BofA SECURITIES

Client FIX Specification Modifications for MiFID II/R Equity/Equity-Like & FFO Instruments

Updated September 2020

Introduction

This document outlines thechanges for BofA Securities, BofA Europe DAC, BofA Securities Europe Société Anonyme(seethe 44TUBofA Securities Entities ListU) 44T and otheraffiliates of BofASecurities related to FIX messaging specifications being implemented to supportMiFID II/R forequity (and equity-like) and FFOinstruments. Muchof the material here is based on work performed by theFIX Trading Community's MiFID working groups (notablytheTransparency, Transaction Reporting and Order Record Keeping working groups).

New Order and Replace Request Messages

Summary of Changes Identified by FIX Trading Community MiFID Working Groups

In this table, fields that will not besupported by BofA Securities forequity/equity-likeor FFO instruments are highlighted in grey. This tablealso identifies which fields areapplicableonly forequities (including equity- like) orFFO.

Data Element	FIX Standard Details	FIX User Defined Details	Applies to
Short Sell Indicator	Side(54) - existing field from 2.7 New value H -> Sell undisclosed	n/a (as FIX Standard details)	Equities only
Order Originating From an SI	New OrderAttributeGrp component containing three fields, NoOrderAttributes(2593), OrderAttributeType(2594) and OrderAttributeValue(2595) with values: OrderAttributeType(2594)=5 (Systematic internaliser order) OrderAttributeValue(2595)="Y"	8015 OrderAttributeTypes - flattened version of OrderAttribute component	Equities only
Client Identifier	Where using an explicit client identifier, use Parties component - existing from 4.3 with fields as follows: Where the order is for a single client who is a legal entity: PartyRole(452) = 13 (Order Origination Firm) PartyIDSource(447) = N (LEI) or P (Short code identifier)	20013 PartyIDOrderOriginationFirm with reserved values for PartyID as follows: 0 = NONE (No client for this order) 1 = AGGR (An aggregation of multiple client orders) 2 = PNAL (Clients are pending allocation)	Equities & FFO

	Where the order is for a single client who is not a legal entity: PartyRole(452) = 13 (Order Origination Firm) PartyIDSource(447) = O (National ID) or P (Short code identifier) Where using the AGGR or PNAL codes (i.e. where the order has been or will be allocated to multiple clients), instead of the above, use New OrderAttributeGrp component containing three fields: NoOrderAttributes(2593) OrderAttributeType(2594)=0 (Aggregated order) or 1 (Pending allocations) OrderAttributeValue(2595)="Y"	The AGGR/PNAL codes may alternatively be represented using 8015 OrderAttributeTypes - flattened version of OrderAttribute component.	
Commodity deriv risk reduction flag	New OrderAttributeGrp component containing three fields, NoOrderAttributes(2593), OrderAttributeType(2594)=3 (Risk reduction order) OrderAttributeValue(2595)="Y"	8015 OrderAttributeTypes - flattened version of OrderAttribute component	FFO only
Order destination instruction (i.e. to trade only on a TV, SI etc.)	ExDestinationType(2704) 0 = No trading venue restriction 1 = Can be traded only on a trading venue 2 = Can be traded only on a Systematic Internaliser (SI) 3 = Can be traded on a trading venue or Systematic Internaliser (SI)	As FIX Standard details	Equities only
RFMD vs. order indicator	BookingType(775) - existing field from 4.4 0 (regular booking) -> order 1 (CFD) or 2 (total return swap) -> RFMD	As FIX Standard details	Equities only
DEA client sub-delegated client id	Parties component - existing from 4.3 with PartyRole(452) = 3 (Client ID)	20003 PartyIDClientID	Both
DEA client trader id	Parties component - existing from 4.3 with PartyRole(452) = 11 (Order origination trader)	20011 PartyIDOrderOriginationTrader	Both
APA to be used for trade reporting	Parties component - existing from 4.3 with fields as follows: PartyRole(452) = 123 (Publishing intermediary) PartyIDSource(447) = G (MIC) PartyID(448) = the APA's MIC	20123 PartyIDPublishingIntermediary	n/a

New Order and Replace Request Messages – BofA Securities Implementation Short sell handling (equities only)

The FIX Protocol Implementation of the Side Field (tag 54) Maps to the MiFID Long/Short Sell Values as follows:

MiFID Value	Description	FIX Value (Side 54)
SELL	No short sell	2 Sell
SESH	Short sale with no exemption	5 Sell short
SSEX	Short sale with exemption	6 Sell short exempt
UNDI	Information not available	H Undisclosed sell

We will support thenew value 54=H for ‘undisclosedsell’ but recognisethat:

- Not all clients havea regulatory obligationto providethis (e.g. non-MiFID investment firms), and
- Not all clients may beableto modify theirsystems to support thenew value.

We will therefore implement logic to handlethefollowing models and requirethat clients informus whichmodel they will beusing so we can configureour FIX infrastructure accordingly:

Model	Client Implementation	BofA Securities Implementation
1 – Full Support	Client implements short sell marking logic (or simply doesn’t sell short at all) and will send 59=2 for long sells, 59=5 for short sells and 59=6 for exempt short sells.	SELL SESH SSEX 54=H ⍰ UNDI
2 – No Short Sell Marking	Client does not perform any short sell marking and any ‘sell-like’ order is to be treated as an ‘undisclosed sell’.	54=2 ⍰ UNDI 54=5 ⍰ UNDI 54=6 ⍰ UNDI 54=H ⍰ UNDI

Identification of SI Orders (Equities Only)

To ensure correct tradereporting of off-venuetrades, werequire knowledgeof whetheran orderhas been received froma systematic internaliser. Wehave the ability to storethis information at a per client level wherethe client is:

- An SI in all equity/equity-likeMiFIDinstruments,
- An SI in no equity/equity-likeMiFID instruments
- An SI in someequity/equity-like MiFIDinstruments (andwill flag as such oninbound orders)

We will require:

- All clients to inform us as to which of theabovethey fall into, and
- If they fall into thelast category, then they are to inform us on each inbound new order/replacerequest messagewhetherthey are an SI in the instrument concernedusing either:

- 2593=1; 2594=5; 2595=Y, or
- 8015=5

These are equivalent from a FIX perspective(theformerbeing the'standard' implementation andthelatterbeing a simplification forclients not willing/able to implement repeating groups).

Assisted Trade Reporting

BofA Securities is notplanning to support assisted tradereporting forequities/equity-like MiFIDinstruments (onthegrounds thatit will bean SI in all such instruments). As such, thefollowing fields as listed in theabovetable will not besupported by BofA Securities (they will besimply ignored if they areprovided):

- Orderinstruction to report to an APA (underassisted reporting arrangement)
- APA to beused fortrade reporting

Identification of Client and Pre-Aggregated Orders

In this section, theterm 'LEI' refers to the legal entity identifier forthe entity facing BofA Securities, i.e. an investment manager (notthefunds managed by the investment manager). To meet both transaction reporting requirements and therecord keeping requirements of trading venues, BofA Securities must know, forevery inbound order:

- Whether theorder is received from a single LEI and, if so, what that LEI is.
  - This can bepre-configured into the BofA Securities trading infrastructure if thereis a oneto onemapping between FIX session and client LEI orby pre-agreed mapping from a FIX field.
  - We will also support explicit identification of the LEI using thefull FIX structure – 453=1;452=13 (Order Origination Firm); 447=N (LEI);448 = the LEI value(oruserdefined equivalent – 20013 PartyID (Orderorigination Firm).
  - For FFO, we will continueto support the GMI account specified in tag 1 and, by default, will usethat to map to the appropriate LEI.
- Whether theorder is received as an aggregation across multiple LEIs. This must beflagged to us by setting either:
  - 2954=0; 2594=1; 2595=Y, or
  - 8015=0

  These are equivalent from a FIX perspective(theformerbeing the'standard' implementation andthelatterbeing a simplificationforclients not willing/able to implement repeating groups).

If wereceive both and aggregated orderindicator AND an LEI identifier, we will considertheaggregation flag to overridethe LEI.

Risk Reduction Flag (FFO Only)

Foran orderon a Commodity Derivativeproduct, this flagindicates whetherthetransaction reduces risk in an objectively measurableway in accordancewith Article 57 of Directive 2014/65/EU.

To indicatean orderthat reduces risk:

- OrderAttributeType(2594) = 3 (risk reduction order)
- OrderAttributeValue(2595) ="Y"

If not specified, BofA Securities willconsiderthat theorderis not risk reducing.

Order Destination Instruction (Equities Only)

This indicates whethertheorderis to be traded only on a trading venue, on a trading venueor SI, or has no restriction:

- ExDestinationType(2704)=0 –no restriction on wheretheorderis traded
- ExDestinationType(2704)=1 –ordercan only betraded on a trading venue
- ExDestinationType(2704)=3 –ordercan only betraded on a trading venueor SI ExDestination has an additional value2 (SIonly) which weare not planning to support.

Note this field will apply in addition to anyotherorderrouting constraints (e.g.specific venuetargeting orexclusion tags). Note also that we can support this as a standing instruction whereclients require.

RFMD vs. Order Indicator (Equities Only)

This indicates whetherthe"new order single" FIX messagerepresents an actual orderin thespecified instrument, ora request for market data (RFMD) used to obtain a pricefora derivative. This distinction needs to beknownat thepoint of messagecaptureas it affects thetrading process and associated regulatory reporting.

- BookingType(775)=0 (regularbooking) – messageis to betreated as an order in the specified instrument
- BookingType(775)=1 (CFD) –messageis to be treated as an RFMD
- BookingType(775)=2 (total return swap) – messageis to betreated as an RFMD

Note also that we can support this as a standing instructionwhereclients require, and also that clients usingdifferent fields (e.g. tag 1) forthis purposewill continueto beableto do so. Where clients do use 775, wewill treat values 1 and 2 thesame way.

DEA Identifiers

There are two requirements specifically for DEA activityas per RTS 6 article 21:

- Paragraph 3 requires thatwe beable to identify traders of DEA clients. Wewill support this using thefull FIX structure – 453=1; 452= 11 (Ordereriginationtrader); 447=D (Proprietary / Custom code);448 =thetrader id value(oruserdefined equivalent – 20011 PartyIDOrderOriginationTrader).
- Paragraph 4 requires thatwe beable to differentiate clients of DEAclients in thecaseof sub- delegation. Wewill support this using thefull FIX structure – 453=1;452=3 (Client ID);447=D (Proprietary / Custom code);448 =theunderlying client id (or user defined equivalent – 20003 PartyIDClientID). Noteweare not required to know theactual identity of theunderlying clients.

Execution Report Messages

Summary of Changes Identified by FIX Trading Community MiFID Working Groups

In this table, fields that will not besupported by BofA Securities forequity/equity-like instruments arehighlightedin grey. This tablealso identifies which fields areapplicableonly forequities (including equity-like) orFFO. Those that arenot provided by default but can besupplied on request arehighlightedin blue.

Data Element	FIX Standard Details	FIX User Defined Details	Applies to
Execution Capacity	LastCapacity(29) - existing field from 2.71 (agent) -> AOTC (cross as agent) -> AOTC (cross as principal) -> MTCH 4 (principal) -> DEAL New value 5 (riskless principal) -> DEAL	n/a (as FIX Standard details)	Both
Execution Venue Identifier	30 Last Market	As FIX Standard details	Both

Transaction Reporting Venue Identifier (I.E. XOFF Or SI MIC)	Parties component - existing from 4.3 with fields as follows: PartyRole(452) = 73 (Execution venue) PartyIDSource(447) = G (MIC) PartyID(448) = the SI MIC	20073 PartyIDExecutionVenue	Equities only
Trade Report Indicator	New TradeReportingIndicator field (2524) with values: 0 = Trade has not (yet) been reported 1 = Trade has been reported by a trading venue as an "on-book" trade 2 = Trade has been reported as a "systematic internalizer" seller trade 3 = Trade has been reported as a "systematic internalizer" buyer trade 4 = Trade has been reported as a "non- systematic internalizer" seller trader 5 = Trade has been reported under a sub- delegation arrangement by an investment firm to a reporting facility (e.g. APA) on behalf of another investment firm 6 = Trade has been or will be reported 7 = Trade has been or will be reported as a "non-Systematic Internaliser" buyer trade 8 = Trade has been or will be reported by a trading venue as an "off-book" trade 9 = Trade is not reportable	n/a (as FIX Standard details)	Equities only
Venue Transaction Identifier	RegulatoryTradeIDGrp component with RegulatoryTradeIDType(1906) = 5 (Trading venue transaction identifier) and the value itself in RegulatoryTradeID(1903)	8016 TradingVenueRegulatoryTradeID	Equities only
Transaction Time	TransactTime (60)	n/a (as FIX Standard details)	Equities only
"I Am An SI" (Order Recipient)	Parties component - existing from 4.3 (PartyRoleQualifier from 5.0) with fields as follows: PartyRole(452) = 63 (Systematic internaliser) PartyIDSource(447) = G (MIC) PartyID(448) = the SI MIC	20063 PartyIDSystematicInternaliser	Equities only
SI Execution Indicator	MatchType(574)=9 - existing from 4.3	As FIX Standard details	Equities only
Broker's LEI	Parties component - existing from 4.3 with fields as follows: PartyRole(452) = 1 (Executing firm) PartyIDSource(447) = N (LEI) PartyID(448) = the LEI	20001 PartyIDExecutingFirm	Both
APA used for trade reporting	Parties component - existing from 4.3 with fields as follows: PartyRole(452) = 123 (Publishing intermediary) PartyIDSource(447) = G (MIC) PartyID(448) = the APA's MIC	20123 PartyIDPublishingIntermediary	n/a
Venue Flags			

RFPT Ref Price Waiver Flag	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency waiver) TrdRegPublicationReason(2670) = 3 (No public price preceding order as public reference price was used for matching orders)	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
NLIQ NT Flag	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency waiver) TrdRegPublicationReason(2670) = 0 (No preceding order in book as transaction price set within average spread of a liquid instrument)	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
OILQ NT Flag	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency waiver) TrdRegPublicationReason(2670) = 1 (No preceding order in book as transaction price depends on system-set reference price for an illiquid Instrument)	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
PRIC NT Flag	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency waiver) TrdRegPublicationReason(2670) = 2 (No preceding order in book as transaction price is subject to conditions other than current market price)	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
LRGS Large In Scale Flag	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency waiver) TrdRegPublicationReason(2670) = 9 (No public price and/or size quoted as transaction size is large in scale)	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Both
OM Waiver Flag	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency waiver) TrdRegPublicationReason(2670) = 10 (No public price and/or size quoted due to order being held in a trading venue's order management facility)	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
OTC Trade Flags			
BENC Flag	SecondaryTrdType(855) - existing field from 4.4, being added to execution reports 64 -> Benchmark	n/a (as FIX Standard details)	Equities only
SDIV flag	TradePriceConditionGrp component - existing from 4.4, being added to execution reports TradePriceCondition(1839) = 13 (Special dividend)	8014 TradePriceConditions - flattened version of TradePriceConditions component	Equities only
TNCP Flag	TradePriceConditionGrp component - existing from 4.4, being added to execution reports TradePriceCondition(1839) = 16 (Trade exempted from trading obligation)	8014 TradePriceConditions - flattened version of TradePriceConditions component	Equities only
ACTX Flag	TrdSubType(829) - existing field from 4.4, being added to execution reports 37 -> Crossed trade	n/a (as FIX Standard details)	Equities only
RPRI SI Flag	TradePriceConditionGrp component - existing from 4.4, being added to execution reports TradePriceCondition(1839) = 14 (Price improvement)	8014 TradePriceConditions - flattened version of TradePriceConditions component	Equities only

ILQD SI Flag (As Per RTS 1)	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency TrdRegPublicationReason(2670) = 4 (No public price quoted as order size is above standard market size")	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
SIZE SI Flag (As Per RTS 1)	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 0 (Pre- trade transparency TrdRegPublicationReason(2670) = 5 (No public price quoted as order is above standard market size)	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
LRGS Deferral Flag	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 1 (Post- trade deferral) TrdRegPublicationReason(2670) = 6 (Deferral due to "Large in scale")	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	Equities only
SIZE Deferral Flag (As Per RTS 2)	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 1 (Post- trade deferral) TrdRegPublicationReason(2670) = 8 (Deferral due to "Size specific")	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	FFO only
ILQD Deferral Flag (As Per RTS 2)	New TrdRegPublicationGrp component with fields TrdRegPublicationType(2669) = 1 (Post- trade deferral) TrdRegPublicationReason(2670) = 7 (Deferral due to "Illiquid instrument")	8013 TrdRegPublicationReasons - flattened version of TradeRegPublica ti on G rp component	FFO only

Note this table (specifically thelistof tradeflags) has been filtered forrelevanceto equity/equity-likeMiFIDinstruments. Further flags are available fornon-equityinstruments.

Execution Report Messages – BofA Securities Implementation

Venue Identifiers

FIX tag 30 will beused forthevenueof execution and will bepopulated onall execution report messages representing actual executions (as opposed to orderstatechanges). Wewill providea segment level MIC whereavailable(i.e. as provided to us by the execution venue), oroperator MIC otherwise. Wherewe use a brokerto access an execution venue, tag 30 will contain the identifier from theend execution venue, not the intermediary broker.

Where trading in 'DEAL' capacity wearerequired to notify ourclients of the'transaction reporting venue' whichis used in field 36 of clients' market-sidetransaction reports. This will berepresented, by default, using the FIX userdefined field 20073 PartyIDExecutionVenue(though wewill beable to usethefull Party component structureon request):

- NoPartyIds 453=1
- PartyID 448=XOFF oran SI MIC
- PartyIDSource 447=G (MIC)
- PartyIDRole 452=73 (executionvenue)

In linewith FIX guidelines, this field (orcomponent) will only besupplied onexecution reportmessages denoting a 'client execution' fortransaction reporting purposes.

Execution Capacity

We will usetag 29 (LastCapacity) to communicatethecapacityin whichweareworking an order. This will beprovided on all execution report messages and will not changeduring the life of an order. Ourusageof this field is in linewith FIX Protocol guidelines asfollows:

Value & Description	Explanatory Guidance
1 (Agent)	An execution on a public market or from an external party (e.g. broker) conducted on an agency basis. For MiFID II, this will be used to represent 'AOTC' capacity.
2 (Cross As Agent)	An execution between two clients of the executing firm, taking place within the firm, and conducted on an agency basis. For MiFID II, this will be used to represent 'AOTC' capacity.
3 (Cross As Principal)	An execution on a public market or from an external party (e.g. broker) conducted on a matched principal basis in line with the MiFID definition of 'MTCH' capacity.
4 (Principal)	An execution where the executing firm is committing capital (e.g. a risk fill or change in price on fills obtained from markets or external parties). Where the FIX execution message is being used to communicate an indicative price and quantity (for example when being used by the executing firm to write a swap), regardless of the source of liquidity. For MiFID II, this will be used to represent 'DEAL' capacity.
5 (Riskless Principal)	An execution on a public market or from an external party (e.g. broker) conducted on a riskless principal basis. For MiFID II, this will be used to represent 'DEAL' capacity.

Waiver and OTC Flags

We will support a numberof the MiFID OTC tradeflags and venuewaiverflags (wheremadeavailableto us by trading venues), using the'FIX User Defined' fields 8013 and 8014 whererelevant. It should benoted that an execution may carry multipleflags, in which case 8013 and/or8014 will containmultiplevalues, delimited by spaces:

Flag	BofA Securities Implementation
Equity/equity-like-Specific OTC Flags	
Trade reported on a deferred basis (LRGS)	8013 contains 6
SI trade in illiquid instrument (ILQD)	8013 contains 4
SI trade above standard market size (SIZE)	8013 contains 5
Non price forming trade (TNCP)	8014 contains 16
Special dividend trade (SDIV)	8014 contains 13
Benchmark price trade (BENC)	855 = 64
Agency cross trade (ACTX)	Not supported by BofA Securities

SI trade with price improvement (RPRI)	Not supported by BofA Securities
Equity/equity-like-Specific Venue Waiver Flags	
Reference price waiver (RFPT)	8013 contains 3
Execution arising from order using a large in scale waiver	8013 contains 9
Execution arising from order using an order mgt system waiver	8013 contains 10
FFO-Specific Flags	
Above specific size (SIZE)	8013 contains 8
Illiquid instrument (ILQD)	8013 contains 7

It should be noted that the venue waiver flags are provided for informational purposes only (i.e. are not required fields for MiFID II compliance) except for DEA clients, where these are required for record keeping purposes. These flags will only be provided on execution report messages representing actual executions from trading venues (as opposed to order state changes).

Trade Reporting Fields (Equities Only)

We will provide an indicator (field 2524) on execution reports to indicate whether the trade has been reported and, if so, why:

Value	Description
0	Trade has not (yet) been reported
1	Trade has or will be reported by a trading venue as an "on-book" trade
2	Trade has or will be reported as a "systematic internalizer" seller trade
3	Trade has or will be reported as a "systematic internalizer" buyer trade
8	Trade has or will be reported by a trading venue as an off-book trade

Values not listed will not be provided by BofA Securities for equity/equity-like MiFID instruments as:

- We are not planning to support assisted trade reporting in these products (which rules out value 5), and
- We will be an SI in all these products (which rules out values 4 and 7).

Value 6 can be provided on request, being a simple mapping of values 1, 2, 3 and 8.

This flag will only be provided on execution report messages representing actual executions (as opposed to order state changes).

SI Indicators (Equities Only)

Given BofA Securities will be an SI in all equity/equity-like MiFID instruments, the "I am an SI" indicator is somewhat unnecessary. Hence BofA Securities will not be providing this by default, though should clients require this, we can add this as a customisation to a FIX connection.

BofA Securities will also not be providing the "SI execution indicator" by default (given it can be inferred directly from tag 30) but, as above, can be added as a customisation on request.

Broker LEI

BofA Securities will not be providing the "Broker LEI" by default but it can be added as a customisation on request in either 'standard' or 'user defined' form.

Transaction Time

BofA Securities will providea Transaction Time(tag 60) as standard. For DEA activity, wewill providethis from thetrading venue directly to the level of granularity as specified by thevenue. This may beup to microsecond granularity.

Trading Venue Transaction Identifier

This will beprovided for DEA activity only (in additionto theexisting tag 17 execution id, whichis generated internally) and is a pass-through of thetransactionid supplied by thetrading venue. This will berepresented, by default, using the FIX userdefined field 8016 TradingVenueRegulatoryTradeID (thoughwewill beableto usethe full RegulatoryTradeIDGrp component structureon request):

- NoRegulatoryTradeIDs (1907) =1
- RegulatoryTradeIDType(1905) = 5 (Trading venuetransaction identifier)
- RegulatoryTradeID(1903) = theactual value

Questions?
If you have questions, please contact your Market Manager.