Introduction

This document outlines the changes to our FIX messaging specifications being implemented to support MiFID II/R for equity (and equity-like) and FFO instruments. Much of the material here is based on work performed by the FIX Trading Community's MiFID working groups (notably the Transparency, 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 be supported by BofAML for equity/equity-like or FFO instruments are highlighted in grey. This table also identifies which fields are applicable only for equities (including equity-like) or FFO.

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) 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"	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) The AGGR/PNAL codes may alternatively be represented using 8015 OrderAttributeTypes - flattened version of OrderAttribute component.	Equities & FFO

Data element	FIX Standard Details	FIX User Defined Details	Applies to
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
Order instruction to report to an APA (under assisted reporting arrangement)	New OrderAttributeGrp component containing three fields, NoOrderAttributes(2593), OrderAttributeType(2594) and OrderAttributeValue(2595) with values: OrderAttributeType(2594)=6 (All executions for the order are to be reported to an APA) OrderAttributeValue(2595)="Y"	8015 OrderAttributeTypes - flattened version of OrderAttribute component	n/a
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 – BofAML 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 the new value 54=H for 'undisclosed sell' but recognise that:

• Not all clients have a regulatory obligation to provide this (e.g. non-MiFID investment firms), and
• Not all clients may be able to modify their systems to support the new value.

We will therefore implement logic to handle the following models and require that clients inform us which model they will be using so we can configure our FIX infrastructure accordingly:

Model	Client Implementation	BofAML 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.	54=2 → SELL 54=5 → SESH 54=6 → 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 trade reporting of off-venue trades, we require knowledge of whether an order has been received from a systematic internaliser. We have the ability to store this information at a per client level where the client is:

• An SI in **all** equity/equity-like MiFID instruments,
• An SI in **no** equity/equity-like MiFID instruments
• An SI in **some** equity/equity-like MiFID instruments (and will flag as such on inbound orders)

We will require:

- All clients to inform us as to which of the above they fall into, and
- If they fall into the last category, then they are to inform us on each inbound new order/replace request message whether they are an SI in the instrument concerned using either:
  - 2593=1; 2594=5; 2595=Y, or
  - 8015=5

  These are equivalent from a FIX perspective (the former being the 'standard' implementation and the latter being a simplification for clients not willing/able to implement repeating groups).

Assisted trade reporting

BofAML is not planning to support assisted trade reporting for equities/equity-like MiFID instruments (on the grounds that it will be an SI in all such instruments). As such, the following fields as listed in the above table will not be supported by BofAML (they will be simply ignored if they are provided):

- Order instruction to report to an APA (under assisted reporting arrangement)
- APA to be used for trade reporting

Identification of client and pre-aggregated orders

In this section, the term 'LEI' refers to the legal entity identifier for the entity facing BofAML, i.e. an investment manager (not the funds managed by the investment manager). To meet both transaction reporting requirements and the record keeping requirements of trading venues, BofAML must know, for every inbound order:

- Whether the order is received from a single LEI and, if so, what that LEI is.
  - This can be pre-configured into the BofAML trading infrastructure if there is a one to one mapping between FIX session and client LEI or by pre-agreed mapping from a FIX field.
  - We will also support explicit identification of the LEI using the full FIX structure – 453=1; 452=13 (Order Origination Firm); 447=N (LEI); 448 = the LEI value (or user defined equivalent – 20013 PartyID (Order originationFirm).
  - For FFO, we will continue to support the GMI account specified in tag 1 and, by default, will use that to map to the appropriate LEI.

- Whether the order is received as an aggregation across multiple LEIs. This must be flagged to us by setting either:
  - 2954=0; 2594=1; 2595=Y, or
  - 8015=0

  These are equivalent from a FIX perspective (the former being the 'standard' implementation and the latter being a simplification for clients not willing/able to implement repeating groups).

If we receive both and aggregated order indicator AND an LEI identifier, we will consider the aggregation flag to override the LEI.

Risk Reduction Flag (FFO only)

For an order on a Commodity Derivative product, this flag indicates whether the transaction reduces risk in an objectively measurable way in accordance with Article 57 of Directive 2014/65/EU.

To indicate an order that reduces risk:

- OrderAttributeType(2594) = 3 (risk reduction order)

- OrderAttributeValue(2595) = "Y"

If not specified, BofAML will consider that the order is not risk reducing.

Order Destination Instruction (Equities only)

This indicates whether the order is to be traded only on a trading venue, on a trading venue or SI, or has no restriction:

- ExDestinationType(2704)=0 – no restriction on where the order is traded
- ExDestinationType(2704)=1 – order can only be traded on a trading venue
- ExDestinationType(2704)=3 – order can only be traded on a trading venue or SI

ExDestination has an additional value 2 (SI only) which we are not planning to support.

Note this field will apply in addition to any other order routing constraints (e.g. specific venue targeting or exclusion tags). Note also that we can support this as a standing instruction where clients require.

RFMD vs. order indicator (Equities only)

This indicates whether the "new order single" FIX message represents an actual order in the specified instrument, or a request for market data (RFMD) used to obtain a price for a derivative. This distinction needs to be known at the point of message capture as it affects the trading process and associated regulatory reporting.

- BookingType(775)=0 (regular booking) – message is to be treated as an order in the specified instrument
- BookingType(775)=1 (CFD) – message is to be treated as an RFMD
- BookingType(775)=2 (total return swap) – message is to be treated as an RFMD

Note also that we can support this as a standing instruction where clients require, and also that clients using different fields (e.g. tag 1) for this purpose will continue to be able to do so. Where clients do use 775, we will treat values 1 and 2 the same way.

DEA Identifiers

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

- Paragraph 3 requires that we be able to identify **traders** of DEA clients. We will support this using the full FIX structure – 453=1; 452= 11 (Order origination trader); 447=D (Proprietary / Custom code); 448 = the trader id value (or user defined equivalent – 20011 PartyIDOrderOriginationTrader).

- Paragraph 4 requires that we be able to differentiate **clients** of DEA clients in the case of sub-delegation. We will support this using the full FIX structure – 453=1; 452=3 (Client ID); 447=D (Proprietary / Custom code); 448 = the underlying client id (or user defined equivalent – 20003 PartyIDClientID). Note we are not required to know the actual identity of the underlying clients.

Execution Report Messages

Summary of changes identified by FIX Trading Community MiFID working groups

In this table, fields that will not be supported by BofAML for equity/equity-like instruments are highlighted in grey. This table also identifies which fields are applicable only for equities (including equity-like) or FFO. Those that are not provided by default but can be supplied on request are highlighted in blue.

Data element	FIX Standard Details	FIX User Defined Details	Applies to
Execution capacity	LastCapacity(29) - existing field from 2.7 1 (agent) -> AOTC 2 (cross as agent) -> AOTC 3 (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

Data element	FIX Standard Details	FIX User Defined Details	Applies to
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 TradeRegPublicationGrp 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 TradeRegPublicationGrp 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 TradeRegPublicationGrp 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 TradeRegPublicationGrp 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 TradeRegPublicationGrp component	Both

Data element	FIX Standard Details	FIX User Defined Details	Applies to
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 TradeRegPublicationGrp 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 TradeRegPublicationGrp 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 TradeRegPublicationGrp 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 TradeRegPublicationGrp 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 TradeRegPublicationGrp component	FFO only

Data element	FIX Standard Details	FIX User Defined Details	Applies to
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 TradeRegPublicationGrp component	FFO only

Note this table (specifically the list of trade flags) has been filtered for relevance to equity/equity-like MiFID instruments. Further flags are available for non-equity instruments.

Execution Report Messages – BofAML Implementation

Venue identifiers

FIX tag 30 will be used for the venue of execution and will be populated on all execution report messages representing actual executions (as opposed to order state changes). We will provide a segment level MIC where available (i.e. as provided to us by the execution venue), or operator MIC otherwise. Where we use a broker to access an execution venue, tag 30 will contain the identifier from the end execution venue, not the intermediary broker.

Where trading in 'DEAL' capacity we are required to notify our clients of the 'transaction reporting venue' which is used in field 36 of clients' market-side transaction reports. This will be represented, by default, using the FIX user defined field 20073 PartyIDExecutionVenue (though we will be able to use the full Party component structure on request):

- NoPartyIds 453=1
- PartyID 448=XOFF or an SI MIC
- PartyIDSource 447=G (MIC)
- PartyIDRole 452=73 (execution venue)

In line with FIX guidelines, this field (or component) will only be supplied on execution report messages denoting a 'client execution' for transaction reporting purposes.

Execution capacity

We will use tag 29 (LastCapacity) to communicate the capacity in which we are working an order. This will be provided on all execution report messages and will not change during the life of an order. Our usage of this field is in line with FIX Protocol guidelines as follows:

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.

Value & Description	Explanatory Guidance
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 number of the MiFID OTC trade flags and venue waiver flags (where made available to us by trading venues), using the 'FIX User Defined' fields 8013 and 8014 where relevant. It should be noted that an execution may carry multiple flags, in which case 8013 and/or 8014 will contain multiple values, delimited by spaces:

Flag	BofAML 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 BofAML
SI trade with price improvement (RPRI)	Not supported by BofAML
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

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

February 2019

Bank of America
Merrill Lynch

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

BofAML 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

BofAML 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

BofAML will provide a Transaction Time (tag 60) as standard. For DEA activity, we will provide this from the trading venue directly to the level of granularity as specified by the venue. This may be up to microsecond granularity.

©2019 Bank of America Corporation   Proprietary

Trading Venue Transaction Identifier

This will be provided for DEA activity only (in addition to the existing tag 17 execution id, which is generated internally) and is a pass-through of the transaction id supplied by the trading venue. This will be represented, by default, using the FIX user defined field 8016 TradingVenueRegulatoryTradeID (though we will be able to use the full RegulatoryTradeIDGrp component structure on request):

- NoRegulatoryTradeIDs (1907) =1
- RegulatoryTradeIDType(1905) = 5 (Trading venue transaction identifier)
- RegulatoryTradeID(1903) = the actual value