Cboe Europe Ltd

Large in Scale Service **(LIS)**

FIX Specification

Version 1.11
(BIDS v8.33.1)

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1. Introduction

This document describes the FIX 4.2 implementation used by the Cboe LIS Trading System. Cboe LIS supports non-actionable IOI's and actionable IOI's.

In some sections, one or more "Notes to Cboe LIS Developers," discuss special aspects of the messages, protocols or contents. These are used to guide the reader as to what will be developed or used by Cboe LIS and what is included for completeness or other purposes.

The contents are based on FIX Version 4.2 with Errata 20010501. The original version of the FIX 4.2 specification can be obtained from FIX Protocol Limited at http://www.fixprotocol.org.

Text Conventions

Convention	Description
Italics text	Used to indicate that the italicized term is not a literal – it is a representation and description of a value. Examples: *YYYY-MM-DD* is used to describe a date format and is not used literally – a value that would match this date value would by 2009-12-08.
Bolded Item	Used to indicate a literal value.
Shaded background in a table	Cboe LIS specific data items are represented using a 10% grey background in all message tables, data file description tables, and data dictionaries.

2. Cboe LIS Trading Overview

The Cboe LIS platform supports submission of non-actionable Indication of Interests (IOI) and allows the participant to "firm-up" their IOI if a match is identified. At the point of "firm up" the non-actionable IOI becomes an actionable IOI. For the purposes of this document we will refer to non-actionable IOIs as **IOIs** and actionable IOIs as **Firm-ups.** It is crucial for market participants to understand the differences between these concepts and how each type is specified using the FIX protocol.

Non-actionable IOIs - IOIs

IOIs occur when the volume is submitted to the system but is not committed to the Cboe LIS Trading system. An IOI may be active in another system and Cboe LIS System until the IOI is replaced with a Firm-up. Within the Cboe LIS system an IOI will not trade until a trade instruction is received in the form of a Firm-up. This allows a trader to "test the waters" and see what liquidity may be available to them in the Cboe LIS Trading platform.

Actionable IOIs – Firm-ups

If an IOI enters the Cboe LIS Trading platform and there is an IOI on the other side that matches or crosses it (i.e. both price and volume) then the trader will be invited to Firm-up their IOI. The invitation occurs if the following conditions are met:

The prices match or cross.

The IOI meets the minimum volume requirements of the contra and vice versa.

The contra has indicated a willingness to invite the IOI to Firm-up to trade.

The Bids LIS Scorecard℠ for the trader must meet or exceed the Bids LIS Filter℠ setting for the contra and vice versa.

This means that the trader has the opportunity to Firm-up their IOI so that a trade may occur. This invitation does not last indefinitely as the system imposes a time-out, and if it takes a long time for a trader to Firm-up the IOI, the contra may have expired or manually cancelled. Time is of the essence when "firming up". Once an IOI is changed to a Firm-up and provided matching conditions are met, a negotiated trade will occur immediately and be sent to Cboe ETR for acceptance.

The workflow is as follows:

A new IOI will be sent via the gateway as a NewOrderSingle. On receipt of an invitation, a Firm-up will be sent as another NewOrderSingle. The IOIid field in the NewOrderSingle message for the Firm-up should be set to the client ID of the invited IOI. Given that, the Cboe LIS Trading platform will cancel the IOI on acceptance of the Firm-up message and, if matched, forward the trade to the ETR gateway. Once the trade is accepted and confirmed it will move from a pending state to a traded state. Matching EBBO protection is always enabled for matched trades. Two Firm-ups will automatically match under the following conditions:

- **The symbol is available for matching;**

- **The prices match or cross at or within the EBBO;**

- **The volumes on both trade messages meet the other's minimum volume requirements.**

If all of these conditions are met, then a trade is generated at a price equal to or closest to the EBBO midpoint using the maximum volume available.

Firm-up Resting Time

For the invitation-firm-up-trade cycle to be successful among algos, it is paramount that the algo firm-ups rest in the system long enough to meet each other and trade. For example, if two interacting algos both firm up with IOCs, they will never trade. Therefore, Cboe LIS will apply a default resting time of 200ms for all algo firm-ups coming in as IOCs.

In the later chapters detailing the FIX message contents, several ways of setting the time-in-force are described. The followings are our recommendations:

- IOC – this is the preferred setting, as Cboe LIS can apply the recommended 200 ms resting time on your behalf.

- Day or EnC without expiry time – this is used if an algo is programmed to always follow NOS with explicit CXL. If this is the only feasible option, the CXL message should be sent with a delay of around 200ms.

- IOC/EnC/GTD with explicit expiry time – this is worth doing if it is important to rest different firm-ups for different durations. However, it is recommended that the resting time should not deviate too far from the 200ms default.

Cboe LIS trades using a one-to-one interaction model. A firm-up is intended to trade with the inviting contra only. Partially-traded or untraded firm-ups do not interact with other contras. For algos, if there is to be a trade, it should happen within a split second. Therefore, setting a long resting time for firm-ups is unnecessary.

Automatic Cancellation

In the Cboe LIS Trading platform, IOI and Firm-up messages will be automatically cancelled under specific circumstances. For IOI and Firm-up messages received via a FIX gateway, an execution report indicating which IOIs and Firm-ups have been cancelled will be generated. If the FIX session is not connected, those reports will be queued and delivered once the session has been re-established.

Condition	What is Cancelled
Loss of connection for FIX Session	All IOIs and/or Firm-ups received via the lost connection will be cancelled by the Cboe LIS Trading platform.
Regulatory halt for a symbol	All IOIs/Firm-ups for that symbol are cancelled
User, desk, or firm being suspended	All remaining IOIs/Firm-ups for that firm, desk, or user, no matter what the source are cancelled
Introducing/Designated Broker revokes Broker relationship	All IOIs/Firm-ups for that firm using that Introducing/Designated Broker are cancelled

3. Other Notes on Cboe LIS FIX

User-defined Tags and Message Types

Cboe LIS currently contains extended tags based on the User Defined FIX 4.2 Cboe LIS Protocol.

Presence of Unexpected Tags

The Cboe LIS Trading FIX gateway will reject messages that contain tags that Cboe LIS does not expect. The message will be a session Reject (MsgType=3) with a SessionRejectReason of '2' (Tag not defined for this message type).

Price

The Cboe LIS platform will only allow for an IOI or a Firm-up submission with a price fitting the minimum tick size increment of the symbol. Please note that executions will only occur at a level that matches the tick increment or half tick increment for the stock.

Volumes

The Cboe LIS trading platform will allow a volume to the maximum of a signed 32-bit number.

Symbology

Cboe LIS accepts three symbologies: Uniform Symbology, RIC and ISIN. A FIX connection can be set up to use either the Uniform Symbology or alternate security IDs (RIC or ISIN). If the latter is configured, RIC or ISIN may be used on different orders, but it is recommended that Participants use the same symbology for all orders.

If using Uniform Symbology to identify a stock, the Participant:

• **must** set Symbol (55) to the Uniform Symbology symbol;
• may optionally set the SecurityExchange (207); and,
• may optionally set the Currency (15).

If using ISIN to identify a stock, the Participant:
• **must** set IDSource (22) to ISIN (4);
• **must** set SecurityID (48) to the ISIN;
• **must** set SecurityExchange (207) to note the market in which the ISIN trades;
• **must** set the Currency (15) field to identify the currency in which the stock is traded; and,
• **must** set the Symbol (55) to conform to FIX standard. However, it can be set using any symbol convention.

If using RIC to identify a stock, the Participant:
• **must** set IDSource (22) to RIC (5);
• **must** set SecurityID (48) to the RIC;
• may optionally set the SecurityExchange (207);
• may optionally set the Currency (15) field; and,
• **must** set the Symbol (55) to conform to FIX standard. However, it can be set using any symbol convention.

Please note, if any optional value is supplied it must match the value provided within the Cboe LIS Symbol File. Also, the symbology used in follow-up events like Order Cancel Request (35=F) and Order Cancel/Replace Request (35=G) should match that of the initial NewOrderSingle (35=D) event.

System-assigned IDs

Cboe LIS uses a 13-char alphanumeric to assign IDs to IOIs and/or Firm-ups. The high-ID 9 characters are the IOI or Firm-up themselves (the Cboe LIS ID), and the low-ID 4 digits are a sequence number for activity on that IOI or Firm-up.

The main purpose is to support systems that expect an execution report for a Cancel-and-Replace request to contain a new system ID, and not the same system ID. Internally, Cboe LIS does not create a new ID during a Cancel-and-Replace, but simply edits the ID in place (i.e. the Cboe LIS ID remains unchanged). This ensures continuity and traceability throughout the life-cycle of an IOI and/or Firm-up. To accommodate assigning a new system ID for a FIX Cancel and Replace Request, the sequence number is incremented.

For example, the table below displays how the Cboe LIS platform ID will work during the life of an IOI or Firm-up message. The client ID shown is an example. Your actual ID will be determined by your system.

Action	Client ID	Cboe LIS ID
New Order Single Message	1001	0000010010001
Cancel and Replace 1001 with 1002	1002	0000010010002
Cancel and Replace 1002 with 1003	1003	0000010010003

Note: The high-ID 9 characters remains "000001001." It is the lower ID 4 digits that change from 1 to 2 to 3 as there are modifications to the IOI or Firm-up. The sequence number does not change after trades occur.

Pass Through Tags

Cboe LIS has implemented a feature called "pass through." It contains a list of tags that Cboe LIS allow client to send in with their tag value, and Cboe LIS will echo them back in the outbound messages.

4. Session Protocol Messages

Permitted Session Level (Administrative) Messages

Message Name	MsgType (tag 35)	Inbound to Cboe LIS	Outbound from Cboe LIS
Logon	A	Initiate a FIX session	Accept a FIX session by responding to inbound Logon
Heartbeat	0 (zero)	Heartbeat to indicate session is still active or a response to a Test Request	Heartbeat to indicate session is still active or a response to a Test Request
Test Request	1	Determine if Cboe LIS FIX connection is still active	Determine if market participant FIX connection is still active
Resend Request	2	Request resend of missing or garbled messages	Request resend of missing or garbled message
Reject	3	Reject a garbled message – should not be used to reject application messages that are well formed	Used to reject garbled messages and invalid application messages
Sequence Reset	4	Indicate to the other side a change in sequence number – usually used to skip the resend of administrative messages	Indicate to the other side a change in sequence number – usually used to skip the resend of administrative messages
Logout	5	End a FIX session	End a FIX session

Cboe LIS CompID Values

The Cboe LIS gateway will expect "BIDS" to be in the TargetCompID on messages inbound to the Cboe LIS market. This value will be the SenderCompID on messages outbound from the Cboe LIS market.

Tag	Field Name	Inbound to Cboe LIS Market value	Outbound from Cboe LIS Market value
49	SenderCompID	Assigned value used to identify firm	BIDS
50	SenderSubID	Assigned UserId	Assigned SubID
56	TargetCompID	BIDS	Assigned value used to identify firm
57	TargetSubID	Assigned SubId	Assigned UserID

How to obtain Cboe LIS Firm Identifiers and User IDs

When a firm becomes a Cboe LIS participant, a firm identifier is assigned by Cboe LIS administrative staff. This firm ID is to be used as the CompID.

A firm has control over user management and Cboe LIS user ID assignment of its own staff. Part of the administrative work a firm has to do is to set up which users are permitted to transact via a FIX gateway and define the mapping between SubIDs (called OMS/EMS user) and Cboe LIS user ID. There are two logical choices for OMS/EMS user IDs:

1. OMS/EMS user ID is the same as user's Cboe LIS user ID – therefore, some form of ID lookup is required on the firm's system;
2. OMS/EMS user ID is the same as the user's ID on the firm's system – no ID lookup is required on the firm's system, Cboe LIS will take care of translating between OMS/EMS user ID (i.e. SubID) and Cboe LIS user IDs.

Sequence Numbers

Cboe LIS does not support 24-hour sessions. Clients can connect 07:00 London Time until 18:00 London Time, Any session active at 18:00 London Time will be terminated with a logout. Sequence numbers are reset to 1 at Midnight London Time.

Logon

The logon message must be the first message received, and the firm must wait for a logon from Cboe LIS before beginning resend/gap fill operations.

Logout

Your firm is expected to issue a logout prior to 18:00 London Time. If not, Cboe LIS will issue a logout and terminate the TCP connection.

Whichever side issues the logout is expected to terminate the TCP connection. If an initiating logout is received with a higher sequence number than expected, then, as per the FIX specification, gap fill operations are to be completed before finishing the logout sequence.

Heartbeat and Test Request

Cboe LIS will use the heartbeat interval specified in your firm's logon message. A heartbeat of 30 seconds is recommended as a reasonable balance between network efficiency and timely detection of a lost connection. The use of heartbeats and test requests will be as per the FIX 4.2 specification.

Resend Request

If your firm receives a resend request with a sequence number higher than expected, your system must first resend the requested messages before sending its own resend request.

While there are two methods for requesting messages to be resent (i.e. asking for a specific range vs. asking for all messages after a particular sequence number), it is recommended that all resend requests follow the latter: request all messages after a particular message. This avoids hunting and race conditions in which responses to resends causes more resends.

Reject

Session-level rejects are used under the following conditions:

- **When a mandatory field is missing**
- **When a field contains improperly formed data**
- **When a field contains a value not supported by standard FIX 4.2 protocol**
- **When a field that is not supported by standard FIX4.2 protocol is present in a message (except for customized tags)**

If Cboe LIS rejects a message sent by your firm, your firm's system must not try to resend the message.

Standard Message Header

4.1.1   Inbound Standard Message Header

FIX GW Tags	FIX GW Name	Req'd	Comments
8	BeginString	Y	FIX 4.2 (Always unencrypted, must be first field in message)
9	BodyLength	Y	(Always unencrypted, must be second field in message)
35	MsgType	Y	Defines message type. (Always unencrypted, must be third field in message)
34	MsgSeqNum	Y	Message sequence number
43	PossDupFlag	N	Always required for retransmitted messages, whether prompted by the sending system or as the result of a resend request
49	SenderCompID	Y	Assigned value used to identify firm sending message
50	SenderSubID	N	SendSubID has to be a known Cboe LIS OMS/EMS user if provided. Pass through tag.
52	SendingTime	Y	This must always be within 60 seconds of the time Cboe LIS receives it, or it will be rejected
56	TargetCompID	Y	This must always specify 'BIDS'
57	TargetSubID	N	Assigned SubID
97	PossResend	N	Cboe LIS will see if the IOI or Firm-up has already been received and processed, and ignore it if it already has. Value is always 'Y'
115	OnBehalfOfCompID	N	Trading partner company ID. Optionally provided by a routing service (e.g. an EMS) to identify the originating company.
116	OnBehalfOfSubID	N	Trading partner SubID. Optionally provided by a routing service (e.g. an EMS) to identify the originating Sub ID. May be used in lieu of tag 50 to provide a known Cboe LIS OMS/EMS user.
122	OrigSendingTime	N	Required for message resent as a result of a ResendRequest. If data is not available set to same value as SendingTime.
128	DeliverToCompID	N	Cboe LIS will use it as the routing destination. If specified, it must be a BIDS recognized external execution venue (i.e) SMAEBXL) or the keyword "None". Defaultable

4.1.2 Outbound Standard Message Header

C in Prov'd means provided under certain circumstances. Tag gets sent out based on certain conditions, which is described in the Comments column.

Tag	Field Name	Prov'd	Comments
8	BeginString	Y	FIX.4.2 (Always unencrypted, must be first field in message)
9	BodyLength	Y	(Always unencrypted, must be second field in message)
35	MsgType	Y	Defines message type
34	MsgSeqNum	Y	Sequence number
43	PossDupFlag	N	Always required for retransmitted messages, whether prompted by the sending system or as the result of a resend request.
49	SenderCompID	Y	Always set to 'BIDS'
50	SenderSubID	Y	Assigned SubID
52	SendingTime	Y	Time of message transmission.
56	TargetCompID	Y	Assigned value used to identify receiving firm.
57	TargetSubID	Y	Assigned value used to identify specific individual or unit intended to receive message.
97	PossResend	C	Provided as "Y" when message may be duplicate of another message sent under a different sequence number
122	OrigSendingTime	N	Provided for message resent as a result of a ResendRequest. If data is not available set to same value as SendingTime
128	DeliverToCompID	N	Trading partner company ID. Echo back tag 115 value of the associated inbound request.
129	DeliverToSubID	N	Trading partner SubID. Echo back tag 116 value of the associated inbound request.

Timestamps

CBOE LIS can cater to timestamp requirements of different audiences. Input timestamps can be of second, millisecond, microsecond, and/or nanosecond precision. For outbound timestamps, the precision is set on a gateway by gateway basis. The choices are millisecond, microsecond, and nanosecond. There is also a Legacy option for backward compatibility, which uses millisecond in general with a few specific tags using second precision.

5. Message Values

Inbound Messages

5.1.1   New Order Single

Tag	Field Name	Req'd	Default able	Length	Comments
	Standard Message Header	Y			MsgType = D
1	Account	N	Y	30	Account mnemonic value. Pass through tag.
11	ClOrdID	Y		30	Unique identifier as assigned by firm. Must be <= 30 characters.
15	Currency	N			Optional, default to symbol's base currency. If provided, must be the symbol's base currency or a major/minor currency of the base currency (e.g. British pounds vs pence). Required if IDSource = 4(ISIN) - Please refer to Symbology section. Pass through tag.
18	ExecInst	N			Can contain multiple instructions, space delimited. Required if OrdType = P, and must contain only one of the following M, P or R. Pass through tag.
21	HandlInst	N			Instructions for handling on Broker trading floor Valid values: 1 = Automated execution order, private, no Broker intervention 2 = Automated execution order, public, Broker intervention OK 3 = Manual order, best execution All values accepted. No IOI behavior change implied.
22	IDSource	N			Required if SecurityID is present, and must be 4 or 5. Pass through tag.
23	IOIid	N		30	Id of the invited IOI, which must be set for Firm-ups
38	OrderQty	Y			Quantity Range from 1 to 999999999

Tag	Field Name	Req'd	Default able	Length	Comments
40	OrdType	Y			Pricing type. Valid values: 1 = Market 2 = Limit P = Pegged (requires ExecInst)
44	Price	N			Price per unit of quantity. Required if OrdType = 2 Price range from 0.0001 to 999999.99
48	SecurityID	N			Must match the alternate security identifier of provided symbol if present. Pass through tag.
54	Side	Y			Side Only 1= Buy, 2= Sell, 5= Sell Short, 6= Sell Short Exempt are currently supported
55	Symbol	Y		15	Either a listed or OTC instrument. Please refer to Symbology section.
58	Text	N		50	Free format text string
59	TimeInForce	N			Time in force Absence of this field indicates Day order. 0 = Day Order 3 = IOC – Immediate or Cancel 6 = GTD – Good till Date (requires use of ExpireTime (tag 126)) A = EnC – Execute and Cancel
60	TransactTime	Y			Time this IOI or Firm-up request was initiated/released by the trader or trading system
76	ExecBroker	N	Y	12	Introducing broker
110	MinQty	N	Y		Minimum quantity to be executed
126	ExpireTime	N			Required if TimeInForce = 6 (GTD) Optional if TimeInForce = A (EnC) Optional if TimeInForce = 3 (IOC) If supplied for 59=3 (IOC) only int value to a maximum of 1000ms will be accepted and interpreted as a delay in milliseconds by which to persist the IOI for a potential match.

Tag	Field Name	Req'd	Default able	Length	Comments
207	SecurityExchange	N			Listing market of the security. This must follow the FIX 4.4 style ISO Market Identifier Code (MIC code). Required if IDSource = 4(ISIN). Please refer to Symbology section.
211	PegDifference	N			Amount (signed) added to the price of the peg
439	ClearingFirm	N			For the case of a Give Up, the MPID for the Give-Up clearing firm. Pass through tag.
Repeating Group 453	NoPartyIDs	N			Repeating group below should contain unique combinations of PartyID, PartyIDSource, and PartyRole
448	PartyID	N			Required if NoPartyIDs(453) > 0. Identification of the party.
447	PartyIDSource	N			Required if NoPartyIDs(453) > 0. Used to identify classification source. N = Legal Entity Identifier (ISO 17442) LEI
452	PartyRole	N			Required if NoPartyIDs(453) > 0. Identifies the type or role of the PartyID (448) specified. 13 = Order Origination Firm
end Repeating Group					
528	OrderCapacity	N			Capacity of Firm placing the IOI or Firm-up. Pass through tag. The valid values are: A = Agency P= Principal R= Riskless Principal
775	BookingType	N			The valid values are: 0 = Cash/Regular 1 = Contract for Difference (CFD)
8002	BIDSType	Y	N		Indicates the traders' willingness to commit to a trade. See Section 7: Cboe LIS FIX User Defined Tag Definitions.

Tag	Field Name	Req'd	Default able	Length	Comments
8003	BIDSInvite	N	Y		Controls whether the presence of an IOI in the system will be advertised to potential counterparties. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8007	BIDSFilterLevel	N	Y		BIDS Filter℠ level See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8008	BIDSTradePriority	N	Y		The algorithm to use in determining the best match for the IOI. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8017	BIDSPriceProtection	N	Y		Indicates the trader's willingness to trade inside EBBO or not. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8065	BIDSFirmUpMode	N			A qualifier indicating how an IOI will be firmed up. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
20013	PartyIDOrderOriginationFirm	N			LEI of Order Origination Firm.
	Standard Trailer	Y			

5.1.2   CancelAndReplace Request (IOI/Firm-up Modification Request)

Tag	Field Name	Req'd	Default able	Length	Comments
	Standard Message Header	Y			MsgType = G
1	Account	N	Y	30	Account mnemonic value. Pass through tag.
11	ClOrdID	Y		30	The firm-assigned ID of the replacement.
15	Currency	N			Optional, default to symbol's base currency. If provided, must be the symbol's base currency or a major/minor currency of the base currency (e.g. British pounds vs pence). Must match original IOI. Pass through tag.

Tag	Field Name	Req'd	Default able	Length	Comments
18	ExecInst	N			Can contain multiple instructions, space delimited. Required if OrdType = P, and must contain only one of the following M, P or R. Pass through tag.
21	HandlInst	N			Instructions for handling on Broker trading floor. Valid values: 1 = Automated execution order, private, no Broker intervention 2 = Automated execution order, public, Broker intervention OK 3 = Manual order, best execution All values accepted. No IOI behavior change implied.
22	IDSource	N			Required if SecurityID is present, and must be 4 or 5 Must match original IOI. Pass through tag.
37	OrderID	N		13	The Cboe LIS ID as provided in the original execution report accepting the IOI or Firm-up.
38	OrderQty	Y			"Original Quantity of the IOI or Firm-up" (including the amount already executed for this chain of Firm-ups)
40	OrdType	Y			Valid values: 1 = Market 2 = Limit P = Pegged (requires ExecInst)
41	OrigClOrdID	Y			The firm-assigned ID of the IOI or Firm-up to replace.
44	Price	N			Price per unit of quantity.
48	SecurityID	N			Must match the alternate security identifier of provided symbol if present Must match original IOI. Pass through tag
54	Side	Y			Must match side from the original IOI or Firm-up.
55	Symbol	Y		15	Must match original IOI or Firm-up message
58	Text	N		50	Cancel and replace reason

Tag	Field Name	Req'd	Default able	Length	Comments
59	TimeInForce	N			Time in force. Absence of this field indicates Day IOI or Firm-up. 0 = Day Order 3 = IOC – Immediate or Cancel 6 = GTD – Good til Date (requires use of ExpireTime (tag 126)) A = EnC – Execute and Cancel
60	TransactTime	Y			Time this IOI or Firm-up request was initiated/released by the trader or trading system.
76	ExecBroker	N	Y	12	Introducing broker
110	MinQty	N	Y		Minimum quantity to be executed.
126	ExpireTime	N			Required if TimeInForce = 6 (GTD) Optional if TimeInForce = A (EnC) Optional if TimeInForce = 3 (IOC) If supplied for 59=3 (IOC) only int value to a maximum of 1000ms will be accepted and interpreted as a delay in milliseconds by which to persist the IOI for a potential match.
207	SecurityExchange	N			Listing market of the security. This must follow the FIX 4.4 style ISO Market Identifier Code (MIC code) Must match original IOI.
211	PegDifference	N			Amount (signed) added to the price of the peg
439	ClearingFirm	N			In the case of a Give Up, the MPID for the Give-Up clearing firm. Pass through tag.
Repeating Group 453	NoPartyIDs	N			Repeating group below should contain unique combinations of PartyID, PartyIDSource, and PartyRole
448	PartyID	N			Required if NoPartyIDs(453) > 0. Identification of the party.
447	PartyIDSource	N			Required if NoPartyIDs(453) > 0. Used to identify classification source. N = Legal Entity Identifier (ISO 17442) LEI
452	PartyRole	N			Required if NoPartyIDs(453) > 0. Identifies the type or role of the PartyID (448) specified. 13 = Order Origination Firm

Tag	Field Name	Req'd	Default able	Length	Comments
end Repeati ng Group					
528	OrderCapacity	N			Must match original IOI or Firm-up message. Pass through tag.
775	BookingType	N			The valid values are: 0 = Cash/Regular 1 = Contract for Difference (CFD)
8002	BIDSType	Y	N		Indicates the trader's willingness to commit to a trade. Must match original IOI. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8003	BIDSInvite	N	Y		Controls whether the presence of the IOI in the system will be advertised to potential counterparties. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8007	BIDSFilterLevel	N	Y		BIDS Filter℠ level See Section 7: Cboe LIS FIX User Defined Tag Definitions
8008	BIDSTradePriority	N	Y		The algorithm used to determine the best match for the IOI. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8017	BIDSPriceProtection	N	Y		Indicates the trader's willingness to trade inside EBBO or not See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8065	BIDSFirmUpMode	N			A qualifier indicating how an IOI will be "firmed up". See Section 7: Cboe LIS FIX User Defined Tag Definitions.
20013	PartyIDOrderOriginationFirm	N			LEI of Order Origination Firm.
	Standard Trailer	Y			

5.1.3 Order Cancel Request

Tag	Field Name	Req'd	Length	Comments
	Standard Message Header	Y		MsgType = F
1	Account	N	30	Account mnemonic value. Pass through tag.
11	ClOrdID	Y	30	The firm-assigned ID of this cancel. This ID is used for any responses to the cancel request.
15	Currency	N		Must match original IOI.
22	IDSource	N		Must match original IOI. Pass through tag
37	OrderID	N	13	The ID provided by Cboe LIS on the original execution report accepting the IOI or Firm-up.
38	OrderQty	N		"Original Quantity of the IOI or Firm-up" (including the amount already executed for this chain of Firm-ups)
41	OrigClOrdID	Y	30	The firm-assigned ID of the IOI or Firm-up to cancel.
48	SecurityID	N		Must match original IOI. Pass through tag
54	Side	Y		Side of IOI or Firm-up. Must match the IOI or Firm-up being cancelled.
55	Symbol	Y	15	Must match the IOI or Firm-up being cancelled
58	Text	N	50	Cancel reason
60	TransactTime	Y		Time this request was initiated/released by the trader or trading system.
76	ExecBroker	N	12	Used if the submitted Firm-up is being submitted for another broker
207	SecurityExchange	N		Listing market of the security. This must follow the FIX 4.4 style ISO Market Identifier Code (MIC code) Must match original IOI.
439	ClearingFirm	N	4	In the case of a Give Up, the MPID for the Give-Up clearing firm. Pass through tag
775	BookingType	N		The valid values are: 0 = Cash/Regular 1 = Contract for Difference (CFD)
	Standard Trailer	Y		

Outbound Messages

5.1.3.1   Execution Report

5.1.3.2 Type of Execution Report

Cboe LIS FIX Message	ExecTransType	ExecType	OrdStatus
NewOrderSingle Accepted	0 = New	0 = New	0 = New
NewOrderSingle Rejected	0 = New	8 = Rejected	8 = Rejected
Cancel Accepted	0 = New	4 = Cancelled	4 = Cancelled
Replace Accepted	0 = New	5 = Replace	5 = Replaced
Cancel Accepted	0 = New	6 = Pending Cancel	6 = Pending Cancel
Replace Accepted	0 = New	E = Pending Replace	E = Pending Replace
Gone	0 = New	C = Expired	C = Expired
Gone	0 = New	3 = Done For Day	3 = Done For Day
Filled	0 = New	1 = Partially fill	1 = Partially filled
Filled	0 = New	2 = Fill	2 = Filled
Updated (Invited)	0 = New	5 = Replace	5 = Replaced
Trade Cancellation	1= Cancel	Same as OrdStatus	Current state of IOI or Firm-up

5.1.3.3 Message Template

C in Prov'd means provided under certain circumstances. Tag gets sent out based on certain conditions, which is described in Comments.

Tag	Field Name	Prov'd	Comments
	Standard Message Header	Y	MsgType = 8
1	Account	C	Account mnemonic value. If provided on inbound message or configure to be defaultable
6	AvgPx	Y	Calculated average price of all fills on this Firm-up. Assigned to 0 when rejected
11	ClOrdID	Y	Unique identifier as assigned
14	CumQty	Y	Total quantity (e.g. number of shares) filled. Assign to 0 when rejected
15	Currency	C	Optional, default to symbol's base currency. If provided, must be the symbol's base currency or a major/minor currency of the base currency (e.g. British pounds vs pence). If provided on inbound message. Pass through tag.
17	ExecID	Y	Unique identifier of each Execution Report message.
18	ExecInst	C	If provided on inbound message. Pass through tag.
19	ExecRefID	C	Reference identifier used with Cancel transaction types. Provided in Trade Cancellation.

Tag	Field Name	Prov'd	Comments
20	ExecTransType	Y	0 = New 1 = Cancel (when a trade cancellation occurs)
22	IDSource	C	If provided on inbound message Pass through tag.
29	LastCapacity	C	Broker capacity in order execution. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2) It is a configurable setting. Valid values: 1 = Agent 3 = Cross as principal (this is a configurable value) 4 = Principal
30	LastMkt	C	If provided on inbound message On Fill/Partially Fill, Cboe LIS will assign it to denote where the execution occurred. Will always be LISX on executions. Pass through tag
31	LastPx	Y	Price of this (last) fill. Assign to 0 on New, Cancelled/Pending Cancel, Replace/Pending Replace, Expire
32	LastShares	Y	Quantity of shares bought/sold on this (last) fill. Assign to 0 on New, Cancelled/Pending Cancel, Replace/Pending Replace, Expire
37	OrderID	Y	Includes BIDSIOIId and omsSequenceNo. Assign to 'NONE' on rejection.
38	OrderQty	Y	Quantity. Range from 1 to 999999999.
39	OrdStatus	Y	Identifies current status of IOI or Firm-up. 0 = New 1 = Partially filled 2 = Filled 3 = Done For Day 4 = Cancelled 5 = Replaced 6 = Pending Cancel 8 = Rejected C = Expired E = Pending Replace
40	OrdType	Y	Valid values: 1 = Market 2 = Limit P = Pegged (requires ExecInst)
41	OrigClOrdID	C	ClOrdID of the previous IOI or Firm-up when canceling or replacing.
44	Price	Y	Price per unit of quantity.
48	SecurityID	C	If provided on inbound message. Pass through tag.

Tag	Field Name	Prov'd	Comments
54	Side	Y	Only 1=Buy, 2=Sell, 5=Sell Short, 6= Sell Short Exempt are currently supported
55	Symbol	Y	Either a listed or OTC instrument.
58	Text	C	Free format text string.
59	TimeInForce	Y	Time in force Default to "Day order" if not provided on inbound message. 0 = Day Order 3 = IOC – Immediate or Cancel 6 = GTD – Good til Date (requires use of ExpireTime (tag 126)) A = EnC – Execute and Cancel
60	TransactTime	Y	Time the transaction represented by this ExecutionReport occurred
76	ExecBroker	C	Used if the submitted Firm-up is being submitted for another broker. Optional.
103	OrdRejReason	C	Code to identify reason for rejection. Valid values: 0 = Broker / Exchange option 1 = Unknown symbol 2 = Exchange closed 3 = Exceeds limit 6 = Duplicate ID (e.g. dupe ClOrdID (11))
110	MinQty	Y	Minimum quantity to be executed.
126	ExpireTime	C	IOI or Firm-up expiration time Required if TimeInForce = 6 (GTD) Optional if TimeInForce = A (EnC) Optional if TimeInForce = 3 (IOC)
150	ExecType	Y	Describes the type of execution report. 0 = New 1 = Partial fill 2 = Fill 3 = Done For Day 4 = Cancelled 5 = Replace 6 = Pending Cancel 8 = Rejected C = Expired E = Pending Replace
151	LeavesQty	Y	Quantity opens for further execution. LeavesQty = OrderQty (38) – CumQty (14). Assign to 0 on a reject, Cancelled, Expired
168	EffectiveTime	C	Time the details within the message should take effect. Not provided in IOIRejected

Tag	Field Name	Prov'd	Comments
207	SecurityExchange	C	Listing market of the security. This must follow the FIX 4.4 style ISO Market Identifier Code (MIC code).
211	PegDifference	C	Amount (signed) added to the price of the peg If provided on Pegged Order
439	ClearingFirm	C	For the case of a Give Up, the MPID for the Give-Up clearing firm. Pass through tag.
Repeating Group 453	NoPartyIDs	C	Repeating group below should contain unique combinations of PartyID, PartyIDSource, and PartyRole Order Origination Firm party group is present if it was provided in incoming FIX messages. Executing Firm party group is provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.
448	PartyID	C	Required if NoPartyIDs(453) > 0. Identification of the party.
447	PartyIDSource	C	Required if NoPartyIDs(453) > 0. Used to identify classification source. N = Legal Entity Identifier (ISO 17442) LEI
452	PartyRole	C	Required if NoPartyIDs(453) > 0. Identifies the type or role of the PartyID (448) specified. 1 = Executing Firm 13 = Order Origination Firm
End Repeating Group			
528	OrderCapacity	Y	Capacity of Firm placing the IOI or Firm-up. Pass through tag.
769	TrdRegTimestamp	C	Time the trade occurred at the trading venue.
775	BookingType	C	Method used for booking. If not present defaulted to 0 0 = Regular/Cash 1 = Contract for Difference (CFD)
851	LastLiquidityInd	C	Identifies whether a fill is results from a firm up or not. It is a configurable setting, applicable only for IOI Filled. It can be populated with a value of 'C' or '8'.
1903	RegulatoryTradeID	C	Uniquely identifies the trade by CXE where the trade was done. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.
1906	RegulatoryTradeIDType	C	Indicates the type of trade identifier provided in RegulatoryTradeID Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. 5=Trading venue transaction identification
1907	NoRegulatoryTradeIDs	C	Number of regulatory IDs in the repeating group. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.

Tag	Field Name	Prov'd	Comments
2524	TradeReportingIndicator	C	Used between parties to convey trade reporting status. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2) It is a configurable setting. If appears, it is always set to: 1 = Trade has been reported by a trading venue as an "on-book" trade
2668	NoTrdRegPublications	C	Number of regulatory publication rules in repeating group. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If appears, it is always set to 1.
2669	TrdRegPublicationType	C	Specifies the type of regulatory trade publication. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If appears, it is always set to: 0 = Pre-trade transparency waiver
2670	TrdRegPublicationReason	C	Additional reason for trade publication type specified in TrdRegPublicationType(2669). Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If appears, it is always set to: 9 = Large in scale
8002	BIDSType	C	Indicates the trader's willingness to commit to a trade. NewIOIRejected: If provided on inbound message. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8003	BIDSInvite	C	Controls whether the presence of the IOI in the system will be advertised to potential counterparties. NewIOIRejected: If provided on inbound message See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8005	BIDSIOIState	Y	Describes the current condition of the IOI or Firm-up. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8006	BIDSTradeDesk	C	The trade desk of the IOI or Firm-up owner. NewIOIRejected: If provided on inbound message.
8007	BIDSFilterLevel	C	BIDS Filter℠ level. NewIOIRejected: If provided on inbound message. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8008	BIDSTradePriority	C	The algorithm to use in determining the best match for the IOI. NewIOIRejected: If provided on inbound message. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8013	TrdRegPublicationReasons **BIDSCreateDate has been deprecated	C	Trade publication reason Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If it appears, it is always set to: 9 = Large in scale
8016	TradingVenueRegulatoryTradeID	C	Trading Venue Transaction Identification Code. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.
8017	BIDSPriceProtection	C	Indicate the trader's willingness to trade inside EBBO or not. NewIOIRejected: If provided on inbound message. See Section 7: Cboe LIS FIX User Defined Tag Definitions.

Tag	Field Name	Prov'd	Comments
8019	BIDSEBBPrice	C	Bid Price Not provided in NewIOIRejected
8020	BIDSEBOPrice	C	Ask Price Not provided in NewIOIRejected
8021	BIDSEBBOTimestamp	C	Time of the EBBO Not provided in NewIOIRejected
8023	BIDSLastAction	Y	Describes the reason for the last action affecting the IOI or Firm-up message. 0 = New 1 = Replace 2 = Cancel 3 = Update 4 = Traded 5 = Expire 6 = Cancelled by Firm 8 = Complete 9 = Pending Trade R = Cancelled after Trade S = Cancelled after Failed Trade
8024	BIDSLastActionTime	C	Timestamp of the last update to the IOI or Firm-up. NewIOIRejected: If provided on inbound message.
8025	BIDSUpdateSeq	C	A counter incremented every time an action is taken on the IOI or Firm-up. NewIOIRejected: If provided on inbound message.
8026	BIDSTradeId	C	Uniquely identifies the trade. Provided in IOIFilled.
8027	BIDSTradeSource	C	Indicates how the trade originated. Provided in IOIFilled. Always 0. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
8051	BIDSAutomatchMinVol	C	Minimum Match Volume. Matches value in MinQty tag 110 NewIOIRejected: If provided on inbound message.
8065	BIDSFirmUpMode	C	A qualifier indicating how an IOI will be firmed up. See Section 7: Cboe LIS FIX User Defined Tag Definitions.
20001	PartyIDExecutingFirm	C	LEI of Executing Firm. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.
20013	PartyIDOrderOriginationFirm	C	LEI of Order Origination Firm. It is a configurable setting.
	Standard Trailer	Y	

5.1.4 Order Cancel Reject

Tag	Field Name	Prov'd	Comments
	Standard Message Header	Y	MsgType = 9
1	Account	C	Account mnemonic value. If provided on inbound message or configure to be defaultable.
11	ClOrdID	Y	The ID of the cancel request that was rejected
37	OrderID	Y	The ID provided in the original cancel request
39	OrdStatus	Y	OrdStatus value after this cancel reject is applied
41	OrigClOrdID	Y	The ID of the Firm-up that was to be cancelled
48	SecurityID	C	If provided on inbound message. Pass through tag.
58	Text	Y	A descriptive reason for the rejection.
76	ExecBroker	C	Used if the submitted Firm-up is being submitted for another broker. Optional for IOIs.
102	CxlRejReason	Y	Code to identify reason for cancel rejection. Valid values: 0 = Too late to cancel 1 = Unknown 2 = Broker / Exchange Option
434	CxlRejResponseTo	Y	Identifies the type of request that a Cancel Reject is in response to. Valid values: 1 = Order Cancel Request 2 = Order Cancel/Replace Request
	Standard Trailer	Y	

6. Supported Messages

Default enabled Tags

Default values in the FIX messages are configurable on a per trader basis by System administrators.

For detailed descriptions, please see Section 7.1 Cboe LIS FIX Standard Tag Definitions.

Application Messages Supported

Cboe LIS FIX 4.2 Protocol Application Messages		
Inbound		
Message	**MsgType**	**Usage**
New Order Single	D	Submit new IOI or Firm-up to Cboe LIS
Cancel and Replace Request	G	Modify an existing IOI or Firm-up in Cboe LIS
Order Cancel Request	F	Completely cancel unfilled quantity of an existing IOI or Firm-up in Cboe LIS
Outbound		
Message	**MsgType**	**Usage**
Execution Report	8	Report the state of a trade instruction previously submitted to the Cboe LIS
Order Cancel Reject	9	Report the rejection of a trade cancel request or Cancel and Replace request

New Order Single and Execution Report Examples

6.1.1   New IOI Message

The following is a day limit IOI for 1000 shares of TESTl

8=FIX.4.2 <SOH> 9=<SOH> 35=D<SOH> 49=AMSL<SOH> 56=BIDS<SOH> 34=120<SOH> 52=20060927-03:31:04<SOH>

11=ClOrdID211<SOH> 1=AMSL1000<SOH> 21=1<SOH> 55= TESTl<SOH> 54=1<SOH> 60=20060927-03:31:04<SOH> 38=1000<SOH> 40=2<SOH>

44=10.00<SOH> 59=0<SOH> 207=XLON<SOH>439=MS<SOH> 528=R<SOH> 775=1<SOH>8002=0<SOH>

10=148<SOH>

Explanation of example message content

Tag	Field Name	Comments
	Standard Message Header	
8	BeginString	'FIX.4.2'
9	BodyLength	As assigned
35	MsgType	'D' – New Order Single
49	SenderCompID	'AMSL' – example firm identifier
56	TargetCompID	'BIDS'
34	MsgSeqNum	120
52	SendingTime	20060927-03:31:04
1	Account	AMSL1000
11	ClOrdID	CLOrdID211
21	HandlInst	1
38	OrderQty	1000
40	OrdType	2 – Limit
44	Price	10.00
54	Side	1 – Buy
55	Symbol	TESTl
59	TimeInForce	0 – Day
60	TransactTime	20060927-03:31:04
110	MinQty	100
207	SecurityExchange	XLON
439	ClearingFirm	MS
528	OrderCapacity	R – Riskless Principal
775	BookingType	1 - CFD
8002	BIDSType	0 - IOI
	Standard Trailer	
10	CheckSum	As assigned

6.1.2   IOI Invited Message

On receipt of the IOI, the Cboe LIS System will acknowledge with an Execution Report with OrdStatus tag 39=0, or reject with an Execution Report with tag 39=8.

The following is a spontaneous Execution Report sent by Cboe LIS thereafter when the day limit IOI for 1000 shares of TESTl is invited.

```
8=FIX.4.2 <SOH> 9=<SOH> 35=8<SOH> 49=AMSL<SOH> 56=BIDS<SOH> 34=122<SOH> 52=20060927-03:32:04<SOH>
1=AMSL1000<SOH> 6=0<SOH>11=ClOrdID 211<SOH> 14=0<SOH>17=a 00000010.2<SOH>20=0<SOH>31=0<SOH>32=0<SOH>
37=a000000100001<SOH>38=1000<SOH>39=5<SOH>40=2<SOH>41= ClOrdID211<SOH>44=10.00<SOH>54=1<SOH>55= TESTl<SOH>59=0<SOH>
60=20060927-03: 32: 04 <SOH>110=100<SOH>150=5<SOH>151=1000<SOH>168=20060927-03:32:04<SOH>207=XLON <SOH>439=MS<SOH>
528=R<SOH>775=1<SOH>8002=0<SOH>8003=0<SOH>8005=5<SOH>8006=bmbra.buy2<SOH>8007=1<SOH>8008=0<SOH>
8013=9<SOH>8017=0<SOH>8019=10.00<SOH>8020=10.10<SOH>8021=20060927-03:32:04<SOH>
8023=3<SOH>8024=20060927-03: 32: 04 <SOH>8025=2<SOH>8051=100<SOH> 8062=1<SOH>
10=163<SOH>
```

Explanation of example message content

Tag	Field Name	Comments
	Standard Message Header	
8	BeginString	'FIX.4.2'
9	BodyLength	As assigned
35	MsgType	'8' – Execution Report
49	SenderCompID	'BIDS'
56	TargetCompID	'AMSL' – example firm identifier
34	MsgSeqNum	122
52	SendingTime	20060927-03: 32: 04
1	Account	AMSL1000
6	AvgPx	0
11	ClOrdID	CLOrdID211
14	CumQty	0
17	ExecID	a00000010.2
20	ExecTransType	0
31	LastPx	0
32	LastShares	0
37	OrderID	a000000100001
38	OrderQty	1000
39	OrdStatus	5 - Replaced
40	OrdType	2 – Limit
41	OrigClOrdID	ClOrdID211
44	Price	10.00
54	Side	1 – Buy
55	Symbol	TESTl
59	TimeInForce	0 – Day
60	TransactTime	20060927-03: 32: 04
110	MinQty	100

Tag	Field Name	Comments
150	ExecType	5 - Replace
151	LeavesQty	1000
168	EffectiveTime	20060927-03:32:04
207	SecurityExchange	XLON
439	ClearingFirm	MS
528	OrderCapacity	R – Riskless Principal
775	BookingType	1 - CFD
8002	BIDSType	0 – IOI
8003	BIDSInvite	0 - On
8005	BIDSIOIState	5 - Invited
8006	BIDSTradeDesk	bmbra.buy2
8007	BIDSFilterLevel	1 - Aggressive
8008	BIDSTradePriority	0 - Price
8013	TrdRegPublicationReasons	9=Large in Scale (LIS)
8017	BIDSPriceProtection	0 – At or Between
8019	BIDSEBBPrice	10.00
8020	BIDSEBOPrice	10.10
8021	BIDSEBBOTimestamp	20060927-03:32:04
8023	BIDSLastAction	3 - Update
8024	BIDSLastActionTime	20060927-03:32:04
8025	BIDSUpdateSeq	2
8051	BIDSAutomatchMinVol	100
8062	BIDSInviterType	1 – Long Lasting
	Standard Trailer	
10	CheckSum	As assigned

6.1.3 New Firm-up Message

The following is a day limit Firm-up for 1000 shares of TESTl in response to the invitation

8=FIX.4.2 <SOH> 9=<SOH> 35=D<SOH> 49=AMSL<SOH> 56=BIDS<SOH> 34=120<SOH> 52=20060927-03:31:04<SOH>
11=ClOrdID212<SOH> 1=AMSL1000<SOH> 21=1<SOH> 23= CLOrdID211<SOH> 55= TESTl<SOH> 54=1<SOH> 60=20060927-03:31:04<SOH>
38=1000<SOH> 40=2<SOH> 44=10.00<SOH> 59=0<SOH> 207=XLON<SOH>439=MS<SOH>528=R<SOH>775=1<SOH>8002=1<SOH>
10=148<SOH>

Explanation of example message content

Tag	Field Name	Comments
	Standard Message Header	
8	BeginString	'FIX.4.2'
9	BodyLength	As assigned
35	MsgType	'D' – New Order Single
49	SenderCompID	'AMSL' – example firm identifier
56	TargetCompID	'BIDS'
34	MsgSeqNum	120
52	SendingTime	20060927-03:31:04
1	Account	AMSL1000
11	ClOrdID	CLOrdID212
21	HandlInst	1
23	IOIid	CLOrdID211 – referencing the invited IOI
38	OrderQty	1000
40	OrdType	2 – Limit
44	Price	10.00
54	Side	1 – Buy
55	Symbol	TESTl
59	TimeInForce	0 – Day
60	TransactTime	20060927-03:31:04
207	SecurityExchange	XLON
439	ClearingFirm	MS
528	OrderCapacity	R – Riskless Principal
775	BookingType	1 - CFD
8002	BIDSType	1 – Firm-up
	Standard Trailer	
10	CheckSum	As assigned

6.1.4 Firm-up Filled Message

On receipt of the Firm-up, the Cboe LIS System will acknowledge with an Execution Report with OrdStatus tag 39=0, or reject with an Execution Report with tag 39=8. The corresponding invited IOI will also be cancelled by the System.

The following is a spontaneous Execution Report sent by Cboe LIS thereafter when the day limit Firm-up for 1000 shares of TESTl gets filled.

```
8=FIX.4.2 <SOH> 9=<SOH> 35=8<SOH> 49=AMSL<SOH> 56=BIDS<SOH> 34=126<SOH> 52=20060927-03:35:04<SOH>
1=AMSL1000<SOH> 6= 10.00000<SOH> 11= CLOrdID212<SOH> 14= 1000<SOH> 17= a00000030.2<SOH> 20=0<SOH> 31= 10.00000<SOH>
32= 1000<SOH> 37= a000000300001<SOH> 38=1000<SOH> 39=2<SOH> 40=2<SOH> 44=10.00<SOH> 54=1<SOH> 55= TESTl <SOH>
58=BIDS  Trade a00000010<SOH> 59=0<SOH> 60=20060927-03:35:04<SOH> 110=100<SOH> 150=2<SOH> 151=0<SOH>
168=20060927-03:32:04<SOH> 207=X LON <SOH> 439=MS <SOH> 528=R<SOH> 775=1<SOH> 8002=1<SOH> 8003=0<SOH> 8005=4<SOH>
8006=bmbra.buy2<SOH> 8007=1<SOH> 8008=0<SOH> 8013=9<SOH> 8017=0<SOH> 8019=10.00<SOH>
8020=10.10<SOH> 8021=20060927-03:32:04<SOH> 8023=3<SOH> 8024=20060927-03:35:04<SOH> 8025=2<SOH>
8026=a00000010<SOH> 8027=0<SOH> 8051=100<SOH> 8062=1<SOH>
10=163<SOH>
```

Explanation of example message content

Tag	Field Name	Comments
	Standard Message Header	
8	BeginString	'FIX.4.2'
9	BodyLength	As assigned
35	MsgType	'8' – Execution Report
49	SenderCompID	'BIDS'
56	TargetCompID	'AMSL' – example firm identifier
34	MsgSeqNum	126
52	SendingTime	20060927-03:35:04
1	Account	AMSL1000
6	AvgPx	10.00000
11	ClOrdID	CLOrdID212
14	CumQty	1000
17	ExecID	a00000030.2
20	ExecTransType	0
31	LastPx	10.00000
32	LastShares	1000
37	OrderID	a000000300001
38	OrderQty	1000
39	OrdStatus	2 - Filled
40	OrdType	2 – Limit
44	Price	10.00
54	Side	1 – Buy
55	Symbol	TESTl
59	TimeInForce	0 – Day

Tag	Field Name	Comments
60	TransactTime	20060927-03:35:04
110	MinQty	100
150	ExecType	2 - Fill
151	LeavesQty	0
168	EffectiveTime	20060927-03:32:04
207	SecurityExchange	XLON
439	ClearingFirm	MS
528	OrderCapacity	R – Riskless Principal
775	BookingType	1 - CFD
1903	RegulatoryTradeID	000J195007BB
1906	RegulatoryTradeIDType	5
1907	NoRegulatoryTradeIDs	1
8002	BIDSType	1 – Firm up
8003	BIDSInvite	0 - On
8005	BIDSIOIState	4 - Traded
8006	BIDSTradeDesk	bmbra.buy2
8007	BIDSFilterLevel	1 - Aggressive
8008	BIDSTradePriority	0 - Price
8013	TrdRegPublicationReasons	9 – Large in Scale
8017	BIDSPriceProtection	0 – At or Between
8019	BIDSEBBPrice	10.00
8020	BIDSEBOPrice	10.10
8021	BIDSEBBOTimestamp	20060927-03:32:04
8023	BIDSLastAction	3 - Update
8024	BIDSLastActionTime	20060927-03:35:04
8025	BIDSUpdateSeq	2
8026	BIDSTradeId	a00000010
8027	BIDSTradeSource	0 - Auto
8051	BIDSAutomatchMinVol	100
8062	BIDSInviterType	1 – Long Lasting
	Standard Trailer	
10	CheckSum	As assigned

6.1.5 Cboe LIS to Cboe CXE Trade ID Linkage

The following steps describe how a trade is identified by a Trade ID as it flows through the service and how it can then be reconciled against DROP feeds and information from the CCP:

1. When a firm-up occurs, the resultant trade in Cboe LIS is uniquely identified by the BIDSTradeID (tag 8026) on the IOIFilled message. To facilitate trade ID linkage, the trade identifier allocated by Cboe is also provided, in the RegulatoryTradeID (tag 1903) field.

2. If a DROP is to be obtained from Cboe CXE the trade will be communicated via a Trade Capture Report. The value for the BIDSTradeID (tag 8026) and RegulatoryTradeID (tag 1903) above will be the same as the TradeReportRefID (tag 572) and TradeID (tag 1003) of the Trade Capture Report.

3. As per existing Cboe Trade Reporting behaviour, the TradeID is sent to CCPs for reconciliation purposes.

7. Data Dictionary

Cboe LIS FIX Standard Tag Definitions

Lengths are provided for inbound string fields. Numeric fields and output fields comply with FIX datatype definitions.

Tag	Field Name	Format	Length	Description	Found in msgs
1	Account	String	30	Account mnemonic value.	New Order Single CancelAndReplace Request Execution Report
6	AvgPx	Price		Calculated average price of all fills on this Firm-up.	Execution Report
11	ClOrdId	String	30	Unique identifier as assigned by the firm. Must be <= 30 characters.	New Order Single CancelAndReplace Request Order Cancel Request Execution Report Order Cancel Reject
14	CumQty	Qty		Total quantity (e.g. number of shares) filled.	Execution Report
15	Currency	Currency		Identifies currency used for price. Absence of this field is interpreted as the default for the security. It is recommended that systems provide the currency value whenever possible Pass through tag.	New Order Single CancelAndReplace Request Order Cancel Request Execution Report
17	ExecID	String		Unique identifier of each Execution Report message.	Execution Report
18	ExecInst	MultipleValueString		Can contain multiple instructions, space delimited. Required if OrdType = P, and must contain only one of the following M, P or R	New Order Single CancelAndReplace Request Execution Report
19	ExecRefID	String		Reference identifier used with Cancel and Correct transaction types	Execution Report
20	ExecTransType	char		Identifies transaction type. Valid values: 0 = New 1 = Cancel 3 = Status	Execution Report
21	HandlInst	char		Instructions for handling on Broker trading floor Valid values: 1 = Automated execution order, private, no Broker intervention 2 = Automated execution order, public, Broker intervention OK 3 = Manual order, best execution	New Order Single CancelAndReplace Request

Tag	Field Name	Format	Length	Description	Found in msgs
22	IDSource	String		Identifies class of alternative SecurityID Valid values: 4 = ISIN 5 = RIC	New Order Single CancelAndReplace Request CancelRequest Execution Report
23	IOIid	String		Id of the invited IOI	New Order Single
29	LastCapacity	char		Broker capacity in order execution. It is a configurable setting. Valid values: 1 = Agent 3 = Cross as principal (this is a configurable value) 4 = Principal	Execution Report
30	LastMkt	Exchange		Market of execution for last fill. Will always be LISX on executions.	New Order Single CancelAndReplace Request Execution Report
31	LastPx	Price		Price of this (last) fill.	Execution Report
32	LastShares	Qty		Quantity of shares bought/sold on this (last) fill.	Execution Report
37	OrderId	String	13	Unique identifier for the IOI or Firm-up. Includes BIDSIOIId and omsSequenceNo	CancelAndReplace Request Order Cancel Request Execution Report Order Cancel Reject
38	OrderQty	Qty		Quantity Range from 1 to 999999999	New Order Single CancelAndReplace Request Order Cancel Request Execution Report
39	OrdStatus	char		Identifies current status of the IOI or Firm-up. Valid values: 0 = New 1 = Partially filled 2 = Filled 3 = Done For Day 4 = Cancelled 5 = Replaced 6 = Pending Cancel E = Pending Replace 8 = Rejected C = Expired	Execution Report
40	OrdType	char		Pricing Type Valid values: 1 = Market 2 = Limit P = Pegged (requires ExecInst)	New Order Single CancelAndReplace Request Execution Report

Tag	Field Name	Format	Length	Description	Found in msgs
41	OrigClOrdID	String	30	ClOrdID of the previous IOI or Firm-up when canceling or replacing.	CancelAndReplace Request Order Cancel Request Execution Report
44	Price	Price		Price per unit of quantity.	New Order Single CancelAndReplace Request Execution Report
48	SecurityID	String		Security identifier value of IDSource (22) type i.e. ISIN or RIC	New Order Single CancelAndReplace Request Cancel Request Execution Report
54	Side	char		Side Valid values 1= Buy 2= Sell 5= Sell Short 6= Sell Short Exempt	New Order Single CancelAndReplace Request Order Cancel Request Execution Report
55	Symbol	String	15	Either a listed or OTC instrument	New Order Single CancelAndReplace Request Order Cancel Request Execution Report
58	Text	String	50	Free format text string.	New Order Single CancelAndReplace Request Order Cancel Request Execution Report Order Cancel Reject
59	TimeInForce	char		Absence of this field indicates Day IOI or Firm-up. 0 = Day Order (default if field not specified) 3 = IOC – Immediate Or Cancel 6 = GTD – Good Til Date (requires use of ExpireTime (tag 126)) A = EnC – Execute and Cancel	New Order Single CancelAndReplace Request Execution Report
60	TransactTime	UTCTimestamp		Time of execution/creation	CancelAndReplace Request Order Cancel Request Execution Report
76	ExecBroker	String	12	Introducing broker	New Order Single CancelAndReplace Request Order Cancel Request Execution Report Order Cancel Reject

Tag	Field Name	Format	Length	Description	Found in msgs
102	CxlRejReason	int		Code to identify reason for cancel rejection. Valid values: 0 = Too late to cancel 1 = Unknown 2 = Broker / Exchange Option	Order Cancel Reject
103	OrdRejReason	int		Code to identify reason for rejection. Valid values: 0 = Broker / Exchange option 1 = Unknown symbol 2 = Exchange closed 3 = Exceeds limit 6 = Duplicate (e.g. dupe ClOrdID (11))	Execution Report
110	MinQty	Qty		Minimum quantity to be executed.	New Order Single CancelAndReplace Request Execution Report
126	ExpireTime	UTCTimestamp		Expiration time yyyy-MM-dd-HH:mm:ss.SSS Required if TimeInForce = 6 (GTD) Optional if TimeInForce = A (EnC) Optional if TimeInForce = 3 (IOC) If supplied for 59=3 (IOC) only int value will be accepted and interpreted as a delay in milliseconds by which to persist the IOI for a potential match.	New Order Single CancelAndReplace Request Execution Report
150	ExecType	char		Describes the type of execution report. Valid values: 0 = New 1 = Partial Fill 2 = Fill 3 = Done For Day 4 = Cancelled 5 = Replace 6 = Pending Cancel 8 = Rejected C = Expired E = Pending Replace	Execution Report
151	LeavesQty	Qty		Quantity open for further execution	Execution Report
168	EffectiveTime	UTCTimestamp		Time the details within the message should take effect	Execution Report
207	SecurityExchange	String	4	Listing market of the security. This must follow the FIX 4.4 style ISO Market Identifier Code (MIC code)	New Order Single Order Cancel Replace Request Order Cancel Request Execution Report
211	PegDifference	PriceOffset		Amount (signed) added to the price of the peg for a pegged IOI or Firm-up	New Order Single CancelAndReplace Request Execution Report

Tag	Field Name	Format	Length	Description	Found in msgs
434	CxlRejResponseTo	char		Identifies the type of request that a Cancel Reject is in response to. Valid values: 1 = Order Cancel Request 2 = Order Cancel/Replace Request	Order Cancel Reject
439	ClearingFirm	String	4	In the case of Give up the MPID for the give up Clearing Firm.	New Order Single Order Cancel Replace Request Order Cancel Request Execution Report
447	PartyIDSource	char		Identifies class or source of the PartyID (448) value. Required if PartyID is specified. Note: applicable values depend upon PartyRole (452) specified. N = Legal Entity Identifier (ISO 17442) LEI	New Order Single CancelAndReplace Request Execution Report
448	PartyID	String		Party identifier/code.	New Order Single CancelAndReplace Request Execution Report
452	PartyRole	int		Identifies the type or role of the PartyID (448) specified. 1 = Executing Firm 13 = Order Origination Firm	New Order Single CancelAndReplace Request Execution Report
453	NoPartyIDs	NumInGroup		Number of PartyID (448), PartyIDSource (447), and PartyRole (452) entries	New Order Single CancelAndReplace Request Execution Report
528	OrderCapacity	char		Capacity of Firm placing the IOI or Firm-up. Pass through tag The valid values are: A = Agency P= Principal R= Riskless Principal	New Order Single CancelAndReplace Request Execution Report
769	TrdRegTimestamp	UTCTimestamp		Time the trade occurred at the trading venue.	Execution Report
775	BookingType	int		Method used for booking, used to notify a broker that the IOI or the Firm-up will be settled by that broker and is to be booked out as a Contract for Difference (CFD)	New Order Single Order Cancel Replace Request Order Cancel Request Execution Report
851	LastLiquidityInd	char		Identifies whether a fill is resultant from a firm-up or not. It is a configurable setting, applicable only for for IOIFilled. C = As a result of conditional order execution 8 = As a result of conditional order execution	Execution Report
1903	RegulatoryTradeID	String	20	Uniquely identifies the trade by CXE where the trade was done. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.	Execution Report

Tag	Field Name	Format	Length	Description	Found in msgs
1906	RegulatoryTradeIDType	String		Indicates the type of trade identifier provided in RegulatoryTradeID Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. 5=Trading venue transaction identification	Execution Report
1907	NoRegulatoryTradeIDs	NumInGroup		Number of regulatory IDs in the repeating group. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.	Execution Report
2524	TradeReportingIndicator	int		Used between parties to convey trade reporting status. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2) It is a configurable setting. If appears, it is always set to: 1 = Trade has been reported by a trading venue as an "on-book" trade	Execution Report
2668	NoTrdRegPublications	NumInGroup		Number of regulatory publication rules in repeating group. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If appears, it is always set to 1.	Execution Report
2669	TrdRegPublicationType	int		Specifies the type of regulatory trade publication. Additional reasons for the publication type may be specified in TrdRegPublicationReason(2670). Required if NoTrdRegPublications(2668) > 0. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If appears, it is always set to: 0 = Pre-trade transparency waiver	Execution Report
2670	TrdRegPublicationReason	int		Additional reason for trade publication type specified in TrdRegPublicationType(2669). Reasons may be specific to regulatory trade publication rules. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If appears, it is always set to: 9 = Large in scale	Execution Report

Cboe LIS FIX User Defined Tag Definitions

Tag	Field Name	Format	Length	Description	Found in msgs
8002	BIDSType	char		0 = IOI 1 = Firm-up	New Order Single CancelAndReplaceRequest Execution Report
8003	BIDSInvite	char		Controls whether the presence of the IOI in the system will be advertised to potential counter parties'. 0 = On 2 = Auto Only	New Order Single CancelAndReplaceRequest Execution Report
8005	BIDSIOIState	char		Describes the current condition of the IOI or Firm-up: 1 = Active 4 = Traded 5 = Invited 7 = Cancelled 8 = Inactive 9 = Pending Replace A = Pending Cancel B = Asymmetric Invitation Issued	Execution Report
8006	BIDSTradeDesk	String	12	The trade desk of the owner	Execution Report
8007	BIDSFilterLevel	char		Cboe LIS Filter Level 0 = Normal 1 = Aggressive 2 = Conservative	New Order Single CancelAndReplaceRequest Execution Report
8008	BIDSTradePriority	char		The algorithm to use in determining the best match for the IOI. 0 = Price 1 = Volume	New Order Single CancelAndReplaceRequest Execution Report
8013	TrdRegPublicationReasons **BIDSCreateDate has been deprecated	int		Trade Publication Reason Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting. If it appears, it is always set to: 9 = Large in scale	Execution Report
8016	TradingVenueRegulatoryTradeID	String		Trading Venue Transaction Identification Code. Provided on Fill/Partial Fill (OrdStatus tag 39 = 1 /2). It is a configurable setting.	Execution Report

Tag	Field Name	Format	Length	Description	Found in msgs
8017	BIDSPriceProtection	char		Indicate the trader wish to trade inside EBBO or not 0 = At or Between 1 = Midpoint or better 2 = Primary	New Order Single CancelAndReplaceRequest Execution Report
8019	BIDSEBBPrice	Price		Bid Price	Execution Report
8020	BIDSEBOPrice	Price		Ask Price	Execution Report
8021	BIDSEBBOTimestamp	UTCTimestamp		Time of the EBBO	Execution Report
8023	BIDSLastAction	char		Describes the reason for the last action affecting the IOI or Firm-up. 0 = New 1 = Replace 2 = Cancel 3 = Update 4 = Traded 5 = Expire 6 = Cancelled by Firm 8 = Complete 9 = Pending Trade R = Cancelled after Trade S = Cancelled after Failed Trade	Execution Report
8024	BIDSLastActionTime	UTCTimestamp		Timestamp of the last update to the IOI or Firm-up	Execution Report
8025	BIDSUpdateSeq	int		A counter incremented every time an action is taken	Execution Report
8026	BIDSTradeId	String	9	Uniquely identifies the trade	Execution Report
8027	BIDSTradeSource	char	16	Indicates how the trade originated 0 = Auto	Execution Report
8051	BIDSAutomatchMinVol	Qty		Minimum Match Volume. Will match tag 110 MinQty if provided on inbound.	Execution Report
8065	BIDSFirmUpMode	char		A qualifier indicating how an IOI will be "firmed up" 1 = Auto 2 = Manual (default) Please contact Cboe LIS Support regarding the use of this tag.	New Order Single CancelAndReplace Request ExecutionReport
20001	PartyIDExecutingFirm	String		LEI of Executing Firm.	Execution Report
20013	PartyIDOrderOriginationFirm	String		LEI of Order Origination Firm.	New Order Single CancelAndReplace Request ExecutionReport

Version History

Date	Version	Change Notes
9th August 2016	1.0	First issue
6th October 2016	1.1	Guidance added in section 2 on the Firm-up resting time
12th December 2016	1.2	Added section on Symbology
30th December 2016	1.3	Clarification of Tags - 8002, 15,207,22 and 48
24 April 2017	1.4	Addition of Tags 1903, 1906 and 1907 Updates to lastActionValues Tag 8023
21st September 2017	1.5	Addition of timestamp information Addition of new tags 2668,2669 and 2670 - (LIS Waiver) Addition of new tags 2524 (TradeReportingIndicator) Changes to Last Capacity (tag 29)
15 December 2017	1.6	Addition of LEI (tag 20001) Addition of Party Group (tags 453,448,447 and 452)
19 January 2018	1.7	Addition of Client LEI (tag 20013)
16 February 2018	1.8	Addition of TVTIC (tag 8016) Clarification of tags 1903, 1906 and 1907
13 April 2018	1.9	Update to tag 8013 - changed from BIDSCreateDate to TrdRegPublicationReasons
15 June 2018	1.10	Added 8005 (BIDSOrderState) = B and 20 (ExecTransType) = 3 (Status) to Data Dictionary
12 Oct 2018	1.11	Added tag 769 (TrdRegTimestamp) to Exec Report and Data Dictionary
07 Feb 2019	1.12	Tag 21 updated to not required in NOS and CNR