Cboe Europe

CEDX Binary Order Entry Specification

Version 2.16

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Contents

1 Introduction

1.1 Overview

This document describes Cboe CEDX Binary Order Entry (CEDX BOE), the Cboe Europe (hereafter, "Cboe") proprietary order entry protocol.

Where applicable, the terminology (e.g., time in force) used in this document is similar to that used by the FIX protocol to allow those familiar with FIX to more easily understand CEDX BOE. This document assumes the reader has basic knowledge of the FIX protocol.

CEDX BOE fulfills the following requirements:

- *CPU and memory efficiency.* Message encoding, decoding, and parsing are simpler to code and can be optimized to use less CPU and memory at runtime.

- *Application level simplicity.* State transitions are simple and unambiguous. They are easy to apply to a Participant's representation of an order.

- *Session level simplicity.* The session level protocol (login, sequencing, replay of missed messages, logout) is simple to understand.

Whilst Cboe has strived to preserve feature parity between FIX and CEDX BOE where possible, some features may only be available in one protocol or the other.

All binary values are in little Endian (used by Intel x86 processors), and *not* network byte order.

Each message is identified by a unique message type. Not all message types are used in all of the Cboe trading environments globally. A listing of the supported message types is provided in **List of Message Types** (§ 8, p. 178).

All communication is via standard TCP/IP.

1.2 Data Types

The following data types are used by CEDX BOE. The size of some data types varies by message. All data types have default values of binary zero, in both Participant to Cboe and Cboe to Participant contexts.

- *Binary*: Little Endian byte order, unsigned binary value. The number of bytes used depends on the context.

  - One byte: `FE` $= 254$
  - Four bytes: `64 00 00 00` $= 100$

- *Signed Binary*: Little Endian byte order, signed two's complement, binary value. The number of bytes used depends on the context.

  - One byte: `DF` $= -33$
  - Four bytes: `64 00 00 00` $= +100$

- *Binary Price*: Little Endian byte order value, signed two's complement, eight bytes in size, with four implied decimal places. So, if the value is $123,400$, the actual value taking into account implied decimal places is 12.34.

  - 08 E2 01 00 00 00 00 00 $= 123,400/10000 = 12.34$

  For negative prices, if the value is $-123,400$, the actual value taking into account implied decimal places is -12.34.

  - F8 1D FE FF FF FF FF FF $= -123,400/10000 = -12.34$

- *Short Binary Price*: Little Endian byte order value, signed two's complement, four bytes in size, with four implied decimal places. So, if the value is $12,300$, the actual value taking into account implied decimal places is 1.23.

  - 78 E0 01 00 $= 123,000/10000 = 1.23$

- *Trade Price*: Little Endian byte order value, eight bytes in size, with seven implied decimal places. So, if the value is $123,400,000$, the actual value taking into account implied decimal places is 12.34.

  - 40 EF 5A 07 00 00 00 00 $= 123,400,000/10000000 = 12.34$

- *Signed Binary Fee*: Little Endian byte order value, signed two's complement, eight bytes in size, signed, with five implied decimal places. So, the value $-123,000$ is -1.23 after taking account for the five implied decimal places.

  - 88 1F FE FF FF FF FF FF $= -123,000/100000 = -1.23$

- *Alpha*: Uppercase letters (A–Z) and lowercase letters (a–z) only. ASCII NUL (0x00) filled on the right, if necessary. The number of bytes used depends on the context.

- *Alphanumeric*: Uppercase letters (A–Z), lowercase letters (a–z) and numbers (0–9) only. ASCII NUL (0x00) filled on the right, if necessary.

- *Text*: Printable ASCII characters only. ASCII NUL (0x00) filled on the right, if necessary.

- *DateTime*: 8 bytes. The date and time, in UTC, represented as nanoseconds past the UNIX epoch (00:00:00 UTC on 1 January 1970), encoded as Little Endian. The nanoseconds portion is currently ignored and treated as 0 (i.e. the times are only accurate to microseconds) on input, and will always be set to 0 by Cboe in outgoing messages. However, ==Cboe may begin populating the nanoseconds portion at any time without warning.==

  For example: E0 FA 20 F7 36 71 F8 11 $= 1,294,909,373,757,324,000 =$ 2011-01-13 09:02:53.757324 UTC.

- *Date*: Little Endian byte order, unsigned binary value, 4 bytes in size. The YYYYMMDD expressed as an integer.

1.3   MiFID II notes

MiFID II Short Code Identifier Ranges

Cboe supports six separate ranges of short codes listed below. A range is provided for each valid combination of id and qualified role.

- *ClientID* and *ClientQualifiedRole* = Natural Person (24)

- *ClientID* and *ClientQualifiedRole* = Firm or LEI (23)

- *InvestorID* and *InvestorQualifiedRole* = Natural Person (24)

- *InvestorID* and *InvestorQualifiedRole* = Algorithm (22)

- *ExecutorID* and *ExecutorQualifiedRole* = Natural Person (24)

- *ExecutorID* and *ExecutorQualifiedRole* = Algorithm (22)

Each range is four bytes in length. Participants can use numbers 4 through to 4,294,967,295 as short codes. Values 0, 1, 2 and 3 are reserved.

MiFID II Mandatory Fields

In messages like NEW ORDER V2 and NEW ORDER CROSS, whilst *AlgorithmicIndicator* (for orders only), *Capacity*, *ClientID*, *ClientQualifiedRole*, *ExecutorID*, *ExecutorQualifiedRole*, *InvestorID*, *InvestorQualifiedRole*, *LiquidityProvision* and *OrderOrigination* are optional from a BOE bitfield perspective, correctly providing data associated with these fields may be mandatory from a MiFID II regulatory perspective. Participants should assess which of these fields are required on each order according to the Cboe Rulebook and their MiFID II obligations.

For cross orders in NEW ORDER CROSS and NEW ORDER CROSS MULTILEG, where these fields are required, they need to be specified for each allocation in the cross order.

1.4 Volatility Strategies

A Volatility Strategy is defined as a complex option package with a future leg in the same underlying product.

A Volatility Strategy instrument can be created using the NEW COMPLEX INSTRUMENT message type.

A minimum of two legs must be specified and a maximum of 13 legs will be accepted. Only one future leg is allowed and it must be last leg in the repeating group, all of the remaining legs must be options. *LegPrice* is present on the repeating group, and mandatory for the Futures Leg. It's use on the Options Legs is reserved for future use. It must still be supplied, but will be ignored for now.

Orders for Volatility Strategies must be entered using the NEW COMPLEX ORDER message type.

1.5 Opening Auction Configuration

The Opening Process for Futures and Options will be subject to various checks. The failure of these will prevent a symbol from opening.

1.5.1 Maximum Composite Widths

Maximum Composite Width (MCW) checks are applied to prevent a given series from opening if the best available Composite Market (CM) is too wide. Additionally, it will not open if the CM is crossed.

1.5.2 Opening Collar Widths

Opening Collar Widths (OCW) are applied to ensure that the Opening Price falls within a reasonable distance from the midpoint of the CM. The collar is defined as the midpoint of the CM +/- the OCW.

Options:

Composite Market Bid Price	Max Composite Width	Opening Collar Width
0.00 - 1.99	2.00	2.00
2.00 - 5.00	2.00	2.00
5.01 - 10.00	2.00	2.00
10.01 - 20.00	4.00	4.00
20.01 - 50.00	5.00	5.00
50.01 - 100.00	10.00	10.00
100.01 - 200.00	16.00	16.00
≥ 200.01	24.00	24.00

Futures: Futures OCWs/MCWs will both be set at **10%**, regardless of the value of the Best Bid on the CM.

1.6   Drill Through Protection Configuration

Unless specified by the participant as part of the New Order, Cboe will apply the following default values for Drill-Through Protection:

Simple:

Break Price	Drill-Through Amount
2.00	0.10
5.01	0.25
10.01	0.50
20.01	1.00
50.01	2.50
100.01	5.00
Max	10.00

Complex: For Complex Instruments, we will apply a default 5% drill-through, capped between **0.10** and **10.00**.

1.7   Futures Threshold Widths

Futures Symbols whose spreads have gone too wide will go into a threshold state. As such, any Complex Instruments made up of those symbols, will be halted and resume when the spreads narrow again. This will be configured to **10%**.

1.8   Optional Fields and Bitfields

Some messages such as New Order V2 and New Order Cross have a number of optional fields. A count and number of bitfields in the message specify which optional fields will be present at the end of the message. If a bit is set, the field will be present. Fields are appended to the end of the message. There is no implicit framing between the optional fields. In order to decode the optional fields, they *must* be appended in a particular order to the end of the message. The fields of the first bitfield are appended first, lowest order bit first. Next, the fields of the next bitfield are appended, lowest order bit first. This continues for all bitfields. While certain *reserved* bits within a defined bitfield are used within another Cboe market and will be ignored, bits that are reserved for future expansion must be set to 0 when noted in the bitfield description.

The size, data type, and values for each field are described in **List of Optional Fields** (§ 6, p. 159).

Note that the set of optional fields returned for each Cboe to Participant message type is determined at session login (using the Login Request V2 message); hence, the exact size and layout of each message received by the client application can be known in advance. Any requested optional field which is irrelevant in a particular context will still be present in the returned message, but with all bytes set to binary zero (0x00).

Each return message from Cboe to Participant indicates the optional fields which are present, even though the Participant indicated during login which optional fields are to be sent. The reason for the inclusion (and

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duplication) is so that each message can be interpreted on its own, without having to find the corresponding login request or response to know which optional fields are present. So, for example, in a log file, decoding a message requires only that single message.

Example messages are shown with each message type which should help to make this concept clear.

In the table for optional bitfields per message, the following legend applies:
• Indicates that the field can be requested for a message
— Indicates that the field cannot be requested for a message

2   Session

2.1   Message Headers

Each message has a ten byte header. The two initial *StartOfMessage* bytes are present to aid in message reassembly for network capture purposes. The *MatchingUnit* field is only populated on sequenced non-session level messages sent from Cboe to the Participant. Messages from Participant to Cboe and all session level messages must always set this value to 0.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	Message type.
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH. **For session level traffic, the unit is set to 0.** **For messages from Participant to Cboe, the unit must be 0.**
SequenceNumber	6	4	Binary	The sequence number for this message. Messages from Cboe to Participant are sequenced distinctly per matching unit. Messages from Participant to Cboe are sequenced across all matching units with a single sequence stream. Participant can optionally send a 0 sequence number on all messages from Participant to Cboe. Cboe highly recommends Participant to send sequence number on all inbound messages.

2.2   Login, Replay and Sequencing

Session level messages, both inbound (Participant to Cboe) and outbound (Cboe to Participant) are unsequenced.

Inbound (Participant to Cboe) application messages are sequenced. Upon reconnection, Cboe informs the Participant of the last processed sequence number; the Participant *may* choose to resend any messages with sequence numbers greater than this value. A gap forward in the Participant's incoming sequence number is permitted at any time and is ignored by Cboe. Gaps backward in sequence number (including the same sequence number used twice) are never permitted and will always result in a Logout message being sent and the connection being dropped.

Most (but not all) outbound (Cboe to Participant) application messages are monotonically sequenced per matching unit. Each message's documentation will indicate whether it is sequenced or unsequenced. While matching units on CEDX BOE correspond directly to matching units on Multicast PITCH, sequence numbers do not.

Upon reconnection, a Participant sends the last received sequence number per matching unit in a Login Request V2 message. Cboe will respond with any missed messages. However, when the Login Request V2 *NoUnspecifiedUnitReplay* flag is enabled, Cboe will exclude messages from unspecified matching units during replay. Cboe will send a Replay Complete message when replay is finished. If there are no messages to replay,

a REPLAY COMPLETE message will be sent immediately after a LOGIN RESPONSE V2 message. Cboe will reject all orders during replay.

Assuming Participant has requested replay messages using a properly formatted LOGIN REQUEST V2 after a disconnect, any unacknowledged orders remaining with the Participant after the REPLAY COMPLETE message is received should be assumed to be unknown to Cboe. Unsequenced messages will not be included during replay.

A session is identified by the username and session sub-identifier (both supplied by Cboe). Only one concurrent connection per username and session sub-identifier is permitted.

If a login is rejected, an appropriate LOGIN RESPONSE V2 message will be sent and the connection will be terminated.

2.3 Sequence Reset

A reset sequence operation is not available for Binary Order Entry. However, a Participant can send a LOGIN REQUEST message with *NoUnspecifiedUnitReplay* field enabled, and *NumberOfUnits* field set to zero. Then, upon receiving a LOGIN RESPONSE V2 message from Cboe, the Participant can use the field *LastReceivedSequenceNumber* as the sequence starting point for sending future messages.

2.4 Heartbeats

CLIENT HEARTBEAT messages are sent from Participant to Cboe and SERVER HEARTBEAT messages are sent from Cboe to Participant if no other data has been sent in that direction for one second. Like other session level messages, heartbeats from Cboe to the Participant do *not* increment the sequence number. If Cboe receives no inbound data or heartbeats for five seconds, a LOGOUT message will be sent and the connection will be terminated. **Participants are encouraged to have a one second heartbeat interval and to perform similar connection staleness logic.**

2.5 Logging Out

To gracefully log out of a session, a LOGOUT REQUEST message should be sent by the Participant. Cboe will finish sending any queued data for that port and will then respond with its own LOGOUT message and close the connection. After receipt of a LOGOUT REQUEST message, Cboe will ignore all other inbound (Participant to Cboe) messages except for CLIENT HEARTBEAT.

3 Session Messages

3.1 Participant to Cboe

3.1.1 Login Request V2

A LOGIN REQUEST V2 message must be sent as the first message upon connection.

A number of repeating parameter groups, some of which may be required, are sent at the end of the message. Ordering of parameter groups is not important. New parameter groups may be added in the future with no notice.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x37
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.
SessionSubID	10	4	Alphanumeric	Session Sub ID supplied by Cboe.
Username	14	4	Alphanumeric	Username supplied by Cboe.
Password	18	10	Alphanumeric	Password supplied by Cboe.
NumberOfParam Groups	28	1	Binary	A number, n (possibly 0), of parameter groups to follow.
ParamGroup$_1$				First parameter group.
⋮				
ParamGroup$_n$				Last parameter group.

Unit Sequences Parameter Group

This parameter group includes the last consumed sequence number per matching unit received by the Participant. Cboe uses these sequence numbers to determine what outbound (Cboe to Participant) traffic, if any, was missed by the Participant. If this parameter group is not sent, it's assumed the Participant has not received any messages (e.g., start of day).

The Participant does *not* need to include a sequence number for a unit if they have never received messages from it. For example, if the Participant has received responses from units 1, 3, and 4, the LOGIN REQUEST V2 message need not include unit 2. If the Participant wishes to send a value for unit 2 anyway, 0 would be the only allowed value.

Only one instance of this parameter group may be included.

Field	Offset	Length	Data Type	Description
ParamGroupLength	0	2	Binary	Number of bytes for the parameter group, including this field.
ParamGroupType	2	1	Binary	0x80
NoUnspecified UnitReplay	3	1	Binary	Flag indicating whether to replay missed outgoing (Cboe to Participant) messages for unspecified units. 0x00 = False (Replay Unspecified Units) 0x01 = True (Suppress Unspecified Units Replay)

Field	Offset	Length	Data Type	Description
NumberOfUnits	4	1	Binary	A number, n (possibly 0), of unit/sequence pairs to follow, one per unit from which the Participant has received messages.
UnitNumber$_1$		1	Binary	A unit number.
UnitSequence$_1$		4	Binary	Last received sequence number for the unit.
$\vdots$				
UnitNumber$_n$		1	Binary	A unit number.
UnitSequence$_n$		4	Binary	Last received sequence number for the unit.

Return Bitfields Parameter Group

This parameter group, which may be repeated, indicates which attributes of a message will be returned by Cboe for the remainder of the session. This allows Participants to tailor the echoed results to the needs of their system without paying for bandwidth or processing they do not need.

Listing of the return bitfields which are permitted per message is contained in **Return Bitfields Per Message** (§ 5, p. 101).

Field	Offset	Length	Data Type	Description
ParamGroupLength	0	2	Binary	Number of bytes for the parameter group, including this field.
ParamGroupType	2	1	Binary	0x81
MessageType	3	1	Binary	Return message type for which the bitfields are being specified (e.g., 0x25 for an ORDER ACKNOWLEDGMENT V2 message)
NumberOfReturn Bitfields	4	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	5	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.

Example Login Request V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	43 00	67 bytes
MessageType	37	Login Request V2
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	00 00 00 00	Always 0 for session level messages
SessionSubID	30 30 30 31	0001
Username	54 45 53 54	TEST
Password	54 45 53 54 49 4E 47 00 00 00	TESTING
NumberOfParam Groups	03	3 parameter groups
ParamGroupLength	14 00	20 bytes for this parameter group
ParamGroupType	80	0x80 = Unit Sequences
NoUnspecified UnitReplay	01	True (replay only specified units)
NumberOfUnits	03	Three unit/sequence pairs to follow;
$UnitNumber_1$	01	Unit 1
$UnitSequence_1$	4A BB 01 00	Last received sequence of 113,482
$UnitNumber_2$	02	Unit 2
$UnitSequence_2$	00 00 00 00	Last received sequence of 0
$UnitNumber_3$	04	Unit 4
$UnitSequence_3$	79 A1 00 00	Last received sequence of 41,337
ParamGroupLength	08 00	8 bytes for this parameter group
ParamGroupType	81	0x81 = Return Bitfields
MessageType	25	0x25 = Order Acknowledgment V2
NumberOfReturn Bitfields	03	3 bitfields to follow
$ReturnBitfield_1$	00	No bitfields from byte 1
$ReturnBitfield_2$	41	Symbol, Capacity
$ReturnBitfield_3$	05	Account, ClearingAccount
ParamGroupLength	0C 00	12 bytes for this parameter group
ParamGroupType	81	0x81 = Return Bitfields
MessageType	2C	0x2C = Order Execution V2
NumberOfReturn Bitfields	07	7 bitfields to follow
$ReturnBitfield_1$	00	No bitfields from byte 1
$ReturnBitfield_2$	41	Symbol, Capacity
$ReturnBitfield_3$	07	Account, ClearingFirm, ClearingAccount
$ReturnBitfield_4$	00	No bitfields from byte 4
$ReturnBitfield_5$	40	BaseLiquidityIndicator
$ReturnBitfield_6$	00	No bitfields from byte 6
$ReturnBitfield_7$	01	SubLiquidityIndicator

3.1.2 Logout Request

To end the session, the Participant should send a LOGOUT REQUEST message. Cboe will finish sending any queued data and finally respond with a LOGOUT message and close the connection.

A Participant may simply close the connection without logging out, but may lose any queued messages by doing so.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x02
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Example Logout Request Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	08 00	8 bytes
MessageType	02	Logout Request
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	00 00 00 00	Always 0 for session level messages

3.1.3 Client Heartbeat

See **Heartbeats** (§ 2.4, p. 11) for more information about heartbeats and the session level protocol.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x03
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Example Client Heartbeat Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	08 00	8 bytes
MessageType	03	Client Heartbeat
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	00 00 00 00	Always 0 for session level messages

3.2 Cboe to Participant

3.2.1 Login Response V2

A LOGIN RESPONSE V2 message is sent in response to a LOGIN REQUEST V2 message. On a successful login, the *LoginResponseStatus* will be set to A. On a failed login, *LoginResponseStatus* will be set to a value other than A, and *LoginResponseText* will be set to an appropriate failure description.

Cboe will verify Return Bitfields at login time. If the Return Bitfields in a Return Bitfields Parameter Group are invalid, *LoginResponseStatus* will be set to F, and *LoginResponseText* will include a description of which byte and bit are invalid. This is done to ensure that reserved fields are not used, and only options that apply to the local market are set. See **Return Bitfields Per Message** (§ 5, p. 101) for additional information.

Note that two sets of sequence numbers are available on the LOGIN RESPONSE V2. The set of sequence numbers in the body are the actual Cboe to Participant sequence numbers indicating the highest sequence numbers available per matching unit. If specified during login, the Unit Sequences Parameter Group will also be returned which is an echo of the sequence numbers the Participant presented during login as the highest received. If these are different, it indicates a gap which will be filled by Cboe.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x24
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.
LoginResponse Status	10	1	Alphanumeric	Accepted, or the reason for the rejection. A = Login Accepted N = Not authorized (invalid username/password) D = Session is disabled B = Session in use S = Invalid session Q = Sequence ahead in Login message I = Invalid unit given in Login message F = Invalid return bitfield in login message M = Invalid Login Request message structure
LoginResponse Text	11	60	Text	Human-readable text with additional information about the reason for rejection. For successful logins, this is empty. ASCII NUL (0x00) filled on the right, if necessary.
NoUnspecified UnitReplay	71	1	Binary	Echoed back from the original LOGIN REQUEST V2 message.
LastReceived SequenceNumber	72	4	Binary	Last inbound (Participant to Cboe) message sequence number processed by Cboe.
NumberOfUnits	76	1	Binary	A number, n, of unit/sequence pairs to follow, one per unit. A pair for every unit will be sent, even if no messages have been sent to this port today. For unsuccessful logins, this will be 0.
UnitNumber$_1$		1	Binary	A unit number.
UnitSequence$_1$		4	Binary	Highest available Cboe to Participant sequence number for the unit.
$\vdots$				

UnitNumber$_n$		1	Binary	A unit number.
UnitSequence$_n$		4	Binary	Highest available Cboe to Participant sequence number for the unit.
NumberOfParam Groups		1	Binary	Echoed back from the original LOGIN REQUEST V2 message.
ParamGroup$_1$				Echoed back from the original LOGIN REQUEST V2 message.
$\vdots$				
ParamGroup$_n$				Echoed back from the original LOGIN REQUEST V2 message.

Example Login Response V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	88 00	136 bytes
MessageType	24	Login Response V2
MatchingUnit	00	Always 0 for session messages
SequenceNumber	00 00 00 00	Always 0 for session level messages
LoginResponseStatus	41	`A` = Login Accepted
LoginResponseText	41 63 63 65 70 74 65 64 00 00	`Accepted`
	00 00 00 00 00 00 00 00 00 00	(padding)
	00 00 00 00 00 00 00 00 00 00	(padding)
	00 00 00 00 00 00 00 00 00 00	(padding)
	00 00 00 00 00 00 00 00 00 00	(padding)
	00 00 00 00 00 00 00 00 00 00	(padding)
NoUnspecified UnitReplay	01	True (replay only specified units)
Last Received Sequence Number	54 4A 02 00	Last sequence Cboe received of 150,100
NumberOfUnits	04	Four unit/sequence pairs to follow.
UnitNumber$_1$	01	Unit 1
UnitSequence$_1$	4A BB 01 00	Actual last sequence of 113,482
UnitNumber$_2$	02	Unit 2
UnitSequence$_2$	00 00 00 00	Actual last sequence of 0
UnitNumber$_3$	03	Unit 3
UnitSequence$_3$	00 00 00 00	Actual last sequence of 0
UnitNumber$_4$	04	Unit 4
UnitSequence$_4$	79 A1 00 00	Actual last sequence of 41,337
NumberOfParam Groups	03	3 parameter groups
ParamGroupLength	14 00	20 bytes for this parameter group
ParamGroupType	80	0x80 = Unit Sequences
NoUnspecified UnitReplay	01	True (replay unspecified units)
NumberOfUnits	03	Three unit/sequence pairs to follow
UnitNumber$_1$	01	Unit 1
UnitSequence$_1$	4A BB 01 00	Last received sequence of 113,482
UnitNumber$_2$	02	Unit 2
UnitSequence$_2$	00 00 00 00	Last received sequence of 0
UnitNumber$_3$	04	Unit 4
UnitSequence$_3$	79 A1 00 00	Last received sequence of 41,337
ParamGroupLength	08 00	8 bytes for this parameter group

ParamGroupType	81	0x81 = Return Bitfields
MessageType	25	0x25 = Order Acknowledgment V2
NumberOfReturn Bitfields	03	3 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	*Symbol, Capacity*
ReturnBitfield$_3$	05	*Account, ClearingAccount*
ParamGroupLength	0C 00	12 bytes for this parameter group
ParamGroupType	81	0x81 = Return Bitfields
MessageType	2C	0x2C = Order Execution V2
NumberOfReturn Bitfields	07	7 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	*Symbol, Capacity*
ReturnBitfield$_3$	07	*Account, ClearingFirm, ClearingAccount*
ReturnBitfield$_4$	00	No bitfields from byte 4
ReturnBitfield$_5$	40	*BaseLiquidityIndicator*
ReturnBitfield$_6$	00	No bitfields from byte 6
ReturnBitfield$_7$	01	*SubLiquidityIndicator*

3.2.2 Logout

A LOGOUT is usually sent in response to a LOGOUT REQUEST. Any queued data is transmitted, a LOGOUT is sent, and Cboe will close the connection. However, a LOGOUT may also be sent if the Participant violates the protocol specification (e.g., by moving backwards in sequence number).

The LOGOUT contains the last transmitted sequence number for each unit, allowing the Participant to check that their last received sequence number matches.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x08
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.
LogoutReason	10	1	Alphanumeric	The reason why the LOGOUT message was sent. U = User Requested E = End of Day A = Administrative ! = Protocol Violation
LogoutReason Text	11	60	Text	Human-readable text with additional information about the reason for logout. Particularly useful if *LogoutReason* = ! (Protocol Violation).
LastReceived SequenceNumber	71	4	Binary	Last inbound (Participant to Cboe) message sequence number processed by Cboe.
NumberOfUnits	75	1	Binary	A number, n (possibly 0), of unit/sequence pairs to follow, one per unit from which the client has received messages.
UnitNumber$_1$		1	Binary	A unit number.
UnitSequence$_1$		4	Binary	Highest available sequence number for the unit.

$\vdots$				
$UnitNumber_n$		1	Binary	A unit number.
$UnitSequence_n$		4	Binary	Highest available sequence number for the unit.

Example Logout Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	55 00	85 bytes
MessageType	08	Logout
MatchingUnit	00	Always 0 for session level messages
SequenceNumber	00 00 00 00	Always 0 for session level messages
LogoutReason	55	U = User Requested
LogoutReason	55 73 65 72 00 00 00 00 00 00	User
Text	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
LastReceived SequenceNumber	54 5A 02 00	Last Cboe received sequence of 150,100
NumberOfUnits	03	Three unit/sequence pairs to follow.
$UnitNumber_1$	01	Unit 1
$UnitSequence_1$	4A BB 01 00	Last sent sequence of 113,482
$UnitNumber_2$	02	Unit 2
$UnitSequence_2$	00 00 00 00	Last sent sequence of 0
$UnitNumber_3$	04	Unit 4
$UnitSequence_3$	79 A1 00 00	Last sent sequence of 41,337

3.2.3 Server Heartbeat

See **Heartbeats** (§ 2.4, p. 11) for more information about heartbeats and the session level protocol.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x09
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Example Server Heartbeat Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	08 00	8 bytes
MessageType	09	Server Heartbeat
MatchingUnit	00	Always 0 for session level messages
SequenceNumber	00 00 00 00	Always 0 for session level messages

3.2.4 Replay Complete

See **Login, Replay and Sequencing** (§ 2.2, p. 10) for more information on Login, sequencing and replay.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x13`
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Example Replay Complete Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	08 00	8 bytes
MessageType	13	Replay Complete
MatchingUnit	00	Always 0 for session level messages
SequenceNumber	00 00 00 00	Always 0 for session level messages

4 Application Messages

4.1 Participant to Cboe

4.1.1 New Order V2

A NEW ORDER V2 message consists of a number of required fields followed by a number of optional fields. The optional fields used are specified by setting bits in the *NewOrderBitfields*. Fields must be appended at the end of the message, starting with the lowest order enabled bit in the first bitfield first.

This message should be used when submitting a single-leg order for standard listed options, or an order for simple futures instrument. Complex options or spread futures order must use NEW COMPLEX ORDER.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x38
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
ClOrdID	10	20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (~) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**
Side	30	1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1 = Buy 2 = Sell
OrderQty	31	4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 contracts.
NumberOf NewOrder Bitfields	35	1	Binary	Bitfield identifying which bitfields are set. Field values must be appended to the end of the message.
NewOrderBitfield$_1$	36	1	Binary	Bitfield identifying fields to follow.
⋮				
NewOrderBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Required Order Attributes:

The following are required to be sent on new orders:

- some form of symbology (see **Symbology** below); and,

- a *Price* only (limit orders) or a *Price* and/or *OrdType* (limit, or market orders.)

- CustOrderHandlingInst

- AccountType

All price fields (*Price*, *StopPx*) must be entered as non-negative values.

All other values have defaults. See the table in **List of Optional Fields** (§ 6, p. 159) for additional information about each optional field, including its default value.

Symbology:

Cboe accepts two symbologies: Cboe Symbology, and ISIN. Different symbologies may be used on different orders, but it is recommended that Participants use the same symbology for all orders.

If using Cboe Symbology to identify an instrument, the Participant:

- **must** set *Symbol* to the Cboe Symbology symbol.

If using ISIN to identify an instrument, the Participant:

- **must** set *IDSource* to ISIN (4);
- **must** set *SecurityID* to the ISIN;
- *may optionally* set the *Symbol* to the Cboe Symbology symbol or to the *SecurityID*.

When specifying an optional value as noted above, the value specified must match the value in Cboe symbol database. Otherwise, the order will be rejected.

See **MiFID II Notes** (§ 1.3, p. 6) for MiFID II-related required fields.

Example New Order V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	4F 00	79 bytes
MessageType	38	New Order V2
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
ClOrdID	41 42 43 31 32 33 00 00 00 00	`ABC123`
	00 00 00 00 00 00 00 00 00 00	
Side	31	Buy
OrderQty	E8 03 00 00	1,000 contracts
NumberOfNewOrder Bitfields	09	9 bitfields to follow
NewOrderBitfield1	04	*Price*
NewOrderBitfield2	41	*Symbol*, *Capacity*
NewOrderBitfield3	01	*Account*
NewOrderBitfield4	10	*OpenClose*
NewOrderBitfield5	00	No bitfields from byte 5
NewOrderBitfield6	00	No bitfields from byte 6
NewOrderBitfield7	00	No bitfields from byte 7
NewOrderBitfield8	00	No bitfields from byte 8
NewOrderBitfield9	30	*CustOrderHandlingInst*, *AccountType*
Price	44 D6 12 00 00 00 00 00	`123.4500`

Symbol	56 31 32 38 41 00 00 00	V128A
Capacity	41	A = Agency
Account	44 45 46 47 00 00 00 00 00 00 00 00 00 00 00 00	DEFG
OpenClose	4F	O = Open
CustOrderHandlingInst	59	Y = Electronic
AccountType	31	1 = Customer

Input bitfields:

Byte	Bit	Field	
1	1	*ClearingFirm*	●
	2	*ClearingAccount*	●
	4	*Price*	●
	8	*ExecInst*	−
	16	*OrdType*	●
	32	*TimeInForce*	●
	64	*MinQty*	●
	128	*MaxFloor*	−
2	1	*Symbol*	●
	2	*SymbolSfx*	−
	4	*Currency*	−
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	−
	64	*Capacity*	●
	128	*RoutingInst*	−
3	1	*Account*	●
	2	*DisplayIndicator*	−
	4	*MaxRemovePct*	−
	8	*DiscretionAmount*	−
	16	*PegDifference*	−
	32	*PreventMatch*	●
	64	*LocateRequired*	−
	128	*ExpireTime*	●
4	1	*MaturityDate*	−
	2	*StrikePrice*	−
	4	*PutOrCall*	−
	8	*RiskReset*	●
	16	*OpenClose*	●
	32	*CMTANumber*	−
	64	*TargetPartyID*	−
	128	*LiquidityProvision*	●
5	1	*Reserved*	−
	2	*AttributedQuote*	−
	4	*BookingType*	−
	8	*ExtExecInst*	−
	16	*ClientID*	●
	32	*InvestorID*	●
	64	*ExecutorID*	●
	128	*OrderOrigination*	●

continued. . .

Byte	Bit	Field	
6	1	*DisplayRange*	–
	2	*StopPx*	●
	4	*RoutStrategy*	–
	8	*RouteDeliveryMethod*	–
	16	*ExDestination*	–
	32	*EchoText*	–
	64	*AuctionId*	●
	128	*RoutingFirmID*	–
7	1	*AlgorithmicIndicator*	●
	2	*CustomGroupId*	●
	4	*ClientQualifiedRole*	●
	8	*InvestorQualifiedRole*	●
	16	*ExecutorQualifiedRole*	●
	32	*CtiCode*	–
	64	*ManualOrderIndicator*	–
	128	*OperatorId*	–
8	1	*QuoteRoomID*	–
	2	*SIIndicator*	–
	4	*ClearingOptionalData*	–
	8	*ClientIdAttr*	–
	16	*FrequentTraderID*	–
	32	*Compression*	–
	64	*FloorDestination*	–
	128	*FloorRoutingInst*	–
9	1	*OrderOrigin*	–
	2	*ORS*	–
	4	*PriceType*	–
	8	*TradingSessionId*	–
	16	*CustOrderHandlingInst*	●
	32	*AccountType*	●
	64	*CrossTradeFlag*	–
	128	*DrillThruProtection*	●

4.1.2 New Order Cross (Options only)

A NEW ORDER CROSS message contains the details for both the agency (initiating) and contra side(s) of a cross order (such as an AIM order). The message consists of a number of required fields including Symbol, Price, OrderQty, and relevant clearing information for all parties, as well as a number of optional fields.

The first order in the list is the agency order, while the rest are contra side responses. There is a maximum of ten (10) contra-parties that can be supplied with the order, for a total of eleven (11) repeating groups, as described below.

In each repeating group, the *Side*, *AllocQty*, *ClOrdID*, *Capacity*, and *ClearingFirm* are always required. Beyond that, the bits in the *NewOrderCrossBitfields* control which fields are expected. Any fields that are specified in *NewOrderCrossBitfields* that appear in the repeating groups should not be supplied in the optional fields that come after the repeating groups.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.

MessageType	4	1	Binary	0x7A
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
CrossID	10	20	Text	Corresponds to *CrossID* (548) in Cboe FIX. Day-unique identifier for the cross order chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe.
CrossType	30	1	Alphanumeric	Corresponds to *CrossType* (549) in Cboe FIX. Type of auction order being submitted. This indicates the type of auction that will be initiated upon order entry. 1 = Automated Improvement Mechanism (AIM)
CrossPrioritization	31	1	Alphanumeric	Corresponds to *CrossPrioritization* (550) in Cboe FIX. Indicates which side of the cross order will be prioritized for execution. This identifies the Agency side. 1 = Buy 2 = Sell
Price	32	8	Binary Price	Corresponds to *Price* (44) in Cboe FIX. Auction price.
OrderQty	40	4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 contracts.
NumberOf NewOrderCross Bitfields	44	1	Binary	Bitfield identifying bitfields which are set.
NewOrderCross Bitfield$_1$	45	1	Binary	Bitfield identifying fields to follow.
$\vdots$				
NewOrderCross Bitfield$_n$		1	Binary	Last bitfield.
GroupCnt		2	Binary	Number of order allocations represented by repeating groups included in this cross order. Must be at least 2 (One agency and one contra), and no more than 11.
Repeating Groups of...				
Side		1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1 = Buy 2 = Sell
AllocQty		4	Binary	Corresponds to *AllocQty* (80) in Cboe FIX. Number of contracts for this party.

ClOrdID		20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX.
				Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (˜) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId.
				If the ClOrdID matches a live order, the order will be rejected as duplicate.
				Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.
Capacity		1	Alpha	Corresponds to *OrderCapacity* (47) in Cboe FIX. A = Agency (maps to 'AOTC') P = Principal (maps to 'DEAL') R = Riskless Principal (maps to 'MTCH')
ClearingFirm		4	Alpha	Corresponds to *ClearingFirm* (439) in Cboe FIX. Firm that will clear this allocation.
AccountType		1	Alphanumeric	Corresponds to *AccountType* (581) in Cboe FIX. Indicates type of account associated with the order. 1 = Account is carried on customer side of the books. 3 = House Trader
Account (Optional)		16	Text	See **List of Optional Fields** (§ 6, p. 159).
ClearingAccount (Optional)		4	Text	See **List of Optional Fields** (§ 6, p. 159).
OpenClose (Optional)		1	Alphanumeric	See **List of Optional Fields** (§ 6, p. 159).
CustOrder HandlingInst (Optional)		1	Alpha	See **List of Optional Fields** (§ 6, p. 159).
Order Origination (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
Algorithmic Indicator (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
ClientID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Client QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
InvestorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).

Investor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
ExecutorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Executor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
Optional fields. . .				

Required Order Attributes:

The following are required to be sent on new orders:

- Some form of symbology (see **Symbology** below)
- Agency order's *Side* must match the cross order's *CrossPrioritization*
- Each contra-party allocation must have the opposite *Side*
- Each side's cumulative *AllocQty* must equal the cross order's *OrderQty*
- CustOrderHandlingInst on each allocation.

Symbology: Cboe accepts two symbologies: Cboe Symbology, and ISIN. Different symbologies may be used on different orders, but it is recommended that Participants use the same symbology for all orders.

If using Cboe Symbology to identify an instrument, the Participant:

- **must** set *Symbol* to the Cboe Symbology symbol.

If using ISIN to identify an instrument, the Participant:

- **must** set *IDSource* to ISIN (4);
- **must** set *SecurityID* to the ISIN;
- *may optionally* set the *Symbol* to the Cboe Symbology symbol or to the *SecurityID*.

When specifying an optional value as noted above, the value specified must match the value in Cboe symbol database. Otherwise, the order will be rejected.

See **MiFID II Notes** (§ 1.3, p. 6) for MiFID II-related required fields.

Example New Order Cross Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	A7 00	167 bytes
MessageType	7A	New Order Cross
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
CrossID	4E 5A 31 56 37 42 4A 31 41 63 63 65 70 74 42 75 79 00 00 00	NZ1V7BJ1AcceptBuy
CrossType	31	1 = AIM Order
CrossPrioritization	31	1 = Agency Buy
Price	20 4E 00 00 00 00 00 00	2.00
OrderQty	64 00 00 00	100 contracts
NumberOf NewOrderCross Bitfields	03	3 bitfields to follow
NewOrderCrossBitfield$_1$	09	*Symbol*, *CustOrderHandlingInst*

NewOrderCrossBitfield$_2$	20	*ClearingAccount*
NewOrderCrossBitfield$_3$	10	*OpenClose*
GroupCnt	03 00	3 repeating groups to follow
Side	31	1 = Buy
AllocQty	64 00 00 00	100 contracts
ClOrdID	51 4C 37 53 5A 37 43 31 61 67	QL7SZ7C1agency
	65 6E 63 79 00 00 00 00 00 00	
Capacity	41	A = Agency
ClearingFirm	44 45 46 47	DEFG
AccountType	31	1 = Customer
ClearingAccount	00 00 00 00	No *ClearingAccount* for this order
OpenClose	43	C = Close
CustOrderHandlingInst	59	Y = Electronic
Side	32	2 = Sell
AllocQty	28 00 00 00	40 contracts
ClOrdID	51 4C 39 4B 38 55 56 31 63 6F	QL9K8UV1contra1
	6E 74 72 61 31 00 00 00 00 00	
Capacity	50	P = Principal
ClearingFirm	41 42 43 44	ABCD
AccountType	33	3 = House Trader
ClearingAccount	57 58 59 5A	WXYZ
OpenClose	4F	O = Open
CustOrderHandlingInst	59	Y = Electronic
Side	32	2 = Sell
AllocQty	3C 00 00 00	60 contracts
ClOrdID	51 4C 39 54 35 59 44 31 63 6F	QL9T5YD1contra2
	6E 74 72 61 32 00 00 00 00 00	
Capacity	50	P = Principal
ClearingFirm	41 42 43 44	ABCD
AccountType	33	3 = House Trader
ClearingAccount	57 58 59 5A	WXYZ
OpenClose	4F	O = Open
CustOrderHandlingInst	59	Y = Electronic
Symbol	30 30 51 30 6B 41 00 00	00Q0kA

Input bitfields:

Byte	Bit	Field	
1	1	*Symbol*	●
	2	*IdSource*	●
	4	*SecurityId*	●
	8	*CustOrderHandlingInst*	●
	16	*LiquidityProvision*	●
	32	*OrderOrigination*	●
	64	*AlgorithmicIndicator*	●
	128	*PreventMatch*	●
2	1	*AutoMatch*	●
	2	*AutoMatchPrice*	●
	4	*LastPriority*	●
	8	*Account*	●
	16	*Reserved*	–
	32	*ClearingAccount*	●
	64	*ClientID*	●
	128	*ClientQualifiedRole*	●
3	1	*InvestorID*	●
	2	*InvestorQualifiedRole*	●
	4	*ExecutorID*	●
	8	*ExecutorQualifiedRole*	●
	16	*OpenClose*	●
	32	*DrillThruProtection*	●
	64	*Reserved*	–
	128	*Reserved*	–

4.1.3 New Complex Order

A NEW COMPLEX ORDER message contains the details required to enter an order on a complex instrument. A complex instrument can be a spread futures predefined by Cboe or a complex option created with previously entered NEW COMPLEX INSTRUMENT request. The message is similar to a NEW ORDER with an additional repeating group of the positions for each leg. The positions must be in the order predefined by Cboe in the case of a predefined spread futures, or in the case of complex options, the order returned by the system in the COMPLEX INSTRUMENT ACCEPTED response message, not the order supplied in the NEW COMPLEX INSTRUMENT request.

Complex orders in cross product spreads where the products do not operate on the same matching unit cannot leg into the simple book.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x4B
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.

ClOrdID	10	20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (~) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**
Side	30	1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1 = Buy 2 = Sell
OrderQty	31	4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 contracts.
NumberOf NewComplexOrder Bitfields	35	1	Binary	Bitfield identifying which bitfields are set. Field values must be appended to the end of the message.
NewComplexOrder Bitfield$_1$	36	1	Binary	Bitfield identifying fields to follow.
$\vdots$				
NewComplexOrder Bitfield$_n$		1	Binary	Last bitfield.
NoLegs		1	Binary	Corresponds to *NoLegs* (555) in Cboe FIX. Indicates the number of repeating groups to follow. Must be a minimum of 2 and a maximum of 13. However, for orders with *AccountType* value of 3 (House Trader), it is possible to specify 0 here. In that case, the repeating group *ComplexLegOrderInfo* should not follow, and the *LegPositionEffect* is defaulted to None ("N") for each leg.

Repeating Group *ComplexLegOrderInfo* must occur the number of times specified in *NoLegs*. Each field occurs in each group, in order as shown below. Optional fields occur only if corresponding bits in bitfields are set.				
	LegPositionEffect	1	Alphanumeric	Corresponds to *LegPositionEffect* (564) in Cboe FIX. Indicates status of client position in option for this leg. O = Open C = Close N = None Orders must specify *LegPositionEffect*. However, orders with *AccountType* value of 3 (House Trader) may specify a value of "N" for each leg. For House Trader, this repeating group is only needed if a non-zero value of *NoLegs* is used.
Optional fields...				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

Required Order Attributes:

The following attributes are required to be sent:

- *Symbol*

- *Price* only (limit orders) or *Price* and/or *OrdType* (limit or market orders);

- *Capacity*;

- *AccountType*; and,

- *CustOrderHandlingInst*

All other values have defaults. See the table in **List of Optional Fields** (§ 6, p. 159) for additional information about each optional field, including its default value.

Example New Complex Order Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	50 00	80 bytes
MessageType	4B	New Complex Order
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
Side	31	Buy
OrderQty	64 00 00 00	100
NumberOfNewComplex OrderBitfields	07	7 bitfields to follow
NewComplexOrder Bitfield$_1$	64	*Price*, *Symbol*, *Capacity*

NewComplexOrder Bitfield₂	01	*Account*
NewComplexOrder Bitfield₃	00	No bitfields from byte 3
NewComplexOrder Bitfield₄	00	No bitfields from byte 4
NewComplexOrder Bitfield₅	00	No bitfields from byte 5
NewComplexOrder Bitfield₆	00	No bitfields from byte 6
NewComplexOrder Bitfield₇	30	*CustOrderHandlingInst, AccountType*
NoLegs	03	3 legs
LegPositionEffect	4F	O = Open
LegPositionEffect	4F	O = Open
LegPositionEffect	4F	O = Open
Price	38 FF FF FF FF FF FF FF	-0.02
Symbol	00 00 00 00 00 43 31 00	0000C1
Capacity	41	A = Agency
Account	44 45 46 47 00 00 00 00 00 00 00 00 00 00 00	DEFG
CustOrderHandlingInst	59	Y = Electronic
AccountType	31	1 = Customer

Input bitfields:

Byte	Bit	Field	
1	1	*ClearingFirm*	●
	2	*ClearingAccount*	●
	4	*Price*	●
	8	*OrdType*	●
	16	*TimeInForce*	●
	32	*Symbol*	●
	64	*Capacity*	●
	128	*RoutingInst*	●
2	1	*Account*	●
	2	*PreventMatch*	●
	4	*ExpireTime*	●
	8	*CMTANumber*	−
	16	*TargetPartyID*	−
	32	*AttributedQuote*	−
	64	*EchoText*	−
	128	*AuctionId*	●
3	1	*RoutingFirmID*	−
	2	*DrillThruProtection*	●
	4	*RiskReset*	●
	8	*CustomGroupId*	●
	16	*LegSide*	−
	32	*EquityPartyId*	−
	64	*Reserved*	−
	128	*ClearingOptionData*	−
4	1	*ClientIDAttr*	−
	2	*FrequentTraderID*	−
	4	*SessionEligibility*	−
	8	*MaxFloor*	−
	16	*DisplayRange*	−
	32	*ComboOrder*	−
	64	*Compression*	−
	128	*EquityExDestination*	−
5	1	*EquityLegShortSell*	−
	2	*FloorDestination*	−
	4	*FloorRoutingInst*	−
	8	*MultiClassSprd*	−
	16	*OrderOrigin*	−
	32	*ORS*	−
	64	*PriceType*	−
	128	*StrategyId*	−
6	1	*Reserved*	−
	2	*ExecInst*	−
	4	*TiedHedge*	−
	8	*LiquidityProvision*	●
	16	*OrderOrigination*	●
	32	*AlgorithmicIndicator*	●
	64	*ClientID*	●
	128	*ClientQualifiedRole*	●

continued...

Byte	Bit	Field	
	1	*InvestorID*	•
	2	*InvestorQualifiedRole*	•
	4	*ExecutorID*	•
	8	*ExecutorQualifiedRole*	•
7	16	*CustOrderHandlingInst*	•
	32	*AccountType*	•
	64	*DisplayIndicator*	•
	128	*Reserved*	–

4.1.4 New Order Cross Multileg (Options only)

A NEW ORDER CROSS MULTILEG message contains the details for both the agency (initiating) and contra side(s) of a cross order (such as an AIM order). The two-sided order consists of a number of required fields including Symbol, Price, OrderQty, and relevant clearing information for both the agency and contra sides, as well as a number of optional fields. A maximum of ten (10) contra-parties will be accepted per order.

CROSS ORDER ACKNOWLEDGEMENT, CROSS ORDER REJECTED, and CROSS ORDER CANCELLED message types will be used by the Exchange to respond to NEW ORDER CROSS MULTILEG messages.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x85
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
CrossID	10	20	Text	Corresponds to *CrossID* (548) in Cboe FIX. Day-unique identifier for the cross order chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe.
CrossType	30	1	Alphanumeric	Corresponds to *CrossType* (549) in Cboe FIX. Type of auction order being submitted. This indicates the type of auction that will be initiated upon order entry. 1 = Automated Improvement Mechanism (AIM)
CrossPrioritization	31	1	Alphanumeric	Corresponds to *CrossPrioritization* (550) in Cboe FIX. Indicates which side of the cross order will be prioritized for execution. This identifies the Agency side. 1 = Buy 2 = Sell
Price	32	8	Binary Price	Corresponds to *Price* (44) in Cboe FIX. Auction price.

OrderQty	40	4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 contracts.
NumberOf NewOrderCross Multileg Bitfields	44	1	Binary	Bitfield identifying bitfields which are set.
NewOrderCross Multileg Bitfield$_1$	45	1	Binary	Bitfield identifying fields to follow.
⋮				
NewOrderCross Multileg Bitfield$_n$		1	Binary	Last bitfield.
GroupCnt		2	Binary	Number of order allocations represented by repeating groups included in this cross order. Must be at least 2 (One agency and one contra), and no more than 11.
Repeating Groups of. . .				
Side		1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1 = Buy 2 = Sell
AllocQty		4	Binary	Corresponds to *AllocQty* (80) in Cboe FIX. Number of contracts for this party.
ClOrdID		20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (~) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**
Capacity		1	Alpha	Corresponds to *OrderCapacity* (47) in Cboe FIX. A = Agency (maps to 'AOTC') P = Principal (maps to 'DEAL') R = Riskless Principal (maps to 'MTCH')
ClearingFirm		4	Alpha	Corresponds to *ClearingFirm* (439) in Cboe FIX. Firm that will clear this allocation.

AccountType		1	Alphanumeric	Corresponds to *AccountType* (581) in Cboe FIX. Indicates type of account associated with the order. 1 = Account is carried on customer side of the books. 3 = House Trader
Account (Optional)		16	Text	See **List of Optional Fields** (§ 6, p. 159).
ClearingAccount (Optional)		4	Text	See **List of Optional Fields** (§ 6, p. 159).
LegPosition Effects (Optional)		12	Alpha	See **List of Optional Fields** (§ 6, p. 159).
CustOrder HandlingInst (Optional)		1	Alpha	See **List of Optional Fields** (§ 6, p. 159).
Order Origination (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
Algorithmic Indicator (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
ClientID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Client QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
InvestorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Investor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
ExecutorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Executor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
Optional fields...				

Required Order Attributes:

The following are required to be sent on new orders:

- *Symbol* - Cboe Symbology symbol created by New Complex Instrument message.
- Agency order's *Side* must match the cross order's *CrossPrioritization*
- Each contra-party allocation must have the opposite *Side*
- Each side's cumulative *AllocQty* must equal the cross order's *OrderQty*
- CustOrderHandlingInst on each allocation.

Example New Order Cross Multileg Message:

Field Name	Hexadecimal	Notes

Field	Bytes	Description
StartOfMessage	BA BA	Start of message bytes.
MessageLength	D4 00	212 bytes
MessageType	85	New Order Cross Multileg
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
CrossID	4E 5A 31 56 37 42 4A 31 41 63 63 65 70 74 42 75 79 00 00 00	NZ1V7BJ1AcceptBuy
CrossType	31	1 = AIM Order
CrossPrioritization	31	1 = Agency Buy
Price	20 4E 00 00 00 00 00 00	2.00
OrderQty	64 00 00 00	100 contracts
NumberOf NewOrderCross Multileg Bitfields	03	3 bitfields to follow
NewOrderCrossMultileg Bitfield$_1$	09	*Symbol*, *CustOrderHandlingInst*
NewOrderCrossMultileg Bitfield$_2$	20	*ClearingAccount*
NewOrderCrossMultileg Bitfield$_3$	10	*LegPositionEffects*
GroupCnt	03 00	3 repeating groups to follow
Side	31	1 = Buy
AllocQty	64 00 00 00	100 contracts
ClOrdID	51 4C 37 53 5A 37 43 31 61 67 65 6E 63 79 00 00 00 00 00 00	QL7SZ7C1agency
Capacity	41	A = Agency
ClearingFirm	44 45 46 47	DEFG
AccountType	31	1 = Customer
ClearingAccount	00 00 00 00	No *ClearingAccount* for this order
LegPositionEffects	43 43 4F 4F 20 20 20 20 20 20 20 20	CCOO - Instrument has four legs, Close first 2 legs, Open last 2 legs
CustOrderHandlingInst	59	Y = Electronic
Side	32	2 = Sell
AllocQty	28 00 00 00	40 contracts
ClOrdID	51 4C 39 4B 38 55 56 31 63 6F 6E 74 72 61 31 00 00 00 00 00	QL9K8UV1contra1
Capacity	50	P = Principal
ClearingFirm	41 42 43 44	ABCD
AccountType	33	33 = House Trader
ClearingAccount	57 58 59 5A	WXYZ
LegPositionEffects	43 43 43 43 20 20 20 20 20 20 20 20	CCCC - Instrument has four legs, Close on all four legs
CustOrderHandlingInst	59	Y = Electronic
Side	32	2 = Sell
AllocQty	3C 00 00 00	60 contracts
ClOrdID	51 4C 39 54 35 59 44 31 63 6F 6E 74 72 61 32 00 00 00 00 00	QL9T5YD1contra2
Capacity	50	P = Principal
ClearingFirm	41 42 43 44	ABCD
AccountType	33	33 = House Trader
ClearingAccount	57 58 59 5A	WXYZ
LegPositionEffects	4F 43 4F 43 20 20 20 20 20 20 20 20	OCOC - Instrument has four legs, mixture of Open and Close
CustOrderHandlingInst	59	Y = Electronic

Symbol   30 30 51 30 6B 41 00 00   00Q0kA

Input bitfields:

Byte	Bit	Field	
1	1	*Symbol*	•
	2	*IdSource*	−
	4	*SecurityId*	−
	8	*CustOrderHandlingInst*	•
	16	*LiquidityProvision*	•
	32	*OrderOrigination*	•
	64	*AlgorithmicIndicator*	•
	128	*PreventMatch*	•
2	1	*AutoMatch*	•
	2	*AutoMatchPrice*	•
	4	*LastPriority*	•
	8	*Account*	•
	16	*Reserved*	−
	32	*ClearingAccount*	•
	64	*ClientID*	•
	128	*ClientQualifiedRole*	•
3	1	*InvestorID*	•
	2	*InvestorQualifiedRole*	•
	4	*ExecutorID*	•
	8	*ExecutorQualifiedRole*	•
	16	*LegPositionEffects*	•
	32	*Reserved*	−
	64	*Reserved*	−
	128	*Reserved*	−

4.1.5 Cancel Order V2

Request to cancel either a single order or mass cancellation of a group of orders. Note that this does not apply to open orders across multiple sessions unless submitted on a Purge Port.

A single order cancellation uses the *ClOrdID* from a previous order.

Mass cancellation of a group of orders requires sending *MassCancelInst*, which comprises filters used to specify the set of orders to cancel.

- If the Trading Firm filter is set to "F", "U" or "O", the *ClearingFirm* optional field must be specified.

- If the Acknowledgement Style is set to "S" or "B", the *MassCancelId* optional field must be specified.

- If the *ProductCode* field is specified, only orders for instruments associated with that ProductCode are cancelled. This should not be combined with Trading Firm filter being set to "U" or "O".

The system limits the rate at which identical Mass Cancel and Purge messages can be submitted to the system. Requests are restricted to ten (10) messages per second per port.

An identical mass cancel message is defined as a message having all of the same *CustomGroupId* (only applicable for Purge messages), *ProductCode*, *ClearingFirm*, Lockout Instruction and Instrument Type Filter field values, as a previously received message.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.

MessageType	4	1	Binary	0x39
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
OrigClOrdID	10	20	Text	Corresponds to *OrigClOrdID* (41) in Cboe FIX. *ClOrdID* of the order to cancel.
NumberOf CancelOrder Bitfields	30	1	Binary	Bitfield identifying bitfields which are set. May be 0. Field values must be appended to the end of the message.
CancelOrder Bitfield$_1$	31	1	Binary	Bitfield identifying fields to follow. Only present if *NumberOfCancelOrderBitfields* is non-zero.
⋮				
CancelOrder Bitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Cancel Order V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	22 00	34 bytes
MessageType	39	Cancel Order V2
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence Number 100
OrigClOrdId	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
NumberOfCancel OrderBitfields	01	1 bitfield to follow
CancelOrder Bitfield1	01	*ClearingFirm*
ClearingFirm	54 45 53 54	TEST

Input bitfields:

Byte	Bit	Field	
1	1	*ClearingFirm*	●
	2	*MassCancelLockout*	–
	4	*MassCancel*	–
	8	*ProductCode*	●
	16	*MassCancelId*	●
	32	*RoutingFirmID*	–
	64	*ManualOrderIndicator*	–
	128	*OperatorId*	–
2	1	*MassCancelInst*	●
	2	*(Reserved)*	–
	4	*(Reserved)*	–
	8	*(Reserved)*	–
	16	*(Reserved)*	–
	32	*(Reserved)*	–
	64	*(Reserved)*	–
	128	*(Reserved)*	–

ClearingFirm is required for service bureau ports.

4.1.6 Modify Order V2

Request to modify an order. The order attributes to be modified are selected using *NumberOfModifyBitfields* and some number of bitfields to follow.

Only *Price*, *OrderQty*, *OrdType*, *MaxFloor*, and *StopPx* may be adjusted. Modifies will result in a loss of time priority unless the modification involves a decrease in *OrderQty*, a change to *MaxFloor* or a change to *StopPx*. *OrdType* may be adjusted from Limit to Market.

Changes in *OrderQty* result in an adjustment of the current order's *OrderQty*. The new *OrderQty* does not directly replace the current order's *LeavesQty*. Rather, a delta is computed from the current *OrderQty* and the replacement *OrderQty*. This delta is then applied to the current *LeavesQty*. If the resulting *LeavesQty* is less than or equal to zero, the order is cancelled. This results in safer behavior when the modification request overlaps partial fills for the current order, leaving the Participant in total control of the share exposure of the order.

A MODIFY ORDER V2 should not be issued until the ORDER ACKNOWLEDGEMENT V2 for the previous NEW ORDER V2 or ORDER MODIFIED message for the previous MODIFY ORDER V2 has been received. The BOE handler will reject a new MODIFY ORDER V2 if it has not been accepted or it has not seen the result of the prior modification from the Matching Engine. However, MODIFY ORDER V2 requests that merely reduce *OrderQty* may be overlapped if the existing *ClOrdID* is reused, as long as the trading identifier has not been opted-in to daily limit trading risk controls. This is the only case where reuse of the *ClOrdID* is allowed.

OrderQty must be present on all Modify Order V2 requests. Messages sent without *OrderQty* will be rejected.

Price must be present on all limit order Modify Order V2 requests. Messages sent without *Price* will be rejected. If the modification is from a limit to a market order the price will be disregarded.

ClearingFirm is required for service bureau ports.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x3A
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
ClOrdID	10	20	Text	New *ClOrdID* for this order.
OrigClOrdID	30	20	Text	Corresponds to *OrigClOrdID* (41) in Cboe FIX. *ClOrdID* of the order to replace. In the case of multiple changes to a single order, this will be the *ClOrdID* of the most recently accepted change.
NumberOf ModifyOrder Bitfields	50	1	Binary	Bitfield identifying bitfields which are set. May be 0. Field values must be appended to the end of the message.
ModifyOrder Bitfield$_1$	51	1	Binary	Bitfield identifying fields to follow.
⋮				
ModifyOrder Bitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Modify Order V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	3E 00	62 bytes
MessageType	3A	Modify Order V2
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence Number 100
ClOrdID	41 42 43 31 32 34 00 00 00 00	ABC124
	00 00 00 00 00 00 00 00 00 00	
OrigClOrdID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
NumberOfModify OrderBitfields	01	1 bitfield to follow
ModifyOrder Bitfield1	0C	OrderQty, Price
OrderQty	64 00 00 00	100 contracts
Price	08 E2 01 00 00 00 00 00	12.34

Input bitfields:

Byte	Bit	Field	
1	1	ClearingFirm	●
	2	Reserved	–
	4	OrderQty	⋆
	8	Price	⋆
	16	OrdType	●
	32	CancelOrigOnReject	●
	64	ExecInst	–
	128	Side	–
2	1	MaxFloor	–
	2	StopPx	●
	4	RoutingFirmID	–
	8	ManualOrderIndicator	–
	16	OperatorId	–
	32	FrequentTraderID	–
	64	CustOrderHandlingInst	●
	128	Reserved	–

⋆ OrderQty must be present on all MODIFY ORDER V2 requests. Price must be present on all limit order MODIFY ORDER V2 requests.

ClearingFirm is required for service bureau ports.

4.1.7 Quote Update

Request to enter or update one or more quotes. QUOTE UPDATE requests will be forwarded in their entirety to the matching engine instance as a single message and will be applied in a single transaction. Optional bitfields are not supported for any response messages for quotes.

All options / futures in a single QUOTE UPDATE must trade under a single product code. Requests which include options / futures trading under multiple product codes will be rejected in their entirety. As options product code are different from futures product code, this includes mixing options and futures in a single QUOTE UPDATE.

A quote is unique per port, firm, and side. You may quote multiple price levels of depth using either multiple firm

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on a single port or with the same firm on multiple ports.

Quote requests are one-sided. To delete a quote, send an update with a zero price and/or size.

Quotes may utilize simple options / futures only; complex options / spread future quotes may not be submitted.

All quotes will be automatically cancelled at the end of the trading day.

Quotes may be marked post only. If a quote crosses the EBBO or displayed Cboe book, it will be rejected. If a quote would be displayed at a price that locks the EBBO, it will be accepted or rejected based on the PostingInstruction on the quote.

If a quote modification is rejected, the resting quote being modified is also cancelled.

Executions, unsolicited cancels, and unsolicited modification response messages from the exchange are different from those for orders. They are optimized for efficiency and contain some different data elements (e.g., *QuoteUpdateID*) than the respective messages for orders.

The *PreventMatch* field may not be specified on the QUOTE UPDATE message and Match Trade Prevention is only available if defaulted at the port level. For Bulk Quoting ports, only Cancel Newest, Cancel Oldest, or Cancel Both are permitted. If a Bulk Quoting port is not configured with both a default MTP Modifier and Unique ID Level, Match Trade Prevention will be disabled.

Capacity may not be changed when modifying a quote. To change Capacity of a resting quote, you must first send a quote with zero price and size and then re-enter the quote with the desired Capacity.

The Quote Execution message will be the only Quote related message available over ODROP and FIXDROP.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x7B
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
QuoteUpdateID	10	16	Text	ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe, the 'at' symbol and double quotes. Responses, both to the Quote Update and any Quote Executions, Quote Cancellations, and Quote Modification messages will include this identifier. **Note: Cboe only enforces uniqueness of QuoteUpdateID values among those not yet acknowledged by the matching engine. However, we strongly recommend that you keep your QuoteUpdateID values day-unique.**
ClearingFirm	26	4	Alpha	Corresponds to *OnBehalfOfCompID* (115) and *ClearingFirm* (439) in Cboe FIX. Firm that will clear the trade. If empty (all binary zero), a default will be used (only permitted on non-service bureau accounts).

ClearingAccount	30	4	Text	Corresponds to OnBehalfOfSubID (116) and ClearingAccount (440) in Cboe FIX. Supplemental identifier. Recorded and made available in execution reports. Available via Drop.
OrderOrigination	34	1	Text	Corresponds to OrderOrigination (1724) in Cboe FIX. 5 = (DEA). Indicates DEA activity (as deemed by MiFID II) is involved in this order. 0 = Non-DEA. (default) Other values are unsupported and will be rejected.
Algorithmic Indicator	35	1	Text	This corresponds to OrderAttributeTypes (8015) = 4 in Cboe FIX. Indicates that the order was placed as a result of an investment firm engaging in algorithmic trading. N = No algorithm was involved (default). Y = Algorithm was involved (ALGO).
LiquidityProvision	36	1	Text	This flag is used to indicate whether the order is related to any sort of liquidity provision activity, as defined by MiFID II. This flag is mandatory for orders which are part of a liquidity provision activity. N = Not Liquidity Provision (default) Y = Liquidity Provision For quote updates, market makers can only submit liquidity provision quotes if they have an active LPP registration for the product code underlying the symbols in the Quote Update.

CustOrder HandlingInst	37	1	Alpha	Corresponds to *CustOrderHandlingInst* (1031) in Cboe FIX. A default value can be set using the 'Default Customer Order Handling Instruction' port attribute. This port attribute is defaulted to Electronic. As only simple instruments are supported for quotes, only Y and W should be used. The system will not, however, reject quotes with other values. `Y` = Electronic. (Default) `W` = Desk `C` = Vendor-provided Platform billed by Executing Broker (For complex) `G` = Sponsored Access via Exchange API or FIX, provided by Executing Broker (For complex) `H` = Premium Algorithmic Trading Provider, billed by Executing Broker (For complex) `D` = Other, including other-provided screen (For complex)
Account	38	16	Text	Corresponds to *Account* (1) in Cboe FIX. Reflected back on execution reports associated with this order. May be made available in the Participant's clearing file. Allowed characters are alphanumeric and colon.
CustomGroupId	54	2	Binary	Optional. Used to group orders for use in PURGE ORDERS. Set to 0 if functionality not needed.
Capacity	56	1	Alpha	Corresponds to *OrderCapacity* (47) in Cboe FIX. `A` = Agency (maps to 'AOTC') `P` = Principal (maps to 'DEAL') `R` = Riskless Principal (maps to 'MTCH')
ClientID	57	4	Binary	The short code representing the client behind the order. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. The value must be between 0 and 4,294,967,295. For clients, the following values are reserved for applicable use: `0` = NONE (No Client for this order) `1` = AGGR (An aggregation of multiple client orders) `2` = PNAL (Clients are pending allocation)

Client QualifiedRole	61	1	Binary	Required whenever a `ClientID` is specified. Valid values are: 0 = None - Only applicable if using a reserved value for `ClientID` 23 = Firm or legal entity (LEI) 24 = Natural person
ExecutorID	62	4	Binary	The short code representing the execution decision maker of the order. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. The value must be between 0 and 4,294,967,295. For executing decision makers, the following value is reserved for applicable use: 3 = NORE (Timing and location of the execution determined by the client of the Participant)
Executor QualifiedRole	66	1	Binary	Required whenever an `ExecutorID` is specified. Valid values are: 0 = None - Only applicable if using a reserved value for `ExecutorID` 22 = Algorithm 24 = Natural person
InvestorID	67	4	Binary	The short code representing the investment decision maker of the order. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. The value must be between 0 and 4,294,967,295.
Investor QualifiedRole	71	1	Binary	Required whenever an `InvestorID` is specified. Valid values are: 22 = Algorithm 24 = Natural person
AccountType	72	1	Alphanumeric	Corresponds to *AccountType* (581) in Cboe FIX. Indicates type of account associated with the order. 1 = Account is carried on customer side of the books. 3 = House Trader

PostingInstruction	73	1	Text	P = Post Only (do not remove liquidity) B = Book Only (allow removal of liquidity, available for Market Makers of futures only). Note that for options, only Post Only is supported.
QuoteCnt	74	1	Binary	Number of repeating groups included in this quote update. Allowed values are 1-20.
Repeating Groups of...				
Symbol		6	Alphanumeric	Cboe Symbology symbol
Side		1	Alphanumeric	1 = Buy 2 = Sell
OpenClose		1	Alphanumeric	Corresponds to *OpenClose* (77) in Cboe FIX. Indicates status of client position in the option. O = Open C = Close N = None Orders with *AccountType* value of 3 (House Trader) are not required to specify *OpenClose* or may optionally specify a value of "N". Otherwise, orders with Orders with *AccountType* value of 1 (Customer Account) must specify *OpenClose*.
Price		8	Binary Price	Corresponds to *Price* (44) in Cboe FIX. Limit price. To cancel an existing quote, specify 0.
OrderQty		4	Binary	Order quantity. System limit is 999,999 contracts. To cancel an existing quote, specify a size of 0.

Example Quote Update Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	6F 00	111 bytes
MessageType	7B	Quote Update
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence Number 100
QuoteUpdateID	41 42 43 31 32 34 00 00 00 00 00 00 00 00 00 00	ABC124
ClearingFirm	41 42 43 44	ABCD
ClearingAccount	57 58 59 5A	WXYZ
OrderOrigination	30	0 (Non-DEA)
AlogrithmicIndicator	4E	N
LiquidityProvision	4E	N
CustOrderHandlingInst	59	Y = Electronic
Account	44 45 46 47 00 00 00 00 00 00 00 00 00 00 00 00	DEFG
CustomGroupID	C8 00	200
Capacity	41	A = Agency
ClientID	00 00 00 00	0 = NONE

ClientQualifiedRole	00	0 = None
ExecutorID	03 00 00 00	3 = NORE
ExecutorQualifiedRole	00	0 = None
InvestorID	C9 00 00 00	201
InvestorQualifiedRole	18	24 = Natural Person
AccountType	31	1 = Customer
PostingInstruction	50	P = Post Only
QuoteCnt	02	2 quotes to follow
Symbol	30 30 30 30 30 31	000001
Side	31	Buy
OpenClose	4F	0 = Open
Price	70 17 00 00 00 00 00 00	0.60
OrderQty	64 00 00 00	100 contracts
Symbol	30 30 30 30 30 37	000007
Side	32	Sell
OpenClose	4F	0 = Open
Price	20 4E 00 00 00 00 00 00	2.00
OrderQty	78 00 00 00	120 contracts

4.1.8 Purge Orders

Request to cancel a group of orders across all the firm's sessions. This differs from a mass cancel request sent via a CANCEL ORDER message as the purge request is applied across all of the firm's sessions, not just the session on which the CANCEL ORDER was received.

A purge request requires populating the *MassCancelInst* bitfield.

A firm may choose to implement one or more filters:

- Trading Firm Filter - optionally cancel based on the *ClearingFirm* field.
- Symbol Filter - optionally cancel based on the *ProductCode* field. When specified, only orders for instruments associated with the given ProductCode are cancelled. This cannot be combined with CustomGroupId filter. This can also not be used when the Trading Firm Options or Futures Filter is used, i.e. when the Trading Firm Filter is set to "U" or "O".
- CustomGroupId Filter - optionally cancel based on *CustomGroupId* field. Cannot be combined with Symbol filter. This can also not be used when the Trading Firm Options or Futures Filter is used, i.e. when the Trading Firm Filter is set to "U" or "O".

If both *ProductCode* and a list of *CustomGroupId* values are specified, the PURGE ORDERS request will be rejected.

Optionally specify *MassCancelId* if the Acknowledgement Style is set to S or B.

The system limits the rate at which identical Mass Cancel and Purge Request messages can be submitted to the system. Requests are restricted to ten (10) messages per second per port.

An identical purge message is defined as a message having all of the same *CustomGroupId*, *ProductCode*, *ClearingFirm*, Lockout Instruction and Instrument Type Filter field values, as a previously received message.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x47
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.

SequenceNumber	6	4	Binary	The sequence number for this message.
Reserved	10	1	Binary	Reserved for Cboe internal use. To maintain forward compatibility, fill with 0.
NumberOf PurgeOrders Bitfields	11	1	Binary	Bitfield identifying bitfields which are set. May be 0. Field values must be appended to the end of the message.
PurgeOrders Bitfield$_1$	12	1	Binary	Bitfield identifying fields to follow. Only present if *NumberOfPurgeOrdersBitfields* is non-zero.
$\vdots$				
PurgeOrders Bitfield$_n$		1	Binary	Last bitfield.
CustomGroupIdCnt		1	Binary	Number of repeating *CustomGroupId* included in this message.
CustomGroupId$_1$		2	Binary	First *CustomGroupId*. Only present if *CustomGroupIdCnt* is non-zero.
$\vdots$				
CustomGroupId$_n$		2	Binary	Last *CustomGroupId*.
Optional fields...				

Example Purge Orders V2 Message with CustomGroupId:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	2A 00	42 bytes
MessageType	47	Purge Orders V2
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence Number 100
Reserved	00	Reserved
NumberOfPurge OrderBitfields	01	1 bitfield to follow
PurgeOrders Bitfield1	A8	*ClearingFirm*, *MassCancelLockout*, *MassCancelInst MassCancelId*
CustomGroupIdCnt	02	2 *CustomGroupId* to follow
CustomGroupId$_1$	BF BE	first *CustomGroupId* of 48831
CustomGroupId$_2$	C0 BE	second *CustomGroupId* of 48832
ClearingFirm	54 45 53 54	TEST
MassCancelLockout	31	1 = lockout
MassCancelInst	34	4 = clearing firm match, single ack
MassCancelId	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123

Input bitfields:

Byte	Bit	Field	
1	1	*ClearingFirm*	●
	2	*MassCancelLockout*	–
	4	*MassCancelInst*	⋆
	8	*ProductCode*	●
	16	*MassCancelId*	●
	32	*RoutingFirmID*	–
	64	*ManualOrderIndicator*	–
	128	*OperatorId*	–
2	1	*Symbol*	–
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	–
	16	*SecurityId*	–
	32	*SecurityExchange*	–
	64	*Reserved*	–
	128	*Reserved*	–

ClearingFirm is required for service bureau ports.

4.1.9   Reset Risk

Reset or release Trading Firm, Symbol (ProductCode), Trading Firm Group or Custom Group ID level lockout conditions resulting from risk profile trips or self-imposed lockouts issued via PURGE ORDERS messages. Risk resets can be performed using this message or by using the *RiskReset* field on a NEW ORDER message.

When specifying the Symbol field, the ProductCode should be used. Risk Resets are always performed at the underlying (ProductCode) level.

Only one unique risk reset of a given type (Trading Firm, Symbol, CustomGroupId, Trading Firm Group) is allowed per second. Additional resets will be ignored (*RiskResetResult* = <space>). For example, a customer may reset risk for *CustomGroupId* = 1 and may not reset risk again for *CustomGroupId* = 1 until one second has elapsed. This restriction is designed to safeguard the trading platform from excessive risk messaging.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x56
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
RiskStatusID	10	16	Text	Unique identifier for this Reset Risk request. Response message will have this corresponding identifier. **Note: Cboe only enforces uniqueness of RiskStatusID values among currently unacknowledged requests. However, we strongly recommend that you keep your RiskStatusID values day-unique.**

Field	Offset	Length	Data Type	Description
RiskReset	26	8	Text	Corresponds to *RiskReset* (7692) in Cboe FIX. Indicates Symbol, Trading Firm, CustomGroupID, and Trading Firm Group lockout reset. See **List of Optional Fields** (§ 6, p. 159) for more explanation.
Reserved	34	4	Binary	Reserved for Cboe internal use. To maintain forward compatibility, fill with 0.
ClearingFirm	38	4	Alpha	Risk will be reset for this Trading Firm.
Symbol	42	6	Alphanumeric	Populate with Symbol for resets at the ProductCode level. Leave empty for resets at the Trading Firm level
CustomGroupId	48	2	Binary	Optional. Populate with an identifier for resets including a *CustomGroupId*. Set to 0 to ignore.

Example Reset Risk Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	30 00	48 bytes
MessageType	56	Reset Risk
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
RiskStatusID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00	ABC123
RiskReset	53 46 00 00 00 00 00 00	SF = Symbol and Trading Firm level reset
Reserved	00 00 00 00	Ignore
ClearingFirm	54 45 53 54	TEST
Symbol	41 42 43 00 00 00	ABC
CustomGroupID	00 00	No CustomGroupID

4.1.10 New Complex Instrument (Options only)

A NEW COMPLEX INSTRUMENT message is used to request that the system create a complex strategy. The resulting symbol (if accepted by the system) will be returned in a COMPLEX INSTRUMENT ACCEPTED message; a COMPLEX INSTRUMENT REJECTED message will be sent if it is not accepted.

A minimum of two legs must be specified and a maximum of twelve options legs, with an optional future leg for volatility strategies. will be accepted. At least one leg must be an option leg. No equity leg is allowed. All legs must have the same underlying product.

A *ClearingFirm* must be sent on each NEW COMPLEX INSTRUMENT message unless a Default Executing Firm ID is set at the port-level.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x4C`
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.

ClOrdID	10	20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (˜) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**
NumberOf NewComplex Instrument Bitfields	30	1	Binary	Bitfield identifying which bitfields are set. Field values must be appended to the end of the message.
NewComplex InstrumentBitfield$_1$	31	1	Binary	Bitfield identifying fields to follow.
$\vdots$				
NewComplex InstrumentBitfield$_n$		1	Binary	Last bitfield.
NoLegs		1	Binary	Corresponds to *NoLegs* (555) in Cboe FIX. Indicates the number of repeating groups to follow. Must be a minimum of 2 and a maximum of 13.

Repeating Group *ComplexLeg* must occur the number of times specified in *NoLegs*. Each field occurs in each group, in order as shown below. Optional fields occur only if corresponding bits in bitfields are set.

LegSymbol	8	Alphanumeric	Corresponds to *LegSymbol* (600) in Cboe FIX.
LegPrice	8	Binary Price	Corresponds to *LegPrice* (566) in Cboe FIX. Reference price for the future leg of a Volatility Strategy. Mandatory for this case, otherwise ignored. See the Volatility Strategies section (p. 7) for more details.
LegRatioQty	4	Binary	Corresponds to *LegRatioQty* (623) in Cboe FIX. Ratio of number of contracts in this leg per order quantity. Must be between 1 and 99,999.
LegSide	1	Alphanumeric	Corresponds to *LegSide* (624) in Cboe FIX. 1 = Buy 2 = Sell

Optional fields...				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

Example New Complex Instrument Message:

Field Name	**Hexadecimal**	**Notes**
StartOfMessage	BA BA	Start of message bytes.
MessageLength	3D 00	61 bytes
MessageType	4C	New Complex Instrument
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
NumberOfNewComplex InstrumentBitfields	01	1 bitfield to follow
NewComplexInstrument Bitfield$_1$	08	_ClearingFirm_
NoLegs	02	2 legs
LegSymbol	30 30 51 30 6B 41 00 00	00Q0kA
LegRatioQty	02 00 00 00	Ratio of 2
LegSide	31	Buy
LegSymbol	30 30 51 30 6B 41 00 00	00Q0kA
LegRatioQty	01 00 00 00	Ratio of 1
LegSide	32	Sell
ClearingFirm	54 45 53 54	TEST

Input bitfields:

Byte	**Bit**	**Field**	
	1	_LegCFICode_	–
	2	_LegMaturityDate_	–
	4	_LegStrikePrice_	–
	8	_ClearingFirm_	●
	16	_Reserved_	–
	32	_LegPrice_	●
	64	_Reserved_	–
	128	_Reserved_	–

4.1.11 Trade Capture Report V2

The TRADE CAPTURE REPORT V2 is used to submit a Block Trade. The report must contain both sides of the trade (_NoSides_ = 2).

CustOrderHandlingInst is mandatory and must be included in the report.

Trade reports in Complex Instruments are not supported. Instead, participants should submit individual trades for each leg, with the appropriate leg price/quantity.

The model supported is as described in the FIX 5.0 (SP2) specification in the Two-Party Reporting workflow diagram of the Trade Capture Reporting section.

Unlike our European Equities platform, we do not support the withdrawal/cancellation of a trade report in our derivatives trading environment. Unmatched ETRs can be left in a pending state, they will simply get cancelled

at end of day, and they don't count towards risk until they are matched and confirmed.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x3C
MatchingUnit	5	1	Binary	Always 0 for inbound (Participant to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
TradeReportID	10	20	Text	Corresponds to *TradeReportID* (571) in Cboe FIX.

Day-unique ID chosen by client. Cboe will enforce port level day-uniqueness.
20 characters or less. Characters in ASCII range 33–126 are allowed, except for comma, semicolon, and pipe.

If the *TradeReportID* matches a live trade report (one that has been acked, but not confirmed or declined), it will be rejected as duplicate. |
| *LastShares* | 30 | 4 | Binary | Corresponds to *LastShares* (32) in Cboe FIX.

Executed contract quantity. System limit is 999,999 contracts. |
| *LastPx* | 34 | 8 | Trade Price | Corresponds to *LastPx* (31) in Cboe FIX.

Price of this fill. Note the use of Binary Price to represent positive and negative prices, which can occur with complex/spread instruments. |
NumberOf TradeCapture ReportBitfields	42	1	Binary	Bitfield identifying bitfields which are set. Field values must be appended to the end of the message.
TradeCapture ReportBitfield$_1$		1	Binary	Bitfield identifying fields to follow.
⋮				
TradeCapture ReportBitfield$_n$		1	Binary	Last bitfield.
NoSides		1	Binary	Corresponds to *NoSides* (552) in Cboe FIX.

Indicates the number of repeating groups to follow. Must be 2. |

Repeating Group *TrdCapRptSideGrp* must occur the number of times specified in *NoSides*. Only *Side* and *PartyID* are mandatory. Each field occurs in each group, in order as shown below. Optional fields should occur only if corresponding bits in bitfields are set.

Side	1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1 = Buy 2 = Sell
Capacity	1	Alpha	Corresponds to *OrderCapacity* (47) in Cboe FIX. (Orders). Corresponds to *LastCapacity* (29) in Cboe FIX. (Executions). A = Agency (maps to 'AOTC') P = Principal (maps to 'DEAL') R = Riskless Principal (maps to 'MTCH')
PartyID	4	Alpha	Corresponds to *PartyID* (448) in Cboe FIX. The end-client responsible for the trade. Must be an identifier (4 uppercase letters) known to Cboe.
Account	16	Text	Corresponds to *Account* (1) in Cboe FIX. Contains the *Account* specified on this leg on the trade capture, if any. Reflected back on trade capture report confirmations. Allowed characters are alphanumeric.
PartyRole	1	Alphanumeric	Corresponds to *PartyRole* (452) in Cboe FIX. Contains the *PartyRole* specified on this leg on the trade capture, if any. Reflected back on trade capture report confirmations. 1 = ExecutingFirm (default) (if used, must be set on both sides. Is not permitted for bilateral trades) 2 = EnteringFirm (the party reporting the trade. Should not be used for the second leg) 3 = ContraFirm (the party the trade is alleged against)
CustOrder HandlingInst	1	Alpha	Corresponds to *CustOrderHandlingInst* (1031) in Cboe FIX. A default value can be set using the 'Default Customer Order Handling Instruction' port attribute. This port attribute is defaulted to Electronic. Y = Electronic. (Default) W = Desk C = Vendor-provided Platform billed by Executing Broker (For complex) G = Sponsored Access via Exchange API or FIX, provided by Executing Broker (For complex) H = Premium Algorithmic Trading Provider, billed by Executing Broker (For complex) D = Other, including other-provided screen (For complex)

... continued ... part of Repeating Group *TrdCapRptSideGrp*				
OpenClose	1	Alphanumeric	Corresponds to *OpenClose* (77) in Cboe FIX. Indicates status of client position in the option. O = Open C = Close N = None Orders with *AccountType* value of 3 (House Trader) are not required to specify *OpenClose* or may optionally specify a value of "N". Otherwise, orders with Orders with *AccountType* value of 1 (Customer Account) must specify *OpenClose*.	
AccountType	1	Alphanumeric	Corresponds to *AccountType* (581) in Cboe FIX. Indicates type of account associated with the order. 1 = Account is carried on customer side of the books. 3 = House Trader	
Optional fields...				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

Example Trade Capture Report V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	4F 00	79 bytes
MessageType	3C	Trade Capture Report V2
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
TradeReportID	31 34 32 39 30 39 38 34 38 39	1429098489587332
	35 38 37 33 33 32 00 00 00 00	
LastShares	46 00 00 00	70 shares
LastPx	40 F9 A1 6A 00 00 00 00	$1789000000 = 178.9000000$
NumberOf TradeCaptureReport Bitfields	06	4 bitfields to follow
$Bitfield_1$	01	*Symbol*
$Bitfield_2$	B5	*Capacity*, *TransactionCategory*, *PartyRole*, *TradeReportTransType*, *VenueType*
$Bitfield_3$	22	*MatchType*, *TradePublishIndicator*
$Bitfield_4$	43	*TradeReportType*, *TradeHandlingInstruction*, *OrderCategory*
$Bitfield_5$	01	No bitfields from byte 5
$Bitfield_6$	01	*CustOrderHandlingInst*, *OpenClose*
NoSides	02	2 repeating groups to follow
Side	31	Buy
Capacity	50	Principal
PartyID	54 45 53 54	TEST
PartyRole	31	ExecutingFirm
CustOrderHandlingInst	59	Y = Electronic
AccountType	31	1 = Customer
OpenClose	4F	O = Open
Side	32	Sell
Capacity	50	Principal
PartyID	54 45 53 54	TEST
PartyRole	31	ExecutingFirm
CustOrderHandlingInst	44	D = Desk
AccountType	33	3 = House
OpenClose	43	C = Close
Symbol	56 4F 44 6C 00 00 00 00	VOD1
TransactionCategory	50	P = Regular Trade
TradeReportTransType	00	0 = New
VenueType	4F	O = Off Book
MatchType	03	3 = Trade Reporting (On-Exchange)
TradePublishIndicator	01	1 = Publish trade
TradeReportType	00	0 = Submit
TradeHandlingInstr	01	1 = Two-Party Report
OrderCategory	03	3 = Privately Negotiated Trade

Input bitfields:

Byte	Bit	Field	
1	1	*Symbol*	•
	2	*Reserved*	–
	4	*Currency*	–
	8	*IDSource*	•
	16	*SecurityID*	•
	32	*Security Exchange*	–
	64	*ExecInst*	•
	128	*Reserved*	–
2	1	*Capacity*	•
	2	*Account*	•
	4	*TransactionCategory*	•
	8	*TradeTime*	•
	16	*PartyRole*	•
	32	*TradeReportTransType*	•
	64	*TradeID*	•
	128	*VenueType*	•
3	1	*TradingSessionSubId*	–
	2	*MatchType*	•
	4	*TrdSubType*	•
	8	*SecondaryTrdType*	–
	16	*TradePriceCondition*	–
	32	*TradePublishIndicator*	•
	64	*LargeSize*	–
	128	*ExecutionMethod*	–
4	1	*TradeReportType*	•
	2	*TradeHandlingInstruction*	•
	4	*TradeLinkID*	•
	8	*TradeReportRefID*	–
	16	*GrossTradeAmt*	•
	32	*Tolerance*	•
	64	*OrderCategory*	•
	128	*SettlementPrice*	–
5	1	*SettlementDate*	–
	2	*PriceFormation*	•
	4	*AlgorithmicIndicator*	•
	8	*WaiverType*	–
	16	*DeferralReason*	–
	32	*SettlementCurrency*	–
	64	*SettlementLocation*	–
	128	*ThirdParty*	–
6	1	*CustOrderHandlingInst*	•
	2	*OpenClose*	•
	4	*AccountType*	•
	8	*Reserved*	–
	16	*Reserved*	–
	32	*Reserved*	–
	64	*Reserved*	–
	128	*Reserved*	–

4.2 Cboe to Participant

4.2.1 Order Acknowledgment V2

ORDER ACKNOWLEDGMENT V2 messages are sent in response to a NEW ORDER V2 message. The message corresponds to a FIX Execution Report with *ExecType* (150) = 0 (New).

Per the instructions given in a Return Bitfields Parameter Group on the LOGIN REQUEST V2 (§ 3.1.1, p. 13), optional fields may be appended to echo back information provided in the original NEW ORDER V2 message. Fields which have been requested to be echoed back but which were not filled in will still be sent, but filled with binary zero (0x00).

Permitted return bits are described in § 5.1, p. 101.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x25
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	Echoed back from the original order.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. Order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
ReservedInternal	46	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	47	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	48	1	Binary	Bitfield identifying fields to return.
⋮				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Order Acknowledgment V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	4E 00	78 bytes
MessageType	25	Order Acknowledgment V2
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	03	3 bitfields to follow

ReturnBitfield₁	00	No bitfields from byte 1
ReturnBitfield₂	41	*Symbol, Capacity*
ReturnBitfield₃	05	*Account, ClearingAccount*
Symbol	30 30 51 30 6B 41 00 00	00Q0kA
Capacity	50	0x50 = P = Principal
Account	41 42 43 00 00 00 00 00	ABC
	00 00 00 00 00 00 00 00	
ClearingAccount	00 00 00 00	(empty)

Example Minimal Order Acknowledgment V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	2E 00	46 bytes
MessageType	25	Order Acknowledgment V2
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	00	No bitfields to follow

4.2.2 Cross Order Acknowledgment (Options Only)

Cross Order Acknowledgment messages are sent in response to a New Order Cross message. The message corresponds to a FIX Execution Report with *ExecType* (150) = 0 (New). In FIX, multiple execution reports could be generated from one new cross order message.

Per the instructions given in a Return Bitfields Parameter Group on the Login Request V2 (§ 3.1.1, p. 13), optional fields may be appended to echo back information provided in the original New Order Cross message. Fields which have been requested to be echoed back but which were not filled in will still be sent, but filled with binary zero (0x00).

In each repeating group, the *ClOrdID* and *OrderId* are always returned. Beyond that, the bits specified in the optional return bitfields parameter group control which fields are returned. Any fields that appear in the repeating groups will not appear in the optional fields that come after the repeating groups.

Permitted return bits are described in § 5.2, p. 105.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x7C
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).

CrossID	18	20	Text	Corresponds to *CrossID* (548) in Cboe FIX. Echoed back from the original order.
AuctionId	38	8	Binary	Corresponds to *AuctionId* (9370) in Cboe FIX. Auction order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
ReservedInternal	46	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	47	1	Binary	Number of bitfields to follow.
$ReturnBitfield_1$	48	1	Binary	Bitfield identifying fields to return.
$\vdots$				
$ReturnBitfield_n$		1	Binary	Last bitfield.
GroupCnt		2	Binary	Number of order allocations represented by repeating groups included in this message.
Repeating Groups of. . .				
ClOrdID		20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (~) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**
OrderID		8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. Order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
Side (Optional)		1	Alphanumeric	See **List of Optional Fields** (§ 6, p. 159).
AllocQty (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Capacity (Optional)		1	Alpha	See **List of Optional Fields** (§ 6, p. 159).
OpenClose (Optional)		1	Alphanumeric	See **List of Optional Fields** (§ 6, p. 159).
Account (Optional)		16	Text	See **List of Optional Fields** (§ 6, p. 159).
ClearingAccount (Optional)		4	Text	See **List of Optional Fields** (§ 6, p. 159).

ClearingFirm (Optional)		4	Alpha	See **List of Optional Fields** (§ 6, p. 159).
CustOrder HandlingInst (Optional)		1	Alpha	See **List of Optional Fields** (§ 6, p. 159).
AccountType (Optional)		1	Alphanumeric	See **List of Optional Fields** (§ 6, p. 159).
Order Origination (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
Algorithmic Indicator (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
ClientID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Client QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
InvestorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Investor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
ExecutorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Executor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
Optional fields...				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

Example Cross Order Acknowledgment Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	91 00	145 bytes
MessageType	7C	Cross Order Acknowledgment
MatchingUnit	02	Matching Unit 2
SequenceNumber	01 00 00 00	Sequence number 1
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
CrossID	4E 5A 31 56 37 42 4A 31 41 63 63 65 70 74 42 75 79 00 00 00	NZ1V7BJ1AcceptBuy
AuctionId	01 C0 91 A2 94 AB 78 04	2G4GYK000001 (base 36)
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	02	2 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	Symbol, Capacity
GroupCnt	03 00	3 repeating groups to follow
ClOrdID	4E 5A 31 56 37 47 4E 31 61 67 65 6E 63 79 00 00 00 00 00 00	NZ1V7GN1agency
OrderID	02 C0 91 A2 94 AB 78 04	2G4GYK000002 (base 36)

Capacity	50		P = Principal
ClOrdID	4E 5A 31 56 37 4B 46 31 63 6F		NZ1V7KF1contra1
	6E 74 72 61 31 00 00 00 00 00		
OrderID	03 C0 91 A2 94 AB 78 04		2G4GYK000003 (base 36)
Capacity	41		A = Agency
ClOrdID	4E 5A 31 56 37 4E 48 31 63 6F		NZ1V7NH1contra2
	6E 74 72 61 32 00 00 00 00 00		
OrderID	04 C0 91 A2 94 AB 78 04		2G4GYK000004 (base 36)
Capacity	41		A = Agency
Symbol	30 30 51 30 6B 41 00 00		00Q0kA

4.2.3 Quote Update Acknowledgment

Quote Update Acknowledgment messages are sent in response to a Quote Update message. The effect of each requested update will be found in this response. The ordering between request and response is preserved.

For quotes not marked post only which are priced at an executable price and which may remove liquidity against non-Market Maker liquidity, QuoteResult reason of D or d will be provided. In these cases, executions or cancellations (as needed) will immediately follow as additional messages. In some cases, an execution may not be permitted (e.g., risk management causes cancellation of the targeted order before execution), no additional messages will follow and the quote will post.

In some cases, a new *OrderID* will be assigned for an existing quote. There are currently two situations where this occurs, but others may be added in the future:

- An order which has received a large number of quote updates over its life will be assigned a new *OrderID* if receiving an update which would cause a loss in priority.

- A quote update sent to modify the PostingInstruction will be assigned a new *OrderID* if there is an existing quote in that symbol on that port and for that Firm.

If using the *OrderID* in your system or to correlate with an *OrderID* on PITCH, always be prepared to receive an update on an Quote Update Acknowledgment .

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x7D
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
QuoteUpdateID	18	16	Text	Echoed back from the original Quote Update request.

QuoteRejectReason	34	1	Text	Reason for rejection of an entire QUOTE UP-DATE message by the matching engine. If an error is indicated, then no quotes were entered or updated. *QuoteCnt* will be 0. <space> = Success See **Quote Reason Codes** (§ 7.2, p. 176) for a list of possible quote reject codes. Additional reasons may be added in the future without warning.
Reserved	35	17	Binary	Reserved for Cboe internal use. Filled with 0.
QuoteCnt	52	1	Binary	Number of repeating groups included in this quote update. Allowed values are 1-20.
Repeating Groups of. . .				
OrderID		8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. Order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
QuoteResult		1	Text	Result of the quote request. *Acceptance:* A = New Quote L = Modified; loss of priority R = Modified; retains priority (size reduction) N = No change, matches existing quote D = New Quote, but may remove liquidity d = Modified, but may remove liquidity *Cancellation:* U = User cancelled (zero size/price requested) *Rejection:* a = Admin P = Rejected, cannot post f = Risk management firm or Custom Group ID level S = Rejected, symbol not found p = Rejected, invalid price r = Invalid Remove s = Risk management underlying level u = Rejected, other reason Additional reasons indicating a reject may be added in the future with no notice.
SubLiquidity Indicator		1	Alphanumeric	**Cboe may add additional values without notice. Participants must gracefully ignore unknown values.** ASCII NUL (0x00) = No Additional Information N = Normal U = Qualifying Market Turner <space> = No quote on book

Subreason		1	Alphanumeric	Additional detail for a quote rejection. See **Subreason Codes** (§ 7.3, p. 177) for a list of possible subreasons.
Reserved		5	Binary	Reserved for Cboe internal use. Filled with 0.

Example Quote Update Acknowledgment Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	53 00	83 bytes
MessageType	7D	Quote Update Acknowledgment
MatchingUnit	00	Unsequenced - 0
SequenceNumber	00 00 00 00	Unsequenced - 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
QuoteUpdateID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
QuoteRejectReason	20	<space> = Success
Reserved	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	Ignore
QuotesCnt	02	2 quotes
OrderID	02 C0 91 A2 94 AB 78 04	2G4GYK000002 (base 36)
QuoteResult	64	d = Modified, but may remove liquidity
SubLiquidityIndicator	4E	N = Normal
Subreason	20	<space> = None
Reserved	00 00 00 00 00	Ignore
OrderID	03 C0 91 A2 94 AB 78 04	2G4GYK000003 (base 36)
QuoteResult	4C	L = Modified, loss of priority
SubLiquidityIndicator	55	U = Qualifying Market Tuber
Subreason	20	<space> = None
Reserved	00 00 00 00 00	Ignore

4.2.4 Order Rejected V2

ORDER REJECTED V2 messages are sent in response to a NEW ORDER V2 which must be rejected. This message corresponds to a FIX Execution Report with *ExecType* (150) = 8 (Rejected). ORDER REJECTED V2 messages are unsequenced.

Permitted return bits are described in § 5.3, p. 108.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x26
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).

ClOrdID	18	20	Text	Echoed back from the original order.
OrderRejectReason	38	1	Text	Reason for an order rejection. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	101	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Order Rejected V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	76 00	118 bytes
MessageType	26	Order Rejected V2
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence = 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
OrderRejectReason	44	D
Text	44 75 70 6C 69 63 61 74 65 20 43 6C 4F 72 64 49 44 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	Duplicate ClOrdID
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	03	3 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	01	Symbol
ReturnBitfield$_3$	06	ClearingFirm, ClearingAccount
Symbol	31 32 33 61 42 63 00 00	123aBc
ClearingFirm	54 45 53 54	TEST
ClearingAccount	00 00 00 00	(empty)

4.2.5 Cross Order Rejected (Options Only)

CROSS ORDER REJECTED messages are sent in response to a NEW ORDER CROSS which must be rejected. This message corresponds to a FIX Execution Report with *ExecType* (150) = 8 (Rejected). CROSS ORDER REJECTED messages are unsequenced.

Permitted return bits are described in § 5.4, p. 111.

Field	Offset	Length	Data Type	Description

StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x7E
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
CrossID	18	20	Text	Corresponds to *CrossID* (548) in Cboe FIX. Echoed back from the original order.
OrderRejectReason	38	1	Text	Reason for an order rejection. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	101	1	Binary	Bitfield identifying fields to return.
⋮				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Cross Order Rejected Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	59 00	89 bytes
MessageType	7E	Cross Order Rejected
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence = 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
CrossID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
OrderRejectReason	41	A
Text	53 65 72 69 65 73 20 6E 6F 74	Series not currently trading
	20 63 75 72 72 65 6E 74 6C 79	
	20 74 72 61 64 69 6E 67 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	02	2 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	01	*Symbol*
Symbol	30 30 51 30 6B 41 00 00	00Q0kA

4.2.6 Quote Update Rejected

QUOTE UPDATE REJECTED messages are sent in response to a QUOTE UPDATE message when the entire quote block is rejected by the order handler. No existing quotes are updated or cancelled as a result.

QUOTE UPDATE REJECTED messages are unsequenced.

Permitted return bits are described in § 5.4, p. 111.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x7F
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
QuoteUpdateID	18	16	Text	Echoed back from the QUOTE UPDATE request
QuoteRejectReason	34	1	Text	Reason for rejection of an entire QUOTE UPDATE message by the matching engine. If an error is indicated, then no quotes were entered or updated. *QuoteCnt* will be 0. `<space>` = Success See **Quote Reason Codes** (§ 7.2, p. 176) for a list of possible quote reject codes. Additional reasons may be added in the future without warning.
Reserved	35	17	Binary	Reserved for Cboe internal use. Filled with 0.

Example Quote Update Rejected Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	32 00	50 bytes
MessageType	7F	Quote Update Rejected V2
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence = 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
QuoteUpdateID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
QuoteRejectReason	4D	M = symbols not on same matching engine
Reserved	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	Ignore

4.2.7 Order Modified V2

ORDER MODIFIED V2 messages are sent in response to a MODIFY REQUEST V2 to indicate that the order has been successfully modified.

Note: You must opt-in to receiving LeavesQty in Order Modified V2 messages. In some cases, the last message to be received on an order's lifecycle will be an ORDER MODIFIED V2 message. The way to know the order is no longer live is to inspect *LeavesQty*. An example of this would be modification of an order whilst an execution is being generated, resulting in the order being reduced to zero outstanding quantity. To maintain return structure compatibility with Participants with Version 1, this field remains in the optional block.

Permitted return bits are described in § 5.5, p. 114.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x27
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	Client order ID. This is the *ClOrdID* from the Modify Order message.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. The unique *OrderID*. Modifications do *not* change the *OrderID*.
ReservedInternal	46	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	47	1	Binary	Number of bitfields to follow.
$ReturnBitfield_1$	48	1	Binary	Bitfield identifying fields to return.
⋮				
$ReturnBitfield_n$		1	Binary	Last bitfield.
Optional fields...				

Example Order Modified V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	35 00	63 bytes
MessageType	27	Order Modified V2
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	05	5 bitfields to follow
$ReturnBitfield_1$	04	*Price*
$ReturnBitfield_2$	00	No fields from byte 2
$ReturnBitfield_3$	00	No fields from byte 3
$ReturnBitfield_4$	00	No fields from byte 4
$ReturnBitfield_5$	02	*LeavesQty*

Price	08 E2 01 00 00 00 00 00	12.34
LeavesQty	00 00 00 00	0 (order done)

4.2.8 Order Restated

ORDER RESTATED messages are sent to inform the Participant that an order has been asynchronously modified for some reason without an explicit MODIFY ORDER request having been sent.

For Cboe Europe Derivatives, ORDER RESTATED messages will only be sent when an AggressiveHeld order is released to the Order Book.

Participants should be prepared to accept and apply ORDER RESTATED messages for any reason.

The return bitfields indicate the characteristics of the order which have changed. Optional fields will be present at the end of the message with the new values.

Note: You must opt-in to receiving *LeavesQty* in ORDER RESTATED messages. In some cases, the last message to be received on an order's lifecycle will be the ORDER RESTATED message. The way to know the order is no longer live is to inspect *LeavesQty*. An example of this would be restatement of an order in some cases due to *PreventParticipantMatch* being set to d.

Permitted return bits are described in § 5.6, p. 117.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x28
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	The *ClOrdID* is the identifier from the open order.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. The unique *OrderID*. For informational purposes only. Restatements do *not* change the *OrderID*.
RestatementReason	46	1	Alphanumeric	The reason for this Order Restated message. Q = Liquidity Updated Cboe reserves the right to add new values as necessary without prior notice.
ReservedInternal	47	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	48	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	49	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields. . .				

Example Order Restated V2 message for a reserve (iceberg) reload:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	41 00	65 bytes
MessageType	28	Order Restated V2
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
RestatementReason	4C	L = Reload
ReservedInternal	00	Ignore
NumberOfReturn	06	6 bitfields to follow
Bitfields		
ReturnBitfield$_1$	00	No fields from byte 1
ReturnBitfield$_2$	00	No fields from byte 2
ReturnBitfield$_3$	00	No fields from byte 3
ReturnBitfield$_4$	00	No fields from byte 4
ReturnBitfield$_5$	02	*LeavesQty*
ReturnBitfield$_6$	01	*SecondaryOrderId*
LeavesQty	64 00 00 00	100 contracts
SecondaryOrderId	0A 10 1E B7 5E 39 2F 02	171WC100000A (base 36)

4.2.9 Quote Restated

Quote Restated messages are sent to inform the Participant that an order has been asynchronously modified for some reason by the Exchange. Additional reasons may be added in the future.

In the case where an inbound quote will execute against a resting order or quote, then a Quote Restated message will be sent after the Quote Update Acknowledgment as a function of normal system behavior. These Restatements will contain the *RestatementReason* of Q=Liquidity.

This message may be expanded in length in the future with new fields added to the end. To maintain forward compatibility, be prepared to receive a message longer than the documented length and to gracefully ignore those extra fields.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x80
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
QuoteUpdateID	18	16	Text	Echoed back from the original Quote Update request.
OrderID	34	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX.

The unique *OrderID*. For informational purposes only. Restatements do *not* change the *OrderID*. |

LeavesQty	42	4	Binary	Corresponds to *LeavesQty* (151) in Cboe FIX. Quantity still open for further execution. If zero, the order is complete.
WorkingPrice	48	8	Binary Price	New working price.
Symbol	54	6	Alphanumeric	Cboe Symbology symbol
Side	60	1	Alphanumeric	1 = Buy 2 = Sell
RestatementReason	61	1	Alphanumeric	The reason for this Quote Restated message. W = Wash Q = Liquidity Updated

Example Quote Restated message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	3C 00	60 bytes
MessageType	80	Quote Restated
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
QuoteUpdateID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
LeavesQty	64 00 00 00	100 contracts
WorkingPrice	AC 07 01 00 00 00 00 00	6.75
Symbol	30 30 34 63 53 73	004cDs
Side	31	1 = Buy
RestatementReason	57	W = Wash

4.2.10 User Modify Rejected V2

USER MODIFY REJECTED V2 messages are sent in response to a MODIFY ORDER V2 for an order which cannot be modified. USER MODIFY REJECTED V2 messages are unsequenced.

This message corresponds to a FIX Execution Report with *MsgType* (35) = 9 (Order Cancel Reject) and *CxlRejResponseTo* (434) = 2 (Order Cancel/Replace Request).

Permitted return bits are described in § 5.7, p. 120.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x29
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).

ClOrdID	18	20	Text	The *ClOrdID* of the modify request which was rejected.
ModifyReject Reason	38	1	Text	Reason for a modify rejection. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	101	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example User Modify Rejected V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	63 00	99 bytes
MessageType	29	User Modify Rejected V2
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence = 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
ModifyRejectReason	50	Pending Fill
Text	50 65 6E 64 69 6E 67 00 00 00	Pending
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	00	No optional fields

4.2.11   Order Cancelled V2

An order has been cancelled.

Permitted return bits are described in § 5.8, p. 123.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x2A`

MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	The order which was cancelled.
CancelReason	38	1	Text	Reason for the order cancellation. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
ReservedInternal	39	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	40	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	41	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Order Cancelled V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	48 00	72 bytes
MessageType	2A	Order Cancelled V2
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
CancelReason	55	U = User Requested
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	05	5 bitfields to follow
ReturnBitfield$_1$	00	No fields from byte 1
ReturnBitfield$_2$	00	No fields from byte 2
ReturnBitfield$_3$	06	*ClearingFirm*, *ClearingAccount*
ReturnBitfield$_4$	00	No fields from byte 2
ReturnBitfield$_5$	01	*OrigClOrdId*
ClearingFirm	54 45 53 54	TEST
ClearingAccount	31 32 33 34	1234
OrigClOrdId	41 42 43 31 32 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC121

4.2.12 Quote Cancelled

A QUOTE CANCELLED message will be sent to indicate an unsolicited cancellation of a quote entered with a Quote Update message. An unsolicited cancellation is used, for example, when a resting quote is cancelled due to PTP with an inbound order or quotes are being cancelled due to a risk trip

This message may be expanded in length in the future with new fields added to the end. To maintain forward compatibility, be prepared to receive a message longer than the documented length and to gracefully ignore those

extra fields.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x81
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
QuoteUpdateID	18	16	Text	Echoed back from the original QUOTE UPDATE request.
OrderID	34	8	Binary	Corresponds to OrderID (37) in Cboe FIX. OrderID assigned by the matching engine.
Symbol	42	6	Alphanumeric	Cboe Symbology symbol
Side	48	1	Alphanumeric	1 = Buy 2 = Sell
CancelReason	49	1	Text	Reason for the quote cancellation. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
CancelSubreason	50	1	Alphanumeric	Additional detail for a quote cancellation. See **Subreason Codes** (§ 7.3, p. 177) for a list of possible subreasons.

Example Quote Cancelled message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	31 00	49 bytes
MessageType	81	Quote Cancelled
MatchingUnit	00	Unsequenced - 0
SequenceNumber	00 00 00 00	Unsequenced - 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
QuoteUpdateID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
Symbol	30 30 34 63 53 73	004cDs
Side	32	2 = Sell
CancelReason	55	U = User
CancelSubreason	42	B = Purge/Mass Cancel Symbol level by user

4.2.13 Cross Order Cancelled (Options Only)

A NEW ORDER CROSS has been cancelled. Individual order allocations from the original NEW ORDER CROSS message will be echoed back in the repeating groups.

In each repeating group, the ClOrdID and OrderId are always returned. Beyond that, the bits specified in the

optional return bitfields parameter group control which fields are returned. Any fields that appear in the repeating groups will not appear in the optional fields that come after the repeating groups.

Permitted return bits are described in § 5.9, p. 126.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x82`
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
CrossID	18	20	Text	Corresponds to *CrossID* (548) in Cboe FIX. The cross order which was cancelled.
CancelReason	38	1	Text	Reason for the order cancellation. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
ReservedInternal	39	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	40	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	41	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
GroupCnt		2	Binary	Number of order allocations represented by repeating groups included in this message.
Repeating Groups of. . .				
ClOrdID		20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (˜) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**

Field		Length	Type	Description
OrderID		8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. Order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
Side (Optional)		1	Alphanumeric	See **List of Optional Fields** (§ 6, p. 159).
AllocQty (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Capacity (Optional)		1	Alpha	See **List of Optional Fields** (§ 6, p. 159).
OpenClose (Optional)		1	Alphanumeric	See **List of Optional Fields** (§ 6, p. 159).
Account (Optional)		16	Text	See **List of Optional Fields** (§ 6, p. 159).
ClearingAccount (Optional)		4	Text	See **List of Optional Fields** (§ 6, p. 159).
ClearingFirm (Optional)		4	Alpha	See **List of Optional Fields** (§ 6, p. 159).
CustOrder HandlingInst (Optional)		1	Alpha	See **List of Optional Fields** (§ 6, p. 159).
AccountType (Optional)		1	Alphanumeric	See **List of Optional Fields** (§ 6, p. 159).
Order Origination (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
Algorithmic Indicator (Optional)		1	Text	See **List of Optional Fields** (§ 6, p. 159).
ClientID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Client QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
InvestorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Investor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
ExecutorID (Optional)		4	Binary	See **List of Optional Fields** (§ 6, p. 159).
Executor QualifiedRole (Optional)		1	Binary	See **List of Optional Fields** (§ 6, p. 159).
Optional fields...				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

Example Cross Order Cancelled Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.

MessageLength	8A 00	138 bytes
MessageType	82	Cross Order Cancelled
MatchingUnit	02	Matching Unit 2
SequenceNumber	01 00 00 00	Sequence number 1
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
CrossID	4E 5A 31 56 37 42 4A 31 41 63	NZ1V7BJ1AcceptBuy
	63 65 70 74 42 75 79 00 00 00	
CancelReason	55	U = User Requested
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	02	2 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	*Symbol, Capacity*
GroupCnt	03 00	3 repeating groups to follow
ClOrdID	4E 5A 31 56 37 47 4E 31 61 67	NZ1V7GN1agency
	65 6E 63 79 00 00 00 00 00 00	
OrderID	02 C0 91 A2 94 AB 78 04	2G4GYK000002 (base 36)
Capacity	43	P = Principal
ClOrdID	4E 5A 31 56 37 4B 46 31 63 6F	NZ1V7KF1contra1
	6E 74 72 61 31 00 00 00 00 00	
OrderID	03 C0 91 A2 94 AB 78 04	2G4GYK000003 (base 36)
Capacity	46	A = Agency
ClOrdID	4E 5A 31 56 37 4E 48 31 63 6F	NZ1V7NH1contra2
	6E 74 72 61 32 00 00 00 00 00	
OrderID	04 C0 91 A2 94 AB 78 04	2G4GYK000004 (base 36)
Capacity	46	A = Agency
Symbol	30 30 51 30 6B 41 00 00	00Q0kA

4.2.14   Cancel Rejected V2

A CANCEL REJECTED V2 message is sent in response to a CANCEL ORDER V2 message to indicate that the cancellation cannot occur. CANCEL REJECTED V2 messages are unsequenced.

Permitted return bitfields are described in § 5.10, p. 129.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x2B
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	The order whose cancel was rejected.
CancelReject Reason	38	1	Text	Reason for a cancel rejection. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.

Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	101	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Cancel Rejected V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	63 00	99 bytes
MessageType	2B	Cancel Rejected V2
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence = 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
CancelRejectReason	4A	J
Text	54 4F 4F 20 4C 41 54 45 00 00	TOO LATE
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	00	No optional fields

4.2.15 Order Execution V2

An ORDER EXECUTION V2 is sent for each fill on an order.

Rather than returning a monetary value indicating the rebate or charge for an execution, the *FeeCode* is an indication of a fee classification corresponding to an item on the venue's fee schedule.

For executions involving complex orders, an ORDER EXECUTION V2 message will be generated for the complex order, with *MultilegReportingType* = "3", followed by ORDER EXECUTION V2 messages for each leg, with *MultilegReportingType* = "2". You must opt-in to receiving this optional field on ORDER EXECUTION V2 messages at login in order to receive this field.

The symbology used on executions for complex orders, including the legs, will **always** be Cboe symbology.

Permitted return bitfields are described in § 5.11, p. 132.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.

Field	Offset	Length	Type	Description
MessageType	4	1	Binary	0x2C
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	Order receiving the execution.
ExecID	38	8	Binary	Corresponds to *ExecID* (17) in Cboe FIX. Execution ID. Unique across all matching units on a given day. Note: ExecIDs will be represented on ODROP, FIXDROP and standard DROP ports as base 36 ASCII. Example conversion: | **Decimal**	**Base 36**
---	---
28294005440239	A1234B567
76335905726621	R248BC23H
728557228187	09AP05V2Z	
LastShares	46	4	Binary	Corresponds to *LastShares* (32) in Cboe FIX. Executed contract quantity. System limit is 999,999 contracts.
LastPx	50	8	Binary Price	Corresponds to *LastPx* (31) in Cboe FIX. Price of this fill. Note the use of Binary Price to represent positive and negative prices, which can occur with complex/spread instruments.
LeavesQty	58	4	Binary	Corresponds to *LeavesQty* (151) in Cboe FIX. Quantity still open for further execution. If zero, the order is complete.
BaseLiquidity Indicator	62	1	Alphanumeric	Indicates whether the trade added or removed liquidity. `A` = Added Liquidity `R` = Removed Liquidity `C` = Auction Trade
SubLiquidity Indicator	63	1	Alphanumeric	Additional information about an execution. **Cboe may add additional values without notice. Participants must gracefully ignore unknown values.** ASCII NUL (0x00) = No Additional Information `b` = Automated Improvement Mechanism (AIM) `U` = Qualifying Market Turner order. Only set when *BaseLiquidityIndicator* = A. `g` = Aggressive Hold. Order held by speed bump.

ContraBroker	64	4	Alphanumeric	Corresponds to *ContraBroker* (375) in Cboe FIX.
ReservedInternal	68	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	69	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	70	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields. . .				

Example Order Execution V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	53 00	83 bytes
MessageType	2C	Order Execution V2
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
ExecID	01 F0 B7 D9 71 21 00 00	D19800001 (base 36)
LastShares	64 00 00 00	100 contracts
LastPx	08 E2 01 00 00 00 00 00	12.34
LeavesQty	00 00 00 00	0 (order completed)
BaseLiquidityIndicator	41	A = Added
SubLiquidityIndicator	00	(unset)
ContraBroker	42 41 54 53	BATS
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	03	3 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	00	No bitfields from byte 2
ReturnBitfield$_3$	46	*ClearingFirm*, *ClearingAccount*, *OrderQty*
ClearingFirm	54 45 53 54	TEST
ClearingAccount	31 32 33 43	1234
OrderQty	78 00 00 00	120 contracts

4.2.16 Quote Execution

A QUOTE EXECUTION message is used to indicate an execution has occurred on a resting quote.

This message may be expanded in length in the future with new fields added to the end. To maintain forward compatibility, be prepared to receive a message longer than the documented length and to gracefully ignore those extra fields.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.

MessageType	4	1	Binary	0x83
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
QuoteUpdateID	18	16	Text	Echoed back from the most recent QUOTE UPDATE request for this quote.
OrderID	34	8	Binary	Corresponds to OrderID (37) in Cboe FIX. Order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
ExecID	42	8	Binary	Corresponds to ExecID (17) in Cboe FIX. Execution ID. Unique across all matching units on a given day. Note: ExecIDs will be represented on ODROP, FIXDROP and standard DROP ports as base 36 ASCII. Example conversion:
Symbol	50	6	Alphanumeric	Cboe Symbology symbol
ClearingFirm	56	4	Alpha	Echoed back from the original quote.
LastShares	60	4	Binary	Corresponds to LastShares (32) in Cboe FIX. Executed contract quantity. System limit is 999,999 contracts.
LastPx	64	8	Binary Price	Corresponds to LastPx (31) in Cboe FIX. Price of this fill. Note the use of Binary Price to represent positive and negative prices, which can occur with complex/spread instruments.
LeavesQty	72	4	Binary	Corresponds to LeavesQty (151) in Cboe FIX. Quantity still open for further execution. If zero, the order is complete.
LastMkt	76	4	Alphanumeric	Corresponds to LastMkt (30) in Cboe FIX. Segment MIC of this fill.
Side	80	1	Alphanumeric	1 = Buy 2 = Sell
BaseLiquidity Indicator	81	1	Alphanumeric	Indicates whether the trade added or removed liquidity. A = Added Liquidity R = Removed Liquidity C = Auction Trade

Within the ExecID row, the following example conversion table appears:

Decimal	Base 36
28294005440239	A1234B567
76335905726621	R248BC23H
728557228187	09AP05V2Z

SubLiquidity Indicator	82	1	Alphanumeric	**Cboe may add additional values without notice. Participants must gracefully ignore unknown values.** ASCII NUL (0x00) = No Additional Information b = Automated Improvement Mechanism (AIM) U = Qualifying Market Turner
FeeCode	83	2	Alphanumeric	Indicates fee associated with an execution. Fee codes are published in the pricing schedule. New fee codes may be sent with little to no notice. Participants are encouraged to code their systems to accept unknown fee codes.

Example Quote Execution Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	54 00	84 bytes
MessageType	83	Quote Execution
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
QuoteUpdateID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ExecID	01 F0 B7 D9 71 21 00 00	D19800001 (base 36)
Symbol	30 30 51 30 6B 41	00Q0kA
ClearingFirm	54 45 53 54	TEST
LastShares	64 00 00 00	100 contracts
LastPx	70 17 00 00 00 00 00 00	0.60
LeavesQty	00 00 00 00	0 (order done)
LastMkt	43 45 44 58	CEDX
Side	32	2 = Sell
BaseLiquidityIndicator	41	A = Added
SubLiquidityIndicator	00	(unset)
FeeCode	41 42	AB

4.2.17 Trade Cancel or Correct V2

Used to relay a trade which has been cancelled (busted) or corrected (price or size change only). The *CorrectedPrice* and optional *CorrectedSize* fields will be set to 0 for cancelled trades and to the new trade price and/or size for corrected trades. TRADE CANCEL OR CORRECT V2 can be sent for same day as well as previous day trades.

Trade cancels or corrections to complex instruments will result in individual TRADE CANCEL OR CORRECT messages being sent for each leg. No cancels or corrections will be sent for complex instruments.

Permitted return bitfields are described in § 5.12, p. 135.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.

Field	Offset	Length	Type	Description
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x2D
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	*ClOrdID* of the order whose fill is being cancelled or corrected.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. Order whose fill is being cancelled or corrected.
ExecRefID	46	8	Binary	Corresponds to *ExecRefID* (19) in Cboe FIX. Refers to the *ExecID* (o)f the fill being cancelled or corrected.
Side	54	1	Alphanumeric	Side of the order.
BaseLiquidity Indicator	55	1	Alphanumeric	Indicates whether the trade added or removed liquidity. A = Added Liquidity R = Removed Liquidity C = Auction Trade
ClearingFirm	56	4	Alpha	Echoed back from the original order.
ClearingAccount	60	4	Text	Echoed back from the original order.
LastShares	64	4	Binary	Number of shares of the trade being cancelled.
LastPx	68	8	Binary Price	Price of the trade being cancelled.
CorrectedPrice	76	8	Binary Price	For trade corrections, this is the new trade price. For trade breaks, this is set to 0.
OrigTime	84	8	DateTime	Corresponds to *OrigTime* (42). The date and time of the original trade, in GMT.
ReservedInternal	92	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	93	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	94	1	Binary	Bitfield identifying fields to return.
⋮				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields. . .				

Example Trade Cancel or Correct Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	66 00	102 bytes
MessageType	2D	Trade Cancel or Correct V2
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000

ClOrdID	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ExecRefID	01 F0 B7 D9 71 21 00 00	D19800001 (base 36)
Side	31	Buy
BaseLiquidity Indicator	41	A = Added
ClearingFirm	54 45 53 54	TEST
ClearingAccount	00 00 00 00	(empty)
LastShares	64 00 00 00	100 contracts
LastPx	70 17 00 00 00 00 00 00	0.60
CorrectedPrice	00 00 00 00 00 00 00 00	0 (cancelled)
OrigTime	E0 BA 75 95 15 4C EB 11	1,291,209,373,757,324,000
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	02	4 bitfields to follow
ReturnBitfield$_1$	00	No fields from byte 1
ReturnBitfield$_2$	01	Symbol
Symbol	30 30 51 30 6B 41 00 00	00Q0kA

4.2.18 Purge Rejected

A Purge Rejected V2 message is sent in response to a Purge Orders V2 message to indicate that the mass cancellation cannot occur. Purge Rejected V2 messages are unsequenced.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x48
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
PurgeReject Reason	18	1	Text	Reason for a purge rejection. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
Text	19	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	79	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	80	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	81	1	Binary	Bitfield identifying fields to return.
⋮				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields. . .				

Example Purge Rejected V2 Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	72 00	114 bytes
MessageType	48	Purge Rejected V2
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence = 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
PurgeRejectReason	41	A
Text	41 44 4D 49 4E 00 00 00 00 00	ADMIN
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00 00 00	
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	0F	15 bitfields to follow
ReturnBitfield$_1$	00	No fields from byte 1
ReturnBitfield$_2$	00	No fields from byte 2
ReturnBitfield$_3$	00	No fields from byte 3
ReturnBitfield$_4$	00	No fields from byte 4
ReturnBitfield$_5$	00	No fields from byte 5
ReturnBitfield$_6$	00	No fields from byte 6
ReturnBitfield$_7$	00	No fields from byte 7
ReturnBitfield$_8$	00	No fields from byte 8
ReturnBitfield$_9$	00	No fields from byte 9
ReturnBitfield$_{10}$	00	No fields from byte 10
ReturnBitfield$_{11}$	00	No fields from byte 11
ReturnBitfield$_{12}$	00	No fields from byte 12
ReturnBitfield$_{13}$	00	No fields from byte 13
ReturnBitfield$_{14}$	00	No fields from byte 14
ReturnBitfield$_{15}$	08	MassCancelId
MassCancelId	41 42 43 31 32 33 00 00 00 00	ABC123
	00 00 00 00 00 00 00 00 00 00	

4.2.19 Reset Risk Acknowledgment

Response to a RESET RISK request.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x57
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.

RiskStatusID	10	16	Text	Unique identifier for this Reset Risk request. Response message will have this corresponding identifier. **Note: Cboe only enforces uniqueness of RiskStatusID values among currently unacknowledged requests. However, we strongly recommend that you keep your RiskStatusID values day-unique.**
RiskResetResult	26	1	Text	\<space\> = Ignored; exceeds 1 reset per second Y = Success F = Rejected; exceeds firm reset limit C = Rejected; exceeds Custom Group ID limit D = Rejected; automatic risk resets are disabled E = Rejected; empty ResetRisk field I = Rejected; Incorrect data center S = Rejected; exceeds risk root reset limit U = Rejected; invalid underlying c = Rejected; invalid ClearingFirm y = Rejected; in replay Additional reject values may be added in the future with no notice.

Example Reset Risk Acknowledgment Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	19 00	25 bytes
MessageType	57	Reset Risk Acknowledgment
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence
RiskStatusID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00	ABC123
RiskResetResult	59	Y = Success

4.2.20 Mass Cancel Acknowledgment

A MASS CANCEL ACKNOWLEDGMENT is an unsequenced message sent when a PURGE ORDERS or CANCEL ORDER V2 message requesting a mass cancellation has completed cancelling all individual orders.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x36
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time in the order entry gateway when the final matching engine event was received to complete the mass cancel.

MassCancelId	18	20	Text	Copied from the MassCancelId passed on the original CANCEL ORDER V2 or PURGE ORDERS V2. This field corresponds to MassCancelId (7695) in Cboe FIX.
CancelledOrder Count	38	4	Binary	Number of orders cancelled. This field corresponds to CancelledOrderCount (7696) in Cboe FIX.
ReservedInternal	42	1	Binary	Reserved for Cboe internal use.

Example Mass Cancel Acknowledgment Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes
MessageLength	29 00	41 bytes
MessageType	36	Mass Cancel Acknowledgment
MatchingUnit	00	Unsequenced Message, unit = 0
SequenceNumber	00 00 00 00	Unsequenced Message, sequence = 0
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
MassCancelId	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
CancelledOrderCount	63 00 00 00	99 orders were cancelled
ReservedInternal	00	Ignore

4.2.21 Complex Instrument Accepted (Options only)

The COMPLEX INSTRUMENT ACCEPTED is used to indicate acceptance of a complex strategy. The leg order sent back may differ from the originating request; *RevisedLegs* will indicate if the leg order has been altered from the original request.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x4D
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).

ClOrdID	18	20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (˜) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**
Symbol	38	8	Alphanumeric	Corresponds to *Symbol* (55) in Cboe FIX. Cboe Symbology for the instrument.
RevisedLegs	46	1	Alphanumeric	Indicates if the legs on the created complex strategy have been reordered from the original request. If the legs were reordered, the order of the Open-Close fields on a NEWCOMPLEXORDER must be the order returned by the exchange, not the order from the original request. 1 = Legs were not reordered 2 = Legs were reordered
NoOfSecurities	47	4	Binary	Corresponds to *NoOfSecurities* (8641) in Cboe FIX. Indicates the number of securities created by the member in this trading session.
ReservedInternal	51	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	52	1	Binary	Number of bitfields to follow.
$ReturnBitfield_1$	53	1	Binary	Bitfield identifying fields to return.
$\vdots$				
$ReturnBitfield_n$		1	Binary	Last bitfield.
NoLegs		1	Binary	Corresponds to *NoLegs* (555) in Cboe FIX. Indicates the number of repeating groups to follow. Must be a minimum of 2 and a maximum of 13.

Repeating Group *ComplexLeg* must occur the number of times specified in *NoLegs*. Each field occurs in each group, in order as shown below. Optional fields occur only if corresponding bits in bitfields are set.

LegSymbol	8	Alphanumeric	Corresponds to *LegSymbol* (600) in Cboe FIX.
LegPrice	8	Binary Price	Corresponds to *LegPrice* (566) in Cboe FIX. Reference price for the future leg of a Volatility Strategy. Mandatory for this case, otherwise ignored. See the Volatility Strategies section (p. 7) for more details.
LegRatioQty	4	Binary	Corresponds to *LegRatioQty* (623) in Cboe FIX. Ratio of number of contracts in this leg per order quantity. Must be between 1 and 99,999.
LegSide	1	Alphanumeric	Corresponds to *LegSide* (624) in Cboe FIX. 1 = Buy 2 = Sell

Optional fields...				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

Example Complex Instrument Accepted Message:

Field Name	Hexadecimal	Notes
StartOfMessage	BA BA	Start of message bytes.
MessageLength	44 00	68 bytes
MessageType	4D	Complex Instrument Accepted
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
Symbol	5A 4E 4B 38 46 43 00 00	ZNK8FC
RevisedLegs	30	Legs accepted as sent
NoOfSecurities	04 00 00 00	4 complex strategies created by sender
NumberOfReturn InstrumentBitfields	00	no bitfields to follow
NoLegs	03	2 legs
LegSymbol	30 30 51 30 6B 41 00 00	00Q0kA
LegRatioQty	02 00 00 00	Ratio of 2
LegSide	31	Buy
LegSymbol	30 30 51 33 6B 43 00 00	00Q3kC
LegRatioQty	01 00 00 00	Ratio of 1
LegSide	32	Sell

4.2.22 Complex Instrument Rejected (Options only)

The COMPLEX INSTRUMENT REJECTED is used to indicate that a requested complex strategy has been rejected. COMPLEX INSTRUMENT REJECTED messages are unsequenced.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x4E
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
ClOrdID	18	20	Text	Corresponds to ClOrdID (11) in Cboe FIX. Day-unique ID chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe. A leading tilde (˜) cannot be sent on any ClOrdId and will result in a reject. These are reserved for internal use by Cboe and could be received as a result of a system generated ClOrdId. If the ClOrdID matches a live order, the order will be rejected as duplicate. **Note: Cboe only enforces uniqueness of ClOrdID values among currently live orders. However, we strongly recommend that you keep your ClOrdID values day-unique.**
OrderRejectReason	38	1	Text	Reason for an order rejection. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
NoOfSecurities	99	4	Binary	Corresponds to NoOfSecurities (8641) in Cboe FIX. Indicates the number of securities created by the member in this trading session.
ReservedInternal	103	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	104	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	105	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields...				

Example Complex Instrument Rejected Message:

Field Name	Hexadecimal										Notes
StartOfMessage	BA	BA									Start of message bytes.
MessageLength	64	00									100 bytes
MessageType	4E										Complex Instrument Rejected
MatchingUnit	00										Unsequenced Message, unit = 0
SequenceNumber	00	00	00	00							Unsequenced Message, sequence = 0
TransactionTime	E0	FA	20	F7	36	71	F8	11			1,294,909,373,757,324,000
ClOrdID	41	42	43	31	32	33	00	00	00	00	ABC123
	00	00	00	00	00	00	00	00	00	00	
OrderRejectReason	44										D
Text	44	75	70	6C	69	63	61	74	65	20	Duplicate ClOrdID
	43	6C	4F	72	64	49	44	00	00	00	
	00	00	00	00	00	00	00	00	00	00	
	00	00	00	00	00	00	00	00	00	00	
	00	00	00	00	00	00	00	00	00	00	
	00	00	00	00	00	00	00	00	00	00	
NoOfSecurities	04	00	00	00							4 complex strategies created by sender
ReservedInternal	00										Ignore
NumberOfReturn	00										no bitfields to follow

4.2.23 Trade Capture Report Acknowledgment V2

The TRADE CAPTURE REPORT ACKNOWLEDGMENT V2 is sent by Cboe to acknowledge the receipt of a TRADE CAPTURE REPORT V2. It is a technical-level ack. The Trade is not considered to have fully succeeded until a TRADE CAPTURE CONFIRM V2 is sent.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the StartOfMessage field.
MessageType	4	1	Binary	0x30
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
TradeReportID	18	20	Text	Corresponds to TradeReportID (571) in Cboe FIX. Contains the TradeReportID (571) of the original trade capture report to which this message relates
ReservedInternal	38	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	39	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	40	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
NoSides		1	Binary	Corresponds to NoSides (552) in Cboe FIX. Indicates the number of repeating groups to follow. Must be 2.

Repeating Group *TrdCapAckSideGrp* must occur the number of times specified in *NoSides*. All fields are optional. Each field occurs in each group, in bitfield order as shown below, if its corresponding bit in the bitfields bit is set.

Side	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
Capacity	1	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
Account	16	Text	Echoed back from the original TRADE CAPTURE REPORT V2 message.
PartyID	4	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
PartyRole	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
OpenClose	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
CustOrder HandlingInst	1	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
AccountType	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
Optional fields. . .				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

4.2.24 Trade Capture Report Reject V2

The TRADE CAPTURE REPORT REJECT V2 is sent by Cboe in response to a TRADE CAPTURE REPORT V2. TRADE CAPTURE REPORT REJECT V2 messages are unsequenced.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x31
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
TradeReportID	18	20	Text	Corresponds to *TradeReportID* (571) in Cboe FIX. Contains the *TradeReportID* (571) of the original trade capture report to which this message relates

Reason	38	1	Text	Reason for a Trade Capture Report reject or decline. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	101	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
NoSides		1	Binary	Corresponds to NoSides (552) in Cboe FIX. Indicates the number of repeating groups to follow. Must be 2.

Repeating Group *TrdCapAckSideGrp* must occur the number of times specified in *NoSides*. All fields are optional. Each field occurs in each group, in bitfield order as shown below, if its corresponding bit in the bitfields bit is set.

Side		1	Alphanumeric	Echoed back from the original Trade Capture Report V2 message.
Capacity		1	Alpha	Echoed back from the original Trade Capture Report V2 message.
Account		16	Text	Echoed back from the original Trade Capture Report V2 message.
PartyID		4	Alpha	Echoed back from the original Trade Capture Report V2 message.
PartyRole		1	Alphanumeric	Echoed back from the original Trade Capture Report V2 message.
OpenClose		1	Alphanumeric	Echoed back from the original Trade Capture Report V2 message.
CustOrder HandlingInst		1	Alpha	Echoed back from the original Trade Capture Report V2 message.
AccountType		1	Alphanumeric	Echoed back from the original Trade Capture Report V2 message.

Optional fields...				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

4.2.25 Trade Capture Confirm V2

The Trade Capture Confirm V2 is sent from Cboe to the participant in order to confirm that a Trade Capture Report V2 has been fully processed. It is a business-level confirmation as distinct from the technology level acknowledgment sent as a Trade Capture Report Acknowledgment V2.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.

MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x32
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).
TradeReportID	18	20	Text	Corresponds to *TradeReportID* (571) in Cboe FIX. Unique identifier for the trade report confirm as provided by Cboe
TradeReportRefID	38	20	Text	Corresponds to *TradeReportRefID* (572) in Cboe FIX. Contains the *TradeReportID* (571) of the original trade capture report to which this message relates
TradeID	58	8	Binary	Corresponds to *TradeID* (1003) in FIX. An ID allocated by Cboe in response to a trade capture report, identifying a particular trade. These are present in the PITCH Off-Book Trade messages, and are guaranteed unique for a minimum of 7 calendar days from the original report.
LastShares	66	4	Binary	Corresponds to *LastShares* (32) in Cboe FIX. Executed contract quantity. System limit is 999,999 contracts.
LastPx	70	8	Trade Price	Corresponds to *LastPx* (31) in Cboe FIX. Price of this fill. Note the use of Binary Price to represent positive and negative prices, which can occur with complex/spread instruments.
ContraBroker	78	4	Alphanumeric	Corresponds to *ContraBroker* (375) in Cboe FIX. Indicates the market of execution. [1]
ReservedInternal	82	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	83	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	84	1	Binary	Bitfield identifying fields to return.
$\vdots$				
ReturnBitfield$_n$		1	Binary	Last bitfield.
NoSides		1	Binary	Corresponds to *NoSides* (552) in Cboe FIX. Indicates the number of repeating groups to follow. Must be 2.

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[1] for historical reasons a local execution for an order entered into the BXE book is identified with a value of BATS

Repeating Group *TrdCapAckSideGrp* must occur the number of times specified in *NoSides*. All fields are optional. Each field occurs in each group, in bitfield order as shown below, if its corresponding bit in the bitfields bit is set.

Side	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
Capacity	1	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
Account	16	Text	Echoed back from the original TRADE CAPTURE REPORT V2 message.
PartyID	4	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
Central Counterparty	1	Alpha	The CCP handling the trade C = EuroCCP
PartyRole	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
FeeCode	2	Alphanumeric	Indicates fee associated with an execution. Fee codes are published in the pricing schedule. New fee codes may be sent with little to no notice. Participants are encouraged to code their systems to accept unknown fee codes.
OpenClose	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
CustOrder HandlingInst	1	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
AccountType	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.

Optional fields. . .				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

4.2.26 Trade Capture Report Decline V2

The TRADE CAPTURE DECLINE V2 is sent from Cboe to the participant in order to decline a TRADE CAPTURE REPORT V2. It is a business-level reject as distinct from the technology level acknowledgment sent as a TRADE CAPTURE REPORT ACKNOWLEDGMENT V2.

Field	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x33
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in CEDX BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe matching engine (not the time the message was sent).

TradeReportID	18	20	Text	Corresponds to *TradeReportID* (571) in Cboe FIX. Unique identifier for the trade report confirm as provided by Cboe
TradeReportRefID	38	20	Text	Corresponds to *TradeReportRefID* (572) in Cboe FIX. Contains the *TradeReportID* (571) of the original trade capture report to which this message relates
TradeID	58	8	Binary	Corresponds to *TradeID* (1003) in FIX. An ID allocated by Cboe in response to a trade capture report, identifying a particular trade. These are present in the PITCH Off-Book Trade messages, and are guaranteed unique for a minimum of 7 calendar days from the original report.
LastShares	66	4	Binary	Corresponds to *LastShares* (32) in Cboe FIX. Executed contract quantity. System limit is 999,999 contracts.
LastPx	70	8	Trade Price	Corresponds to *LastPx* (31) in Cboe FIX. Price of this fill. Note the use of Binary Price to represent positive and negative prices, which can occur with complex/spread instruments.
ContraBroker	78	4	Alphanumeric	Corresponds to *ContraBroker* (375) in Cboe FIX. Indicates the market of execution. [2]
Reason	82	1	Text	Reason for a TRADE CAPTURE REPORT reject or decline. See **Reason Codes** (§ 7.1, p. 175) for a list of possible reasons.
Text	83	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	143	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	144	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	145	1	Binary	Bitfield identifying fields to return.
⋮				
ReturnBitfield$_n$		1	Binary	Last bitfield.
NoSides		1	Binary	Corresponds to *NoSides* (552) in Cboe FIX. Indicates the number of repeating groups to follow. Must be 2.

---

[2] for historical reasons a local execution for an order entered into the BXE book is identified with a value of BATS

Repeating Group *TrdCapAckSideGrp* must occur the number of times specified in *NoSides*. All fields are optional. Each field occurs in each group, in bitfield order as shown below, if its corresponding bit in the bitfields bit is set.

	Side	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
	Capacity	1	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
	Account	16	Text	Echoed back from the original TRADE CAPTURE REPORT V2 message.
	PartyID	4	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
	PartyRole	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
	OpenClose	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.
	CustOrder HandlingInst	1	Alpha	Echoed back from the original TRADE CAPTURE REPORT V2 message.
	AccountType	1	Alphanumeric	Echoed back from the original TRADE CAPTURE REPORT V2 message.

Optional fields. . .				Optional fields as set in the bitmap. Note, optional fields that occur in the repeating groups appear above, repeating per group, not within this block.

5 Return Bitfields Per Message

Legend:

• Indicates that the field can be requested for a message
− Indicates that the field cannot be requested for a message

5.1 Order Acknowledgment V2

Byte	Bit	Field	
1	1	*Side*	•
	2	*PegDifference*	−
	4	*Price*	•
	8	*ExecInst*	−
	16	*OrdType*	•
	32	*TimeInForce*	•
	64	*MinQty*	•
	128	*MaxRemovePct*	−
2	1	*Symbol*	•
	2	*SymbolSfx*	−
	4	*Currency*	−
	8	*IdSource*	•
	16	*SecurityId*	•
	32	*SecurityExchange*	−
	64	*Capacity*	•
	128	*ContraTrader*	−
3	1	*Account*	•
	2	*ClearingFirm*	•
	4	*ClearingAccount*	•
	8	*DisplayIndicator*	•
	16	*MaxFloor*	−
	32	*DiscretionAmount*	−
	64	*OrderQty*	•
	128	*PreventMatch*	•
4	1	*MaturityDate*	−
	2	*StrikePrice*	−
	4	*PutOrCall*	−
	8	*OpenClose*	•
	16	*ClOrdIdBatch*	−
	32	*CorrectedSize*	−
	64	*PartyID*	−
	128	*AccessFee*	−
5	1	*OrigClOrdId*	•
	2	*LeavesQty*	•
	4	*LastShares*	•
	8	*LastPrice*	•
	16	*DisplayPrice*	•
	32	*WorkingPrice*	•
	64	*BaseLiquidityIndicator*	•
	128	*ExpireTime*	•

continued...

Byte	Bit	Field	
6	1	SecondaryOrderId	●
	2	CCP	–
	4	ContraCapacity	–
	8	AttributedQuote	–
	16	ExtExecInst	–
	32	BulkOrderIds	–
	64	BulkRejectReasons	–
	128	PartyRole	–
7	1	SubLiquidityIndicator	●
	2	TradeReportTypeReturn	–
	4	TradePublishIndReturn	–
	8	Text	–
	16	Bid	–
	32	Offer	–
	64	LargeSize	–
	128	LastMkt	–
8	1	FeeCode	–
	2	EchoText	–
	4	StopPx	●
	8	RoutingInst	●
	16	RoutStrategy	–
	32	RouteDeliveryMethod	–
	64	ExDestination	–
	128	TradeReportRefID	–
9	1	MarketingFeeCode	–
	2	TargetPartyID	–
	4	AuctionId	●
	8	OrderCategory	–
	16	LiquidityProvision	●
	32	CmtaNumber	–
	64	CrossType	–
	128	CrossPrioritization	–
10	1	CrossId	–
	2	AllocQty	–
	4	GiveUpFirmID	–
	8	RoutingFirmID	–
	16	WaiverType	–
	32	CrossExclusionIndicator	–
	64	PriceFormation	–
	128	ClientQualifiedRole	●
11	1	ClientID	●
	2	InvestorID	●
	4	ExecutorID	●
	8	OrderOrigination	●
	16	AlgorithmicIndicator	●
	32	DeferralReason	–
	64	InvestorQualifiedRole	●
	128	ExecutorQualifiedRole	●

continued. . .

Byte	Bit	Field	
12	1	CtiCode	–
	2	ManualOrderIndicator	–
	4	OperatorId	–
	8	TradeDate	–
	16	ClearingPrice	–
	32	ClearingSize	–
	64	ClearingSymbol	–
	128	ClearingOptionalData	–
13	1	CumQty	–
	2	DayOrderQty	–
	4	DayCumQty	–
	8	AvgPx	–
	16	DayAvgPx	–
	32	PendingStatus	–
	64	DrillThruProtection	●
	128	MultilegReportingType	–
14	1	LegCFICode	–
	2	LegMaturityDate	–
	4	LegStrikePrice	–
	8	QuoteRoomID	–
	16	SecondaryExecId	–
	32	UserRequestID	–
	64	Username	–
	128	UserStatus	–
15	1	TradeReportingIndicator	–
	2	EquityPartyId	–
	4	EquityNBBOProtect	–
	8	MassCancelId	–
	16	TradePublishInd	–
	32	ReportTime	–
	64	LegSymbolSfx	–
	128	ClientIdAttr	–
16	1	FrequentTraderID	–
	2	SessionEligibility	–
	4	ComboOrder	–
	8	Compression	–
	16	FloorDestination	–
	32	FloorRoutingInst	–
	64	MultiClassSpread	–
	128	OrderOrigin	–
17	1	PriceType	–
	2	StrategyId	–
	4	TradingSessionId	–
	8	TradeThroughAlertType	–
	16	SenderLocationId	–
	32	FloorTraderAcronym	–
	64	ExecLegCFICode	–
	128	CustOrderHandlingInst	●

Byte	Bit	Field	
18	1	*AccountType*	●
	2	*CrossInitiator*	−
	4	*Subreason*	−
	8	*ReservedBit*	−
	16	*ReservedBit*	−
	32	*ReservedBit*	−
	64	*ReservedBit*	−
	128	*ReservedBit*	−

5.2 Cross Order Acknowledgment (Options Only)

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	●
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*ContraTrader*	–
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	●
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	●
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued...

Byte	Bit	Field	
7	1	SubLiquidityIndicator	–
	2	TradeReportTypeReturn	–
	4	TradePublishIndReturn	–
	8	Text	–
	16	Bid	–
	32	Offer	–
	64	LargeSize	–
	128	LastMkt	–
8	1	FeeCode	–
	2	EchoText	–
	4	StopPx	–
	8	RoutingInst	–
	16	RoutStrategy	–
	32	RouteDeliveryMethod	–
	64	ExDestination	–
	128	TradeReportRefID	–
9	1	MarketingFeeCode	–
	2	TargetPartyID	–
	4	AuctionId	–
	8	OrderCategory	–
	16	LiquidityProvision	●
	32	CmtaNumber	–
	64	CrossType	●
	128	CrossPrioritization	●
10	1	CrossId	●
	2	AllocQty	●
	4	GiveUpFirmID	–
	8	RoutingFirmID	–
	16	WaiverType	–
	32	CrossExclusionIndicator	–
	64	PriceFormation	–
	128	ClientQualifiedRole	●
11	1	ClientID	●
	2	InvestorID	●
	4	ExecutorID	●
	8	OrderOrigination	●
	16	AlgorithmicIndicator	●
	32	DeferralReason	–
	64	InvestorQualifiedRole	●
	128	ExecutorQualifiedRole	●
12	1	CtiCode	–
	2	ManualOrderIndicator	–
	4	OperatorId	–
	8	TradeDate	–
	16	ClearingPrice	–
	32	ClearingSize	–
	64	ClearingSymbol	–
	128	ClearingOptionalData	–

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	−
	2	*DayOrderQty*	−
	4	*DayCumQty*	−
	8	*AvgPx*	−
	16	*DayAvgPx*	−
	32	*PendingStatus*	−
	64	*DrillThruProtection*	●
	128	*MultilegReportingType*	−
14	1	*LegCFICode*	−
	2	*LegMaturityDate*	−
	4	*LegStrikePrice*	−
	8	*QuoteRoomID*	−
	16	*SecondaryExecId*	−
	32	*UserRequestID*	−
	64	*Username*	−
	128	*UserStatus*	−
15	1	*TradeReportingIndicator*	−
	2	*EquityPartyId*	−
	4	*EquityNBBOProtect*	−
	8	*MassCancelId*	−
	16	*TradePublishInd*	−
	32	*ReportTime*	−
	64	*LegSymbolSfx*	−
	128	*ClientIdAttr*	−
16	1	*FrequentTraderID*	−
	2	*SessionEligibility*	−
	4	*ComboOrder*	−
	8	*Compression*	−
	16	*FloorDestination*	−
	32	*FloorRoutingInst*	−
	64	*MultiClassSpread*	−
	128	*OrderOrigin*	−
17	1	*PriceType*	−
	2	*StrategyId*	−
	4	*TradingSessionId*	−
	8	*TradeThroughAlertType*	−
	16	*SenderLocationId*	−
	32	*FloorTraderAcronym*	−
	64	*ExecLegCFICode*	−
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	●
	2	*CrossInitiator*	−
	4	*Subreason*	−
	8	*ReservedBit*	−
	16	*ReservedBit*	−
	32	*ReservedBit*	−
	64	*ReservedBit*	−
	128	*ReservedBit*	−

5.3 Order Rejected V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	●
	8	*ExecInst*	–
	16	*OrdType*	●
	32	*TimeInForce*	●
	64	*MinQty*	●
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*ContraTrader*	–
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	●
	8	*DisplayIndicator*	●
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	●
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	●
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued. . .

Byte	Bit	Field	
7	1	SubLiquidityIndicator	–
	2	TradeReportTypeReturn	–
	4	TradePublishIndReturn	–
	8	Text	–
	16	Bid	–
	32	Offer	–
	64	LargeSize	–
	128	LastMkt	–
8	1	FeeCode	–
	2	EchoText	–
	4	StopPx	•
	8	RoutingInst	•
	16	RoutStrategy	–
	32	RouteDeliveryMethod	–
	64	ExDestination	–
	128	TradeReportRefID	–
9	1	MarketingFeeCode	–
	2	TargetPartyID	–
	4	AuctionId	–
	8	OrderCategory	–
	16	LiquidityProvision	•
	32	CmtaNumber	–
	64	CrossType	–
	128	CrossPrioritization	–
10	1	CrossId	–
	2	AllocQty	–
	4	GiveUpFirmID	–
	8	RoutingFirmID	–
	16	WaiverType	–
	32	CrossExclusionIndicator	–
	64	PriceFormation	–
	128	ClientQualifiedRole	•
11	1	ClientID	•
	2	InvestorID	•
	4	ExecutorID	•
	8	OrderOrigination	•
	16	AlgorithmicIndicator	•
	32	DeferralReason	–
	64	InvestorQualifiedRole	•
	128	ExecutorQualifiedRole	•
12	1	CtiCode	–
	2	ManualOrderIndicator	–
	4	OperatorId	–
	8	TradeDate	–
	16	ClearingPrice	–
	32	ClearingSize	–
	64	ClearingSymbol	–
	128	ClearingOptionalData	–

continued. . .

Byte	Bit	Field	
13	1	CumQty	–
	2	DayOrderQty	–
	4	DayCumQty	–
	8	AvgPx	–
	16	DayAvgPx	–
	32	PendingStatus	–
	64	DrillThruProtection	–
	128	MultilegReportingType	–
14	1	LegCFICode	–
	2	LegMaturityDate	–
	4	LegStrikePrice	–
	8	QuoteRoomID	–
	16	SecondaryExecId	–
	32	UserRequestID	–
	64	Username	–
	128	UserStatus	–
15	1	TradeReportingIndicator	–
	2	EquityPartyId	–
	4	EquityNBBOProtect	–
	8	MassCancelId	–
	16	TradePublishInd	–
	32	ReportTime	–
	64	LegSymbolSfx	–
	128	ClientIdAttr	–
16	1	FrequentTraderID	–
	2	SessionEligibility	–
	4	ComboOrder	–
	8	Compression	–
	16	FloorDestination	–
	32	FloorRoutingInst	–
	64	MultiClassSpread	–
	128	OrderOrigin	–
17	1	PriceType	–
	2	StrategyId	–
	4	TradingSessionId	–
	8	TradeThroughAlertType	–
	16	SenderLocationId	–
	32	FloorTraderAcronym	–
	64	ExecLegCFICode	–
	128	CustOrderHandlingInst	●
18	1	AccountType	●
	2	CrossInitiator	–
	4	Subreason	●
	8	ReservedBit	–
	16	ReservedBit	–
	32	ReservedBit	–
	64	ReservedBit	–
	128	ReservedBit	–

5.4 Cross Order Rejected (Options Only)

Byte	Bit	Field	
1	1	*Side*	−
	2	*PegDifference*	−
	4	*Price*	●
	8	*ExecInst*	−
	16	*OrdType*	−
	32	*TimeInForce*	−
	64	*MinQty*	−
	128	*MaxRemovePct*	−
2	1	*Symbol*	●
	2	*SymbolSfx*	−
	4	*Currency*	−
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	−
	64	*Capacity*	−
	128	*ContraTrader*	−
3	1	*Account*	−
	2	*ClearingFirm*	−
	4	*ClearingAccount*	−
	8	*DisplayIndicator*	−
	16	*MaxFloor*	−
	32	*DiscretionAmount*	−
	64	*OrderQty*	●
	128	*PreventMatch*	●
4	1	*MaturityDate*	−
	2	*StrikePrice*	−
	4	*PutOrCall*	−
	8	*OpenClose*	−
	16	*ClOrdIdBatch*	−
	32	*CorrectedSize*	−
	64	*PartyID*	−
	128	*AccessFee*	−
5	1	*OrigClOrdId*	−
	2	*LeavesQty*	−
	4	*LastShares*	−
	8	*LastPrice*	−
	16	*DisplayPrice*	−
	32	*WorkingPrice*	−
	64	*BaseLiquidityIndicator*	−
	128	*ExpireTime*	−
6	1	*SecondaryOrderId*	−
	2	*CCP*	−
	4	*ContraCapacity*	−
	8	*AttributedQuote*	−
	16	*ExtExecInst*	−
	32	*BulkOrderIds*	−
	64	*BulkRejectReasons*	−
	128	*PartyRole*	−

continued...

Byte	Bit	Field	
7	1	SubLiquidityIndicator	−
	2	TradeReportTypeReturn	−
	4	TradePublishIndReturn	−
	8	Text	−
	16	Bid	−
	32	Offer	−
	64	LargeSize	−
	128	LastMkt	−
8	1	FeeCode	−
	2	EchoText	−
	4	StopPx	−
	8	RoutingInst	−
	16	RoutStrategy	−
	32	RouteDeliveryMethod	−
	64	ExDestination	−
	128	TradeReportRefID	−
9	1	MarketingFeeCode	−
	2	TargetPartyID	−
	4	AuctionId	−
	8	OrderCategory	−
	16	LiquidityProvision	−
	32	CmtaNumber	−
	64	CrossType	●
	128	CrossPrioritization	●
10	1	CrossId	●
	2	AllocQty	−
	4	GiveUpFirmID	−
	8	RoutingFirmID	−
	16	WaiverType	−
	32	CrossExclusionIndicator	−
	64	PriceFormation	−
	128	ClientQualifiedRole	−
11	1	ClientID	−
	2	InvestorID	−
	4	ExecutorID	−
	8	OrderOrigination	−
	16	AlgorithmicIndicator	−
	32	DeferralReason	−
	64	InvestorQualifiedRole	−
	128	ExecutorQualifiedRole	−
12	1	CtiCode	−
	2	ManualOrderIndicator	−
	4	OperatorId	−
	8	TradeDate	−
	16	ClearingPrice	−
	32	ClearingSize	−
	64	ClearingSymbol	−
	128	ClearingOptionalData	−

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	–
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	●
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.5 Order Modified V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	−
	4	*Price*	●
	8	*ExecInst*	−
	16	*OrdType*	●
	32	*TimeInForce*	●
	64	*MinQty*	●
	128	*MaxRemovePct*	−
2	1	*Symbol*	−
	2	*SymbolSfx*	−
	4	*Currency*	−
	8	*IdSource*	−
	16	*SecurityId*	−
	32	*SecurityExchange*	−
	64	*Capacity*	−
	128	*ContraTrader*	−
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	●
	8	*DisplayIndicator*	●
	16	*MaxFloor*	−
	32	*DiscretionAmount*	−
	64	*OrderQty*	●
	128	*PreventMatch*	●
4	1	*MaturityDate*	−
	2	*StrikePrice*	−
	4	*PutOrCall*	−
	8	*OpenClose*	−
	16	*ClOrdIdBatch*	−
	32	*CorrectedSize*	−
	64	*PartyID*	−
	128	*AccessFee*	−
5	1	*OrigClOrdId*	●
	2	*LeavesQty*	●
	4	*LastShares*	●
	8	*LastPrice*	●
	16	*DisplayPrice*	●
	32	*WorkingPrice*	●
	64	*BaseLiquidityIndicator*	●
	128	*ExpireTime*	●
6	1	*SecondaryOrderId*	●
	2	*CCP*	−
	4	*ContraCapacity*	−
	8	*AttributedQuote*	−
	16	*ExtExecInst*	−
	32	*BulkOrderIds*	−
	64	*BulkRejectReasons*	−
	128	*PartyRole*	−

continued. . .

Byte	Bit	Field	
7	1	SubLiquidityIndicator	−
	2	TradeReportTypeReturn	−
	4	TradePublishIndReturn	−
	8	Text	−
	16	Bid	−
	32	Offer	−
	64	LargeSize	−
	128	LastMkt	−
8	1	FeeCode	−
	2	EchoText	−
	4	StopPx	•
	8	RoutingInst	•
	16	RoutStrategy	−
	32	RouteDeliveryMethod	−
	64	ExDestination	−
	128	TradeReportRefID	−
9	1	MarketingFeeCode	−
	2	TargetPartyID	−
	4	AuctionId	•
	8	OrderCategory	−
	16	LiquidityProvision	•
	32	CmtaNumber	−
	64	CrossType	−
	128	CrossPrioritization	−
10	1	CrossId	−
	2	AllocQty	−
	4	GiveUpFirmID	−
	8	RoutingFirmID	−
	16	WaiverType	−
	32	CrossExclusionIndicator	−
	64	PriceFormation	−
	128	ClientQualifiedRole	•
11	1	ClientID	•
	2	InvestorID	•
	4	ExecutorID	•
	8	OrderOrigination	•
	16	AlgorithmicIndicator	•
	32	DeferralReason	−
	64	InvestorQualifiedRole	•
	128	ExecutorQualifiedRole	•
12	1	CtiCode	−
	2	ManualOrderIndicator	−
	4	OperatorId	−
	8	TradeDate	−
	16	ClearingPrice	−
	32	ClearingSize	−
	64	ClearingSymbol	−
	128	ClearingOptionalData	−

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.6 Order Restated V2

Byte	Bit	Field	
1	1	Side	●
	2	PegDifference	–
	4	Price	●
	8	ExecInst	–
	16	OrdType	●
	32	TimeInForce	●
	64	MinQty	●
	128	MaxRemovePct	–
2	1	Symbol	●
	2	SymbolSfx	–
	4	Currency	–
	8	IdSource	●
	16	SecurityId	●
	32	SecurityExchange	–
	64	Capacity	●
	128	ContraTrader	–
3	1	Account	●
	2	ClearingFirm	●
	4	ClearingAccount	●
	8	DisplayIndicator	●
	16	MaxFloor	–
	32	DiscretionAmount	–
	64	OrderQty	●
	128	PreventMatch	●
4	1	MaturityDate	–
	2	StrikePrice	–
	4	PutOrCall	–
	8	OpenClose	●
	16	ClOrdIdBatch	–
	32	CorrectedSize	–
	64	PartyID	–
	128	AccessFee	–
5	1	OrigClOrdId	●
	2	LeavesQty	●
	4	LastShares	●
	8	LastPrice	●
	16	DisplayPrice	●
	32	WorkingPrice	●
	64	BaseLiquidityIndicator	●
	128	ExpireTime	●
6	1	SecondaryOrderId	●
	2	CCP	–
	4	ContraCapacity	–
	8	AttributedQuote	–
	16	ExtExecInst	–
	32	BulkOrderIds	–
	64	BulkRejectReasons	–
	128	PartyRole	–

continued...

Byte	Bit	Field	
7	1	*SubLiquidityIndicator*	−
	2	*TradeReportTypeReturn*	−
	4	*TradePublishIndReturn*	−
	8	*Text*	−
	16	*Bid*	−
	32	*Offer*	−
	64	*LargeSize*	−
	128	*LastMkt*	−
8	1	*FeeCode*	−
	2	*EchoText*	−
	4	*StopPx*	●
	8	*RoutingInst*	●
	16	*RoutStrategy*	−
	32	*RouteDeliveryMethod*	−
	64	*ExDestination*	−
	128	*TradeReportRefID*	−
9	1	*MarketingFeeCode*	−
	2	*TargetPartyID*	−
	4	*AuctionId*	−
	8	*OrderCategory*	−
	16	*LiquidityProvision*	●
	32	*CmtaNumber*	−
	64	*CrossType*	−
	128	*CrossPrioritization*	−
10	1	*CrossId*	●
	2	*AllocQty*	−
	4	*GiveUpFirmID*	−
	8	*RoutingFirmID*	−
	16	*WaiverType*	−
	32	*CrossExclusionIndicator*	−
	64	*PriceFormation*	−
	128	*ClientQualifiedRole*	●
11	1	*ClientID*	●
	2	*InvestorID*	●
	4	*ExecutorID*	●
	8	*OrderOrigination*	●
	16	*AlgorithmicIndicator*	●
	32	*DeferralReason*	−
	64	*InvestorQualifiedRole*	●
	128	*ExecutorQualifiedRole*	●
12	1	*CtiCode*	−
	2	*ManualOrderIndicator*	−
	4	*OperatorId*	−
	8	*TradeDate*	−
	16	*ClearingPrice*	−
	32	*ClearingSize*	−
	64	*ClearingSymbol*	−
	128	*ClearingOptionalData*	−

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	−
	2	*DayOrderQty*	−
	4	*DayCumQty*	−
	8	*AvgPx*	−
	16	*DayAvgPx*	−
	32	*PendingStatus*	−
	64	*DrillThruProtection*	−
	128	*MultilegReportingType*	−
14	1	*LegCFICode*	−
	2	*LegMaturityDate*	−
	4	*LegStrikePrice*	−
	8	*QuoteRoomID*	−
	16	*SecondaryExecId*	−
	32	*UserRequestID*	−
	64	*Username*	−
	128	*UserStatus*	−
15	1	*TradeReportingIndicator*	−
	2	*EquityPartyId*	−
	4	*EquityNBBOProtect*	−
	8	*MassCancelId*	−
	16	*TradePublishInd*	−
	32	*ReportTime*	−
	64	*LegSymbolSfx*	−
	128	*ClientIdAttr*	−
16	1	*FrequentTraderID*	−
	2	*SessionEligibility*	−
	4	*ComboOrder*	−
	8	*Compression*	−
	16	*FloorDestination*	−
	32	*FloorRoutingInst*	−
	64	*MultiClassSpread*	−
	128	*OrderOrigin*	−
17	1	*PriceType*	−
	2	*StrategyId*	−
	4	*TradingSessionId*	−
	8	*TradeThroughAlertType*	−
	16	*SenderLocationId*	−
	32	*FloorTraderAcronym*	−
	64	*ExecLegCFICode*	−
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	●
	2	*CrossInitiator*	−
	4	*Subreason*	−
	8	*ReservedBit*	−
	16	*ReservedBit*	−
	32	*ReservedBit*	−
	64	*ReservedBit*	−
	128	*ReservedBit*	−

5.7 User Modify Rejected V2

Byte	Bit	Field	
1	1	*Side*	–
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	–
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	–
	16	*SecurityId*	–
	32	*SecurityExchange*	–
	64	*Capacity*	–
	128	*ContraTrader*	–
3	1	*Account*	–
	2	*ClearingFirm*	–
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	–
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	–
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued...

Byte	Bit	Field	
7	1	SubLiquidityIndicator	–
	2	TradeReportTypeReturn	–
	4	TradePublishIndReturn	–
	8	Text	–
	16	Bid	–
	32	Offer	–
	64	LargeSize	–
	128	LastMkt	–
8	1	FeeCode	–
	2	EchoText	–
	4	StopPx	–
	8	RoutingInst	–
	16	RoutStrategy	–
	32	RouteDeliveryMethod	–
	64	ExDestination	–
	128	TradeReportRefID	–
9	1	MarketingFeeCode	–
	2	TargetPartyID	–
	4	AuctionId	–
	8	OrderCategory	–
	16	LiquidityProvision	–
	32	CmtaNumber	–
	64	CrossType	–
	128	CrossPrioritization	–
10	1	CrossId	–
	2	AllocQty	–
	4	GiveUpFirmID	–
	8	RoutingFirmID	–
	16	WaiverType	–
	32	CrossExclusionIndicator	–
	64	PriceFormation	–
	128	ClientQualifiedRole	–
11	1	ClientID	–
	2	InvestorID	–
	4	ExecutorID	–
	8	OrderOrigination	–
	16	AlgorithmicIndicator	–
	32	DeferralReason	–
	64	InvestorQualifiedRole	–
	128	ExecutorQualifiedRole	–
12	1	CtiCode	–
	2	ManualOrderIndicator	–
	4	OperatorId	–
	8	TradeDate	–
	16	ClearingPrice	–
	32	ClearingSize	–
	64	ClearingSymbol	–
	128	ClearingOptionalData	–

continued...

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	–
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.8 Order Cancelled V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	●
	8	*ExecInst*	–
	16	*OrdType*	●
	32	*TimeInForce*	●
	64	*MinQty*	●
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*ContraTrader*	–
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	●
	8	*DisplayIndicator*	●
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	●
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	●
	2	*LeavesQty*	●
	4	*LastShares*	●
	8	*LastPrice*	●
	16	*DisplayPrice*	●
	32	*WorkingPrice*	●
	64	*BaseLiquidityIndicator*	●
	128	*ExpireTime*	●
6	1	*SecondaryOrderId*	●
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued...

Byte	Bit	Field	
7	1	*SubLiquidityIndicator*	−
	2	*TradeReportTypeReturn*	−
	4	*TradePublishIndReturn*	−
	8	*Text*	−
	16	*Bid*	−
	32	*Offer*	−
	64	*LargeSize*	−
	128	*LastMkt*	−
8	1	*FeeCode*	−
	2	*EchoText*	−
	4	*StopPx*	•
	8	*RoutingInst*	•
	16	*RoutStrategy*	−
	32	*RouteDeliveryMethod*	−
	64	*ExDestination*	−
	128	*TradeReportRefID*	−
9	1	*MarketingFeeCode*	−
	2	*TargetPartyID*	−
	4	*AuctionId*	−
	8	*OrderCategory*	−
	16	*LiquidityProvision*	•
	32	*CmtaNumber*	−
	64	*CrossType*	−
	128	*CrossPrioritization*	−
10	1	*CrossId*	−
	2	*AllocQty*	−
	4	*GiveUpFirmID*	−
	8	*RoutingFirmID*	−
	16	*WaiverType*	−
	32	*CrossExclusionIndicator*	−
	64	*PriceFormation*	−
	128	*ClientQualifiedRole*	•
11	1	*ClientID*	•
	2	*InvestorID*	•
	4	*ExecutorID*	•
	8	*OrderOrigination*	•
	16	*AlgorithmicIndicator*	•
	32	*DeferralReason*	−
	64	*InvestorQualifiedRole*	•
	128	*ExecutorQualifiedRole*	•
12	1	*CtiCode*	−
	2	*ManualOrderIndicator*	−
	4	*OperatorId*	−
	8	*TradeDate*	−
	16	*ClearingPrice*	−
	32	*ClearingSize*	−
	64	*ClearingSymbol*	−
	128	*ClearingOptionalData*	−

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	●
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.9 Cross Order Cancelled (Options Only)

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	●
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*ContraTrader*	–
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	●
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	●
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued. . .

Byte	Bit	Field	
7	1	SubLiquidityIndicator	–
	2	TradeReportTypeReturn	–
	4	TradePublishIndReturn	–
	8	Text	–
	16	Bid	–
	32	Offer	–
	64	LargeSize	–
	128	LastMkt	–
8	1	FeeCode	–
	2	EchoText	–
	4	StopPx	–
	8	RoutingInst	–
	16	RoutStrategy	–
	32	RouteDeliveryMethod	–
	64	ExDestination	–
	128	TradeReportRefID	–
9	1	MarketingFeeCode	–
	2	TargetPartyID	–
	4	AuctionId	●
	8	OrderCategory	–
	16	LiquidityProvision	●
	32	CmtaNumber	–
	64	CrossType	●
	128	CrossPrioritization	●
10	1	CrossId	●
	2	AllocQty	●
	4	GiveUpFirmID	–
	8	RoutingFirmID	–
	16	WaiverType	–
	32	CrossExclusionIndicator	–
	64	PriceFormation	–
	128	ClientQualifiedRole	●
11	1	ClientID	●
	2	InvestorID	●
	4	ExecutorID	●
	8	OrderOrigination	●
	16	AlgorithmicIndicator	●
	32	DeferralReason	–
	64	InvestorQualifiedRole	●
	128	ExecutorQualifiedRole	●
12	1	CtiCode	–
	2	ManualOrderIndicator	–
	4	OperatorId	–
	8	TradeDate	–
	16	ClearingPrice	–
	32	ClearingSize	–
	64	ClearingSymbol	–
	128	ClearingOptionalData	–

continued...

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	●
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.10 Cancel Rejected V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	●
	8	*ExecInst*	–
	16	*OrdType*	●
	32	*TimeInForce*	●
	64	*MinQty*	●
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*ContraTrader*	–
3	1	*Account*	–
	2	*ClearingFirm*	–
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	–
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued...

Byte	Bit	Field	
7	1	SubLiquidityIndicator	−
	2	TradeReportTypeReturn	−
	4	TradePublishIndReturn	−
	8	Text	−
	16	Bid	−
	32	Offer	−
	64	LargeSize	−
	128	LastMkt	−
8	1	FeeCode	−
	2	EchoText	−
	4	StopPx	●
	8	RoutingInst	−
	16	RoutStrategy	−
	32	RouteDeliveryMethod	−
	64	ExDestination	−
	128	TradeReportRefID	−
9	1	MarketingFeeCode	−
	2	TargetPartyID	−
	4	AuctionId	−
	8	OrderCategory	−
	16	LiquidityProvision	●
	32	CmtaNumber	−
	64	CrossType	−
	128	CrossPrioritization	−
10	1	CrossId	●
	2	AllocQty	●
	4	GiveUpFirmID	−
	8	RoutingFirmID	−
	16	WaiverType	−
	32	CrossExclusionIndicator	−
	64	PriceFormation	−
	128	ClientQualifiedRole	●
11	1	ClientID	●
	2	InvestorID	●
	4	ExecutorID	●
	8	OrderOrigination	●
	16	AlgorithmicIndicator	●
	32	DeferralReason	−
	64	InvestorQualifiedRole	●
	128	ExecutorQualifiedRole	●
12	1	CtiCode	−
	2	ManualOrderIndicator	−
	4	OperatorId	−
	8	TradeDate	−
	16	ClearingPrice	−
	32	ClearingSize	−
	64	ClearingSymbol	−
	128	ClearingOptionalData	−

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	●
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	–
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.11 Order Execution V2

Byte	Bit	Field	
1	1	Side	●
	2	PegDifference	−
	4	Price	●
	8	ExecInst	−
	16	OrdType	●
	32	TimeInForce	●
	64	MinQty	●
	128	MaxRemovePct	−
2	1	Symbol	●
	2	SymbolSfx	−
	4	Currency	−
	8	IdSource	●
	16	SecurityId	●
	32	SecurityExchange	−
	64	Capacity	●
	128	ContraTrader	−
3	1	Account	●
	2	ClearingFirm	●
	4	ClearingAccount	●
	8	DisplayIndicator	●
	16	MaxFloor	−
	32	DiscretionAmount	−
	64	OrderQty	●
	128	PreventMatch	●
4	1	MaturityDate	−
	2	StrikePrice	−
	4	PutOrCall	−
	8	OpenClose	●
	16	ClOrdIdBatch	−
	32	CorrectedSize	−
	64	PartyID	−
	128	AccessFee	−
5	1	OrigClOrdId	−
	2	LeavesQty	−
	4	LastShares	−
	8	LastPrice	−
	16	DisplayPrice	−
	32	WorkingPrice	−
	64	BaseLiquidityIndicator	−
	128	ExpireTime	−
6	1	SecondaryOrderId	−
	2	CCP	−
	4	ContraCapacity	−
	8	AttributedQuote	−
	16	ExtExecInst	−
	32	BulkOrderIds	−
	64	BulkRejectReasons	−
	128	PartyRole	−

Byte	Bit	Field	
7	1	*SubLiquidityIndicator*	−
	2	*TradeReportTypeReturn*	−
	4	*TradePublishIndReturn*	−
	8	*Text*	−
	16	*Bid*	−
	32	*Offer*	−
	64	*LargeSize*	−
	128	*LastMkt*	●
8	1	*FeeCode*	●
	2	*EchoText*	−
	4	*StopPx*	●
	8	*RoutingInst*	●
	16	*RoutStrategy*	−
	32	*RouteDeliveryMethod*	−
	64	*ExDestination*	−
	128	*TradeReportRefID*	−
9	1	*MarketingFeeCode*	−
	2	*TargetPartyID*	−
	4	*AuctionId*	−
	8	*OrderCategory*	−
	16	*LiquidityProvision*	−
	32	*CmtaNumber*	−
	64	*CrossType*	●
	128	*CrossPrioritization*	●
10	1	*CrossId*	●
	2	*AllocQty*	●
	4	*GiveUpFirmID*	−
	8	*RoutingFirmID*	−
	16	*WaiverType*	−
	32	*CrossExclusionIndicator*	−
	64	*PriceFormation*	−
	128	*ClientQualifiedRole*	●
11	1	*ClientID*	●
	2	*InvestorID*	●
	4	*ExecutorID*	●
	8	*OrderOrigination*	●
	16	*AlgorithmicIndicator*	●
	32	*DeferralReason*	−
	64	*InvestorQualifiedRole*	●
	128	*ExecutorQualifiedRole*	●
12	1	*CtiCode*	−
	2	*ManualOrderIndicator*	−
	4	*OperatorId*	−
	8	*TradeDate*	−
	16	*ClearingPrice*	−
	32	*ClearingSize*	−
	64	*ClearingSymbol*	−
	128	*ClearingOptionalData*	−

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	−
	2	*DayOrderQty*	−
	4	*DayCumQty*	−
	8	*AvgPx*	−
	16	*DayAvgPx*	−
	32	*PendingStatus*	−
	64	*DrillThruProtection*	●
	128	*MultilegReportingType*	●
14	1	*LegCFICode*	−
	2	*LegMaturityDate*	−
	4	*LegStrikePrice*	−
	8	*QuoteRoomID*	−
	16	*SecondaryExecId*	●
	32	*UserRequestID*	−
	64	*Username*	−
	128	*UserStatus*	−
15	1	*TradeReportingIndicator*	−
	2	*EquityPartyId*	−
	4	*EquityNBBOProtect*	−
	8	*MassCancelId*	−
	16	*TradePublishInd*	−
	32	*ReportTime*	−
	64	*LegSymbolSfx*	−
	128	*ClientIdAttr*	−
16	1	*FrequentTraderID*	−
	2	*SessionEligibility*	−
	4	*ComboOrder*	−
	8	*Compression*	−
	16	*FloorDestination*	−
	32	*FloorRoutingInst*	−
	64	*MultiClassSpread*	−
	128	*OrderOrigin*	−
17	1	*PriceType*	−
	2	*StrategyId*	−
	4	*TradingSessionId*	−
	8	*TradeThroughAlertType*	−
	16	*SenderLocationId*	−
	32	*FloorTraderAcronym*	−
	64	*ExecLegCFICode*	−
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	●
	2	*CrossInitiator*	−
	4	*Subreason*	−
	8	*ReservedBit*	−
	16	*ReservedBit*	−
	32	*ReservedBit*	−
	64	*ReservedBit*	−
	128	*ReservedBit*	−

5.12 Trade Cancel or Correct V2

Byte	Bit	Field	
1	1	*Side*	–
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*ContraTrader*	–
3	1	*Account*	–
	2	*ClearingFirm*	–
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	–
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	●
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued. . .

Byte	Bit	Field	
7	1	SubLiquidityIndicator	●
	2	TradeReportTypeReturn	−
	4	TradePublishIndReturn	−
	8	Text	−
	16	Bid	−
	32	Offer	−
	64	LargeSize	−
	128	LastMkt	●
8	1	FeeCode	−
	2	EchoText	−
	4	StopPx	−
	8	RoutingInst	−
	16	RoutStrategy	−
	32	RouteDeliveryMethod	−
	64	ExDestination	−
	128	TradeReportRefID	−
9	1	MarketingFeeCode	−
	2	TargetPartyID	−
	4	AuctionId	−
	8	OrderCategory	−
	16	LiquidityProvision	−
	32	CmtaNumber	−
	64	CrossType	−
	128	CrossPrioritization	−
10	1	CrossId	−
	2	AllocQty	−
	4	GiveUpFirmID	−
	8	RoutingFirmID	−
	16	WaiverType	−
	32	CrossExclusionIndicator	−
	64	PriceFormation	−
	128	ClientQualifiedRole	−
11	1	ClientID	−
	2	InvestorID	−
	4	ExecutorID	−
	8	OrderOrigination	−
	16	AlgorithmicIndicator	−
	32	DeferralReason	−
	64	InvestorQualifiedRole	−
	128	ExecutorQualifiedRole	−
12	1	CtiCode	−
	2	ManualOrderIndicator	−
	4	OperatorId	−
	8	TradeDate	−
	16	ClearingPrice	−
	32	ClearingSize	−
	64	ClearingSymbol	−
	128	ClearingOptionalData	−

continued. . .

Byte	Bit	Field	
13	1	CumQty	–
	2	DayOrderQty	–
	4	DayCumQty	–
	8	AvgPx	–
	16	DayAvgPx	–
	32	PendingStatus	–
	64	DrillThruProtection	–
	128	MultilegReportingType	–
14	1	LegCFICode	–
	2	LegMaturityDate	–
	4	LegStrikePrice	–
	8	QuoteRoomID	–
	16	SecondaryExecId	–
	32	UserRequestID	–
	64	Username	–
	128	UserStatus	–
15	1	TradeReportingIndicator	–
	2	EquityPartyId	–
	4	EquityNBBOProtect	–
	8	MassCancelId	–
	16	TradePublishInd	–
	32	ReportTime	–
	64	LegSymbolSfx	–
	128	ClientIdAttr	–
16	1	FrequentTraderID	–
	2	SessionEligibility	–
	4	ComboOrder	–
	8	Compression	–
	16	FloorDestination	–
	32	FloorRoutingInst	–
	64	MultiClassSpread	–
	128	OrderOrigin	–
17	1	PriceType	–
	2	StrategyId	–
	4	TradingSessionId	–
	8	TradeThroughAlertType	–
	16	SenderLocationId	–
	32	FloorTraderAcronym	–
	64	ExecLegCFICode	–
	128	CustOrderHandlingInst	–
18	1	AccountType	–
	2	CrossInitiator	–
	4	Subreason	–
	8	ReservedBit	–
	16	ReservedBit	–
	32	ReservedBit	–
	64	ReservedBit	–
	128	ReservedBit	–

5.13 Purge Rejected

Byte	Bit	Field	
1	1	*Side*	–
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	–
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	–
	16	*SecurityId*	–
	32	*SecurityExchange*	–
	64	*Capacity*	–
	128	*ContraTrader*	–
3	1	*Account*	–
	2	*ClearingFirm*	–
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	–
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	–
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued...

Byte	Bit	Field	
7	1	*SubLiquidityIndicator*	–
	2	*TradeReportTypeReturn*	–
	4	*TradePublishIndReturn*	–
	8	*Text*	–
	16	*Bid*	–
	32	*Offer*	–
	64	*LargeSize*	–
	128	*LastMkt*	–
8	1	*FeeCode*	–
	2	*EchoText*	–
	4	*StopPx*	–
	8	*RoutingInst*	–
	16	*RoutStrategy*	–
	32	*RouteDeliveryMethod*	–
	64	*ExDestination*	–
	128	*TradeReportRefID*	–
9	1	*MarketingFeeCode*	–
	2	*TargetPartyID*	–
	4	*AuctionId*	–
	8	*OrderCategory*	–
	16	*LiquidityProvision*	–
	32	*CmtaNumber*	–
	64	*CrossType*	–
	128	*CrossPrioritization*	–
10	1	*CrossId*	–
	2	*AllocQty*	–
	4	*GiveUpFirmID*	–
	8	*RoutingFirmID*	–
	16	*WaiverType*	–
	32	*CrossExclusionIndicator*	–
	64	*PriceFormation*	–
	128	*ClientQualifiedRole*	–
11	1	*ClientID*	–
	2	*InvestorID*	–
	4	*ExecutorID*	–
	8	*OrderOrigination*	–
	16	*AlgorithmicIndicator*	–
	32	*DeferralReason*	–
	64	*InvestorQualifiedRole*	–
	128	*ExecutorQualifiedRole*	–
12	1	*CtiCode*	–
	2	*ManualOrderIndicator*	–
	4	*OperatorId*	–
	8	*TradeDate*	–
	16	*ClearingPrice*	–
	32	*ClearingSize*	–
	64	*ClearingSymbol*	–
	128	*ClearingOptionalData*	–

continued...

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	●
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	–
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.14 Complex Instrument Accepted (Options Only)

Byte	Bit	Field	
1	1	Side	–
	2	PegDifference	–
	4	Price	–
	8	ExecInst	–
	16	OrdType	–
	32	TimeInForce	–
	64	MinQty	–
	128	MaxRemovePct	–
2	1	Symbol	–
	2	SymbolSfx	–
	4	Currency	–
	8	IdSource	–
	16	SecurityId	–
	32	SecurityExchange	–
	64	Capacity	–
	128	ContraTrader	–
3	1	Account	–
	2	ClearingFirm	–
	4	ClearingAccount	–
	8	DisplayIndicator	–
	16	MaxFloor	–
	32	DiscretionAmount	–
	64	OrderQty	–
	128	PreventMatch	–
4	1	MaturityDate	–
	2	StrikePrice	–
	4	PutOrCall	–
	8	OpenClose	–
	16	ClOrdIdBatch	–
	32	CorrectedSize	–
	64	PartyID	–
	128	AccessFee	–
5	1	OrigClOrdId	–
	2	LeavesQty	–
	4	LastShares	–
	8	LastPrice	–
	16	DisplayPrice	–
	32	WorkingPrice	–
	64	BaseLiquidityIndicator	–
	128	ExpireTime	–
6	1	SecondaryOrderId	–
	2	CCP	–
	4	ContraCapacity	–
	8	AttributedQuote	–
	16	ExtExecInst	–
	32	BulkOrderIds	–
	64	BulkRejectReasons	–
	128	PartyRole	–

continued. . .

Byte	Bit	Field	
7	1	*SubLiquidityIndicator*	–
	2	*TradeReportTypeReturn*	–
	4	*TradePublishIndReturn*	–
	8	*Text*	–
	16	*Bid*	–
	32	*Offer*	–
	64	*LargeSize*	–
	128	*LastMkt*	–
8	1	*FeeCode*	–
	2	*EchoText*	–
	4	*StopPx*	–
	8	*RoutingInst*	–
	16	*RoutStrategy*	–
	32	*RouteDeliveryMethod*	–
	64	*ExDestination*	–
	128	*TradeReportRefID*	–
9	1	*MarketingFeeCode*	–
	2	*TargetPartyID*	–
	4	*AuctionId*	–
	8	*OrderCategory*	–
	16	*LiquidityProvision*	–
	32	*CmtaNumber*	–
	64	*CrossType*	–
	128	*CrossPrioritization*	–
10	1	*CrossId*	–
	2	*AllocQty*	–
	4	*GiveUpFirmID*	–
	8	*RoutingFirmID*	–
	16	*WaiverType*	–
	32	*CrossExclusionIndicator*	–
	64	*PriceFormation*	–
	128	*ClientQualifiedRole*	–
11	1	*ClientID*	–
	2	*InvestorID*	–
	4	*ExecutorID*	–
	8	*OrderOrigination*	–
	16	*AlgorithmicIndicator*	–
	32	*DeferralReason*	–
	64	*InvestorQualifiedRole*	–
	128	*ExecutorQualifiedRole*	–
12	1	*CtiCode*	–
	2	*ManualOrderIndicator*	–
	4	*OperatorId*	–
	8	*TradeDate*	–
	16	*ClearingPrice*	–
	32	*ClearingSize*	–
	64	*ClearingSymbol*	–
	128	*ClearingOptionalData*	–

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	–
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*LegPrice*	•
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.15 Complex Instrument Rejected (Options Only)

Byte	Bit	Field	
1	1	*Side*	–
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	–
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	–
	16	*SecurityId*	–
	32	*SecurityExchange*	–
	64	*Capacity*	–
	128	*ContraTrader*	–
3	1	*Account*	–
	2	*ClearingFirm*	–
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	–
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	–
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	–
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	–

continued. . .

Byte	Bit	Field	
7	1	*SubLiquidityIndicator*	–
	2	*TradeReportTypeReturn*	–
	4	*TradePublishIndReturn*	–
	8	*Text*	–
	16	*Bid*	–
	32	*Offer*	–
	64	*LargeSize*	–
	128	*LastMkt*	–
8	1	*FeeCode*	–
	2	*EchoText*	–
	4	*StopPx*	–
	8	*RoutingInst*	–
	16	*RoutStrategy*	–
	32	*RouteDeliveryMethod*	–
	64	*ExDestination*	–
	128	*TradeReportRefID*	–
9	1	*MarketingFeeCode*	–
	2	*TargetPartyID*	–
	4	*AuctionId*	–
	8	*OrderCategory*	–
	16	*LiquidityProvision*	–
	32	*CmtaNumber*	–
	64	*CrossType*	–
	128	*CrossPrioritization*	–
10	1	*CrossId*	–
	2	*AllocQty*	–
	4	*GiveUpFirmID*	–
	8	*RoutingFirmID*	–
	16	*WaiverType*	–
	32	*CrossExclusionIndicator*	–
	64	*PriceFormation*	–
	128	*ClientQualifiedRole*	–
11	1	*ClientID*	–
	2	*InvestorID*	–
	4	*ExecutorID*	–
	8	*OrderOrigination*	–
	16	*AlgorithmicIndicator*	–
	32	*DeferralReason*	–
	64	*InvestorQualifiedRole*	–
	128	*ExecutorQualifiedRole*	–
12	1	*CtiCode*	–
	2	*ManualOrderIndicator*	–
	4	*OperatorId*	–
	8	*TradeDate*	–
	16	*ClearingPrice*	–
	32	*ClearingSize*	–
	64	*ClearingSymbol*	–
	128	*ClearingOptionalData*	–

continued...

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	–
18	1	*AccountType*	–
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.16 Trade Capture Report Acknowledgment V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*(Reserved)*	–
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	●
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	●

continued. . .

Byte	Bit	Field	
7	1	SubLiquidityIndicator	–
	2	TradeReportTypeReturn	●
	4	TradePublishIndReturn	–
	8	Text	–
	16	Bid	–
	32	Offer	–
	64	LargeSize	–
	128	LastMkt	–
8	1	FeeCode	–
	2	EchoText	–
	4	StopPx	–
	8	RoutingInst	–
	16	RoutStrategy	–
	32	RouteDeliveryMethod	–
	64	ExDestination	–
	128	TradeReportRefID	●
9	1	MarketingFeeCode	–
	2	TargetPartyID	–
	4	AuctionId	–
	8	OrderCategory	●
	16	LiquidityProvision	●
	32	CmtaNumber	–
	64	CrossType	–
	128	CrossPrioritization	–
10	1	CrossId	–
	2	AllocQty	–
	4	GiveUpFirmID	–
	8	RoutingFirmID	–
	16	WaiverType	–
	32	CrossExclusionIndicator	–
	64	PriceFormation	●
	128	ClientQualifiedRole	–
11	1	ClientID	–
	2	InvestorID	–
	4	ExecutorID	–
	8	OrderOrigination	–
	16	AlgorithmicIndicator	●
	32	DeferralReason	–
	64	InvestorQualifiedRole	–
	128	ExecutorQualifiedRole	–
12	1	CtiCode	–
	2	ManualOrderIndicator	–
	4	OperatorId	–
	8	TradeDate	–
	16	ClearingPrice	–
	32	ClearingSize	–
	64	ClearingSymbol	–
	128	ClearingOptionalData	–

continued. . .

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	●
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.17 Trade Capture Report Reject V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*(Reserved)*	–
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	●
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	●

continued. . .

Byte	Bit	Field	
7	1	SubLiquidityIndicator	−
	2	TradeReportTypeReturn	●
	4	TradePublishIndReturn	●
	8	Text	−
	16	Bid	−
	32	Offer	−
	64	LargeSize	−
	128	LastMkt	−
8	1	FeeCode	−
	2	EchoText	−
	4	StopPx	−
	8	RoutingInst	−
	16	RoutStrategy	−
	32	RouteDeliveryMethod	−
	64	ExDestination	−
	128	TradeReportRefID	−
9	1	MarketingFeeCode	−
	2	TargetPartyID	−
	4	AuctionId	−
	8	OrderCategory	−
	16	LiquidityProvision	−
	32	CmtaNumber	−
	64	CrossType	−
	128	CrossPrioritization	−
10	1	CrossId	−
	2	AllocQty	−
	4	GiveUpFirmID	−
	8	RoutingFirmID	−
	16	WaiverType	−
	32	CrossExclusionIndicator	−
	64	PriceFormation	●
	128	ClientQualifiedRole	−
11	1	ClientID	−
	2	InvestorID	−
	4	ExecutorID	−
	8	OrderOrigination	−
	16	AlgorithmicIndicator	●
	32	DeferralReason	−
	64	InvestorQualifiedRole	−
	128	ExecutorQualifiedRole	−
12	1	CtiCode	−
	2	ManualOrderIndicator	−
	4	OperatorId	−
	8	TradeDate	−
	16	ClearingPrice	−
	32	ClearingSize	−
	64	ClearingSymbol	−
	128	ClearingOptionalData	−

continued...

Byte	Bit	Field	
13	1	*CumQty*	–
	2	*DayOrderQty*	–
	4	*DayCumQty*	–
	8	*AvgPx*	–
	16	*DayAvgPx*	–
	32	*PendingStatus*	–
	64	*DrillThruProtection*	–
	128	*MultilegReportingType*	–
14	1	*LegCFICode*	–
	2	*LegMaturityDate*	–
	4	*LegStrikePrice*	–
	8	*QuoteRoomID*	–
	16	*SecondaryExecId*	–
	32	*UserRequestID*	–
	64	*Username*	–
	128	*UserStatus*	–
15	1	*TradeReportingIndicator*	–
	2	*EquityPartyId*	–
	4	*EquityNBBOProtect*	–
	8	*MassCancelId*	–
	16	*TradePublishInd*	–
	32	*ReportTime*	–
	64	*LegSymbolSfx*	–
	128	*ClientIdAttr*	–
16	1	*FrequentTraderID*	–
	2	*SessionEligibility*	–
	4	*ComboOrder*	–
	8	*Compression*	–
	16	*FloorDestination*	–
	32	*FloorRoutingInst*	–
	64	*MultiClassSpread*	–
	128	*OrderOrigin*	–
17	1	*PriceType*	–
	2	*StrategyId*	–
	4	*TradingSessionId*	–
	8	*TradeThroughAlertType*	–
	16	*SenderLocationId*	–
	32	*FloorTraderAcronym*	–
	64	*ExecLegCFICode*	–
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	●
	2	*CrossInitiator*	–
	4	*Subreason*	–
	8	*ReservedBit*	–
	16	*ReservedBit*	–
	32	*ReservedBit*	–
	64	*ReservedBit*	–
	128	*ReservedBit*	–

5.18 Trade Capture Confirm V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*(Reserved)*	–
3	1	*Account*	●
	2	*ClearingFirm*	–
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	●
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	●
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	●

continued. . .

Byte	Bit	Field	
7	1	SubLiquidityIndicator	–
	2	TradeReportTypeReturn	●
	4	TradePublishIndReturn	●
	8	Text	●
	16	Bid	–
	32	Offer	–
	64	LargeSize	–
	128	LastMkt	●
8	1	FeeCode	●
	2	EchoText	–
	4	StopPx	–
	8	RoutingInst	–
	16	RoutStrategy	–
	32	RouteDeliveryMethod	–
	64	ExDestination	–
	128	TradeReportRefID	–
9	1	MarketingFeeCode	–
	2	TargetPartyID	–
	4	AuctionId	–
	8	OrderCategory	●
	16	LiquidityProvision	–
	32	CmtaNumber	–
	64	CrossType	–
	128	CrossPrioritization	–
10	1	CrossId	–
	2	AllocQty	–
	4	GiveUpFirmID	–
	8	RoutingFirmID	–
	16	WaiverType	–
	32	CrossExclusionIndicator	–
	64	PriceFormation	●
	128	ClientQualifiedRole	–
11	1	ClientID	–
	2	InvestorID	–
	4	ExecutorID	–
	8	OrderOrigination	–
	16	AlgorithmicIndicator	●
	32	DeferralReason	●
	64	InvestorQualifiedRole	–
	128	ExecutorQualifiedRole	–
12	1	CtiCode	–
	2	ManualOrderIndicator	–
	4	OperatorId	–
	8	TradeDate	–
	16	ClearingPrice	–
	32	ClearingSize	–
	64	ClearingSymbol	–
	128	ClearingOptionalData	–

continued. . .

Byte	Bit	Field	
13	1	CumQty	−
	2	DayOrderQty	−
	4	DayCumQty	−
	8	AvgPx	−
	16	DayAvgPx	−
	32	PendingStatus	−
	64	DrillThruProtection	−
	128	MultilegReportingType	−
14	1	LegCFICode	−
	2	LegMaturityDate	−
	4	LegStrikePrice	−
	8	QuoteRoomID	−
	16	SecondaryExecId	−
	32	UserRequestID	−
	64	Username	−
	128	UserStatus	−
15	1	TradeReportingIndicator	−
	2	EquityPartyId	−
	4	EquityNBBOProtect	−
	8	MassCancelId	−
	16	TradePublishInd	●
	32	ReportTime	●
	64	LegSymbolSfx	−
	128	ClientIdAttr	−
16	1	FrequentTraderID	−
	2	SessionEligibility	−
	4	ComboOrder	−
	8	Compression	−
	16	FloorDestination	−
	32	FloorRoutingInst	−
	64	MultiClassSpread	−
	128	OrderOrigin	−
17	1	PriceType	−
	2	StrategyId	−
	4	TradingSessionId	−
	8	TradeThroughAlertType	−
	16	SenderLocationId	−
	32	FloorTraderAcronym	−
	64	ExecLegCFICode	−
	128	CustOrderHandlingInst	●
18	1	AccountType	●
	2	CrossInitiator	−
	4	Subreason	−
	8	ReservedBit	−
	16	ReservedBit	−
	32	ReservedBit	−
	64	ReservedBit	−
	128	ReservedBit	−

5.19 Trade Capture Report Decline V2

Byte	Bit	Field	
1	1	*Side*	●
	2	*PegDifference*	–
	4	*Price*	–
	8	*ExecInst*	–
	16	*OrdType*	–
	32	*TimeInForce*	–
	64	*MinQty*	–
	128	*MaxRemovePct*	–
2	1	*Symbol*	●
	2	*SymbolSfx*	–
	4	*Currency*	–
	8	*IdSource*	●
	16	*SecurityId*	●
	32	*SecurityExchange*	–
	64	*Capacity*	●
	128	*(Reserved)*	–
3	1	*Account*	●
	2	*ClearingFirm*	●
	4	*ClearingAccount*	–
	8	*DisplayIndicator*	–
	16	*MaxFloor*	–
	32	*DiscretionAmount*	–
	64	*OrderQty*	●
	128	*PreventMatch*	–
4	1	*MaturityDate*	–
	2	*StrikePrice*	–
	4	*PutOrCall*	–
	8	*OpenClose*	●
	16	*ClOrdIdBatch*	–
	32	*CorrectedSize*	–
	64	*PartyID*	●
	128	*AccessFee*	–
5	1	*OrigClOrdId*	–
	2	*LeavesQty*	–
	4	*LastShares*	–
	8	*LastPrice*	–
	16	*DisplayPrice*	–
	32	*WorkingPrice*	–
	64	*BaseLiquidityIndicator*	–
	128	*ExpireTime*	–
6	1	*SecondaryOrderId*	–
	2	*CCP*	–
	4	*ContraCapacity*	–
	8	*AttributedQuote*	–
	16	*ExtExecInst*	–
	32	*BulkOrderIds*	–
	64	*BulkRejectReasons*	–
	128	*PartyRole*	●

continued...

Byte	Bit	Field	
7	1	SubLiquidityIndicator	−
	2	TradeReportTypeReturn	●
	4	TradePublishIndReturn	●
	8	Text	−
	16	Bid	−
	32	Offer	−
	64	LargeSize	−
	128	LastMkt	−
8	1	FeeCode	−
	2	EchoText	−
	4	StopPx	−
	8	RoutingInst	−
	16	RoutStrategy	−
	32	RouteDeliveryMethod	−
	64	ExDestination	−
	128	TradeReportRefID	−
9	1	MarketingFeeCode	−
	2	TargetPartyID	−
	4	AuctionId	−
	8	OrderCategory	−
	16	LiquidityProvision	−
	32	CmtaNumber	−
	64	CrossType	−
	128	CrossPrioritization	−
10	1	CrossId	−
	2	AllocQty	−
	4	GiveUpFirmID	−
	8	RoutingFirmID	−
	16	WaiverType	−
	32	CrossExclusionIndicator	−
	64	PriceFormation	●
	128	ClientQualifiedRole	−
11	1	ClientID	−
	2	InvestorID	−
	4	ExecutorID	−
	8	OrderOrigination	−
	16	AlgorithmicIndicator	●
	32	DeferralReason	−
	64	InvestorQualifiedRole	−
	128	ExecutorQualifiedRole	−
12	1	CtiCode	−
	2	ManualOrderIndicator	−
	4	OperatorId	−
	8	TradeDate	−
	16	ClearingPrice	−
	32	ClearingSize	−
	64	ClearingSymbol	−
	128	ClearingOptionalData	−

continued...

Byte	Bit	Field	
13	1	*CumQty*	−
	2	*DayOrderQty*	−
	4	*DayCumQty*	−
	8	*AvgPx*	−
	16	*DayAvgPx*	−
	32	*PendingStatus*	−
	64	*DrillThruProtection*	−
	128	*MultilegReportingType*	−
14	1	*LegCFICode*	−
	2	*LegMaturityDate*	−
	4	*LegStrikePrice*	−
	8	*QuoteRoomID*	−
	16	*SecondaryExecId*	−
	32	*UserRequestID*	−
	64	*Username*	−
	128	*UserStatus*	−
15	1	*TradeReportingIndicator*	−
	2	*EquityPartyId*	−
	4	*EquityNBBOProtect*	−
	8	*MassCancelId*	−
	16	*TradePublishInd*	−
	32	*ReportTime*	−
	64	*LegSymbolSfx*	−
	128	*ClientIdAttr*	−
16	1	*FrequentTraderID*	−
	2	*SessionEligibility*	−
	4	*ComboOrder*	−
	8	*Compression*	−
	16	*FloorDestination*	−
	32	*FloorRoutingInst*	−
	64	*MultiClassSpread*	−
	128	*OrderOrigin*	−
17	1	*PriceType*	−
	2	*StrategyId*	−
	4	*TradingSessionId*	−
	8	*TradeThroughAlertType*	−
	16	*SenderLocationId*	−
	32	*FloorTraderAcronym*	−
	64	*ExecLegCFICode*	−
	128	*CustOrderHandlingInst*	●
18	1	*AccountType*	●
	2	*CrossInitiator*	−
	4	*Subreason*	−
	8	*ReservedBit*	−
	16	*ReservedBit*	−
	32	*ReservedBit*	−
	64	*ReservedBit*	−
	128	*ReservedBit*	−

6   List of Optional Fields

The following are descriptions of optional fields which may be sent or received.

Field	Length	Data Type	Description
Account	16	Text	Corresponds to *Account* (1) in Cboe FIX. Reflected back on execution reports associated with this order. May be made available in the Participant's clearing file. Allowed characters are alphanumeric and colon.
AccountType	1	Alphanumeric	Corresponds to *AccountType* (581) in Cboe FIX. Indicates type of account associated with the order. 1 = Account is carried on customer side of the books. 3 = House Trader
Algorithmic Indicator	1	Text	For orders and executions, this corresponds to *OrderAttributeTypes* (8015) = 4 in Cboe FIX. For Trade Capture Report, this corresponds to *AlgorithmicTradeIndicator* (2667) in Cboe FIX. Indicates that the order (or the reported trade in a Trade Capture Report) was placed as a result of an investment firm engaging in algorithmic trading. N = No algorithm was involved (default). Y = Algorithm was involved (ALGO).
AllocQty	4	Binary	Corresponds to *AllocQty* (80) in Cboe FIX. Number of contracts for this party.
AuctionId	8	Binary	Corresponds to *AuctionId* (9370) in Cboe FIX. Auction order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
AutoMatch	1	Alphanumeric	Corresponds to *AutoMatch* (9040) in Cboe FIX. Better-priced responses will be matched by the Contra side. Indicates the type of Auto Match the Contra Order will use. Mutually exclusive with *LastPriority*. Limit type Auto Match orders require *AutoMatchPrice* to be supplied. 0 = Disabled (Default) 1 = Market 2 = Limit
AutoMatchPrice	8	Binary Price	Corresponds to *AutoMatchPrice* (9044) in Cboe FIX. Sets the limit price at which the Contra Order will Auto Match. Required if *AutoMatch* = 2 (Limit). Ignored otherwise. Must be non-negative. 1 = Buy 2 = Sell

BaseLiquidity Indicator	1	Alphanumeric	Indicates whether the trade added or removed liquidity. `A` = Added Liquidity `R` = Removed Liquidity `C` = Auction Trade
CancelOrig OnReject	1	Alpha	Corresponds to *CancelOrigOnReject* (9619) in Cboe FIX. Indicates handling of original order on failure to modify. `N` = Leave original order alone. `Y` = Cancel original order if modification fails.
Capacity	1	Alpha	Corresponds to *OrderCapacity* (47) in Cboe FIX. (Orders). Corresponds to *LastCapacity* (29) in Cboe FIX. (Executions). `A` = Agency (maps to 'AOTC') `P` = Principal (maps to 'DEAL') `R` = Riskless Principal (maps to 'MTCH')
ClearingAccount	4	Text	Corresponds to *OnBehalfOfSubID* (116) and *ClearingAccount* (440) in Cboe FIX. Supplemental identifier. Recorded and made available in execution reports. Available via Drop.
ClearingFirm	4	Alpha	Corresponds to *OnBehalfOfCompID* (115) and *ClearingFirm* (439) in Cboe FIX. Firm that will clear the trade. If empty (all binary zero), a default will be used (only permitted on non-service bureau accounts).
ClientID	4	Binary	The short code representing the client behind the order. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. The value must be between 0 and 4,294,967,295. For clients, the following values are reserved for applicable use: `0` = NONE (No Client for this order) `1` = AGGR (An aggregation of multiple client orders) `2` = PNAL (Clients are pending allocation)
Client QualifiedRole	1	Binary	Required whenever a `ClientID` is specified. Valid values are: `0` = None - Only applicable if using a reserved value for `ClientID` `23` = Firm or legal entity (LEI) `24` = Natural person
CorrectedSize	4	Binary	Corresponds to *CorrectedSize* (6655) in Cboe FIX. Number of shares after trade adjustment.
CrossID	20	Text	Corresponds to *CrossID* (548) in Cboe FIX. Day-unique identifier for the cross order chosen by the client. Characters in the ASCII range 33–126 are allowed, except for comma, semicolon, and pipe.

CrossType	1	Alphanumeric	Corresponds to *CrossType* (549) in Cboe FIX. Type of auction order being submitted. This indicates the type of auction that will be initiated upon order entry. `1` = Automated Improvement Mechanism (AIM)
CrossPrioritization	1	Alphanumeric	Corresponds to *CrossPrioritization* (550) in Cboe FIX. Indicates which side of the cross order will be prioritized for execution. This identifies the Agency side. `1` = Buy `2` = Sell
CustomGroupId	2	Binary	Optional. Used to group orders for use in PURGE ORDERS. Set to 0 if functionality not needed.
CustOrder HandlingInst	1	Alpha	Corresponds to *CustOrderHandlingInst* (1031) in Cboe FIX. A default value can be set using the 'Default Customer Order Handling Instruction' port attribute. This port attribute is defaulted to Electronic. `Y` = Electronic. (Default) `W` = Desk `C` = Vendor-provided Platform billed by Executing Broker (For complex) `G` = Sponsored Access via Exchange API or FIX, provided by Executing Broker (For complex) `H` = Premium Algorithmic Trading Provider, billed by Executing Broker (For complex) `D` = Other, including other-provided screen (For complex)
DeferralReason	1	Alphanumeric	Corresponds to *TrdRegPublicationReasons* (8013) in FIX. It indicates the deferral reason for the trade. This is only supported in return messages from Cboe to Participants. The following values are valid: `-` = No Deferral Reason `6` = Deferral for Large In Scale (LRGS)
DisplayIndicator	1	Alphanumeric	Corresponds to *DisplayIndicator* (9479) in Cboe FIX. This is only applicable for Complex Options orders participating in C-RFQ. `I` = Hidden. If set, the auction price will be hidden for the initiator. For responders, their response ill be hidden from the Auction Summary. This will only happen if the order meets the LIS threshold. If this field is not specified, or if the LIS threshold is not met, then by default, the auction price or the response will be displayed.
DisplayPrice	8	Binary Price	Only present when order is fully or partially booked. If the order has to be displayed at a less aggressive price for some reason, then that price will be reported here, otherwise equals price. Present for hidden orders, indicating the price the order would have been displayed at.

DrillThruProtection	8	Binary Price	Corresponds to *DrillThruProtection* (6253) in Cboe FIX. Amount sender is willing to trade through BBO at the time of order entry. This is available for both futures and options on simple and complex instruments. The amount should be entered as a non-negative value indicating he protection to be applied for the order. This is the value by which the order may aggress the resting BBO. The drill through price is then the resting BBO aggressed by the drill through protection value. A zero value denotes full BBO protection. This will allow the inbound order to execute only against the top level of the resting price. The drill through price is the resting BBO. If unspecified, the exchange default value will be used. The drill through price is the resting BBO aggressed by the exchange default value.
ExecutorID	4	Binary	The short code representing the execution decision maker of the order. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. The value must be between 0 and 4,294,967,295. For executing decision makers, the following value is reserved for applicable use: 3 = NORE (Timing and location of the execution determined by the client of the Participant)
Executor QualifiedRole	1	Binary	Required whenever an `ExecutorID` is specified. Valid values are: 0 = None - Only applicable if using a reserved value for `ExecutorID` 22 = Algorithm 24 = Natural person
ExpireTime	8	DateTime	Corresponds to *ExpireTime* (126) in FIX. Required for *TimeInForce* = 6 orders, specifies the date-time (in UTC) that the order expires.
FeeCode	2	Alphanumeric	Indicates fee associated with an execution. Fee codes are published in the pricing schedule. New fee codes may be sent with little to no notice. Participants are encouraged to code their systems to accept unknown fee codes.
IDSource	1	Alphanumeric	Corresponds to *IDSource* (22) in Cboe FIX. 4 = ISIN

Field	Bytes	Type	Description
InvestorID	4	Binary	The short code representing the investment decision maker of the order. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. The value must be between 0 and 4,294,967,295.
Investor QualifiedRole	1	Binary	Required whenever an `InvestorID` is specified. Valid values are: `22` = Algorithm `24` = Natural person
LastMkt	4	Alphanumeric	Corresponds to *LastMkt* (30) in Cboe FIX. Segment MIC of this fill.
LastPriority	1	Alphanumeric	Corresponds to *LastPriority* (9849) in Cboe FIX. When enabled, allocation will go to other participants' responses before requiring the Contra Order to satisfy remaining contracts of the Agency Order. Mutually exclusive with *AutoMatch*. `0` = Disabled (Default) `1` = Enabled
LastPx	8	Binary Price	Corresponds to *LastPx* (31) in Cboe FIX. Price of this fill. Note the use of Binary Price to represent positive and negative prices, which can occur with complex/spread instruments.
LastShares	4	Binary	Corresponds to *LastShares* (32) in Cboe FIX. Executed contract quantity. System limit is 999,999 contracts.
LeavesQty	4	Binary	Corresponds to *LeavesQty* (151) in Cboe FIX. Quantity still open for further execution. If zero, the order is complete.
LegPosition Effects	12	Alpha	Corresponds to *LegPositionEffects* (22019) in Cboe FIX. Indicates status of the client position in each complex option leg. For example, if five legs, then this field must have five position effects specified. Ordering of position effects matches the instrument definition. `O` = Open `C` = Close `N` = None Orders with *AccountType* value of 3 (House Trader) are not required to specify *LegPositionEffects* or may optionally specify a value of "N" for each leg. Otherwise, orders with *AccountType* value of 1 (Customer Account) must specify *LegPositionEffects*.

LegPrice	8	Binary Price	Corresponds to *LegPrice* (566) in Cboe FIX. Reference price for the future leg of a Volatility Strategy. Mandatory for this case, otherwise ignored. See the Volatility Strategies section (p. 7) for more details.
LiquidityProvision	1	Text	This flag is used to indicate whether the order is related to any sort of liquidity provision activity, as defined by MiFID II. This flag is <u>mandatory</u> for orders which are part of a liquidity provision activity. N = Not Liquidity Provision (default) Y = Liquidity Provision
MassCancelId	20	Text	Copied from the *MassCancelId* passed on the original CANCEL ORDER V2 or PURGE ORDERS V2. This field corresponds to *MassCancelId* (7695) in Cboe FIX.

MassCancelInst	16	Text	Corresponds to *MassCancelInst* (7700) in Cboe FIX.

Used for specification of Purge Orders V2 functionality and optionally used for specification of Mass Cancel functionality associated with the Cancel Order V2 message.
At least one character must be provided (Trading Firm filter). Contiguous characters must be specified up to total length. Truncated/unspecified characters will default to values indicated (D) below.

1ˢᵗ character: Trading Firm filter
A = No filtering by trading firm relationship is performed
F = All orders that were under the clearing relationship specified in *ClearingFirm*.
U = All futures orders that were under the clearing relationship specified in *ClearingFirm*.
O = All options orders that were under the clearing relationship specified in *ClearingFirm*.
If "F", "U" or "O" specified and *ClearingFirm* not provided, the Mass Cancel or Purge request will be rejected. If *Clearing-Firm* field is provided but is blank (NULL), the Mass Cancel or Purge request will be treated like "A", and no filtering by trading firm relationship is performed.

2ⁿᵈ character: Acknowledgement Style
M = (D) Order Cancelled V2 messages are sent for each cancelled order. If M is sent and the *MassCancelId* optional field is specified, the *MassCancelId* value is ignored.
S = A single Mass Cancel Acknowledgement V2 message is sent once all cancels have been processed. The *MassCancelId* optional field must be specified or the Mass Cancel or Purge request will be rejected.
B = Both individual Order Cancelled V2 and Mass Cancel Acknowledgement V2 messages will be sent. Also requires the *MassCancelId* optional field to be specified or the Mass Cancel or Purge request will be rejected.

3ʳᵈ character: Lockout instruction
N = (D) No lockout
L = Lockout until corresponding *RiskReset* received. Lockout can be used only with Clearing Firm filter set to F, U or O, otherwise the Mass Cancel or Purge request will be rejected. If Trading firm filter is set to U or O, lockout will apply to all new future orders or options orders (respectively), and cancel/replace orders for the trading firm. *ProductCode* or *CustomGroupId* should not be specified in these cases.

4ᵗʰ character: Instrument Type filter
B = (D) Cancel both simple and complex orders
S = Cancel simple orders only
C = Cancel complex orders only

A self-imposed lockout can be released using the *RiskReset* field of the New Order V2 or New Complex Order message or by sending a Reset Risk message. If *ProductCode* optional field is specified, a symbol level reset is required, otherwise a Firm level reset is required to release a lockout.

MaxFloor	4	Binary	Corresponds to *MaxFloor* (111) in Cboe FIX.
			Portion of *OrderQty* to display. The balance is reserve. 0 displays the entire quantity. The displayed quantity of each order at a price level is decremented first. When displayed quantity is fully decremented, it is reloaded up to *MaxFloor* from reserve.
			Default = 0
MinQty	4	Binary	Corresponds to *MinQty* (110) in Cboe FIX.
			Optional minimum fill quantity for IOC orders. Ignored for other orders. Default is zero.
			On entry and user modification, the behavior is configurable on the port and can apply to the **total** fill size, which may be made up of several **consecutive** smaller fills.
MultilegReporting Type	1	Alphanumeric	Corresponds to *MultilegReportingType* (442) in Cboe FIX.
			Indicates the type of ORDER EXECUTION V2 message during a complex order execution.
			1 = Single-leg /Simple instrument 2 = Individual leg of multi-leg instrument (Options), or Simple instrument execution that is part of a Spread instrument execution (Futures) 3 = Entire multi-leg / Spread instrument package
OpenClose	1	Alphanumeric	Corresponds to *OpenClose* (77) in Cboe FIX.
			Indicates status of client position in the option.
			O = Open C = Close N = None
			Orders with *AccountType* value of 3 (House Trader) are not required to specify *OpenClose* or may optionally specify a value of "N". Otherwise, orders with Orders with *AccountType* value of 1 (Customer Account) must specify *OpenClose*.
OrderCategory	1	Binary	This field corresponds to the MMT Level 3.2 field 'Negotiated Transaction Indicator', and is used by the participant to indicate that the trade was a Negotiated Transaction as per the Cboe Rules. For all trade reports reported on-exchange, the value must be 3.
			0 = Not a Negotiated Trade 3 = Privately Negotiated Trade
			On return fields, this field indicates whether Cboe deems the trade as utilising the Negotiated Transaction waiver under MiFID.

OrderOrigination	1	Text	Corresponds to *OrderOrigination* (1724) in Cboe FIX. 5 = (DEA). Indicates DEA activity (as deemed by MiFID II) is involved in this order. 0 = Non-DEA. (default) Other values are unsupported and will be rejected.
OrderQty	4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 contracts.
OrdType	1	Alphanumeric	Corresponds to *OrdType* (40) in Cboe FIX. 1 = Market 2 = Limit (default) 3 = Stop (Options only) 4 = Stop Limit Market implies *TimeInForce* of IOC (3). Stop/Stop Limit orders must have *TimeInForce* = 0 (DAY), 1 (GTC), or 6 (GTD).
OrigClOrdID	20	Text	Corresponds to *OrigClOrdID* (41) in Cboe FIX.

PreventMatch	3	Alpha	Corresponds to *PreventParticipantMatch* (7928) in Cboe FIX.
			The first character is the Participant Trade Prevention (PTP) Modifier with the following possible values:
			N = Cancel Newest O = Cancel Oldest B = Cancel Both
			Not all values are supported in all contexts.
			On a NEW ORDER V2, all values are supported. On a NEW COMPLEX ORDER, for complex options, and spread instruments, all values are supported, and when specified, they only apply on complex vs. complex matches. When a complex order with Participant Trade Prevention interacts with a single-leg order with Participant Trade Prevention, the complex order will always be cancelled. Similarly, in the event of a Spread order match with a Simple order, the Spread order will always be cancelled irrespective of the value of the first character.
			On a NEW ORDER CROSS, only N and O are supported for the PTP modifier, and it is only applicable to the Agency order.
			The second character indicates the Unique ID Level:
			F = Prevent Match at Participant Level M = Prevent Match at Trading Firm Level
			The third character indicates a Trading Group ID (optional):
			Member specified alphanumeric value 0–9, A–Z, or a–z.
			The Unique ID level (character 2) of both orders must match to prevent a trade. If specified on both orders, Trading Group ID (character 3) must match to prevent a trade.
			The PTP Modifier (character 1) of the inbound order will be honoured.

Price	8	Binary Price	Corresponds to *Price* (44) in Cboe FIX.
			Limit price. Four implied decimal places.
			Required for limit orders (*OrdType* = 2). If specified on a new market order (*OrdType* = 1), the order will be rejected.
			For complex orders, net price of the strategy. Four implied decimal places. (<mark>Options only</mark>) Buy orders: • Positive value, Debit • Negative value, Credit • Even order, 0 (Zero) Sell orders: • Positive value, Credit • Negative value, Debit • Even order, 0 (Zero)
PriceFormation	1	Alphanumeric	Optional. Indicates the price formation attribute of the trade, and corresponds to MMT v3 Level 3.8 'Contribution to Price Formation or the Price Discovery Process'. Supported values are: Not specified or P = Plain-Vanilla Trade T = Non-Price Forming Trade (NPFT)
ProductCode	6	Text	Product Code symbol.
ReportTime	8	DateTime	Corresponds to *RptTime* (7570) in FIX. Optional. Indicates the time at which a deferred trade report will be automatically published.

RiskReset	8	Text	Corresponds to *RiskReset* (7692) in Cboe FIX. For use by Participants using Cboe Risk Management tools to reset or release Trading Firm, Trading Firm Group, Symbol or Cus-tomGroupID level lockout conditions resulting from risk pro-file trips or self-imposed lockout issued via Cancel Order or Purge Orders messages. **Single Character Values - with counter reset**: `S` = Symbol level lockout reset `F` = Trading firm level lockout reset risk profile trips where product type is Any. Also reset Trading Firm Any level self-imposed lockout. `U` = Trading firm level lockout reset risk profile trips where product type is Futures. Also reset Trading Firm Futures level self-imposed lockout. `O` = Trading firm level lockout reset risk profile trips where product type is Option. Also reset Trading Firm Option level self-imposed lockout. `G` = Trading firm Group level lockout reset risk profile trips where product type is Any. Note that lockout cannot be self-imposed at Trading firm Group level. `X` = Trading firm Group level lockout reset risk profile trips where product type is Futures. `Z` = Trading firm Group level lockout reset risk profile trips where product type is Option. **Single Character Values - without counter reset**: `T` = Symbol level self-imposed lockout reset `E` = Trading firm Any level self-imposed lockout reset `V` = Trading firm Futures level self-imposed lockout reset `P` = Trading firm Option level self-imposed lockout reset `C` = CustomGroupID lockout reset When resetting the Trading Firm lockout, it is important to note that resetting on Trading Firm Any level does not au-tomatically reset Trading Firm Option and Trading Firm Fu-tures levels. For example, if self-imposed lockout has been performed on Any and Option levels, resetting at either Any or Option levels will still see options orders being rejected. Lockout at each Trading firm level has to be reset at the cor-responding level. Values may be combined together to allow for resets of mul-tiple self-imposed lockouts in a single message. For example, FS, SC, FC, and SFC are all acceptable values. The single character values with no counter reset will release a self-imposed lockout condition only without resetting any counters related to active risk rules. This may be useful for time based risk rules where the lockout may be released with-out resetting any risk values being tracked back to zero. If a conflicting value is provided the lockout release with counter reset will take precedence. For example, "ST" will release any lockout and reset any applicable root-level rule coutners to zero.

RiskReset (Cont'd)	8	Text	When a resting or inbound order is executed and a Symbol level risk profile limit is reached, resting orders on the associated Product Code will be cancelled and inbound orders on the Product Code will be rejected until this field is filled with the value S on a subsequent NEW ORDER or NEW COMPLEX ORDER message corresponding to a symbol on the same Product Code, or on a RESET RISK message. If a Trading Firm level rule is tripped, this tag can be filled with the value F to reset all Trading Firm level rules. While this will reset Trading Firm level rules, it is possible that both Trading Firm and Symbol level rules are currently both tripped. Setting this field to F will not clear Symbol level rules and the order may still be rejected. To clear both Symbol and Trading Firm level rules, set this field to SF to reset all associated Trading Firm level and Symbol level lockouts. If orders have been locked out by at the custom group ID level, inbound orders for the locked custom group ID will be rejected until this field is filled with the value C.
RoutingInst	4	Text	Corresponds to *RoutingInst* (9303) in Cboe FIX. Complex options only. **1st character:** B = Book Only (will remove from local book), allowed to interact with both single-leg and other complex orders. Default value. D = Complex Book Only, allowed to interact with other complex orders only[3] **2nd character:** L = Do Not Expose order via C-RFQ (Default). S = Expose order via C-RFQ.[4]
SecondaryExecId	8	Binary	Corresponds to *SecondaryExecId* (527) in Cboe FIX. Field indicates whether an execution is a complex instrument execution or a Simple instrument execution that is part of a complex execution. If the *SecondaryExecId* field is blank, the execution is a Simple instrument execution only. If the *SecondaryExecId* field is present and is the same as the *ExecID* field, the execution represents a complex execution for which associated simple instrument executions will follow. Simple instrument executions associated with a complex execution will contain a *SecondaryExecId* value that matches the *ExecID* of the associated complex execution.
SecondaryOrderId	8	Binary	Corresponds to *SecondaryOrderId* (198) in Cboe FIX. Denotes an alternative *OrderID* which is present on Cboe market data feeds (for example, to hide that a reserve (iceberg) order has reloaded). Or, *OrderID* of the contra side of a prevented match.
SecurityID	16	Text	Corresponds to *SecurityID* (48) in Cboe FIX. ISIN if *IDSource* is set.

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[3]Only valid with *TimeInForce* values of 0 (Day) or 3 (IOC), otherwise order will be rejected.
[4] All non-IOC Complex Orders will be eligible for C-RFQ unless otherwise specified.

Side	1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX.
			1 = Buy
			2 = Sell
StopPx	8	Binary Price	Corresponds to *StopPx* (99) in Cboe FIX.
			Stop price. Required if *OrdType* = 3 (Stop) or 4 (Stop Limit). Stop and Stop Limit orders will only be triggered off Last Sale Eligible trades.
			New in Version 2.
SubLiquidity Indicator	1	Alphanumeric	Additional information about an execution. **Cboe may add additional values without notice. Participants must gracefully ignore unknown values.**
			ASCII NUL (0x00) = No Additional Information
			b = Automated Improvement Mechanism (AIM)
			U = Qualifying Market Turner order. Only set when *BaseLiquidityIndicator* = A.
			g = Aggressive Hold. Order held by speed bump.
Subreason	1	Alphanumeric	Additional detail for an order reject or cancellation.
			Corresponds to the first character in *Subreason* (22058) in Cboe FIX.
			See **Subreason Codes** (§ 7.3, p. 177) for a list of possible subreasons.
Symbol	8	Alphanumeric	Corresponds to *Symbol* (55) in Cboe FIX.
			Cboe Symbology for the instrument.
Text	60	Text	Used to provide additional textual information, e.g. a warning.
TimeInForce	1	Alphanumeric	Corresponds to *TimeInForce* (59) in FIX.
			0 = Day
			1 = GTC (allowed, but treated as Day)
			2 = At The Open (complex only)
			3 = IOC (Portion not filled immediately is cancelled. Market orders are implicitly IOC.)
			4 = FOK (Supported in NEW ORDER only; Not supported in NEW COMPLEX ORDER.
			6 = GTD (expires at earlier of specified *ExpireTime* or end of day)
TradeHandling Instruction	1	Binary	Used to specify the trade reporting model used.
			1 (Two-Party Report)
			2 (One Party Report for Matching)
TradeID	8	Binary	Corresponds to *TradeID* (1003) in FIX.
			Optional. Is used by the participant to specify the previously reported trade that the report sent refers to.

TradeLinkID	1	Alpha	Third Party Trade Identifier used for identifying trades coming from a complex package. 30 characters or less. Characters in ASCII range 33–126 are allowed, except for comma, semicolon, and pipe.	
TradePublishInd	1	Binary	Corresponds to *TradePublishIndicator* (1390) in FIX. Optional. Is used by the participant to request that the publication be delayed. The following values are valid: 0 = Do not publish / 1 = Publish trade / 2 = Deferred publication	
TradeReport TransType	1	Binary	Corresponds to *TradeReportTransType* (487) in FIX. Optional. Specifies the transaction type of the report sent via Trade Capture Report. Client initiated amends and cancels are not permitted. The following values are valid: 0 = New / 1 = Cancel (only on return) / 2 = Replace (only on return) / 3 = Release	
TradeReport Type	1	Binary	This field controls pending state of the trade report. 0 = (Submit) for all new trade reports	
TradeReport TypeReturn	2	Binary	When requested, both *TradeReportTransType* and *TradeReportType* will be returned.	
TradeTime	8	DateTime	Corresponds to *TransactTime* (60) and *TradeDate* (75) in FIX. Optional, for new trade reports. Cancel/amend/releases require the original time of the trade. Specifies the date and time at which the trade was arranged. This field defaults to the time at which the message is received, when defaulting is allowed.	
TradingSession SubId	1	Binary	Corresponds to *TradingSessionSubId* (625) in FIX. The following values are valid: 2 = Scheduled Opening Auction / 4 = Scheduled Closing Auction / 6 = Scheduled Intraday Auction / 8 = Unspecified Auction / 9 = Unscheduled Auction / 3 = Continuous Trading / 5 = Post Trading / 10 = Out of Main Session Trading	

Transaction Category	1	Alphanumeric	Corresponds to *TrdType* (828) in FIX. Optional. Specifies the type or category of the trade being reported in a Trade Capture Report. At this time, only the following values are valid: P = Regular Trade (aka Plain-Vanilla Trade) Y = Exchange For Physical Z = Package Trade
TrdSubType	1	Binary	Corresponds to *TrdSubType* (829) in FIX. Optional. The following values are valid: 37 = Agency Cross trade
VenueType	1	Alphanumeric	Corresponds to *VenueType* (1430) in FIX. The following values are valid: O = Off Book
WorkingPrice	8	Binary Price	Only present when order is fully or partially booked. If price had to be adjusted to a less aggressive value for some reason, then the adjusted price will be reported here, otherwise equals price.

7 Reason Codes

7.1 Order Reason Codes

The following is a list of all reason codes used related to orders and trade capture reports. These reason codes are used in a variety of contexts (order cancellations, order rejections, modify rejections, etc.). All reasons are not valid in all contexts. The reason code will be followed by free form text. Cboe may add additional reason codes without notice. Members must gracefully ignore unknown values.

- `A` = Admin
- `D` = Duplicate Identifier (e.g., *ClOrdID*)
- `H` = Halted
- `I` = Incorrect Data Center
- `J` = Too late to cancel
- `K` = Order Rate Threshold Exceeded
- `L` = Price Exceeds Cross Range
- `M` = Liquidity Available Exceeds Order Size
- `N` = Ran Out of Liquidity to Execute Against
- `O` = *ClOrdID* Doesn't Match a Known Order
- `P` = Can't Modify an Order That is Pending Fill
- `Q` = Waiting For First Trade
- `U` = User Requested
- `V` = Would Wash
- `W` = Add Liquidity Only Order Would Remove
- `X` = Order Expired
- `Y` = Symbol Not Supported
- `Z` = Unforeseen Reason
- `f` = Risk Management Trading Firm Level
- `m` = Market Access Risk Limit Exceeded
- `o` = Max Open Orders Count Exceeded
- `r` = Reserve Reload
- `s` = Risk Management Symbol Level
- `x` = Crossed Market
- `y` = Order Received by Cboe During Replay
- `+` = Risk Management Trading Firm Group Level

7.2 Quote Reason Codes

The following is a list of all quote reason codes used by Cboe. All reasons are not valid in all contexts. The reason code will be followed by free form text. The specific text the system delivers may vary from the text listed below, to provide clarification of the reject reason. Cboe may add additional reason codes without notice. Members must gracefully ignore unknown values.

C = Invalid *ClearingFirm*
D = Invalid *WashId*
F = Not enabled for quotes
I = Incorrect Data Center
L = Invalid *QuoteCnt*
M = Symbols not on same matching engine
P = Invalid *PostingInstruction*
Q = Invalid *QuoteUpdateID*
R = Product Code does not match across quotes
S = Symbol not found
U = Symbol range unreachable
W = Invalid *WashPreventType*
a = Admin
b = Invalid *AccountType*
c = Invalid *Capacity*
f = Risk Management Trading Firm Level
l = Liquidity Provision quotes require active LPP registration for product
m = Invalid *WashMethod*
n = Exceed max notional value per order
o = Invalid *OpenClose*
s = Invalid *Side*
v = Invalid EU Record Keeping info, such as *OrderOrigination*, *AlgorithmicIndicator*, *LiquidityProvision*, *ClientID*, *ClientQualifiedRole*, *ExecutorID*, *ExecutorQualifiedRole*,*InvestorID*, *InvestorQualifiedRole*.
x = Exceed max size per order
y = Quote Received by Cboe During Replay
z = Session End

7.3 Order and Quote Subreason Codes

The following is a list of subreason codes used to indicate additional detail for the order rejections or cancellations. The specific text the system delivers may vary from the text listed below, to provide clarification of the reject reason. Cboe may add additional values without notice. Members must gracefully ignore unknown values.

```
A = Purge/Mass Cancel Trading Firm Level by user
B = Purge/Mass Cancel Symbol Level by user
C = Purge/Mass Cancel Custom Group ID Level by user
E = Trading Firm Level lockout by Cboe Trade Desk Admin
J = Firm disconnect
K = Matching engine disconnect
T = Cboe Trade Desk admin
f = Risk Management Trading Firm Level by rule
s = Risk Management Symbol Level by rule
+ = Risk Management Trading Firm Group Level by rule
l = Limit order collar breach
p = Spike protection collar breach
```

8 List of Message Types

8.1 Participant to Cboe

Message Name	Level	Type	Sequenced
Login Request V2	Session	0x37	No
Logout Request	Session	0x02	No
Client Heartbeat	Session	0x03	No
New Order V2	Application	0x38	Yes
New Order Cross	Application	0x7A	Yes
New Complex Order	Application	0x4B	Yes
New Order Cross Multileg	Application	0x85	Yes
Cancel Order V2	Application	0x39	Yes
Modify Order V2	Application	0x3A	Yes
Quote Update	Application	0x7B	Yes
Purge Orders	Application	0x47	Yes
New Complex Instrument	Application	0x4C	Yes

8.2 Cboe to Participant

Message Name	Level	Type	Sequenced
Login Response V2	Session	0x24	No
Logout	Session	0x08	No
Server Heartbeat	Session	0x09	No
Replay Complete	Session	0x13	No
Order Acknowledgment V2	Application	0x25	Yes
Cross Order Acknowledgment	Application	0x7C	Yes
Quote Update Acknowledgment	Application	0x7D	Yes
Order Rejected V2	Application	0x26	No
Cross Order Rejected	Application	0x7E	No
Quote Update Rejected	Application	0x7F	No
Order Modified V2	Application	0x27	Yes
Order Restated V2	Application	0x28	Yes
Quote Restated	Application	0x80	Yes
User Modify Rejected V2	Application	0x29	No
Order Cancelled V2	Application	0x2A	Yes
Quote Cancelled	Application	0x81	Yes
Cross Order Cancelled	Application	0x82	Yes
Cancel Rejected V2	Application	0x2B	No
Order Execution V2	Application	0x2C	Yes
Quote Execution	Application	0x83	Yes
Trade Cancel or Correct V2	Application	0x2D	Yes
Purge Rejected V2	Application	0x48	No
Reset Risk Acknowledgment	Application	0x57	No
Mass Cancel Acknowledgment V2	Application	0x36	No
Complex Instrument Accepted	Application	0x4D	Yes
Complex Instrument Rejected	Application	0x4E	No

9 Port Attributes

The table below lists BOE port attributes that are configurable on the port or firm level. Changes to these attributes can be made by contacting the Cboe Trade Desk.

Attribute	Default	Description
Allow Test Symbols Only	Disabled	Allow or disallow orders in non-test symbols
Cancel on Disconnect	Option 1	Cboe offers two options for cancelling orders as a result of a session disconnect: 1. Cancel all open orders (continuous book and on-open, on-close and periodic auction orders). 2. Do not cancel any open orders.
Capacity Strategy	House	The default strategy sent to the CCP. Used when no strategy was set on incoming messages.
Send Trade Breaks$^\wedge$	No	Enables sending of TRADE CANCEL OR CORRECT V2 messages.
Default MTP Value$^{\star\wedge\dagger}$	None	Specifies default value for *PreventParticipantMatch*.
Allow MTP Decrement Override$^{\star\wedge}$	No	Overrides the exception that requires both the resting and inbound order to be marked as "Decrement".
Allow Sponsored Participant MTP Control$^{\star\wedge}$	No	Allows Sponsored Participant to override port default for match trade prevention by using *PreventMatch* on the order level.
Cancel on Reject†	No	Cancels an order upon a cancel or modify reject.
Monitor DROP Port Profile IDs	None	Only applicable if "Reject Orders on DROP Port Disconnect" has been enabled. Allows to associate a DROP port(s) to an order entry port(s). If no DROP associated ports are connected, reject orders.
Reject Orders on DROP Port Disconnect*	30 seconds	Only applicable if "Reject Orders on DROP Port Disconnect" has been enabled. When the last associated DROP port has disconnected, begin rejecting orders on the associated order entry port(s) if a DROP session has not been reestablished within this timeout. Minimum value allowed is 0 seconds.
Cancel Open Orders on DROP Port Disconnect*	No	Only applicable if "Reject Orders on DROP Port Disconnect" has been enabled. When the last associated DROP port has disconnected, cancel all associated open orders.
Monitor DROP Port Profile IDs	None	Only applicable if "Reject Orders on DROP Port Disconnect" has been enabled. Allows to associate a DROP port(s) to an order entry port(s). If no DROP associated ports are connected, reject orders.
Cancel on ME Disconnect	Yes	When set to "no", this setting allows orders to remain open on a Matching Unit failover. When set to "yes", all open orders associated with a session are cancelled in the event of a loss of connectivity to a Matching Unit. In any event, if a failover takes longer than 5 minutes, all orders are cancelled unconditionally.

Allowed Trade Reporting Firm ID(s)*	No MPIDs	Executing Firm ID(s) allowed for trade reporting on the port.
Enable ETR Matching	No	Allows ETR matching on the port.
Minimum Quantity Mechanism	None	Controls how an order's MinQty is handled: 1. M: Orders can generate multiple fills with volumes below the minimum, so long as the total is larger then the min. quantity. 2. P: Fills will always larger than the min. quantity. 3. F: Like 'P' for persistent orders but simulates "Fill Or Kill" by making non-persistent orders like 'M'
Send Fee Code	No	Send the fee code on execution reports
Block Cross-Jurisdictional orders and ETRs	Yes	Reject cross jurisdictional orders and ETRs
Validate Orders for DEAL Transaction Reporting Bank Codes	Yes	
Default Customer Order Handling Instruction	1 (W - Desk)	Set the default CustOrderHandlingInst that will be used, unless overridden at the individual order level.

*Sponsored Participants require written approval from Sponsors to update these settings on ports associated with a Sponsor's MPID.

†Port attribute can be overridden on an order-by-order basis.

^Requires certification.

10 BOE Differences between US and Europe Derivatives

This section describes, in detail, the differences between the BOE implementations of the Cboe US Futures/Options exchanges and Cboe Europe Derivatives.

Trade Capture Reports

All messaging related to the use of Trade Capture Reports is only available in Europe.

Persistence

GTC Orders are not supported in the Cboe Europe system. As such, all participant created complex instruments will be purged at the EOD.

Order Routing

Futures and Options Trading on Cboe Europe Contracts can only be undertaken on the Cboe Europe Venue. As such, this environment will have no Order Routing capability.

Iceberg Orders

Iceberg orders will not be supported for any Derivatives in Cboe Europe.

Order/Quote Attribution

The identity of the contra firm/trader to an execution is exposed on US Options. This information will not be available on the European Execution Messages.

Cross Mechanisms

CrossType (549) in the US Options Systems can be used to specify one of three Auction Types.

- Automated Improvement Mechanism (AIM)
- Qualified Contingent Cross (QCC)
- Solicited Cross (SAM)

Cboe Europe Options will only support the AIM Auction Type.

Order Entry

Symbology

In the US Systems, Symbols can be specified using a Product Identifier, such as OSI Root and associated information like MaturityMonth, MaturityDay, StrikePrice and PutOrCall. In the European system, products must be specified using the 6-Character Cboe Symbol as taken from the Symbol File provided in Symbol, or the ISIN Code provided in SecurityID. Complex Instruments can be identified by defining each leg with a Cboe Symbol or ISIN, or the 6-Character Identifier for the Complex Instrument as a whole. Complex Instruments will not have an ISIN.

Capacity

In Europe, Capacity values must conform to the MiFID II defined values of:

- A = AOTC (Agency)
- P = DEAL (Principal)
- R = MTCH (Riskless)

MiFID II

MiFID II requires that Cboe Europe process the following fields for record keeping obligations:

- Client ID
- Executing Trader
- Investor ID

Market Making Activity should be marked using the LiquidityProvision field.

Algorithmic Trading Activity should be marked using the Algorithmic Indicator field.

DEA Activity, as defined in MiFID II, should also be marked using the OrderOrigination field.

This information will also need to be provided on a per Contra basis for AIM Auction Orders sent using the New Order Cross message.

OpenClose/LegPositionEffect

The OpenClose/LegPositionEffect fields will be required for all Orders where the participant is trading on a client account. The Account Type must be specified using the AccountType bitfield.

The Position Effect must be specified on a per Leg basis. Account Type will need to be provided on a per order basis, or per contra for New Order Cross Messages.

Execution Source

CustOrderHandlingInst must be specified for all New Order Messages, and also on a per contra basis for all Cross Order Messages. If this information is missing, the Order will be rejected.

Complex Order Entry

In Cboe Europe, due to the requirement to provide the OpenClose indicator, its equivalent LegPositionEffect is required for Complex Instruments. Therefore, unlike US Futures, the New Order Message is exclusively for Simple Instruments. Complex Instruments must be submitted using the New Complex Order message.

Quoting Interface

The Quoting Interface used in US Futures and US Options uses distinct message types due to their distinct nature and the lack of optional bitfields. In EU Derivatives, the Quoting messages are distinct again to remove any US specific fields, and add in the European specific ones.

New Order Cross

The New Order Cross Message for US Options is tailored to the US flows. In Europe, new message types are defined with support for additional Europe Specific fields. The Auction mechanism remains the same.

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11 Support

Please email questions or comments regarding this specification to `tradedeskeurope@cboe.com`.

Revision History

March 13, 2020	Version 1.0.0 Draft first version.
May 25, 2020	Version 1.0.1 Added OpenClose in QuoteUpdate message.
June 16, 2020	Version 1.0.2 Added new section, § 10, p. 181, highlighting key differences between US and EU Derivatives environments. Renamed ExecutionSource to CustOrderHandlingInst to match the existing FIX Tag 1031. Removed support for MaxFloor.
June 30, 2020	Version 1.0.3 Added AccountType, and clarify if OpenClose and LegPositionEffects are mandatory. Added MassCancel in Order Cancel Request, and added InstrumentTypeFilter in *MassCancelInst*.
August 17, 2020	Version 1.0.4 Added info on Default Customer Order Handling Instruction port attribute, and clarified the use of NoLegs in New Complex Order.
September 22, 2020	Version 1.0.5 Added *CustOrderHandlingInst*, *OpenClose* and *AccountType* to *TrdCapRptSideGrp*.
October 5, 2020	Version 1.0.6 Changed the fields order of *OpenClose* in *NewOrderCross*, and *LegPositionEffects* in *NewOrderCrossMultileg*; these fields are no longer mandatory.
October 19, 2020	Version 1.0.7 *AuctionId* is now a valid return bitfield in *Cross Order Cancelled* message.
November 10, 2020	Version 1.0.8 Removed At The Close as a valid *TimeInForce* value.
December 21, 2020	Version 1.0.9 Updated examples and Added example for *QuoteUpdate*; Updated supported values for *PreventMatch*; Expanded list of Quote Reason Codes (§ 7.2, p. 176); Added support for *DrillThruProtection*; Clarified TCR support for complex instruments; Added support for *RoutingInst* for complex options.
11 January 2021	Version 1.0.10 Added Volatility Strategies section. Added optional *LegPrice* to NoLegs repeating group.
14 January 2021	Version 1.0.11 Updated and clarified usage of *ProductCode* in *Cancel Order*, *Purge Orders* and *ResetRisk*.
2 February 2021	Version 1.0.12 Updated values supported in *RiskReset*, added support for *Subreason*; Added *TradeLinkID* for trade reports.
9 February 2021	Version 1.0.13 Updated values in *SubLiquidityIndicator*; Clarified values supported in *TimeInForce* for complex orders.
23 February 2021	Version 1.0.14 Update supported values for *TradeCaptureReport* messages.
03 March 2021	Version 1.0.15 Clarified usage of *Order Restatement* Message.
08 March 2021	Version 1.0.16 Added DisplayIndicator to *New Complex Order* message; Added descriptions for more trade capture report specific optional fields.
24 March 2021	Version 2.0.0 Removed Draft Watermark.

01 April 2021	Version 2.1
	Updated descriptions of various fields for *QuoteUpdate*, including *PostingInstruction* and *CustOrderHandlingInst*.
07 April 2021	Version 2.2
	Updated values in *RestatementReason* for *Order Restated*.
09 April 2021	Version 2.3
	AuctionId now supported in *Order Modified* message.
14 April 2021	Version 2.4
	Updated QuoteCancelled CancelReason to point to the correct set of reason codes.
22 April 2021	Version 2.5
	Updated LPP registration requirements in using *LiquidityProvision* in *Quote Update*; Added new Quote Reason code.
04 May 2021	Version 2.6
	Updated *Transaction Category* with new values for Exchange For Physical and Package Trade.
19 May 2021	Version 2.7
	Added new *RiskReset* values to support reset risk profile trips at Futures or Options level; Clarified that ETRs cannot be cancelled; Clarified size limit for Trade Reports; Removed support for *SecondaryTrdType*, *WaiverType*, *TradePriceCondition*, *ExecutionMethod* in TradeCaptureReport message, and modified allowed values for *PriceFormation* in TCR message; Amends and cancels are not permiited for TradeCaptureReports.
28 May 2021	Version 2.8
	Updated *NewComplexInstrument* and *ComplexInstrumentAccepted* ComplexLeg repeating group, with optional *LegPrice* field. Updated description in Volatility Strategies section, to reflect usage of LegPrice.
18 June 2021	Version 2.9
	Added new sections for Opening Auction Configuration, Drill-Through Configuration and Futures Threshold Widths. Updated Input Bit Fields for *Cancel Order V2*, to include *Product Code* as valid.
13 July 2021	Version 2.10
	Minor correction to RiskReset definition. Clarify that C-RFQ will not be initiated by default.
22 July 2021	Version 2.11
	Clarified that AccountType is requestable in CrossOrderCancelled message.
30 July 2021	Version 2.12
	Removed LiquitityProvision Optional Field from all Order Messages. LiquidityProvision is only supported on Quote messages.
1 September 2021	Version 2.13
	Added sub-reason codes for limit order collar and spike protection collar breaches.
17 September 2021	Version 2.14
	Update *Quote Update Acknowledgment*/*Quote Cancelled* to reflect they are unsequenced.
20 September 2021	Version 2.15
	Added new section for port parameters.
12 October 2021	Version 2.16
	Added new characters for *RiskReset* and *MassCancelInst*; Re-allow *LiquidityProvision* in non-Quote messages.