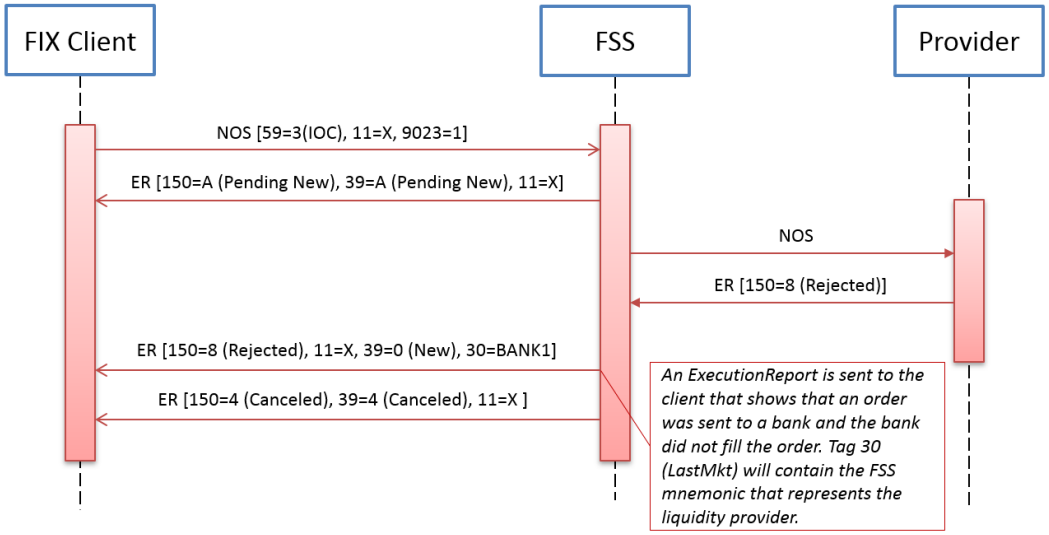
FOK/IOC Order submitted and has no provider prices that match so order is immediately cancelled.



Limit aggressive Order sent to Provider for the full requested amount, order not filled:

FOK/IOC Order submitted and matched for the full requested amount with a single provider. The provider declines to fill the order, so the order is cancelled.

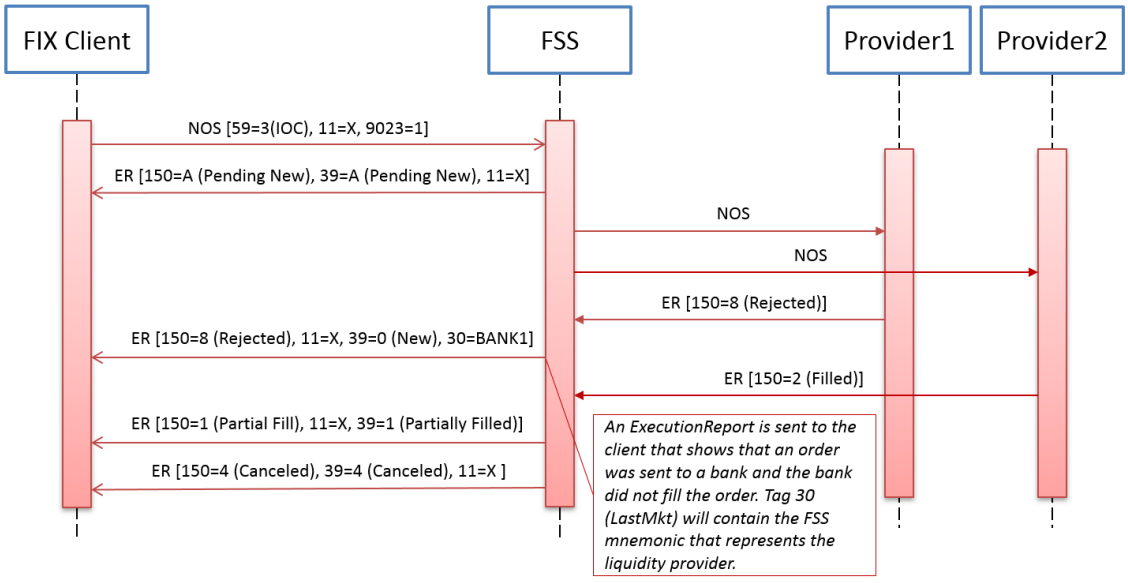
Limit IOC Orders with 9023=1 [NotifyTradeRejects]
Order matched with a Provider but not filled



Limit IOC Order sent to multiple providers; order partially filled:

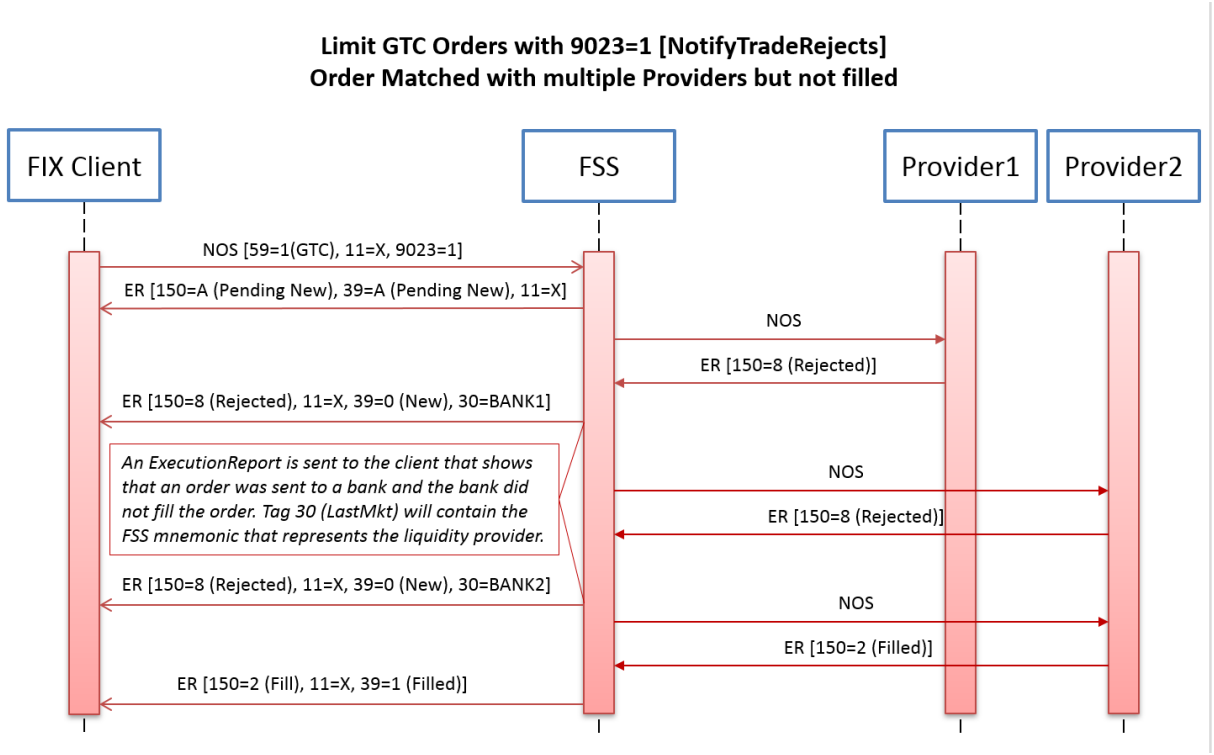
Limit IOC orders can be matched to multiple providers. Each provider will independently determine whether or not to fulfill the trade request.

Limit IOC Orders with 9023=1 [NotifyTradeRejects]
Order Matched with multiple Providers but not filled by 1



Limit resting Order sent to multiple providers, order partially filled:

Limit GTC/GTD orders rest on the FSS servers which monitor the price feeds from the client's liquidity providers and look for matches. Matches can be for a part of the order quantity or for the full requested amount. The order remains open until it is either fully filled or it is canceled by the client (or expired for GTD).



12.3.2. Direct Market Access Strategy (DMA)

The orders sent with DMA strategy (847=2000) will be passed through to the target liquidity provider specified in PartyID with PartyRole equals to 35 (Liquidity Provider).

In this case only one LP can be specified as a PartyID because the order will be resting on the LP side.

12.4. NewOrderSingle Message Definition (Type D)

Tag Name	Tag #	Req'd	Description
Account	1	N	Account mnemonic as agreed between client and FSS to allow a specific handling of the order by the liquidity provider. This is an optional value.
ClOrdID	11	Y	Unique identifier supplied by the client for this order.
NoPartyIDs	453	Cond	Number of repeating entries.
➢ PartyID	448	Cond	The party identifier (possible values depend on the party role). Required if NoPartyIDs > 0.
➢ PartyIDSource	447	Cond	Required if NoPartyIDs > 0. Valid values: D = Proprietary/Custom code G = MIC: Market Identifier Code (ISO 10383) N = LEI: Legal Entity Identifier (ISO 17443)
➢ PartyRole	452	Cond	Required if NoPartyIDs > 0. Valid values: 1 = Execution Firm. 3 = Client ID (internal id or name of the trader who is placing the trade). And/or Client LEI value may be sent to LP in tag 448 for MiFID covered trades. 35 = Liquidity Provider (codes are listed in section 3.3, only one value of this type when TargetStrategy=2000(DMA)) 73 = Execution Venue. To be sent to broker with MIC value in tag 448. 12 = Execution Decision Maker. 122 = Investment Decision Maker. LEI and MIC values are required by some LPs; please refer to "FSS - MIFID Addendum" document for more details.
AllocID	70	N	Used to assign an overall allocation ID to the block of pre-allocations.
NoAllocs	78	N	Number of repeating groups for pre-trade allocation.
➢ AllocAccount	79	Cond	Required if NoAllocs > 0, Must be first field in repeating group.
➢ IndividualAllocID	467	Cond	Unique ID for a specific allocation repeating group. Required if NoAllocs > 0.
➢ AllocSide	20009	Cond	Side of allocation: 1 = Buy, 2 = Sell. Required if NoAllocs > 0.
➢ AllocQty	80	Cond	Quantity to be allocated to AllocAccount (in dealt currency). Required if NoAllocs > 0.
➢ AllocUTIPrefix	20005	N	Identifies the reporting entity that originated the value in AllocRegulatoryTradeID
➢ AllocUTI	20006	N	Trade identifier required by government regulatory organizations for regulatory reporting purposes. For example, unique swap identifier (USI) required by the CFTC.
Symbol	55	Y	The instrument CCY pair.

Tag Name	Tag #	Req'd	Description
SecurityID	48	Cond	Instrument identifier value of SecurityIDSource tag ISIN (UPI – Unique Product Identifier) Required by some LPs; Please refer to "FSS - MIFID Addendum" document for more details.
SecurityIDSource	22	Cond	Identifies source of SecurityID. Used for MIFID Valid value: 4 = ISIN (Instrument ISIN Code)
SecurityID2	7637	Cond	Instrument identifier value of SecurityID2Source tag Used for far leg of swaps for regulatory trading (MIFID) ISIN. Required by some LPs; please refer to "FSS - MIFID Addendum" document for more details.
UTIPrefix	20001	N	UTI prefix near leg. Not required, but if 20001 is present, then 20002 is required.
UTI	20002	N	Unique UTI ID near leg. Not required, but if 20002 is present, then 20001 is required.
SecurityID2Source	7636	Cond	Source of SecurityID2 Used for far leg of swaps for regulatory trading (MIFID) Valid value: 4 = ISIN
NoTrdRegPublications	2668	Cond	Number of regulatory publication rules in repeating group. Required by some LPs; please refer to "FSS - MIFID Addendum" document for more details.
➢TrdRegPublicationType	2669	Cond	Valid values: 0 = Pre-Trade transparency waiver There are allowable waivers from the obligation to make public current bid/offer prices and trading depth. 1 = Post-trade deferral There are allowable deferrals for the post-trade publication of trade transactions. 2 = Exempt from publication
➢TrdRegPublicationReason	2670	Cond	4 = No public price quoted as instrument is illiquid 5 = No public price quoted due to "Size" 6 = Deferral due to "Large in Scale" 7 = Deferral due to "Illiquid Instrument" 8 = Deferral due to "Size Specific" 11 = Exempted due to securities financing transaction
SettlType	63	Cond	Required and must have a value of 'B' when order is for a broken date. Otherwise, must be a valid tenor code. If not specified, will default to tenor code SP.
SecurityType	167	Cond	Required for an NDF, valid value = FXNDF
Side	54	Y	Side of the order. This is from the client's perspective. Valid values: 1 = Buy 2 = Sell
TransactTime	60	Y	The timestamp in UTC for this order. For ex; 20181220-09:00:00.000 If order is received significantly later than the time specified in this tag, it is rejected with an appropriate reason sent back to the client.

Tag Name	Tag #	Req'd	Description
OrderQty	38	Y	The size of the order.
OrdType	40	Y	Order type. Valid values: 1 = Market 2 = Limit D = Previously Quoted
Currency	15	N	The currency that this order refers to. Must be either base currency (ccy1) or term currency (ccy2) of the CcyPair specified in tag 55. Only base currency (ccy1) trading is supported for NDF orders.
Price	44	Cond	The limit price of the order. Required when 40=2 or 40=D.
MDEntryID	278	Cond	The id of the previously quoted data. Required when 40=D.
TimeInForce	59	Y	Specifies how long the order remains in effect. Valid values: 0 = Good till End of Trading date (DAY) 1 = Good Till Cancel (GTC) 3 = Immediate-Or-Cancel (IOC)[5] 4 = Fill-Or-Kill (FOK) 6 = Good Till Date (GTD) A = Good For Time (GFT) For DAY orders, The end of the trading day is considered 5:00 PM New York Time. 5:00PM New York time on Sunday is an exception and is not considered the end of a trading day. Day orders entered prior to 5PM on calendar date Sunday will remain open until calendar day Monday at 5PM New York time. GFT orders will remain active until quantity is fully filled or the specified time has elapsed at which point the order is cancelled. Time will be expressed in tag 1629 (ExposureDuration).
SettlDate	64	Cond	Value date is required when order is for a broken date and tag 63 = 'B'. It is highly recommended to set this tag as certain providers will require it on certain transactions, and it needs to match the value provided on the quote from the provider. Not required for Limit/Market orders. Format is YYYYMMDD
PriceImprovement[6]	639	N	Allows clients to specify a discretion offset up to which they will accept the execution in their disfavor.

[5] As of today, only the following LPs support *true* IOC orders (*i.e.*, a partial execution can occur):

- MS
- UBS
- STS

Submitting an IOC order to another LP will have the same behavior as a FOK order, either rejected or fully filled.

[6] When adding slippage on the price originally quoted, the client is informing the bank(s) that it is authorizing the bank to fill the order at a worse price as specified by the client versus having the bank reject the order. Before sending an order with slippage, clients should speak directly to the bank to understand and agree on how orders

Tag Name	Tag #	Req'd	Description
MDEntrySpotRate	1026	Cond	For forwards and NDFs, the spot rate of the previously quoted data. It is highly recommended to set this tag if the LP provides it on the market data as certain providers require it on the order.
TargetStrategy	847	N	The target strategy of the order. Valid values: 1 = VWAP, the calculated VWAP price (for one LP) must be populated in tag 44 (Price)[7] 2000 = DMA – Direct Market Access
ExpireTime	126	Cond	The expiry time of the order expressed as UTC time. For ex; 20181220-09:00:00 Required for GTD order type.
ExposureDuration	1629	Cond	The expiration time specified as an integer and represents the number of seconds the order is open before it expires. Required for GFT Order type
ExecInst	18	N	Only available for limit orders Valid value: o = Cancel on connection loss 2 = Work G = AON (all or None) If you do not send tag 18=o on resting limit orders and your trading session is disconnected, your order will still be active until it is filled by an LP or it expires or you send an explicit cancel request (on reconnect). **Work:** Only relevant to Limit orders with a TIF of IOC. Orders with the Work option will attempt additional match cycles if an LP that has a better price than the client's limit price declines to fill an order by either rejecting it or not responding within the accepted 1 second time limit. **AON:** Allows a client to trade full amount but have the order remain live if no match is immediately available or a fill request is declined by a provider. Any other value will be ignored and echoed back to the client.

with slippage are handled by the bank. FXSpotStream is not involved in any way in the determination of the price at which an order is filled by the bank.aon

[7] Calculated VWAP prices must be rounded to the closest tenth of a pip: rounded down for bid prices and rounded up for offer prices. Also, these LP-specific rules must be followed:

- Citi requires that the first rung is hit when placing VWAP orders.
- UBS requires that the rung cumulating the desired quantity is hit, *e.g.,* if UBS streams 1M (1st rung), 2M (2nd rung), 3M (3rd rung) then the 2nd rung must be hit for a VWAP order of 3M (the 2nd rung cumulates 1M + 2M).

Tag Name	Tag #	Req'd	Description
FixingDate	6203	Cond	For NDF, fixing date expressed in the format YYYYMMDD. Recommended when SecurityType = FXNDF when LP sends Fixing Date in the quote message. Not required for Limit/Market orders.
NotifyTradeRejects	9023	N	For limit and market orders, specifies if the client wants to receive trade rejects details. Possible values: 0 = DO_NOT_NOTIFY_REJECTS 1 = NOTIFY_REJECTS
QuoteMsgID	1166	N	For previously quoted orders (40=D), the id of the market data snapshot.
MatchType	574	Cond	Client to specify if they are acting as a Systematic Internaliser. Accepted Values: 9 = Trade Reporting (Systematic Internaliser)

12.5. Submitting Order Examples

For the next examples, we consider the following book for bid and offer:

BID			OFFER		
MDEntryID	**MDEntryPx**	**MDEntrySize**	**MDEntryID**	**MDEntryPx**	**MDEntrySize**
quoted.bid.0	1. 312570	3M	quoted.offer.0	1.312614	4M
quoted.bid.1	1. 312565	6M	quoted.offer.1	1.312620	6M
quoted.bid.2	1. 312560	12M	quoted.offer.2	1.312625	12M
quoted.bid.3	1. 312555	5M	quoted.offer.3	1.312630	5M

12.5.1. Buy Order

In order to hit the top of the book, we would send the following order:

ClOrdID	Symbol	Currency	Side	OrderQty	OrderType	Price	MDEntryID	TIF
ClOrdID1	EUR/USD	EUR	Buy	4M	D	1.312614	quoted.offer.0	4 (FOK)

8=FIX.4.4|9=199|35=D|49=Client|56=FSS|34=69|52=20121019-15:32:34.212|11=ClOrdID1
|55=EUR/USD|54=1|60=20121019-10:32:34.000|38=4000000|40=D|44=1.312614
|15=EUR|59=4|278=quoted.offer.0|1166=mds.id|10=009|

12.5.2. Sell Order

In order to hit the top of the book, we would send the following order:

ClOrdID	Symbol	Currency	Side	OrderQty	OrderType	Price	MDEntryID	TIF
ClOrdID2	EUR/USD	EUR	Sell	3M	D	1.31257	quoted.bid.0	4 (FOK)

8=FIX.4.4|9=199|35=D|49=Client|56=FSS|34=70|52=20121019-15:42:29.216|11=ClOrdID2
|55=EUR/USD|54=2|60=20121019-10:42:29.000|38=3000000|40=D|44=1.31257
|15=EUR|59=4|278=quoted.bid.0|1166=mds.id|10=038|

12.5.3. Buy Order on the Term Currency

In order to hit the top of the book, we would send the following order:

ClOrdID	Symbol	Currency	Side	OrderQty	OrderType	Price	MDEntryID	TIF
ClOrdID3	EUR/USD	USD	Buy	3937710	D	1.31257	quoted.bid.0	4 (FOK)

8=FIX.4.4|9=199|35=D|49=Client|56=FSS|34=70|52=20121019-15:42:29.216|11=ClOrdID3
|55=EUR/USD|54=1|60=20121019-10:42:29.000|38=3937710|40=D|44=1.31257
|15=USD|59=4|278=quoted.bid.0|1166=mds.id|10=038|

12.5.4. Sell Order on the Term Currency

In order to hit the top of the book, we would send the following order:

ClOrdID	Symbol	Currency	Side	OrderQty	OrderType	Price	MDEntryID	TIF
ClOrdID4	EUR/USD	USD	Sell	5250456	D	1.312614	quoted.offer.0	4 (FOK)

8=FIX.4.4|9=199|35=D|49=Client|56=FSS|34=69|52=20121019-15:32:34.212|11=ClOrdID4
|55=EUR/USD|54=2|60=20121019-10:32:34.000|38=5250456|40=D|44=1.312614
|15=USD|59=4|278=quoted.offer.0|1166=mds.id|10=009|

12.5.5. Order with MIFID Tags

8=FIX.4.4|9=199|35=D|49=Client|56=FSS|34=69|52=20121019-15:32:34.212|11=ClOrdID1
|55=EUR/USD|54=1|60=20121019-10:32:34.000|38=4000000|40=D|44=1.312614
|15=EUR|59=4|278=quoted.offer.0|1166=mds.id|63=W1|453=1|448=lei.id|447=N|452=3|10=009|

13. Executions

All order responses are sent using the "ExecutionReport" message. This includes any fills and rejections. Currently each order can either be rejected or fulfilled with a complete fill.

When the client has sent an order, he will get an ExecutionReport acknowledging the reception of the order by FSS. The order status can be either PENDING_NEW if FSS could process the order or REJECTED if FSS could not process the order.

Then, the client will receive an execution report with the status of the execution reported by the bank, either FILLED, CANCELED, or REJECTED.

If FSS does not receive a response from the bank within 4 seconds, both the client and the bank will be notified by email.

13.1. ExecutionReport Message Definition (Type 8)

Tag Name	Tag #	Req'd	Description
Account	1	N	Account mnemonic as agreed between client and FSS as specified in corresponding NewOrderSingle (see 0). It will be set with the value provided in the NewOrderSingle.
OrderID	37	Y	Unique identifier supplied by FSS for this order.
SecondaryOrderID	198	N	Can be used to provide order id used by exchange or executing system.
ClOrdID	11	Y	The original client unique identifier (ESP case). Or identifier of the cancel request.
OrigClOrdID	41	N	For a response to a cancel request, the original client unique identifier for the order.
NoPartyIDs	453	N	Number of repeating entries.
➢ PartyID	448	N	The party identifier (possible values depend on the party role).
➢ PartyIDSource	447	N	Valid values: D = Proprietary/Custom code E = ISO Country Code G = MIC: Market Identifier Code (ISO 10383) On MIFID covered trades the MIC code of the provider will be populated if supplied. N = LEI: Legal Entity Identifier (ISO 17443) On MIFID covered trades the LEI of the provider will be populated if supplied.

Tag Name	Tag #	Req'd	Description
➢ PartyRole	452	N	Valid values: 1 = Execution Firm 3 = Client ID 35 = Liquidity Provider 63 = Systematic Internaliser (SI). For MiFID covered trades the LEI value of the LP will be provided in tag 448 73 = Execution Venue. For MiFID covered trades the MIC value will be provided in tag 448 75 = Location ID Country code where the trade is booked. 12 = Executing Trader (Execution Decision Maker) 122 = Investment Decision Maker
➢ PartyRoleQualifier	2376	N	Provides further qualification of PartyRole, Used values: 22 = Algorithm 24 = Natural Person
ExecID	17	Y	Unique identifier specific to this execution message supplied by FSS.
SecondaryExecID	527	N	Assigned by the bank who received the order.
ExecType	150	Y	Describes the specific execution while OrdStatus (39) will always identify the current order status. Valid values: 0 = New A = Pending_New 1 = Partial Fill 2 = Fill 4 = Canceled 6 = Pending_Canceled 8 = Rejected C = Expired
OrdStatus	39	Y	Identifies current status of order. Valid values: 0 = New A = Pending_New 1 = Partially Filled 2 = Filled 4 = Canceled 6 = Pending_Canceled 8 = Rejected C = Expired
Symbol	55	Y	The instrument CCY pair
Side	54	Y	Side of the order. This is from the client's perspective (only buys and Sells are supported): 1 = Buy 2 = Sell

Tag Name	Tag #	Req'd	Description
TargetStrategy	847	N	The target strategy of the order. Valid values: 1 = VWAP, the calculated VWAP price (for one LP) must be populated in tag 44 (Price)[8] 2000 = DMA – Direct Market Access
SecurityType	167	N	For NDF, valid value = FXNDF
OrderQty	38	Y	The size of the order. For swaps, this refers to the near leg.
OrdType	40	Y	The order type
Price	44	N	Dealt all-in-rate price of the order. For swaps, this refers to the near leg.
Currency	15	Y	The currency that this order refers to.
TimeInForce	59	Y	Specifies how long the order remains in effect. Valid values: 0 = Good till End of Trading date (DAY) 1 = Good Till Cancel (GTC) 3 = Immediate-Or-Cancel (IOC) 4 = Fill-Or-Kill (FOK) 6 = Good Till Date (GTD) A = Good For Time (GFT)
SettlDate	64	N	The settlement date in format YYYYMMDD. For swaps, this refers to the near leg.
LastQty	32	Y	Quantity of this fill or 0 if not fill. For swaps, this refers to the near leg.
LastPx	31	Y	Price of this fill or 0 if not fill. For swaps, this refers to the near leg.
LeavesQty	151	Y	The quantity open for execution
CumQty	14	Y	The total cumulative executed quantity of the order = OrderQty – LeavesQty
AvgPx	6	Y	The average price of all fills, or 0 if no fill. For swaps, this refers to the near leg.
TransactTime	60	Y	The timestamp in UTC for this execution. For ex; 20181220-09:00:00.000
Text	58	N	Description of this execution, or reason for rejection.
TradeDate	75	N	The trade date in the format YYYYMMDD.
OrdRejectReason	103	N	Code to identify reason for order rejection.
MDEntryID	278	N	The id of the previously quoted data. ESP case.
LastMkt	30	Cond	When tag 150 is 1 (Partial Fill) or 2 (Fill), this tag has the ID of the liquidity provider as defined in section 3.3
QuoteRespID	693	N	A unique identifier for this quote response provided by the client. RFS case.
QuoteID	117	N	The id of the previously quoted data. RFS case.

[8] Calculated VWAP prices must be rounded to the closest tenth of a pip: rounded down for bid prices and rounded up for offer prices. Also, these LP-specific rules must be followed:

- Citi requires that the first rung is hit when placing VWAP orders.
- UBS requires that the rung cumulating the desired quantity is hit, *e.g.,* if UBS streams 1M (1st rung), 2M (2nd rung), 3M (3rd rung) then the 2nd rung must be hit for a VWAP order of 3M (the 2nd rung cumulates 1M + 2M).

Tag Name	Tag #	Req'd	Description
QuoteReqID	131	N	The id of the corresponding Quote-Request. RFS case.
SettlType	63	N	Standard tenor type as described in section 6), a value of 'B' for an ESP broken date execution or YYYYMMDD for a RFS broken date executions. For swaps, this refers to the near leg.
SettlType2	9999	N	Standard tenor type as described in section 6) or YYYYMMDD for a broken date. For swaps, this refers to the far leg.
SettlDate2	193	N	The settlement date YYYYMMDD. For swaps, this refers to the far leg.
LastSpotRate	194	N	Spot rate of the near leg.
LastSpotRate2	6161	N	Spot rate of the far leg.
LastForwardPoints	195	N	Forward points of the near leg.
OrderQty2	192	N	Size of the far leg.
Price2	640	N	Dealt all-in-rate price of the far leg.
LastForwardPoints2	641	N	Forward points of the far leg.
LastQty2	6808	N	Quantity of this fill or 0 if not fill. For swaps, this refers to the far leg.
LastPx2	6160	N	Price of this fill or 0 if not fill. For swaps, this refers to the far leg.
ReferenceEquivalentQty	7012	N	The contra or calculated quantity of the other side of the currency trade. Will be derived from LastQty and LastPx. Currently, it is a configuration option on the client's trading session that can be enabled on request.
ReferenceEquivalentQty2	7013	N	The contra or calculated quantity of the other side of the far leg of the currency trade. Will be derived from LastQty2 and LastPx2. Currently, it is a configuration option on the client's trading session that can be enabled on request.
LeavesQty2	6164	N	Far quantity open for execution.
CumQty2	6165	N	The total cumulative executed far quantity of the order = OrderQty2 – LeavesQty2
AvgPx2	6159	N	The average price of all fills, or 0 if no fill. For swaps, this refers to the far leg.
UTIPrefix	20001	Cond	UTI prefix near leg. Present on Metals, Forwards, NDFs, SWAP and NDS Execution Reports.
UTI	20002	Cond	Unique UTI ID near leg. Present on Metals, Forwards, NDFs, SWAP and NDS Execution Reports.
UTIPrefix2	20003	Cond	UTI prefix far leg. Present on SWAP and NDS Execution Reports.
UTI2	20004	Cond	Unique UTI ID far leg. Present on SWAP and NDS Execution Reports.
TargetStrategy	847	N	The target strategy of the order. Valid values: 1 = VWAP 2000 = DMA routing rule
FixingDate	6203	N	For NDF, fixing date expressed in the format YYYYMMDD. For swaps, this refers to the near leg.

Tag Name	Tag #	Req'd	Description
FixingDate2	9121	N	For NDF, fixing date expressed in the format YYYYMMDD. For swaps, this refers to the far leg.
PrimaryFixingSource	5974	N	The NDF rate source
SecondaryFixingSource	5975	N	For cross NDF, specifies the cross-rate source
NotifyTradeRejects	9023	N	For limit and market orders, specifies if the client wants to receive trade rejects details. Possible values: 0 = DO_NOT_NOTIFY_REJECTS 1 = NOTIFY_REJECTS
QuoteMsgID	1166	N	For previously quoted orders (40=D), the id of the market data snapshot.
ExecInst	18	N	Only available for limit orders Valid value: o = Cancel on connection loss 2 = Work G = AON (all or None)
SecurityID	48	Cond	Instrument identifier value of SecurityIDSource tag. Used for MIFID, may not be populated if the value is not available.
SecurityIDSource	22	Cond	Identifies source of SecurityID. Used for MIFID, may not be populated if the value is not available. Valid values: 4 = ISIN (ISIN-code, where ISIN is available) 8 = OTHER (Other Identifier)
SecurityID2	7637	Cond	Instrument identifier value of SecurityID2Source. Used for MIFID, may not be populated if the value is not available. For swaps, this refers to the far leg.
SecurityIDSource2	7636	Cond	Identifies source of SecurityID2 Used for MIFID may not be populated if the value is not available. For swaps, this refers to the far leg. Valid values: 4 = ISIN (ISIN-code, where ISIN is available) 8 = OTHER (Other Identifier)
NoTrdRegPublications	2668	Cond	Number of regulatory publication rules in repeating group. Used for MIFID, may not be populated if the value is not available.
➢ TrdRegPublicationType	2669	Cond	Valid values: 0= Pre-Trade transparency waiver There are allowable waivers from the obligation to make public current bid/offer prices and trading depth. 1 = Post-trade deferral There are allowable deferrals for the post-trade publication of trade transactions.

Tag Name	Tag #	Req'd	Description
➢ TrdRegPublicationReason	2670	Cond	4 = No public price quoted as instrument is illiquid 5 = No public price quoted due to "Size" 6 = Deferral due to "Large in Scale" 7 = Deferral due to "Illiquid Instrument" 8 = Deferral due to "Size Specific" 11 = Exempted due to securities financing transaction 12 = Exempted due to ESCB policy transaction
OrderCapacity	528	Cond	Designates the capacity of the firm placing the order. Valid Values: A = Agency P = Principle R = Riskless Principle Used for MIFID, may not be populated if the value is not available.
LastCapacity	29	N	Liquidity Provider capacity in order execution. 1 = Agent 4 = Principal
MatchType	574	Cond	Specifies if client is acting as a Systematic Internaliser. Accepted Values: 9 = Trade Reporting (Systematic Internaliser)
AllocID	70	N	Used to assign an overall allocation ID to the block of pre-allocations.
NoAllocs	78	N	Number of repeating groups for pre-trade allocation.
➢ AllocAccount	79	N	Required if NoAllocs > 0, Must be first field in repeating group.
➢ IndividualAllocID	467	N	Unique ID for a specific allocation repeating group
➢ AllocSide	20009	N	Side of allocation: 1 = Buy, 2 = Sell
➢ AllocQty	80	N	Quantity to be allocated to AllocAccount (in dealt currency)
➢ AllocQty2	20011	N	Quantity to be allocated to AllocAccount (in dealt currency) for the far leg of a swap. This tag is used for swap far leg allocations only; please do not use AllocQty (tag 80) for far leg quantities. Required if NoAllocs > 0 and transaction is a swap.
➢ ExecID	17	N	Unique Trade ID for this allocation
➢ AllocUTIPrefix	20005	N	Identifies the reporting entity that originated the value in AllocUTI
➢ AllocUTI	20006	N	Trade identifier required by government regulatory organizations for regulatory reporting purposes. For example, unique swap identifier (USI) required by the CFTC.

Currently, the inclusion of the contra quantity is a configuration option on the client's trading session. This is only necessary for single leg transactions and only on the FSS Trading API.

13.2. Order Execution Examples

Below are examples of a couple of scenarios on how orders are managed by the system, and the types of messages that are sent back to the client.

Order Rejected

Example: Client submits an order to Buy 1000000 GBP/USD for 1.4773 and was rejected.

OrdStatus	ExecType	OrderQty	CumQty	LeavesQty	LastQty	Description
Rejected	Rejected	1000000	0	0	0	Order rejected immediately

Order Filled

Example: Client submits an order to Buy 1000000 GBP/USD for 1.4773 and was filled.

OrdStatus	ExecType	OrderQty	CumQty	LeavesQty	LastQty	Description
Pending_New	Pending_New	1000000	0	1000000	0	Accepted
Filled	Fill	1000000	1000000	0	1000000	Trade execution and order filled

Order Partially Filled (IOC orders)

Example: Client submits an order to Buy 1000000 GBP/USD for 1.4773 and was filled up to 800000.

OrdStatus	ExecType	OrderQty	CumQty	LeavesQty	LastQty	Description
Pending_New	Pending_New	1000000	0	1000000	0	Accepted
Partially Filled	Partial Fill	1000000	800000	200000	800000	Trade execution and order partially filled
Cancelled	Cancel	1000000	800000	200000	0	Remaining quantity is canceled

13.3. Canceling Orders

Only GTD and GTC orders can be canceled. IOC and FOK order cannot be canceled as their time in force is considered atomic. A successful order cancelation request will result in an ExecutionReport with OrdStatus set to 4 (Canceled). Unsuccessful cancelation requests will result in an OrderCancelReject.

13.4. OrderCancelRequest Message Definition (Type F)

Tag Name	Tag #	Req'd	Description
ClOrdID	11	Y	A unique identifier for the cancel request supplied by the client.
OrigClOrdID	41	Y	The original client's unique identifier for the order.
Symbol	55	Y	The instrument CCY pair
TransactTime	60	Y	Time in UTC this cancel request was initiated by the client. For ex; 20181220-09:00:00.000

13.5. OrderCancelReject Message Definition (Type 9)

Tag Name	Tag #	Req'd	Description
OrderID	37	N	Unique identifier for the order as provided by FSS.
ClOrdID	11	Y	A unique identifier for the cancel request supplied by the client.
OrigClOrdID	41	Y	The original client's unique identifier for the order.
Symbol	55	Y	The instrument CCY pair
OrdStatus	39	N	Status of the order after this cancel reject is applied.
CxlRejResponseTo	434	Y	Always 1 = Order Cancel Request
CxlRejReason	102	N	Valid values: 0 = TOO LATE TO CANCEL 1 = UNKNOWN ORDER 3 = ORDER IS IN PENDING CANCEL OR PENDING REPLACE STATUS 99 = OTHER
Text	58	N	Textual Description of the reject reason.

14. Request for Stream (RFS)

14.1. QuoteRequest Message Definition (Type R)

Tag Name	Tag #	Req'd	Description
QuoteReqID	131	Y	A unique identifier supplied by the client.
Account	1	N	Account mnemonic as agreed between client and FSS.
ExpireTime	126	N	The quote request will expire after an ExpireTime expressed in milliseconds. Default to 120000ms if not set or if the ExpireTime value does not respect the following: 10000ms < ExpireTime < 120000ms.
NoRelatedSym	146	Y	Number of repeating symbols. Valid value: 1.
➢ Symbol	55	Y	The instrument, ccy pair.
➢ Side	54	N	Side of the quote for a One-Way request: 1 = Buy 2 = Sell If the value is not set, this is a Two-Way request. For a swap, refers to the far leg.
➢ OrderQty	38	Y	The requested size expressed in the ccy specified in tag 15. For swaps, this refers to the near leg.
➢ SettlType	63	Y	Standard tenor type as described in table 6) or YYYYMMDD for a broken date. For swaps, this refers to the near leg.
➢ SettlType2	9999	N	Standard tenor type as described in table 6) or YYYYMMDD for a broken date. For swaps, this refers to the far leg.
➢ OrderQty2	192	N	The requested size expressed in the ccy specified in tag 15. For swaps, this refers to the far leg.
➢ Currency	15	N	The currency that this request refers to.
➢ FixingDate	6203	N	For NDF, fixing date expressed in the format YYYYMMDD. For swaps, this refers to the near leg.
➢ FixingDate2	9121	N	For NDF, fixing date expressed in the format YYYYMMDD. For swaps, this refers to the far leg.
NoPartyIDs	453	N	Repeating group below should contain unique combinations of PartyID, PartyIDSource, and PartyRole
➢ PartyID	448	Cond	Used to identify source of PartyID. Required if NoPartyIDs > 0.
➢ PartyIDSource	447	Cond	Required if NoPartyIDs > 0. Valid value = D. G = MIC: Market Identifier Code (ISO 10383) Required by some LPs for MIFID trading clients when trading MIFID covered products. N = LEI : Legal Entity Identifier (ISO 17443)

Tag Name	Tag #	Req'd	Description
➢ PartyRole	452	Cond	Required if NoPartyIDs > 0. Valid values: 1 = Executing Firm. 3 = Client ID (internal id or name of the trader who is placing the trade, at most one value of this type). And/or Client LEI value may be sent to LP in tag 448 for MiFID covered trades. 35 = Liquidity Provider. 73 = Execution Venue. To be sent to LP with MIC value in tag 448 LEI and MIC values are required by some LPs; please refer to "FSS - MIFID Addendum" document for more details..
SecurityID	48	Cond	Required for regulatory trading (MIFID) ISIN (UPI – Unique Product Identifier)
SecurityIDSource	22	Cond	Required for regulatory trading (MIFID) 4=ISIN (Instrument ISIN Code)
SecurityID2	7637	Cond	Required for far leg of swaps for regulatory trading (MIFID) ISIN
SecurityID2Source	7636	Cond	Required for far leg of swaps for regulatory trading (MIFID) 4=ISIN
NoTrdRegPublications	2668	Cond	Number of regulatory publication rules in repeating group. Required by some LPs; please refer to "FSS - MIFID Addendum" document for more details.
➢ TrdRegPublicationType	2669	Cond	Valid values: 0 = Pre-Trade transparency waiver There are allowable waivers from the obligation to make public current bid/offer prices and trading depth. 1 = Post-trade deferral There are allowable deferrals for the post-trade publication of trade transactions.
➢ TrdRegPublicationReason	2670	Cond	4 = No public price quoted as instrument is illiquid 5 = No public price quoted due to "Size" 6 = Deferral due to "Large in Scale" 7 = Deferral due to "Illiquid Instrument" 8 = Deferral due to "Size Specific" 11 = Exempted due to securities financing transaction
-AllocID	70	N	Used to assign an overall allocation ID to the block of preallocations.
NoAllocs	78	N	Number of repeating groups for pre-trade allocation.
➢ AllocAccount	79	Cond	Required if NoAllocs > 0, Must be first field in repeating group.
➢ IndividualAllocID	467	N	Unique ID for a specific allocation repeating group
➢ AllocSide	20009	Cond	Side of allocation: 1 = Buy, 2 = Sell. Required if NoAllocs > 0.
➢ AllocQty	80	Cond	Quantity to be allocated to AllocAccount (in dealt currency). Required if NoAllocs > 0.

Tag Name	Tag #	Req'd	Description
➢ AllocQty2	20011	Cond	Quantity to be allocated to AllocAccount (in dealt currency) for the far leg of a swap. This tag is used for swap far leg allocations only; please do not use AllocQty (tag 80) for far leg quantities. Required if NoAllocs > 0 and transaction is a swap.
➢ AllocUTIPrefix	20005	N	Identifies the reporting entity that originated the value in AllocUTI.
➢ AllocUTI	20006	N	Trade identifier required by government regulatory organizations for regulatory reporting purposes. For example, unique swap identifier (USI) required by the CFTC.
➢ SecurityType	167	N	For NDF, valid value = FXNDF

14.2. MassQuote Message Definition (Type i)

Tag Name	Tag #	Req'd	Description
QuoteReqID	131	Y	The original unique identifier supplied by the client.
Symbol	55	Y	The instrument, ccy pair.
SecurityType	167	N	For NDF, valid value = FXNDF
SettlType	63	Y	Standard tenor type as described in table 6) or YYYYMMDD for a broken date. For swaps, this refers to the near leg.
SettlType2	9999	N	Standard tenor type as described in table 6) or YYYYMMDD for a broken date. For swaps, this refers to the far leg.
NoQuoteEntries	295	Y	Number of entries in the Mass Quote message. Depends on the number of LP involved.
➢ QuoteEntryID	299	Y	Unique identifier for this single-entry quote and side. Updates to this entry quote bid/offer will use this ID to reference the entry quote.
➢ Side	54	Y	Side of this quote 1 = Bid 2 = Offer
➢ Currency	15	N	Currency this response refers to.
➢ SettlDate	64	N	Value date. For swaps, this refers to the near leg.
➢ SettlDate2	193	N	Value date. For swaps, this refers to the far leg.
➢ BidSpotRate	188	N	Bid spot rate of the near leg.
➢ OfferSpotRate	190	N	Offer spot rate of the near leg.
➢ BidSpotRate2	6162	N	Bid spot rate of the far leg.
➢ OfferSpotRate2	6163	N	Offer spot rate of the far leg.

Tag Name	Tag #	Req'd	Description
➢ BidPx	132	N	Bid all-in rate of the near leg.
➢ BidSize	134	N	Bid size of the near leg.
➢ BidForwardPoints	189	N	Bid forward points of the near leg.
➢ OfferPx	133	N	Offer all-in rate of the near leg.
➢ OfferSize	135	N	Offer size of the near leg.
➢ OfferForwardPoints	191	N	Offer forward points of the near leg.
➢ BidPx2	7576	N	Bid all-in rate of the far leg.
➢ BidSize2	6052	N	Bid size of the far leg.
➢ BidForwardPoints2	642	N	Bid forward points of the far leg.
➢ OfferPx2	7577	N	Offer all-in rate of the far leg.
➢ OfferSize2	6053	N	Offer size of the far leg.
➢ OfferForwardPoints2	643	N	Offer forward points of the far leg.
➢ BidSwapPoints	4539	N	Bid swap points.
➢ OfferSwapPoints	4540	N	Offer swap points.
➢ ValidUntilTime	62	N	Indicates expiration time in UTC. For ex; 20181220-09:00:00.000
➢ MDEntryDate	272	N	The date of this quote entry.
➢ MDEntryTime	273	N	The time of this quote entry.
➢ MDEntryOriginator	282	N	The ID of the liquidity provider as defined in 3.3.
➢ FixingDate	6203	N	For NDF, fixing date expressed in the format YYYYMMDD. For swaps, this refers to the near leg.
➢ FixingDate2	9121	N	For NDF, fixing date expressed in the format YYYYMMDD. For swaps, this refers to the far leg.
NoMDEntries	268	Y	Number of entries in the Mass Quote message. It is the number of mid-rate entries.
➢ MDEntryType	269	Y	H = Mid-Rate Price
➢ MDEntryOriginator	282	Y	The ID of the liquidity provider as defined in 3.3.
➢ MidPx	631	N	Mid-price of the near leg as provided by the LP.
➢ FarMidPx	9998	N	Mid-price of the far leg as provided by the LP.

14.3. MassQuoteAcknowledgement Message Definition (Type b)

Tag Name	Tag #	Req'd	Description
QuoteReqID	131	Y	Identifier of the quote request that this ack refers to.
QuoteStatus	297	Y	Identifies the status of the quote acknowledgement. Valid values: 0 = Accepted 4 = Canceled All 5 = Rejected 7 = Expired
QuoteRejectReason	300	N	Reason of the rejection.
Text	58	N	Full description for rejection.
Symbol	55	N	The instrument ccy pair.

14.4. QuoteResponse Message Definition (Type AJ)

Tag Name	Tag #	Req'd	Description
QuoteRespID	693	Y	Unique identifier for this quote response provided by the client.
QuoteID	117	Y	Identifier of the quote that this quote response refers to (QuoteEntryID from the MassQuote).
QuoteRespType	694	Y	Valid values: 1 = Hit/Lift
Symbol	55	Y	The instrument ccy pair.
QuoteReqID	131	Y	Identifier of the quote request that this quote response refers to.
Side	54	Y	Side of the hit. This is from the client's perspective. Valid values: 1 = Buy 2 = Sell
SecurityType	167	N	For NDF, valid value = FXNDF
SettlType	63	Y	Standard tenor type as described in table 6) or YYYYMMDD for a broken date as provided in the quoteRequest. For swaps, this refers to the near leg.
SettlDate	64	Y	Value date as provided in the targeted quote. For swaps, this refers to the near leg.
SettlType2	9999	Cond	Standard tenor type as described in table 6) or YYYYMMDD for a broken date as provided in the quoteRequest. For swaps, this refers to the far leg.
SettlDate2	193	Cond	Value date as provided in the targeted quote. For swaps, this refers to the far leg.
Currency	15	N	The currency that this response refers to.
BidSpotRate	188	Cond	Bid spot rate of the near leg.
OfferSpotRate	190	Cond	Offer spot rate of the near leg.
BidSpotRate2	6162	Cond	Bid spot rate of the far leg.
OfferSpotRate2	6163	Cond	Offer spot rate of the far leg.
BidSize	134	Cond	Bid size of the near leg.
BidPx	132	Cond	Bid all-in rate of the near leg.

Tag Name	Tag #	Req'd	Description
BidForwardPoints	189	N	Bid forward points of the near leg (for information only).
OfferSize	135	Cond	Offer size of the near leg.
OfferPx	133	Cond	Offer all-in rate of the near leg.
OfferForwardPoints	191	N	Offer forward points of the near leg (for information only).
BidSize2	6052	Cond	Bid size of the far leg.
BidPx2	7576	Cond	Bid all-in rate of the far leg.
BidForwardPoints2	642	N	Bid forward points of the far leg (for information only).
OfferSize2	6053	Cond	Offer size of the far leg.
OfferPx2	7577	Cond	Offer all-in rate of the far leg.
OfferForwardPoints2	643	N	Offer forward points of the far leg (for information only).
TransactTime	60	Y	The timestamp in UTC for this response. For ex; 20181220-09:00:00.000
SecurityID	48	N	Used for regulatory trading (MIFID) ISIN (UPI – Unique Product Identifier)
SecurityIDSource	22	N	Used for regulatory trading (MIFID) 4 = ISIN (Instrument ISIN Code)
SecurityID2	7637	N	ISIN (UPI – Unique Product Identifier) taxonomy (max 10 chars)
SecurityIDSource2	7636	N	4 = ISIN (ISIN-code, where ISIN is available) 8 = OTHER (Other Identifier) Used for MIFID II (UPI - Unique Product Identifier)
UTIPrefix	20001	N	UTI prefix near leg. Not required, but if 20001 is present, then 20002 is required.
UTI	20002	N	Unique UTI ID near leg. Not required, but if 20002 is present, then 20001 is required.
UTIPrefix2	20003	N	UTI prefix far leg. Not required, but if 20003 is present, then 20004 is required.
UTI2	20004	N	Unique UTI ID far leg. Not required, but if 20004 is present, then 20003 is required.
FixingDate	6203	Cond	For NDF, fixing date expressed in the format YYYYMMDD. For swaps, this refers to the near leg. Recommended when SecurityType = FXNDF when LP sends Fixing Date in the quote message. Some providers require it on RFS, see table 8.1.
FixingDate2	9121	Cond	For NDF, fixing date expressed in the format YYYYMMDD. For NDF swaps, this refers to the far leg. Recommended when SecurityType = FXNDF when LP sends Fixing Date in the quote message. Some providers require it on RFS, see table 8.1.
NoPartyIDs	453	N	Number of repeating entries.
➢ PartyID	448	Cond	The party identifier (possible values depend on the party role). Required if NoPartyIDs > 0.
➢ PartyIDSource	447	Cond	Required if NoPartyIDs > 0. Valid values: D = Proprietary/Custom code N = LEI : Legal Entity Identifier (ISO 17443)

Tag Name	Tag #	Req'd	Description
➢ PartyRole	452	Cond	Required if NoPartyIDs > 0. Valid values: 1 = Executing Firm. 3 = Client ID (internal id or name of the trader who is placing the trade, at most one value of this type). And/or Client LEI value may be sent to LP in tag 448 for MiFID covered trades. 75 = Location ID Country code where the trade is booked. 12 = Executing Trader (Execution Decision Maker) 122 = Investment Decision Maker Required by some LPs; please refer to "FSS - MIFID Addendum" document for more details.
➢ PartyRoleQualifier	2376	N	Provides further qualification of PartyRole, Used values: 22 = Algorithm 24 = Natural Person
MatchType	574	Cond	Client to specify if they are acting as a Systematic sequenceInternaliser. Accepted Values: 9 = Trade Reporting (Systematic Internaliser)
SecurityID	48	Cond	Required for regulatory trading (MIFID) ISIN (UPI – Unique Product Identifier)
SecurityIDSource	22	Cond	Required for regulatory trading (MIFID) 4=ISIN (Instrument ISIN Code)
SecurityID2	7637	Cond	Required for far leg of swaps for regulatory trading (MIFID) ISIN (UPI – Unique Product Identifier)
SecurityID2Source	7636	Cond	Required for far leg of swaps for regulatory trading (MIFID) 4=ISIN
AllocID	70	N	Used to assign an overall allocation ID to the block of preallocations.
NoAllocs	78	N	Number of repeating groups for pre-trade allocation.
➢ AllocAccount	79	Cond	Required if NoAllocs > 0, Must be first field in repeating group.
➢ IndividualAllocID	467	N	Unique ID for a specific allocation repeating group
➢ AllocSide	20009	N	Side of allocation: 1 = Buy, 2 = Sell. Required is NoAllocs > 0.
➢ AllocQty	80	N	Quantity to be allocated to AllocAccount (in dealt currency). Required if NoAllocs > 0.
➢ AllocQty2	20011	N	Quantity to be allocated to AllocAccount (in dealt currency) for the far leg of a swap. This tag is used for swap far leg allocations only; please do not use AllocQty (tag 80) for far leg quantities. Required if NoAllocs > 0 and transaction is a swap.
➢ AllocUTIPrefix	20005	N	Identifies the reporting entity that originated the value in AllocUTI

Tag Name	Tag #	Req'd	Description
➢ AllocUTI	20006	N	Trade identifier required by government regulatory organizations for regulatory reporting purposes, i.e., unique swap identifier (USI) required by the CFTC.
➢ RegulatoryJurisdiction	7602	Cond	Valid value EMIR, CFTC.

14.5. QuoteCancel Message Definition (Type Z)

Tag Name	Tag #	Req'd	Description
QuoteReqID	131	Y	The original unique identifier of the quote to be canceled.
QuoteRespID	693	Y	Unique identifier for this quote cancel provided by the client.
Symbol	55	N	The instrument ccy pair.

14.6. RFS Message Examples

Forward Trading and Broken Dates

QuoteRequest

8=FIX.4.4|9=154|35=R|34=837|49=STR.RFS.NY.UAT.CLIENT|52=20150127-14:35:05.846|56=FSS|131=QR_EUR/USD_RFS_1422369305835|146=1|55=EUR/USD|15=EUR|38=10000000|63=20150205|10=242|

MassQuote

8=FIX.4.4|9=0697|35=i|49=FSS|56=STR.RFS.NY.UAT.CLIENT|52=20150127-14:35:06.481|34=951|131=QR_EUR/USD_RFS_1422369305835|55=EUR/USD|63=20150205|295=4|299=6JJ00a00000000+|54=1|132=1.137067|134=100000|188=1.137|189=0.000067|15=EUR|64=20150205|272=20150127|273=14:35:06.480|282=HSBC|299=61a28.60249752.0.Q+|54=1|132=1.136717|134=100000|188=1.13666|189=0.000057|15=EUR|64=20150205|272=20150127|273=14:35:05.897|282=COBA|299=6JJ00a00000000+|54=2|133=1.137171|135=100000|190=1.1371|191=0.000071|15=EUR|64=20150205|272=20150127|273=14:35:06.480|282=HSBC|299=61a28.60249752.0.Q+|54=2|133=1.137552|135=100000|190=1.13747|191=0.000082|15=EUR|64=20150205|272=20150127|273=14:35:05.897|282=COBA|268=1|269=H|282=COBA|631=1.13714|10=000|

QuoteResponse

8=FIX.4.4|9=261|35=AJ|34=832|49=TRD.RFS.NY.UAT.CLIENT|52=20150127-14:35:06.598|56=FSS|15=EUR|54=2|55=EUR/USD|60=20150127-14:35:06|63=20150205|64=20150205|117=6JJ00a00000000+|131=QR_EUR/USD_RFS_1422369305835|132=1.137067|134=100000|188=1.137|693=NOSvg6O4zraEeO/s5iTSjTl2g|694=1|10=007|

Here both 63 and 64 tags must be provided:
- 63 must be set as provided in the QuoteRequest
- 64 must be set with the value date of the targeted entry as returned by the LPs in the MassQuote message.

Be aware that values of tags 63 and 64 may be different as FSS passes through the value of tag 64 from the LPs.

Execution Reports

8=FIX.4.4|9=0368|35=8|34=838|49=FSS|56=TRD.RFS.NY.UAT.CLIENT|52=20150127-14:35:06.606|37=O20150127L1000031313|17=E20150127L1000018135|150=A|39=A|55=EUR/USD|54=2|693=NOSvg6O4zraEeO/s5iTSjTl2g|131=QR_EUR/USD_RFS_1422369305835|117=6JJ00a00000000+|63=20150205|64=20150205|38=100000|44=1.137067|151=100000|14=0|32=0|31=0|6=0|194=1.137|195=0.000067|40=D|15=EUR|59=4|60=20150127-14:35:06.000|10=243|

8=FIX.4.4|9=0495|35=8|34=839|49=FSS|56=TRD.RFS.NY.UAT.CLIENT|52=20150127-14:35:07.218|37=O20150127L1000031313|198=LNQ020019CNX2F8K|17=E20150127L1000018138|527=LNQ020019CNX2F8K|150=2|39=2|55=EUR/USD|54=2|693=NOSvg6O4zraEeO/s5iTSjTl2g|131=QR_EUR/USD_RFS_1422369305835|117=6JJ00a00000000+|63=20150205|64=20150205|38=100000|44=1.137067|151=0|14=100000|32=100000|31=1.137067|6=1.137067|194=1.137|195=0.000067|20001=5493001N6DM40ZPSHW89|20002=NYO20150127L1000031313|40=D|15=EUR|59=4|60=20150127-14:35:07.216|75=20150127|30=HSBC|10=028|

Swap Trading and Broken Dates

QuoteRequest

8=FIX.4.4|9=178|35=R|34=19|49=STR.RFS.NY.UAT.CLIENT|52=20150127-12:19:29.586|56=FSS|131=QR_EUR/USD_RFS_1422361169552|146=1|55=EUR/USD|15=EUR|38=100000|63=20150129|192=100000|9999=20150429|10=124|

MassQuote

8=FIX.4.4|9=0556|35=i|49=FSS|56=STR.RFS.NY.UAT.CLIENT|52=20150127-12:19:30.427|34=43|131=QR_EUR/USD_RFS_1422361169552|55=EUR/USD|63=20150129|9999=20150429|295=2|299=6JJ00300000001+|54=1|133=1.12883|7576=1.129704|135=100000|6052=100000|190=1.12883|6162=1.12883|191=0|642=0.000874|4539=0.000874|15=EUR|64=20150129|193=20150429|272=20150127|273=12:19:30.425|282=HSBC|299=6JJ00300000001+|54=2|132=1.12873|7577=1.129644|134=100000|6053=100000|188=1.12873|6163=1.12873|189=0|643=0.000914|4540=0.000914|15=EUR|64=20150129|193=20150429|272=20150127|273=12:19:30.425|282=HSBC|268=0|10=100|

QuoteResponse

8=FIX.4.4|9=327|35=AJ|34=17|49=TRD.RFS.NY.UAT.CLIENT|52=20150127-12:19:31.715|56=FSS|15=EUR|54=1|55=EUR/USD|60=20150127-12:19:31|63=20150129|64=20150129|117=6JJ00300000001+|131=QR_EUR/USD_RFS_1422361169552|132=1.12873|134=100000|188=1.12873|193=20150429|693=NOSajLtdAslja+nAiX5oYB2jQ|694=1|6053=100000|6163=1.12873|7577=1.129644|9999=20150429|10=109|

Here both 63 and 64 tags (near leg) and both 9999 and 193 tags (far leg) must be provided:
- 63 and 9999 must be set as provided in the QuoteRequest
- 64 and 193 must be set with the value date of the targeted entry as returned by the LPs in the MassQuote message.
Be aware that values of tags 63 and 64 on one hand, and the values of tags 9999 and 193 on the other hand, may be different as FSS passes through the value of tag 64 and 193 from the LPs.

Execution Reports

8=FIX.4.4|9=0504|35=8|34=18|49=FSS|56=TRD.RFS.NY.UAT.CLIENT|52=20150127-

12:19:31.273|37=O20150127L1000031213|17=E20150127L1000018075|150=A|39=A|55=EUR/USD|54=1|693=NOSajLtdAslja+nAiX5oYB2jQ|131=QR_EUR/USD_RFS_1422361169552|117=6JJ00300000001+|63=20150129|64=20150129|9999=20150429|193=20150429|44=1.12873|640=1.129644|38=100000|192=100000|194=1.12873|6161=1.12873|195=0|641=0.000914|151=100000|14=0|32=0|6164=100000|6165=0|6808=0|31=1.12873|6=1.12873|6160=1.129644|6159=1.129644|40=D|15=EUR|59=4|60=20150127-12:19:31.000|10=086|

8=FIX.4.4|9=0670|35=8|34=19|49=FSS|56=TRD.RFS.NY.UAT.CLIENT|52=20150127-12:19:31.876|37=O20150127L1000031213|198=LNQ020019CNNA5L6|17=E20150127L1000018078|527=LNQ020019CNNA5L6|150=2|39=2|55=EUR/USD|54=1|693=NOSajLtdAslja+nAiX5oYB2jQ|131=QR_EUR/USD_RFS_1422361169552|117=6JJ00300000001+|63=20150129|64=20150129|9999=20150429|193=20150429|44=1.12873|640=1.129644|38=100000|192=100000|194=1.12873|6161=1.12873|195=0|641=0.000914|151=0|14=100000|32=100000|6164=0|6165=100000|6808=100000|31=1.12873|6=1.12873|6160=1.129644|6159=1.129644|20001=5493001N6DM40ZPSHW89|20002=NYO20150127L1000031213|20003=5493001N6DM40ZPSHW89|20004=NYO20150127L10000312132|40=D|15=EUR|59=4|60=20150127-12:19:31.874|75=20150127|30=HSBC|10=200|

MIFID

QuoteResponse with HSBC MIFID tags

8=FIX.4.4|9=327|35=AJ|34=17|49=TRD.RFS.NY.UAT.CLIENT|52=20150127-12:19:31.715|56=FSS|15=EUR|54=1|55=EUR/USD|60=20150127-12:19:31|63=20150129|64=20150129|117=6JJ00300000001+|131=QR_EUR/USD_RFS_1422361169552|132=1.12873|134=100000|188=1.12873|193=20150429|693=NOSajLtdAslja+nAiX5oYB2jQ|694=1|6053=100000|6163=1.12873|7577=1.129644|9999=20150429|
453=1|448=lei.id|447=N|452=3|10=109|

15. Standard FIX Message Definitions

15.1. Standard Message Header

Tag Name	Tag #	Req'd	Description
BeginString	8	Y	Set to "FIX.4.4"
BodyLength	9	Y	Length of the message body.
MessageType	35	Y	The message type
SenderCompID	49	Y	Message sender ID, a pre-defined ID agreed by both parties. Value supplied separately outside this document. Will be assigned during on-boarding.
TargetCompID	56	Y	Message receiver ID, a pre-defined ID agreed by both parties. Value supplied separately outside this document. Will be assigned during on-boarding.
MsgSeqNum	34	Y	The sequence number for this message.
SendingTime	52	Y	Time of message transmission (UTC timestamp at the source). Note that on ESP mkt data sessions clients will receive SendingTime at microsecond precision.
PossDupFlag	43	N	Indicates possible retransmission of message with this sequence number
PossResend	97	N	Indicates that message may contain information that has been sent under another sequence number.
OrigSendingTime	122	N	Original time of message transmission (always expressed in UTC (Universal Time Coordinated, also known as "GMT") when transmitting orders as the result of a resend request.

15.2. Standard Message Trailer

Tag Name	Tag #	Req'd	Description
CheckSum	10	Y	3 bytes FIX checksum. Always the last tag of a message.

15.3. ResendRequest Message Definition (Type 2)

Tag Name	Tag #	Req'd	Description
BeginSeqNo	7	Y	Sequence number of the first message to be resent.
EndSeqNo	16	Y	Sequence number of last message to be resent, or 0 (zero) to send all messages subsequent to the first message.

15.4. SequenceReset Message Definition (Type 4)

Tag Name	Tag #	Req'd	Description
GapFillFlag	123	N	Set "Y" for Gap Fill mode or "N" for reset mode.
NewSeqNo	36	Y	New sequence number.

15.5. Reject Message Definition (Type 3)

Tag Name	Tag 3	Req'd	Description
RefSeqNum	45	Y	The rejected message sequence number.
RefTagId	371	N	The tag number of the FIX field being referenced.
RefMsgType	372	N	The rejected message type.
SessionRejectReason	373	N	Reject code.
Text	58	N	Text description of the rejection.

15.6. TestRequest Message Definition (Type 1)

Tag Name	Tag #	Req'd	Description
TestReqID	112	Y	Unique ID for this message.

15.7. Heartbeat Message Definition (Type 0)

Tag Name	Tag #	Req'd	Description
TestReqID	112	N	Unique ID for the original TestRequest message.

16. Status and Error Message

Below is the list of status messages and descriptions that the FSS Trading Platform will send to the Client system in various FIX messages.

16.1. Streaming Error

Status Message	Description
Symbol not assigned to client	The client is not allowed to trade with the requested currency pair.
No account activated for this currency	The client has no account activated for the requested currency pair.

16.2. Trading Error

Status Message	Description
Invalid QuoteID	The requested QuoteID is invalid.
Price is mandatory	The price is missing. It must be mentioned in the order.
Quantity is mandatory	The quantity is missing. It must be mentioned in the order.
Quote reference is mandatory	The quote reference is missing. It must be mentioned in the order.
Stale Order	Order is received x seconds after it was sent by the client.
Exceeded max order limit	Client has exceeded the maximum allowed number of orders during a certain amount of time.

➢ Appendix A. Currency Pairs

I. FX Currency Pairs

AED/CHF	CAD/SEK	DKK/AUD	GBP/CHF	INR/USD	NZD/PHP	SGD/NOK	USD/NGN	XPD/THB
AED/JPY	CAD/SGD	DKK/CAD	GBP/CNH	JPY/AUD	NZD/PLN	SGD/NZD	USD/NOK	XPD/TRY
AED/SAR	CAD/THB	DKK/CHF	GBP/CNY	JPY/CAD	NZD/RUB	SGD/PHP	USD/NZD	XPD/USD
AED/SEK	CAD/TRY	DKK/CZK	GBP/CZK	JPY/CHF	NZD/SEK	SGD/PLN	USD/OMR	XPD/ZAR
AUD/AED	CAD/TWD	DKK/EUR	GBP/DKK	JPY/CNH	NZD/SGD	SGD/RUB	USD/PEN	XPT/AUD
AUD/BRL	CAD/USD	DKK/GBP	GBP/EUR	JPY/DKK	NZD/THB	SGD/SEK	USD/PHP	XPT/CAD
AUD/CAD	CAD/ZAR	DKK/HKD	GBP/GHS	JPY/EUR	NZD/TRY	SGD/THB	USD/PLN	XPT/CHF
AUD/CHF	CAD/ZMW	DKK/HUF	GBP/HKD	JPY/GBP	NZD/TWD	SGD/TWD	USD/QAR	XPT/DKK
AUD/CNH	CHF/AUD	DKK/JPY	GBP/HUF	JPY/HKD	NZD/USD	SGD/USD	USD/RON	XPT/EUR
AUD/CNY	CHF/CAD	DKK/MXN	GBP/IDR	JPY/HUF	NZD/ZAR	SGD/ZAR	USD/RUB	XPT/GBP
AUD/CZK	CHF/CNH	DKK/NOK	GBP/ILS	JPY/MXN	NZD/ZMW	THB/CHF	USD/SAR	XPT/HKD
AUD/DKK	CHF/CNY	DKK/PLN	GBP/INR	JPY/NOK	OMR/JPY	THB/IDR	USD/SEK	XPT/JPY
AUD/EUR	CHF/CZK	DKK/SEK	GBP/JPY	JPY/NZD	PEN/USD	THB/INR	USD/SGD	XPT/NOK
AUD/GBP	CHF/DKK	DKK/SGD	GBP/KES	JPY/SEK	PHP/USD	THB/JPY	USD/THB	XPT/NZD
AUD/GHS	CHF/EUR	DKK/THB	GBP/KRW	JPY/SGD	PLN/CHF	THB/KRW	USD/TND	XPT/SEK
AUD/HKD	CHF/GBP	DKK/USD	GBP/KWD	JPY/TRY	PLN/CZK	THB/PHP	USD/TRY	XPT/SGD
AUD/HUF	CHF/GHS	DKK/ZAR	GBP/MXN	JPY/TWD	PLN/DKK	THB/SEK	USD/TWD	XPT/THB
AUD/IDR	CHF/HKD	DKK/ZMW	GBP/MYR	JPY/USD	PLN/EUR	THB/TWD	USD/TWO	XPT/TRY
AUD/ILS	CHF/HUF	EUR/AED	GBP/NOK	JPY/ZAR	PLN/HUF	TRY/AUD	USD/ZAR	XPT/USD
AUD/INR	CHF/IDR	EUR/AUD	GBP/NZD	JPY/ZMW	PLN/JPY	TRY/CHF	USD/ZMW	XPT/ZAR
AUD/JPY	CHF/INR	EUR/BGN	GBP/OMR	KRW/USD	PLN/NOK	TRY/DKK	XAG/AUD	XTS/XTS
AUD/KES	CHF/JPY	EUR/BRL	GBP/PHP	MAD/CHF	PLN/SEK	TRY/EUR	XAG/CAD	ZAR/AUD
AUD/KRW	CHF/KES	EUR/CAD	GBP/PLN	MXN/AUD	PLN/USD	TRY/GBP	XAG/CHF	ZAR/CHF
AUD/MXN	CHF/KRW	EUR/CHF	GBP/RON	MXN/CHF	PLN/ZAR	TRY/HKD	XAG/DKK	ZAR/EUR
AUD/MYR	CHF/MXN	EUR/CNH	GBP/RUB	MXN/EUR	RON/NOK	TRY/JPY	XAG/EUR	ZAR/GBP
AUD/NGN	CHF/MYR	EUR/CNY	GBP/SAR	MXN/GBP	RON/SEK	TRY/MXN	XAG/GBP	ZAR/JPY
AUD/NOK	CHF/NOK	EUR/CZK	GBP/SEK	MXN/JPY	RUB/CHF	TRY/NOK	XAG/HKD	ZAR/MXN
AUD/NZD	CHF/NZD	EUR/DKK	GBP/SGD	MXN/SEK	RUB/JPY	TRY/NZD	XAG/JPY	ZAR/NOK
AUD/PHP	CHF/PHP	EUR/GBP	GBP/THB	MXN/USD	RUB/USD	TRY/RUB	XAG/NOK	ZAR/SEK
AUD/PLN	CHF/PLN	EUR/GHS	GBP/TRY	MYR/USD	SAR/AED	TRY/SEK	XAG/NZD	ZAR/USD
AUD/RUB	CHF/RON	EUR/HKD	GBP/TWD	NOK/AUD	SAR/CHF	TRY/USD	XAG/SEK	
AUD/SEK	CHF/RUB	EUR/HRK	GBP/USD	NOK/CAD	SAR/SEK	TRY/ZAR	XAG/SGD	
AUD/SGD	CHF/SEK	EUR/HUF	GBP/ZAR	NOK/CHF	SEK/AUD	TWD/USD	XAG/THB	
AUD/THB	CHF/SGD	EUR/IDR	GBP/ZMW	NOK/CZK	SEK/CAD	USD/AED	XAG/TRY	
AUD/TRY	CHF/THB	EUR/ILS	HKD/AUD	NOK/DKK	SEK/CHF	USD/ARS	XAG/USD	
AUD/TWD	CHF/TRY	EUR/INR	HKD/CHF	NOK/EUR	SEK/CZK	USD/AUD	XAG/ZAR	
AUD/USD	CHF/TWD	EUR/JPY	HKD/CNH	NOK/GBP	SEK/DKK	USD/BGN	XAU/AUD	
AUD/ZAR	CHF/USD	EUR/KES	HKD/CNY	NOK/HKD	SEK/EUR	USD/BHD	XAU/CAD	
AUD/ZMW	CHF/ZAR	EUR/KRW	HKD/DKK	NOK/HUF	SEK/GBP	USD/BRL	XAU/CHF	
BRL/USD	CHF/ZMW	EUR/KWD	HKD/IDR	NOK/JPY	SEK/HKD	USD/CAD	XAU/CNH	

CAD/AED	CLP/USD	EUR/MAD	HKD/INR	NOK/PLN	SEK/HUF	USD/CHF	XAU/DKK	
CAD/AUD	CNH/CAD	EUR/MXN	HKD/JPY	NOK/SEK	SEK/JPY	USD/CLP	XAU/EUR	
CAD/BRL	CNH/CHF	EUR/MYR	HKD/KRW	NOK/USD	SEK/NOK	USD/CNH	XAU/GBP	
CAD/CHF	CNH/CNY	EUR/NOK	HKD/MXN	NOK/ZAR	SEK/PLN	USD/CNY	XAU/HKD	
CAD/CNH	CNH/DKK	EUR/NZD	HKD/NOK	NOK/ZMW	SEK/SGD	USD/COP	XAU/JPY	
CAD/CNY	CNH/HKD	EUR/OMR	HKD/NZD	NZD/AED	SEK/THB	USD/CZK	XAU/NOK	
CAD/CZK	CNH/IDR	EUR/PHP	HKD/PHP	NZD/AUD	SEK/USD	USD/DKK	XAU/NZD	
CAD/DKK	CNH/INR	EUR/PLN	HKD/SEK	NZD/BRL	SEK/ZAR	USD/EGP	XAU/SEK	
CAD/EUR	CNH/JPY	EUR/RON	HKD/SGD	NZD/CAD	SEK/ZMW	USD/EUR	XAU/SGD	
CAD/GBP	CNH/KRW	EUR/RUB	HKD/THB	NZD/CHF	SGD/AED	USD/GBP	XAU/THB	
CAD/HKD	CNH/PHP	EUR/SAR	HKD/TWD	NZD/CNH	SGD/AUD	USD/GHS	XAU/TRY	
CAD/HUF	CNH/SEK	EUR/SEK	HKD/USD	NZD/CNY	SGD/CAD	USD/HKD	XAU/USD	
CAD/IDR	CNH/SGD	EUR/SGD	HKD/ZAR	NZD/CZK	SGD/CHF	USD/HUF	XAU/ZAR	
CAD/ILS	CNH/TWD	EUR/THB	HUF/CHF	NZD/DKK	SGD/CNH	USD/IDR	XPD/AUD	
CAD/INR	CNH/USD	EUR/TND	HUF/JPY	NZD/EUR	SGD/CNY	USD/ILS	XPD/CAD	
CAD/JPY	CNH/ZAR	EUR/TRY	HUF/SEK	NZD/GBP	SGD/DKK	USD/INR	XPD/CHF	
CAD/KRW	CNY/USD	EUR/TWD	HUF/USD	NZD/HKD	SGD/EUR	USD/ISK	XPD/DKK	
CAD/MXN	COP/USD	EUR/TWO	IDR/USD	NZD/HUF	SGD/GBP	USD/JOD	XPD/EUR	
CAD/MYR	CZK/CHF	EUR/USD	ILS/CHF	NZD/IDR	SGD/HKD	USD/JPY	XPD/GBP	
CAD/NOK	CZK/EUR	EUR/ZAR	ILS/DKK	NZD/ILS	SGD/HUF	USD/KES	XPD/HKD	
CAD/NZD	CZK/HUF	EUR/ZMW	ILS/HKD	NZD/INR	SGD/IDR	USD/KRW	XPD/JPY	
CAD/PHP	CZK/JPY	GBP/AED	ILS/JPY	NZD/JPY	SGD/INR	USD/KWD	XPD/NOK	
CAD/PLN	CZK/MXN	GBP/AUD	ILS/NOK	NZD/KRW	SGD/JPY	USD/MAD	XPD/NZD	
CAD/RON	CZK/SEK	GBP/BRL	ILS/SEK	NZD/MYR	SGD/KRW	USD/MXN	XPD/SEK	
CAD/RUB	CZK/USD	GBP/CAD	ILS/TRY	NZD/NOK	SGD/MYR	USD/MYR	XPD/SGD	

II. FX Currency Pairs with Tenors for ESP Forwards and NDFs

FXSpotStream has no technical limitations on the CCY pairs and tenors that are available to stream in respect to the pairs listed previously. If there is a CCY pair or tenor that you would like to trade that is not currently on the security list or in the above tables, please contact FXSpotStream support (support@fxspotstream.com).

The table below lists some examples of ESP Forward and NDF symbols and the corresponding interpretation:

Currency Pair	Tenor	Symbol (55)	SettlType (63)	SecurityType (167)
EURUSD	1 month	EUR/USD	M1	
EURUSD	3 months	EUR/USD	M3	
USDJPY	1 month	USD/JPY	M1	
USDJPY	3 months	USD/JPY	M3	
USDKRW (NDF)	1 month	USD/KRW	M1	FXNDF
USDTWD (NDF)	First IMM date	USD/TWD	IM1	FXNDF
USDTWD (NDF)	Next IMM date	USD/TWD	IM2	FXNDF

III. Price Precisions

Support for multiple LP price rounding strategies

There are certain protocols and trading scenarios where the pricing quoted from LPs needs to be rounded. These occur when an LP is providing a sweep-able order stack-based price feed to FSS clients. For such a feed, rounding may be performed for the FSS Full Amount trading protocol or when the client is using the FSS Pass-Through protocol and submitting orders that hit multiple levels in the order stack at a VWAP based price. FSS now supports two price rounding strategies to better align with the VWAP price validation checks performed by the LP.

Liquidity Provider	Rounding Mode	Meaning	Example
Default Rounding Mode	WIDER	Bids rounded down; Offers rounded up.	Precision: 0.0001 **Bids:** 0.00439 -> 0.0043 0.00435 -> 0.0043 0.00431 -> 0.0043 **Offers:** 0.00439 -> 0.0044 0.00435 -> 0.0044 0.00431 -> 0.0044
JPMC STS	ARITHMETIC_OR_HALF_TIGHTER	If value is halfway between two rounded numbers, then round tighter, else round towards the nearest whole number whether it is tighter or wider.	Precision: 0.0001 **Bids:** 0.00436 -> 0.0044 0.00435 -> 0.0044 0.00434 -> 0.0043 **Offers:** 0.00436 -> 0.0044 0.00435 -> 0.0043 0.00434 -> 0.0043

For the Full Amount option, the calculated VWAP price will be rounded to a precision that is dependent to the currency pairs as per the general precisions table for the following providers:

- BNP Paribas
- Citi
- Commerzbank
- HSBC
- JPMorgan Chase
- Morgan Stanley
- NatWest Markets
- State Street
- UBS

The following liquidity providers do not support VWAP price on Full Amount Option. FSS will not perform any VWAP calculation. They do not accept orders with VWAP price either:

- Bank of America
- MUFG Bank
- Barclays
- Goldman Sachs
- Societe Generale
- Standard Chartered

- Wells Fargo

For the pass-through option, FSS will send the price sent by the bank, without doing any rounding.

General FX Precisions

Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision
AUDCAD	5	EURMXN	4	NZDNOK	4
AUDCHF	5	EURNOK	5	NZDPLN	4
AUDCZK	3	EURNZD	5	NZDSEK	5
AUDDKK	5	EUROMR	5	NZDSGD	5
AUDEUR	5	EURPLN	5	NZDTHB	3
AUDGBP	5	EURRON	5	NZDTRY	5
AUDHKD	5	EURRUB	5	NZDUSD	5
AUDHUF	2	EURSAR	5	NZDZAR	5
AUDILS	4	EURSEK	5	OMRJPY	4
AUDJPY	3	EURSGD	5	PLNCZK	4
AUDMXN	4	EURTHB	3	PLNDKK	5
AUDNOK	5	EURTRY	5	PLNHUF	2
AUDNZD	5	EURUSD	5	PLNJPY	3
AUDPLN	4	EURZAR	5	PLNNOK	5
AUDSEK	5	GBPAED	5	PLNSEK	5
AUDSGD	5	GBPAUD	5	PLNZAR	5
AUDTHB	3	GBPCAD	5	RONNOK	2
AUDTRY	2	GBPCHF	5	SEKAUD	5
AUDUSD	5	GBPCZK	4	SEKCHF	4
AUDZAR	4	GBPDKK	5	SEKCZK	3
CADAUD	4	GBPEUR	5	SEKDKK	5
CADCHF	5	GBPHKD	5	SEKEUR	5
CADCZK	3	GBPHUF	3	SEKGBP	5
CADDKK	5	GBPILS	4	SEKHKD	5
CADEUR	5	GBPJPY	3	SEKHUF	3
CADGBP	5	GBPKWD	5	SEKJPY	3
CADHKD	5	GBPMXN	4	SEKNOK	4
CADHUF	3	GBPNOK	5	SEKUSD	5
CADJPY	3	GBPNZD	5	SGDAUD	5
CADMXN	5	GBPOMR	5	SGDCHF	5
CADNOK	5	GBPPLN	5	SGDCNH	5
CADPLN	4	GBPRON	5	SGDEUR	5
CADSEK	5	GBPSAR	5	SGDGBP	5
CADSGD	5	GBPSEK	5	SGDHUF	2
CADTHB	3	GBPSGD	4	SGDJPY	3
CADUSD	5	GBPTHB	3	SGDNOK	5
CADZAR	5	GBPTRY	5	SGDPLN	2
CHFAUD	4	GBPUSD	5	SGDSEK	5
CHFCAD	4	GBPZAR	4	SGDTHB	3
CHFCZK	2	HKDCNH	4	SGDUSD	4
CHFDKK	5	HKDJPY	3	SGDZAR	5
CHFEUR	5	HKDSEK	5	THBJPY	3
CHFGBP	5	HKDTHB	3	TRYAUD	4

Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision
CHFHKD	5	HKDUSD	4	TRYCHF	4
CHFHUF	3	ILSJPY	3	TRYDKK	5
CHFJPY	3	JPYAUD	6	TRYEUR	5
CHFMXN	4	JPYCAD	6	TRYGBP	5
CHFNOK	5	JPYCHF	6	TRYJPY	3
CHFNZD	5	JPYCNH	6	TRYMXN	5
CHFPLN	5	JPYDKK	6	TRYNZD	5
CHFRON	5	JPYEUR	6	TRYUSD	5
CHFSEK	5	JPYGBP	6	USDAED	5
CHFSGD	5	JPYHKD	6	USDAUD	5
CHFTHB	3	JPYHUF	6	USDCAD	5
CHFTRY	4	JPYMXN	6	USDCHF	5
CHFUSD	5	JPYNOK	6	USDCNH	5
CHFZAR	4	JPYNZD	6	USDCZK	4
CNHHKD	4	JPYSEK	6	USDDKK	5
CNHJPY	3	JPYSGD	6	USDEUR	5
CNHSGD	5	JPYTRY	6	USDGBP	5
CNHUSD	4	JPYUSD	6	USDHKD	5
CZKHUF	4	JPYZAR	6	USDHUF	3
CZKJPY	3	MXNAUD	2	USDILS	5
DKKAUD	4	MXNCHF	4	USDISK	3
DKKCHF	4	MXNEUR	4	USDJPY	3
DKKEUR	4	MXNGBP	4	USDKWD	5
DKKGBP	4	MXNJPY	4	USDMXN	5
DKKHKD	5	MXNUSD	4	USDNGN	2
DKKHUF	2	NOKAUD	4	USDNOK	5
DKKJPY	3	NOKCHF	5	USDNZD	5
DKKNOK	5	NOKCZK	2	USDOMR	6
DKKPLN	4	NOKDKK	5	USDPLN	5
DKKSEK	5	NOKEUR	5	USDRON	5
DKKSGD	4	NOKGBP	5	USDRUB	5
DKKTHB	3	NOKHKD	5	USDSAR	5
DKKUSD	2	NOKHUF	3	USDSEK	5
DKKZAR	5	NOKJPY	3	USDSGD	5
EURAED	5	NOKSEK	4	USDTHB	3
EURAUD	5	NOKUSD	5	USDTRY	5
EURCAD	5	NOKZAR	5	USDZAR	4
EURCHF	5	NZDAUD	5	ZARAUD	2
EURCNH	4	NZDCAD	5	ZARCHF	4
EURCZK	4	NZDCHF	5	ZAREUR	4
EURDKK	5	NZDCZK	3	ZARGBP	4
EURGBP	5	NZDDKK	5	ZARMXN	5
EURHKD	5	NZDEUR	5	ZARJPY	3
EURHUF	3	NZDGBP	5	ZARUSD	4
EURILS	5	NZDHKD	5	CADCNH	4
EURJPY	3	NZDHUF	2		
EURKWD	5	NZDJPY	3		

Precious Metals Currency Pairs and Precisions

Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision
XAGAUD	6	XAUHKD	4	XPDTHB	4
XAGCAD	6	XAUJPY	4	XPDTRY	4
XAGCHF	6	XAUNOK	4	XPDUSD	3
XAGDKK	6	XAUNZD	4	XPDZAR	4
XAGEUR	6	XAUSEK	4	XPTAUD	4
XAGGBP	6	XAUSGD	4	XPTCAD	4
XAGHKD	6	XAUTHB	4	XPTCHF	4
XAGJPY	6	XAUTRY	4	XPTDKK	4
XAGNOK	6	XAUUSD	2	XPTEUR	4
XAGNZD	6	XAUZAR	4	XPTGBP	4
XAGSEK	6	XPDAUD	4	XPTHKD	4
XAGSGD	6	XPDCAD	4	XPTJPY	4
XAGTHB	6	XPDCHF	4	XPTNOK	4
XAGTRY	6	XPDDKK	4	XPTNZD	4
XAGUSD	4	XPDEUR	4	XPTSEK	4
XAGZAR	6	XPDGBP	4	XPTSGD	4
XAUAUD	4	XPDHKD	4	XPTTHB	4
XAUCAD	4	XPDJPY	4	XPTTRY	4
XAUCHF	4	XPDNOK	4	XPTUSD	3
XAUDKK	4	XPDNZD	4	XPTZAR	4
XAUEUR	4	XPDSEK	4		
XAUGBP	4	XPDSGD	4		

NDF Currency Pairs and Precisions

Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision	Ccy Pair	Decimal Precision
AUDBRL	6	DKKZMW	5	NZDKRW	3
AUDCNY	7	EURBRL	6	NZDMYR	7
AUDGHS	6	EURCNY	5	NZDPHP	7
AUDIDR	3	EURGHS	6	NZDTWD	7
AUDINR	5	EURIDR	2	NZDZMW	5
AUDKES	4	EURINR	4	PENUSD	4
AUDKRW	3	EURKES	4	PHPUSD	6
AUDMYR	7	EURKRW	2	RUBUSD	8
AUDNGN	4	EURMYR	4	SEKZMW	5
AUDPHP	5	EURPHP	3	SGDCNY	6
AUDTWD	6	EURRUB	6	SGDIDR	3
AUDZMW	4	EURTWD	4	SGDINR	5
BRLUSD	4	EURZMW	4	SGDKRW	3
CADBRL	6	GBPBRL	6	SGDMYR	8
CADCNY	7	GBPCNY	7	SGDPHP	7
CADIDR	2	GBPGHS	6	SGDRUB	7
CADINR	5	GBPIDR	3	SGDTWD	7
CADKRW	2	GBPINR	5	THBIDR	2
CADMYR	7	GBPKES	4	THBINR	7
CADPHP	7	GBPKRW	3	THBKRW	2
CADTWD	7	GBPMYR	7	THBPHP	9
CADZMW	4	GBPPHP	5	THBTWD	8
CHFCNY	7	GBPTWD	6	TWDUSD	5
CHFGHS	6	GBPZMW	4	USDARS	6
CHFIDR	3	HKDCNY	6	USDBRL	5
CHFINR	5	HKDIDR	2	USDCLP	2
CHFKES	4	HKDINR	5	USDCNY	5
CHFKRW	3	HKDKRW	3	USDCOP	2
CHFMYR	8	HKDPHP	7	USDGHS	6
CHFPHP	5	HKDTWD	7	USDIDR	0
CHFTWD	6	IDRUSD	9	USDINR	3
CHFZMW	4	INRUSD	8	USDKES	4
CLPUSD	7	JPYTWD	8	USDKRW	2
CNHCNY	6	JPYZMW	7	USDMYR	4
CNHIDR	2	KRWUSD	8	USDNGN	4
CNHINR	6	MYRUSD	6	USDPEN	4
CNHKRW	8	NOKZMW	5	USDPHP	3
CNHPHP	6	NZDBRL	4	USDRUB	5
CNHTWD	7	NZDCNY	7	USDTWD	4
CNYUSD	6	NZDIDR	3	USDZMW	4
COPUSD	7	NZDINR	5		

➢ Appendix B. FIX dictionary

The latest version of FIX dictionary (FSS_FIX44.xml) is available on demand. Please contact support@fxspotstream.com.

➢ Appendix C. Pre-Trade Allocations FIX Message Examples

Spot and Forwards

Quote Request (35=R) with Allocations

8=FIX.4.4|9=178|35=R|34=19|49=STR.RFS.NY.UAT.CLIENT|52=20200917-12:19:29.586|56=FSS|131=QR_EUR/USD_RFS_1422361169552|146=1|55=EUR/USD|15=EUR|38=2000000|64=20200919|70=ALLOCEURUSD1|78=4|79=ALLOC1|20009=1|80=1000000|467=ALLOC1_1|79=ALLOC2|20009=1|80=1000000|467=ALLOC2_1|79=ALLOC3|20009=1|80=1000000|467=ALLOC3_1|79=ALLOC4|20009=1|80=1000000|467=ALLOC4_1|10=124|

Quote Response (35=AJ) with Allocations

8=FIX.4.4|9=261|35=AJ|34=832|49=TRD.RFS.NY.UAT.CLIENT|52=20200927-14:35:06.598|56=FSS|15=EUR|54=2|55=EUR/USD|60=20200927-14:35:06|63=20201005|64=20201005|117=6JJ00a00000000+|131=QR_EUR/USD_RFS_1422369305835|132=1.137067|134=3000000|188=1.137|693=NOSvg6O4zraEeO/s5iTSjTl2g|694=1|78=3|79=ALLOC1|20009=1|80=1000000|467=ALLOC1_1|79=ALLOC2|20009=1|80=1000000|467=ALLOC2_1|79=ALLOC3|20009=1|80=1000000|467=ALLOC3_1|10=007|

Execution (35=8) with Allocations

8=FIX.4.4|9=0368|35=8|34=838|49=FSS|56=TRD.RFS.NY.UAT.CLIENT|52=20200927-14:35:06.606|37=O20200927L1000031313|17=E20200127L1000018135|150=A|39=A|55=EUR/USD|54=2|693=NOSvg6O4zraEeO/s5iTSjTl2g|131=QR_EUR/USD_RFS_1422369305835|117=6JJ00a00000000+|63=20201005|64=20201005|38=10000000|44=1.137067|151=0|14=0|32=0|31=0|6=0|194=1.137|195=0.000067|40=D|15=EUR|59=4||78=3|79=ALLOC1|20009=1|80=3000000|467=ALLOC1_1|79=ALLOC2|20009=1|80=2000000|467=ALLOC2_1|79=ALLOC3|20009=1|80=5000000|467=ALLOC3_1|60=20200927-14:35:06.000|10=243|

New Order Single (35=D) with Allocations

8=FIX.4.4|9=199|35=D|49=Client|56=FSS|34=69|52=20200919-15:32:34.212|11=ClOrdID1|55=EUR/USD|54=1|60=20200919-15:32:35.000|38=4000000|40=D|44=1.312614|15=EUR|59=4|64=20200921|278=quoted.offer.0|1166=mds.id|70=ALLOCEURUSDFWD1||78=4|79=ALLOC1|20009=1|80=1000000|467=ALLOC1_1|79=ALLOC2|20009=1|80=1000000|467=ALLOC2_1

|79=ALLOC3|20009=1|80=1000000|467=ALLOC3_1|79=ALLOC4|20009=1|80=1000000|467=ALLOC4_1|10=124|10=009|

Swaps

Swap Quote Request (35=R) with Allocations

8=FIX.4.4|9=178|35=R|34=19|49=STR.RFS.NY.UAT.CLIENT|52=20200927-12:19:29.586|56=FSS|131=QR_EUR/USD_RFS_1422361169552|146=1|55=EUR/USD|15=EUR|38=2000000|64=20150129|192=2000000|9999=20150429|70=ALLOCEURUSD1||78=4|79=ALLOC1|20009=1|80=1000000|467=ALLOC1_1|79=ALLOC2|20009=1|80=1000000|467=ALLOC2_1|79=ALLOC1|20009=2|20011=1000000|467=ALLOC1_2|79=ALLOC2|20009=2|20011=1000000|467=ALLOC2_2|10=124|

Swap Quote Response (35=AJ) with Allocations

8=FIX.4.4|9=327|35=AJ|34=17|49=TRD.RFS.NY.UAT.CLIENT|52=20200927-12:19:31.715|56=FSS|15=EUR|54=1|55=EUR/USD|60=20200927-12:19:31|63=20150129|64=20150129|117=6JJ00300000001+|131=QR_EUR/USD_RFS_1422361169552|132=1.12873|134=100000|188=1.12873|193=20150429|693=NOSajLtdAslja+nAiX5oYB2jQ|694=1|6053=100000|6163=1.12873|7577=1.129644|9999=20150429|70=ALLOCEURUSD1||78=4|79=ALLOC1|20009=1|80=1000000|467=ALLOC1_1|79=ALLOC2|20009=1|80=1000000|467=ALLOC2_1|79=ALLOC1|20009=2|20011=1000000|467=ALLOC1_2|79=ALLOC2|20009=2|20011=1000000|467=ALLOC2_2|10=109|

Swap Execution (35=8) with Allocations

8=FIX.4.4|9=0504|35=8|34=18|49=FSS|56=TRD.RFS.NY.UAT.CLIENT|52=20200927-12:19:31.273|37=O20200927L1000031213|17=E20200927L1000018075|150=A|39=A|55=EUR/USD|54=1|693=NOSajLtdAslja+nAiX5oYB2jQ|131=QR_EUR/USD_RFS_1422361169552|117=6JJ00300000001+|63=20150129|64=20150129|9999=20150429|193=20150429|44=1.12873|640=1.129644|38=2000000|192=2000000|194=1.12873|6161=1.12873|195=0|641=0.000914|151=100000|14=0|32=0|6164=100000|6165=0|6808=0|31=1.12873|6=1.12873|6160=1.129644|6159=1.129644|40=D|15=EUR|59=4|60=20200927-12:19:31.000|70=ALLOCEURUSD1||78=4|79=ALLOC1|20009=1|80=1000000|467=ALLOC1_1|79=ALLOC2|20009=1|80=1000000|467=ALLOC2_1|79=ALLOC1|20009=2|20011=1000000|467=ALLOC1_2|79=ALLOC2|20009=2|20011=1000000|467=ALLOC2_2|10=086|