US Options
Binary Order Entry
Version 3
Specification

Version 1.0.10

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Contents

1 Overview

This document describes Binary Order Entry, version 3 (BOEv3), the Cboe proprietary order entry protocol used by members to send orders, quotes, and purges to Cboe.

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 BOEv3. This document assumes the reader has basic knowledge of the FIX protocol.

BOEv3 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 member's representation of an order.
- *Session level simplicity.* The session level protocol (login, sequencing, replay of missed messages, logout) is simple to understand.

While Cboe strives to preserve feature parity between FIX and BOEv3 where possible, some features may only be available in one protocol or the other.

Note that while FIX is an ASCII based protocol, BOE is binary based, providing for efficiencies that can allow for reduced latency.

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

Each message is identified by a unique message type. A listing of the supported message types is provided in Section 7 - List of Message Types.

All communication is via standard TCP/IP.

1.1.1 Differences with prior versions of BOE

Notable differences between BOEv3 and the prior major version of BOE (BOEv2) include:

1. BOEv3 has statically sized messages except when sizing variability is required due to (statically sized) repeating groups of fields. Consequently, BOEv3 does not support optional fields on input nor bitfield-specified optional return fields. This provides a more consistent and predictable experience for all users.

2. Connectivity is now managed as a port specific to a matching unit. Consequently, separate ports will be required for access to each matching unit.

   a. A "convenience" BOEv3 port will be made available which will allow for a single connection to interact with all matching units. Note that using a convenience port will incur an incremental latency cost due to the additional communication layer.

3. The Logout Response message no longer returns the LastReceivedSequenceNumber, nor the highest available sequence numbers of the matching unit(s).

4. There is no longer a systematically enforced limit on the number of open orders or quotes a firm may have entered on the exchange from a unitized port.

5. BOEv3 requires that the EFID (ClearingFirm) be specified on all Cancel Order and Modify Order messages (either via Port default or by specifying in the message). This differs from prior versions of BOE where this was only required of service bureau members.

6. When logging in, members may specify a behavior of "Fail" for unspecified matching units (fail the login if a matching unit was not specified). This in addition to the "Skip" and "Replay" behaviors, as detailed in 'Section 2.2 – Login, Replay, and Sequencing'.

7. Logging in may specify a "deep replay" mode, available on the inactive session. See "1.1.4 Failover and Disaster Recovery (DR)".

8. The Cancel Order message type now cancels a single order. A new message type Mass Cancel Order provides all multi-order cancellation requests.

9. There no longer exists a condition where a member would send a Modify Order followed immediately by a Cancel Order message and it was not deterministic as to which OrigClOrdId value was correct on the Cancel Order message. In BOEv3, the OrigClOrdId on a cancel should be the ClOrdId sent on the most recent Modify Order (or New Order if no modifies have been sent), even if the corresponding response has not yet been seen. CancelOrigOnReject should be set to 'Y' to ensure that a rejected Modify Order does not leave behind a live order.

10. Member risk trips and self-imposed lockouts are now required to be reset using the Reset Risk message. They can no longer be reset via the New Order message.

11. An "in flight" field has been added to most return messages, informing the member of the total number of messages received by the BOE3 order handler which have not yet been acknowledged by the matching engine.

12. A "ScratchPad" field has been added to messages sent from the Member to Cboe. This two byte field is located at or near the end of the message structure and can be used for a Member's own internal purposes.

13. BOEv3 Trade Cancel or Correct messages are not suppressible by port parameter.

14. Added requirement for members to record and connect to secondary IP in event of failover to secondary port in the primary, Secaucus Datacenter as detailed in 'Section 1.1.4 – Failover and Disaster Recovery (DR)'

15. Risk resets on a BOEv3 unitized port only apply for the unit associated with that port. BOEv2, BOEv3 convenience, and FIX ports risk resets may optionally apply to all units.

16. In many of the messages from Cboe to the member the fixed set of fields in the response will be fewer than the total number of fixed and optional fields available over BOEv2.

17. For sequenced messages from Member to Cboe, a sequence number of "0" will always be accepted and is treated as if it were the next expected sequence number.

1.1.2   BOEv3 Message Format Versioning and Nomenclature

Message types may be introduced when new fields cannot be accommodated by utilizing reserved bytes in the existing message specification. In such cases, when a new message type is introduced, it will be documented as a distinct message type in this document. Application layer message types are named using the following pattern:

Application Layer Message Type	General Type	Market	Version
NewOrderUSOptionsV1	New Order	US Options	V1

This allows for ease of distinction between similar message types between markets (for example, JP Equities compared to US Futures), and the handling of new versions of the message (V1, V2, *et cetera*).

When application layer message types are discussed in this document, they are referred to using their general type name unless their specific version is relevant to the documentation.

During any time when multiple versions of messages from Cboe to Member are supported concurrently, the configuration of the port determines which message version may be sent by Cboe.

1.1.3   Introduction of New Fields in Existing BOEv3 Messages

Existing message fields will not change in length. Fields currently identified as "Reserved" may be redefined, in part or in whole, as new specified fields. New fields may be introduced at the end of any message that does not have a repeating group of fields; consequently, members must check the length of messages received from Cboe and treat any additional bytes present as undefined values.

1.1.4   Failover and Disaster Recovery (DR)

1.1.4.1   *BOEv3 Unitized (BOEv3u)*

Each BOEv3u session assigned to a member will have three total ports available per unit for the member's use:

- Secaucus Primary port (A)
- Secaucus Secondary port (B)
- Chicago DR port (C)

All three ports will have distinct IP addresses assigned. During normal operation, only the primary port in Secaucus (port A) will accept order/quote traffic. Sequence numbers are unified across all three unitized ports for a given session. Telnet connectivity testing can be done at any time (24/7).

Deep Replay Logins

Active Primary (A) and Secondary (B) BOEv3u ports support a limited message replay facility. (see "2.2 Login, Replay, and Sequencing"). To facilitate the occasional need for a deep replay of messages, BOEv3 logins support a specialized *ReplayInstruction*=D (Deep Replay) on inactive ports. Deep replay logins can *only* be used for deep replay. On a successful deep replay login, after Cboe has sent the requested messages clients should logout and disconnect; otherwise Cboe will send a LogoutResponse and disconnect the port after an idle period of 30 seconds. Any order/quote traffic on a deep replay login will not be accepted and the session will be immediately disconnected.

Under normal operations, the active port will be the primary port (A) and the inactive ports are secondary (B) and DR (C). Upon promotion of either port to "active", any deep replay logins will be immediately terminated.

Order Handler Redundancy

Port B and C will only accept deep replay logins (*ReplayInstruction*='D'), unless promoted to active. All other login attempts will be rejected. As a result of this design, customers **may** design their system to attempt to connect with regular logins (i.e. *ReplayInstuction* value other than 'D') to Port A, B, or C and can be confident that the port that accepts their login is the current primary.

Disaster Recovery Data Center

While DR activation may occur intraday, it will only occur only after Cboe has provided notification to customers.

1.1.4.2 *BOEv3 Convenience (BOEv3c)*

Order Handler Redundancy in Primary Data center

There are no explicit separate BOEv3c address, port or credentials. Cboe will activate a replacement order hander when necessary using the same address, port and credentials. Sequences on an activated replacement will match primary, less anything very recent lost during failover. Please note that there is no way to communicate with dormant backup port before it is activated.

Disaster Recovery Data Center

Cboe configures an order handler session in DR data center (Chicago for US) for each primary site order hander session. Members are able to connect, login, and heartbeat to the DR session at any time during trading operations. Unless the DR data center has been activated all application-level messages (orders, quotes) will be rejected.

Login credentials are the same the primary site.

The DR sessions have independent sequence numbering, and will not support the replay of messages from the primary data center.

1.2   Certification Requirement

All customers must complete a formal certification in the appropriate Cboe Certification test environment before production orders or quotes will be accepted by Cboe. Formal certification scripts can be found in the Cboe Customer Web Portal. Customers may complete the formal certification using the "Certification Tool" app and selecting the applicable certification script. Customers are advised to test all functionality they plan to use in production in the Cboe Certification test environment.

1.3   Document Format

Blue highlighted sections highlight key differences between the Cboe US Options Exchanges (BZX Options Exchange "BZX", Cboe Options Exchange "C1", C2 Options Exchange "C2", and EDGX Options Exchange "EDGX").

1.4   Hours of Operation

All times noted are Eastern time zone (ET) based.

See the respective exchange websites for holiday schedules.

Cboe Options Exchanges support a Pre-Market Queuing Session that allows orders to be entered and queued prior to the start of the Global Trading Hours ("GTH") session and the Regular Trading Hours ("RTH") session. The GTH Queuing session allows SPX, VIX, and XSP orders marked as both GTH and RTH only order to be entered and queued. C1 also supports a Curb session in addition to GTH and RTH sessions.

For more information on the Cboe Opening Process, please refer to the Cboe Opening Process Specification.

Cboe Options Exchanges do not support a closing auction, but do support extended trading for options on select ETF and index products. All orders remaining after the Regular Trading Session that are not eligible for Extended Trading will be cancelled automatically. All orders remaining after the Extended session will be cancelled automatically. Members will receive `Order Cancelled` messages for all automatically cancelled orders.

	C1	C2	BZX	EDGX
Order Acceptance	8:00 p.m. - 8:15 p.m. ET (SPX/VIX/XSP)	7:30 a.m. - 9:30 a.m. ET (All Products)	7:30 a.m. - 9:30 a.m. ET (All Products)	7:30 a.m. - 9:30 a.m. ET (All Products)
	7:30 a.m. - 9:30 a.m. ET (All Products)			
GTH	8:15 p.m. - 9:15 a.m. ET (SPX/VIX/XSP)	N/A	N/A	N/A
RTH	9:30 a.m. - 4:00 p.m. ET (All Products)	9:30 a.m. - 4:00 p.m. ET (All Products)	9:30 a.m. - 4:00 p.m. ET (All Products)	9:30 a.m. - 4:00 p.m. ET (All Products)
	9:30 a.m. - 4:15 p.m. ET (Select ETF's/ETN's and Index Products)	9:30 a.m. - 4:15 p.m. ET	9:30 a.m. - 4:15 p.m. ET	9:30 a.m. - 4:15 p.m. ET
Curb	4:30 p.m. - 5:00 p.m. ET (SPX/VIX/XSP)	N/A	N/A	N/A

1.4.1 Holiday Sessions (C1 only)

On certain US-centric holidays, where European and/or Asian markets are open, trading is suspended for RTH and Curb but continues for GTH, resulting in two sets of non-contiguous GTH sessions before RTH.

Figure 1: US Holiday Trading Hours
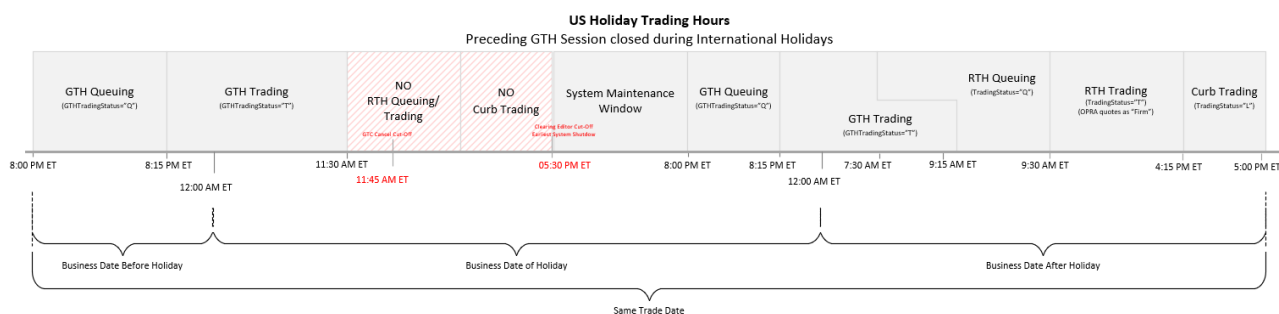
On days where the market closes early, RTH will conclude at 1:15 p.m. ET and there will not be a subsequent Curb session. The market will remain closed until the next GTH session.

On certain International Holidays (i.e. New Years' Day) there is no GTH or RTH trading and the C1 Options market is closed. Notice will be sent prior to any holiday communicating the specific hours and sessions that will be available.

1.5 Data Types

The following data types are used by BOEv3. The size of some data types varies by message. All data types have default values of binary zero, in both Member to Cboe and Cboe to Member 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
- *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 considering implied decimal places is 12.3400.
    - — 08 E2 01 00 00 00 00 00 = 123,400/10,000 = 12.3400
    - — F8 1D FE FF FF FF FF FF = -123,400/10,000 = -12.3400
- *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 123,400, the actual value considering implied decimal places is 12.3400.
    - — 08 E2 01 00 = 123,400/10,000 = 12.3400
    - — F8 1D FE FF = -123,400/10,000 = -12.3400
- *Alpha:* ASCII 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:* ASCII 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 (binary values in the inclusive range 0x20 through 0x7E). ASCII NUL (0x00) filled on the right, if necessary. The number of bytes used depends on the context.
- *DateTime:* Little Endian byte order, unsigned binary value, 8 bytes in size. The date and time, in UTC, represented as nanoseconds past the UNIX epoch (00:00:00 UTC on 1 January 1970). The nanoseconds portion is set to 0 by the exchange (the actual precision will be in microseconds).
    - — E0 FE 20 F7 36 71 F8 11 = 1,294,909,373,757,325,000 = 2011-01-13 09:02:53.757325 UTC
- *Date:* Little Endian byte order, unsigned binary value, 4 bytes in size. The YYYYMMDD expressed as an integer.
    - — A7 3C 34 01 = 20200615 = "June 15, 2020"
- *Reserved*: sequence of ASCII NUL (0x00) values when sent by the member. May contain any values when sent by the exchange and should be ignored by the member.

Alpha and Text fields which are "blank" (entirely filled with ASCII NUL (0x00)) are eligible to be populated with a port default value. See section "8 Port Attributes" for eligible port parameters.

1.6   Protocol Features

The exchange does not guarantee messages sent by Members/TPHs to the exchange, including through protocols such as TCP. Members/TPHs are responsible to monitor the status of the messages they send to the exchange.

1.6.1   Architecture and Message in Flight Settings

Each BOE order handler port will allow a single TCP connection from a member. Connection attempts from unknown source IP ranges will be blocked to prevent unauthorized access to BOE ports. The Cboe NOC should be contacted in the event that a Member desires to connect from a new source IP range.

The connections between BOE order handlers and matching units are governed by an internal flow control mechanism to control burst rates.

The number of messages in flight between an order handler and a matching engine is 128. In addition, when the total number of unacknowledged messages exceeds 1,024, the BOE order handler will stop reading from the member-facing TCP socket. This will cause the order handler to stop removing bytes from the TCP receive buffer, and will prevent the member from sending more TCP data once the member's send buffer is full.

When the total number of unacknowledged messages falls below 960, the reading of the member facing TCP socket will be resumed.

For message in flight counting purposes the following logic will be used:

- A new order message will count as one message;
- A new complex order with up to 100 legs will count as one message;
- A new order cross or new complex order cross auction message with one agency side and up to 10 contra parties will count as one message;
- A quote update with up to 20 individual quote sides will count as one message.
- In contrast, a single TCP segment sent by a member containing two quote update messages, each with five quote sides, will count as two messages.

Cboe may either update the message in flight or the total number of unacknowledged messages settings with notice. Changes to reduce either limit will be made only with two weeks' notice. Cboe reserves the ability to increase either limit immediately with notice.

1.6.2   Complex Instruments and Signed Prices (C1, C2, and EDGX only)

All price fields in the BOE protocol are signed values capable of accommodating complex instruments that can be negative (See Data Types) for a description and an example of using the Binary Price type with a negative price). For an example of the use of the Binary Price type with negative price values in an application message, see the example BOE message in `New Complex Order`.

1.6.3   Done For Day Restatements

Good 'Til Cancel ("GTC") and Good 'Til Day ("GTD") orders can result in order persisting between sessions. The Cboe BOE protocol provides a mechanism for clients to request end-of-day restatement of GTC/GTD orders that will be persisted to the next trading session.

Done For Day Restatement messages are sent to connected clients after the trading session ends, for each order that will persist to the next trading session. Any time prior to the cutoff, customers may send `Cancel Order` messages for any open GTC and GTD orders.

Done For Day Restatements are represented using the `Done For Day` message.

1.6.4 Carried Order Restatements

GTC and GTD orders can result in orders persisting between sessions. The Cboe BOE protocol provides a mechanism for clients to request restatement of orders that have been carried forward from the previous business day trading session.

Carried Order Restatements are sent to connected clients for each product on the Options Exchange for which orders have been carried forward from the previous business day trading session. Carried Order Restatements are sent after connection establishment and before regular trading activity messages on a per-product basis.

Carried Order Restatements are represented using the `Carried Restatement` message.

1.6.5 Cancellation of Carried Orders Between Trading Sessions

GTC and GTD orders persist within the Cboe Options Exchanges between business days. On BZX, EDGX, and C2 the latest time when GTC/GTD orders may be cancelled is 4:45 p.m. ET.

On C1 Options the latest time when GTC/GTD orders may be cancelled is 5:15 p.m. ET (15 minutes following the close of the Curb Session).

GTC, GTD, and Day orders also persist between multiple GTH trading sessions on the same business day in connection with a holiday. On US holidays, `Cancel Order` messages for GTC orders may be issued until 11:45 a.m. ET, which is 15 minutes after the first GTH session ends at 11:30 a.m. ET. The "Multi-Segment Holiday Day Order Handling" port attribute will enable Members to designate if Day orders are cancelled or preserved across holiday trading segments comprising a single business date. See 'Section 10 – Port Attributes' for information on available port attributes.

1.6.6 Display Indicator Features

Orders are eligible for all of the sliding features described below. Quotes are eligible for the sliding behaviors described below if they are received with a price that locks the NBBO and with a *PostingInstruction* eligible for price sliding. Quotes that also <u>cross</u> the NBBO or displayed Cboe book will be accepted if within a configurable buffer range through the NBBO or displayed Cboe book. The buffer is set to 5% with a minimum of $0.05 and a maximum of $1.00.

For BZX only, quotes and orders that are marked as "Post Only" will execute against resting liquidity as a remover and be charged applicable removal fee codes if the amount of price improvement of the removal execution exceeds the expected rebate that the order or quote would have received if it had posted at its limit price.

Display-Price Sliding *(BZX Only)*
If the original limit price of the unexecuted remainder of a day order does not lock or cross the NBBO then Cboe works the order at the original limit price while displayed at the nearest permissible quoting increment. If the original limit price does lock or cross the NBBO then Cboe makes available Display-Price Sliding.

Display-Price Sliding adjusts the original limit price on entry to the locking price of the NBBO. It will be ranked and worked at a price locking the NBBO but will temporarily adjust the displayed price to the nearest permissible quoting increment. When the NBBO widens, the display price will be readjusted to the adjusted limit price. The display price may be temporarily less aggressive than the adjusted limit price or working price.

Multiple Display-Price Sliding does not permanently adjust the original limit price on entry, but allows for Display-Price slid orders to continue to have their display **and** working prices adjusted towards their original limit price based on changes to the prevailing NBBO.

Contra-side Post Only orders that are received when a Display-Price Slid order is working at a locking price with the NBBO will not result in a reject of a contra-side Post Only order but will instead result in the working price of the Display-Price Slid order to be repriced to one penny away from the locking price.

Price Adjust *(BZX, C1, C2, and EDGX)*
If the limit price of an order does not lock or cross the NBBO, then the order will be ranked and displayed at the nearest permissible quoting increment.

If the limit price of a Price Adjust eligible order locks or crosses the NBBO, the limit price will be adjusted on entry to the locking price of the NBBO, while the displayed price and ranked price will be temporarily adjusted to the nearest permissible quoting increment. Price Adjust orders will never be ranked at the locking price or at a non-displayable price increment. If the NBBO widens, the displayed price and ranked price will be readjusted to the adjusted limit price.

The limit price of a Multiple Price Adjust order will not be permanently adjusted on entry if the limit price crosses the NBBO. The displayed price and ranked price will be the nearest permissible quoting increment and will be adjusted towards the original limit price based on changes in the prevailing NBBO.

NoRescrapeAtLimit *(BZX Only)*
Applicable only to fully routable IOC orders (9303=R **and** 59=3). After walking the price down to the limit, there will be no final scrape at Cboe and the cancel code will state "X: Expired" rather than "N: No Liquidity".

1.6.7 Default Exchange Risk Protections

1.6.7.1 *Market Order NBBO Width Protection for Simple Orders*

Market Orders are rejected if the NBBO width is greater than 100% of the midpoint (with a minimum value of $5.00 and maximum value of $10.00).

Example
- NBBO = $1.00 x $4.00
- Midpoint =$2.50 x 100% = $2.50 (min of 5.00 is used instead)
- NBBO Width= $4.00 – $1.00 = $3.00

Even though the width is greater than 100% of the midpoint, Market Orders entered are accepted since the $5.00 minimum applies in this example.

1.6.7.2 *Drill-Through Protection for Simple Limit Orders*

Each simple limit order will be assigned a drill-through price that allows simple orders to be executed up to a maximum capped price through the contra side NBBO at time of order entry. The drill-through mechanism will repeatedly post the order at a more aggressive price. If the order reaches its limit price at any time during the iterative drill-through process, the order will remain at its limit price and the drill-through protection mechanism will not continue. The preset duration is one second.

Adjustments that would lock or invert an away displayed market will initiate a SUM auction. Eligible complex orders may also initiate a COA throughout the iterative process.

Market orders submitted with a *TimeInForce* (FIX Tag 59) of 'Day' along with elected stop orders will be eligible for iterative drill-through price protection.

- Sell market orders will drill-through down to the minimum tick for the class where they will rest until cancelled or executed in full.
- Buy market orders will drill-through to the maximum allowable price for the class where they will rest until cancelled or executed in full.
- Market orders submitted with a *TimeInForce* of 'IOC' will trade on arrival, capped at the first drill-through price level.

Separate stop and stop limit orders elected as a result of the same election trigger (NBBO update or last sale) will all use the same drill-through reference price. This may include orders with multiple stop prices if the election trigger covers multiple price levels. When multiple stop orders are elected as a result of the same election trigger, they are sequenced in time priority based on their order entry time.

- If an iterative drill-through protection is in progress, newly-elected stop and stop limit orders will join the current drill-through price. The newly-elected stop and stop limit orders will be prioritized behind orders already in drill-through.
- If no iterative drill-through is in progress, the initial drill-through reference price for stop and stop limit orders elected by the same market data event will be set to the contra side NBBO

Triggered Market-On-Close and Limit-On-Close orders are handled the same as elected stop and stop limit orders with respect to drill-through reference price and priority.

- Existing market-width checks prevent market orders from executing if the bid/ask width is wider than a specified amount. This protection will be bypassed for triggered Market-On-Close orders and triggered stop orders.
- Existing Fat Finger limit price reasonability checks reject limit orders priced at an overly-aggressive level. Such protections will be bypassed for triggered Limit-On-Close orders and triggered stop limit orders.

The Drill-Through Price is calculated by taking the NBB or NBO and subtracting or adding, respectively, the Drill-Through Amount from the table below. Calculated drill-through prices at an invalid pick increment for the class will be widened to the next valid tick.

NBBO Price	Drill-Through Amount (All Symbols)
$0.00 – $5.00	$0.10
$5.01 – $20.00	$0.20
$20.01 – $50.00	$0.30
$50.01 – $100.00	$0.40
$100.01 & Above	$0.50

1.6.7.3 *Market/Limit Order Drill-Through for Complex Orders*

Default Drill-Through Protections will be applied to all complex limit and market orders that will cap the price of the order relative to the SNBBO at the time of order entry. Exchange defaults are 5% through the contra-side of the SNBBO. For orders other than SPX/SPXW, the price cap level will be no larger than $0.25 through the contra-side SNBBO. For SPX/SPXW, the price cap will be no larger than $2.00 through the contra-side SNBBO. The price cap will be no smaller than $0.02 through the contra-side SNBBO for all orders.

For complex orders not specifying a drill-through override with *DrillThruProtection* (FIX Tag 6253), the drill-through mechanism will repeatedly post the order at a more aggressive price. If the order reaches its limit price at any time during the iterative drill-through process, the order will remain at its limit price and the drill-through protection mechanism will not continue. The preset duration is one second.

Sell market orders will drill through to the minimum tick for the class, where they will rest until cancelled or executed in full. Buy market orders will drill through to the maximum allowable price for the class, where they will rest until cancelled or executed in full. Market orders submitted with a *TimeInForce* of 'IOC' will trade on arrival, capped at the first drill-through price level.

Adjustments that would lock or invert an away displayed market will initiate a SUM auction. Eligible complex orders may also initiate a COA throughout the iterative process.

Customers can optionally set more or less restrictive Drill-Through Protections on individual orders using *DrillThruProtection* on the `New Order Multileg` message.

1.6.7.4 *Exchange Default Fat Finger Limits*

Fat Finger Checks are mandatory for both Pre-Market and Regular Sessions and applied to both simple and complex orders. The following Exchange defaults are applied if not specified by the user. Fat Finger checks are not applicable for any Multi-Class Spread instruments that trade on the floor only. Fat Finger checks are applicable for Multi-Class complex instruments containing only SPX or SPXW legs as they are eligible for trading on the electronic book.

Pre-Open Curb/GTH Session (VIX/XSP)		
Limit Price Range	**Fat Finger % Default**	**Fat Finger Dollar-Based Limit Default**
$0.00 – $1.99	No Value	$1.00
$2.00 – $5.00	No Value	$1.50
$5.01 – $10.00	No Value	$2.00
$10.01 – $20.00	No Value	$3.00
$20.01 – $50.00	No Value	$4.00
$50.01 – $100.00	No Value	$6.00
$100.01 & Above	8%	Not Valid

Regular Session		
Limit Price Range	Fat Finger % Default	Fat Finger Dollar-Based Limit Default
$0.00 – $1.99	No Value	$0.50
$2.00 – $5.00	No Value	$0.75
$5.01 – $10.00	No Value	$1.00
$10.01 – $20.00	No Value	$1.50
$20.01 – $50.00	No Value	$2.00
$50.01 – $100.00	No Value	$3.00
$100.01 & Above	4%	Not Valid

SPX and SPXW are considered Exception Classes and have unique Fat Finger default values for the Pre-Open and Regular sessions.

Exception Class Pre-Open Curb/GTH Session (SPX)		
Limit Price Range	Fat Finger % Default	Fat Finger Dollar-Based Limit Default
$0.00 – $1.99	No Value	$15.00
$2.00 – $5.00	No Value	$15.00
$5.01 – $10.00	No Value	$15.00
$10.01 – $20.00	No Value	$15.00
$20.01 – $50.00	No Value	$20.00
$50.01 – $100.00	No Value	$20.00
$100.01 & Above	No Value	$25.00

Exception Class Regular Session		
Limit Price Range	Fat Finger % Default	Fat Finger Dollar-Based Limit Default
$0.00 – $1.99	No Value	$1.00
$2.00 – $5.00	No Value	$1.50
$5.01 – $10.00	No Value	$2.00
$10.01 – $20.00	No Value	$3.00
$20.01 – $50.00	No Value	$4.00
$50.01 – $100.00	No Value	$6.00
$100.01 & Above	16%	Not Valid

See the Web Portal Port Controls Specification for additional details on how Members can manage fat finger settings intraday.

1.6.7.5 *Default Fat Finger Limits for Quote Updates*

Quotes that <u>cross</u> the NBBO or displayed Cboe book will be accepted if within a configurable buffer range through the NBBO or displayed Cboe book. The buffer is set to 5% with a minimum of $0.05 and a maximum of $1.00.

1.6.7.6 *Maximum Open Order Limits*

The exchange limits the maximum number of open orders allowed on a BOE or BOE Quote port to 200,000 per port. New orders will be rejected once this limit is breached until the number of open orders drops back below 200,000. Note this limit is only for orders and does not include open quotes sent over a BOE Quote port.

1.6.8   Risk Root

This document uses the term "Risk Root" to describe Cboe Options Risk Management functionality that is applied at the symbol-level. The Risk Root is defined as the underlying symbol. This impacts what value must be sent in the defined *RiskRoot* fields when performing a mass cancel or a risk trip reset.

See the Risk Management Specification for more details.

1.6.9   Market Maker Trade Notifications (C1 Only)

Floor Trade Notifications (MMTNs) will be sent to Market Makers if they are identified as the contra party of a floor trade. MMTN messages will be sent over a designated FIXDrop or BOE order entry port. See 'Section 10 – Port Attributes' section for information on available port attributes related to MMTNs.

Market Makers that receive a Floor Trade Notification should use the Floor Trade Confirmation message to respond to the NNTN if they agree with the terms of the trade. Alternatively, a Market Maker can use the Add Floor Trade message to enter their own version of the trade.

1.6.10 Cabinet and Sub-Cabinet Orders (C1 Only)

Cabinet orders are identified via *PriceType* = '0' and must have a valid *TimeInForce* of 'Day' or 'GTC'. Cabinet orders can support a position status of Open or Close indentified via the *OpenClose* field. Cabinet orders will only trade with other cabinet orders on the book or floor depending on *FloorRoutingInst* and *FloorDestination* values.

1.6.10.1 *Valid Pricing*

Orders in non-penny classes must have a limit price **less than or equal to** $0.01 and orders in penny classes must have a limit price **less than** $0.01. Limit prices may be up to 4 decimal places.

1.6.10.2 *Invalid Pricing*

Orders in penny or non-penny classes priced **greater than** $0.01 and orders in penny classes priced **equal to** $0.01 will be rejected. Orders with a limit price that locks or crosses a resting non-cabinet order will be rejected.

1.6.10.3 *Market Data*

Cabinet orders or executions will not be disseminated on OPRA but will be available on http://cdn.cboe.com/resources/membership/US_EQUITIES_OPTIONS_MULTICAST_PITCH_SPECIFICATION.pdf and http://cdn.cboe.com/resources/membership/US_OPTIONS_MULTICAST_TOP_SPECIFICATION.pdf feeds.

1.6.11 Auction Orders

For more information on the following Auction Only Orders, please refer to the Opening Process Specification.

Order Type	Order Entry Details	
Market-On-Open (MOO)	*OrdType* = 1 (*Market*)	*TimeInForce* = 2 (*At the open*)
Limit-On-Open (LOO)	*OrdType* = 2 (*Limit*) *Price* = [price]	*TimeInForce* = 2 (*At the open*)
Settlement Liquidity On Open (SLOO)	*OrdType* = 2 (*Limit*) *Price* = [price]	*TimeInForce* = 2 (*At the open*) *ExecInst* = r (*Settlement Liquidity*)

1.6.12 Port Types

All BOE port types may be ordered using the **Logical Port Request** tool on the Customer Web Portal. Port attribute changes may also be requested through this tool by submitting a 'Modify' request for one or more existing BOE ports.

1.6.12.1 *Unitized Ports*

BOE unitized ports are specific to a partular matching unit. Members connecting to unitized ports will have the most direct available route to the matching engine. See "Appendix B – Architectural Diagram". Quote Update messages will only be supported via unitized ports.

1.6.12.2 *Convenience Ports*

BOE convenience ports supporting routing traffic to all units. A convenience port will in turn route traffic to the appropriate BOE unitized traffic handler. Message sent via a convenience port requires additional routing to access a unit, similar to FIX and BOEv2. See "Appendix B – Architectural Diagram".

1.6.12.3 *BOE Order Ports*

Standard BOE ports support simple and complex order entry but do not support the usage of the following message types: `Quote Update`, `Quote Update (Short)`, `Purge Orders`. The attempted usage of any of these message types on standard BOE order ports will result in a rejection of the disallowed message.

Standard BOE ports are limited to 5,000 inbound messages per second. Only messages having symbols mapped to the matching unit will be accepted. Once the inbound limit is reached new orders are rejected, modifies are handled as cancels, and cancels are processed normally.

1.6.12.4 *BOE Bulk Quoting Ports*

BOE Bulk Quoting ports are intended for use by market makers quoting large numbers of simple options series. As a result, they are unthrottled in terms of number of messages that may be accepted within any given period of time from a member. However, market makers may still experience poor performance on Bulk Quoting ports if excessive message traffic is sent.

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.

Bulk Quoting Port Order Acceptance Table

Message	Simple/Complex	Accepted over Bulk Quoting Port?	Other Conditions
`Quote Update`	Simple	Yes	
`Quote Update` *(short)*	Simple	Yes	
`New Order`	Simple	Yes	Must have a *TimeInForce* value of Day or GTD with a same day expiration on C1, C2, and EDGX.
`New Order` *(Auction Response)*	Simple	Yes	
`New Order Cross` *(AIM or QCC)*	Simple	No	

New Order Cross Multileg	Simple	No	
Purge Orders	Simple/Complex	No	
Reset Risk	Simple/Complex	Yes	
New Complex Instrument	Complex	Yes	
Quote Update	Complex	No	
New Complex Order	Complex	Yes	Must be Post Only (*RoutingInst* = P). Must have a *TimeInForce* value of Day or GTD with a same day expiration on C1, C2, and EDGX.
New Complex Order *(COA Response)*	Complex	Yes	

Bulk Quoting Port Quote/Order Behavior Matrix

The following matrix describes the liquidity removal behavior of quotes and orders sent on Bulk Quoting ports. Bulk Quoting ports are available for use by all customers but only Market Makers may use `Quote Update` messages. Orders sent on Bulk Quoting Ports are allowed to remove liquidity only on BZX Options. On C1, C2, and EDGX Options, only registered Market Makers are allowed to remove liquidity using `New Order` messages.

Once a quote or order is posted to the exchange book, liquidity removal against any contra capacity is always allowed in the case that a subsequent event causes the resting quote or order to be re-evaluated, such as the Opening/Re-Opening Process.

- Only Market-Makers can send `Quote Update` messages, and such messages can only be sent on a Bulk Quoting Port.
- Liquidity removal using either `New Order` or `Quote Update` messages on Bulk Quoting ports is restricted to appointed Market-Makers only. Removal of any resting order with a `Quote Update` by a Market-Maker when not appointed in the class will result in a *quoteResult* reject of "r = Invalid Remove" or "A = Market Maker must be registered" for New Orders. For purposes of liquidity removal, an appointment using any one EFID will allow for liquidity removal for all EFIDs used by the Market-Maker.
- `New Order` messages can be sent over FIX/BOE Ports and Bulk Quoting Ports by all capacities. However, on C1, C2, and EDGX, non-Market-Maker `New Order` messages sent over a Bulk Quoting Port must be marked "post only" and thus cannot remove liquidity.

	BOE Bulk Quoting Port				FIX/BOE Order Port			
	BZX	C2	EDGX	C1	BZX	C2	EDGX	C1
Can a Market-Maker send order messages?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can a Market-Maker send quote messages?	Yes	Yes	Yes	Yes	No	No	No	No
Can a non-Market-Maker send order messages?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can a non-Market-Maker send quote messages?	No	No	No	No	No	No	No	No

Can an aggressing Market-Maker remove a resting Market-Maker quote or order?	Yes	No	No	No	Yes	Yes	Yes	Yes
Can an aggressing Market-Maker remove a resting non-Market-Maker order?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can an aggressing non-Market-Maker remove a resting Market-Maker quote or order?	Yes	No	No	No	Yes	Yes	Yes	Yes
Can an aggressing non-Market-Maker remove a resting non-Market-Maker order?	Yes	No	No	No	Yes	Yes	Yes	Yes

1.6.12.5 *BOE Purge Ports*

BOE Purge Ports support a single message type: `Purge Orders`. Members may use this port type to request a cancellation of groups of orders, including orders across multiple FIX, BOE Order, or BOE Bulk Quoting ports associated with the same unit.

Note that since Purge Ports are also provisioned per matching unit, a purge request will be limited to the symbol range of the targeted matching unit.

1.6.13 Floor Routing (C1 Only)

All orders routed to the floor must include explicit routing instructions that includes two features: 1) floor routing instruction indicating Direct or Default routing behavior and 2) floor destination information. Floor routing behavior is specified in *FloorRoutingInst* (22303). Direct routing sends the order to the indicated PAR workstation, while default routing indicates that electronic execution is preferred, but the order may be routed to the indicated PAR if it cannot be processed electronically.

Examples of conditions which cause default routing to the Floor include:

- a complex order having an AON contingency

- a complex order with multiple underlying components

- not held orders

Floor destination instructions are specified in *FloorDestination* (22100), indicating a PAR workstation (ex. W001) to route to on the floor (or 'PARO' to rout to the Floor PAR Official of the underlying symbol) if not specified on the inbound message. See 'Section 10 – Port Attributes' for information on available port attributes, including *Default FloorRoutingInst* and *Default FloorDestination.*

Order Tags/Port Settings				Handling of the Order	
Order Floor Destination	Order FloorRoutingInst	Port Default Floor Destination	Port Default FloorRoutingInst	Orders Only Executed on Floor (i.e. complex AON)	All Other Order Types
			E (default)	Reject: ineligible for electronic book	Process electronically

			D	Reject: requires a floor destination	Reject: requires a floor destination
			X	Reject: requires a floor destination	Reject: requires a floor destination
		W001	E (default)	Reject: ineligible for electronic book	Process electronically
		W001	D	Route to floor: W001	Route to floor: W001
		W001	X	Route to floor: W001	Process electronically
W009			E (default)	Reject: ineligible for electronic book	Process electronically
W009		W001	D	Route to floor: W009	Route to floor: W009
W009			X	Route to floor: W009	Process electronically
W009	E			Reject: ineligible for electronic book	Process electronically
W009	D			Route to floor: W009	Route to floor: W009
W009	X			Route to floor: W009	Process electronically
	E			Reject: ineligible for electronic book	Process electronically
	D			Reject: requires a floor destination	Reject: requires a floor destination
	X			Reject: requires a floor destination	Process electronically

E = Electronic only   **D** = Direct   **X** = Route to floor if unable to process electronically

1.6.13.1 *Floor Representation Restatements (C1 Only)*

Orders routed to the trading floor will be represented to the open outcry crowd before being traded in the crowd. The Cboe BOE protocol provides a mechanism for members to receive restatement of orders at the time of representation.

BOE Floor Representation Restatements are sent to connected members for each order when the floor broker reports representation of the order to the crowd. Floor Representation Restatements sent to BOE ports will also be sent to connected Order by Order Drop ports having the *Floor Representation Restatements* port attribute enabled.

`Order Restated` messages for floor representation will have *RestatementReason* = 'F' (Represented on Floor). The *TransactTime* (60) will be the recorded time of the representation.

1.6.14 Stale NBBO

A stale NBBO will occur when the Cboe trading system determines that one or more OPRA quote channels is impaired or down completely. If the trading system detects that an NBBO is stale new orders for the affected class(es) will be rejected. Any existing orders will remain on the book but will not be allowed to update (user updates or sliding updates). Members will be allowed to cancel any open orders. Regular trading will resume when the NBBO for a given class is determined to be healthy by the Cboe trading system.

2 Session

2.1 Message Headers

Each message has a twelve-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 Member. Messages from Member to Cboe and all session level messages must always set this value to 0.

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	B0 E3 (58288)
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes of the *StartOfMessage* field.
MessageType	4	2	Binary	Message type
MatchingUnit	6	1	Binary	Matching unit which created this message. Matching units in BOE correspond to matching units on Multicast PITCH. For session level traffic the unit is set to 0. For messages from Member to Cboe, the unit must be 0.
Reserved	7	1	Binary	Must be zero from member. Value unspecified from Cboe.
SequenceNumber	8	4	Binary	The sequence number for this message. Messages from Cboe to Member are sequenced distinctly per matching unit. Zero for session level traffic.

2.1.1 Handling of Invalid Message Headers

If an invalid message header is encountered, the Exchange will disconnect the port. A message header is considered invalid if any of the following is encountered:

- *StartOfMessage* is not `B0E3`.
- *MessageLength* is not appropriate for the given message type.
- *MessageType* is not a documented message type for Cboe. Note that the types of application messages accepted will vary between Cboe and other BOEv3 exchanges.

2.2 Login, Replay, and Sequencing

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

Inbound (member to Cboe) application messages are sequenced. Upon reconnection, Cboe informs the member of the last processed sequence number; the member may choose to resend any messages with sequence numbers greater than this value. A gap forward in the member'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 Response` message being sent and the connection being dropped.

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

Upon reconnection, a member sends the last received sequence number per matching unit in a `LoginRequest` message. Cboe will then respond with any missed messages. If the sequence message gap is greater than the value supported by Cboe for a unitized port, the login will be rejected with a Login Response Status of "R" (replay too deep). The maximum value for Cboe Primary and Secondary ports is 1000 messages, while an unlimited number are permitted in DR.

The *ReplayInstruction* value can be used to control the replay behavior for unknown units. If the flag is set to F (Fail), Cboe will send a `Login Response` and close the connection if the login request does not list all matching units. If the flag is set to S (Skip), Cboe will exclude messages from unspecified matching units during replay. If the flag is set to R (Replay), Cboe will send messages from unspecified units during replay (starting with sequence 1 per unspecified unit and limited to 1000 messages on a unitized port). 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` message. ==Cboe will reject all orders during replay.== If the flag is set to D (Deep Replay), the login is accepted only on an inactive unitized port, to facilitate the replay of messages beyond the limit imposed on an active unitized port.

If a member has requested replay messages using a properly formatted `LoginRequest` after a disconnect, any unacknowledged orders remaining with the member 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 *SessionId* and *SessionSubId* (both supplied by Cboe).

If a login is rejected an appropriate `Login Response` 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 member can send a `LoginRequest` message with *ReplayInstruction* set to S (Skip), and *NumberOfUnits* set to zero. Then, upon receiving a `Login Response` message from Cboe, the member can use the *ClientSequence* value in that message as the sequence starting point for sending future messages.

2.4   Heartbeats

`Client Heartbeat` messages are sent from member to Cboe, and `Server Heartbeat` messages are sent from Cboe to Member if no other data has been sent in that direction for one second. Similar to other session level messages, heartbeats from Cboe to the member do not increment the sequence number. If Cboe receives no inbound data or heartbeats for five seconds, a `Logout Response` message will be sent, and the connection will be terminated. **Members 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 member. Cboe will finish sending any queued data for that port, respond with a `Logout Response` message, and close the connection. After receipt of a `Logout Request` message, Cboe will ignore all other inbound (Member to Cboe) messages except for `Client Heartbeat`. Application Messages.

3 Session Messages

Table 1 – Session Message Types

Direction	Message Name	Type	Sequenced
Member to Cboe	Login Request	`01 00` (1)	No
Member to Cboe	Logout Request	`02 00` (2)	No
Member to Cboe	Client Heartbeat	`03 00` (3)	No
Cboe to Member	Login Response	`F5 01` (501)	No
Cboe to Member	Replay Complete	`F6 01` (502)	No
Cboe to Member	Logout Response	`F7 01` (503)	No
Cboe to Member	Server Heartbeat	`F8 01` (504)	No

3.1   Member to Cboe

3.1.1   Login Request

A `LoginRequest` message must be sent as the first message upon connection.

The message includes a repeating group starting with field *UnitNumber* which repeats *NumberOfUnits* times. This can be used to specify the last consumed sequence numbers per matching unit received by the member. Cboe uses these sequence numbers to determine what outbound (Cboe to member) traffic, if any, was missed by the member. If *NumberOfUnits* is 0, it is assumed the member has not received any messages (e.g., start of day).

The member does not need to include a sequence number for a unit if they have never received messages from it. If the member wishes to send a value for the unit anyway, 0 is the only allowed value.

If the member is sending a `LoginRequest` to a Unit Order Port, Unit Quoting Port, or Unit Purge Port, the only *UnitNumber* accepted is the number of the port's unit.

Logins to a BOEv3 convenience session have no limitation on the number of messages to replay on a login. Cboe therefore will not accept a login request on a convenience session having *ReplayInstruction*=D. Logins to a BOEv2 unitized session on the primary login port are limited to the most recent 1000 sequences on BOE3 unitized sessions. Recovery of messages beyond the limit can be accomplished using *ReplayInstruction*=D on an inactive port (normally the secondary or DR port). See "Appendix C – Login Playbook" for more details.

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	`0xB0 0xE3` (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	`0x0001` (1)
MatchingUnit	6	1	Binary	Must be zero
Reserved	7	1	Binary	Must be zero
SequenceNumber	8	4	Binary	Must be zero
SessionId	12	4	AlphaNumeric	Session Id as supplied by Cboe

Field Name	Offset	Length	Data Type	Description
SessionSubId	16	4	AlphaNumeric	Session Sub Id as supplied by Cboe
Password	20	10	AlphaNumeric	The password associated with the *SessionId* and *SessionSubId*.
ReplayInstruction	30	1	Text	Controls replay behavior for unknown units. 'D' is exclusively supported on unitized ports that are also inactive. Must be one of: D = deep replay of specified unit F = fail if unit not specified R = replay any unspecified unit from zero S = skip replay of unspecified units
NumberOfUnits	31	1	Binary	The number (possibly 0) of unit/sequence pairs to follow, one per unit from which the member has received messages over this port. The value must be 0 or 1 for unitized BOE ports.
→*UnitNumber*	32	1	Binary	A unit number. This must be the unit number of the port.
→*UnitSequence*	33	4	Binary	Last received sequence number for the unit.

3.1.1.1   *Example LoginRequest Message*

Field Name	Hexadecimal	Description
StartOfMessage	B0 E3	Start of message bytes
MessageLength	23 00	35 bytes
MessageType	01 00	`LoginRequest`
MatchingUnit	00	Must be zero
Reserved	00	Must be zero
SequenceNumber	00 00 00 00	Must be zero
SessionId	54 45 53 54	"`TEST`"
SessionSubId	30 30 30 31	"`0001`"
Password	54 45 53 54 49 4E 47 00 00 00	"`TESTING`"
ReplayInstruction	46	"`F`" (Fail)
NumberOfUnits	01	1 unit
→*UnitNumber*	02	Unit 2
→*UnitSequence*	3F 15 00 00	5,439

3.1.2   Logout Request

To end the session, the member should send a `Logout Request` message. Cboe will finish sending any queued data and finally respond with a `Logout Response` message and close the connection.

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

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	`B0 E3` (58288)
MessageLength	2	2	Binary	`0A 00` (10)
MessageType	4	2	Binary	`02 00` (2)
MatchingUnit	6	1	Binary	Must be zero
Reserved	7	1	Binary	Must be zero
SequenceNumber	8	4	Binary	Must be zero

3.1.2.1   *Example Logout Request Message*

Field Name	Hexadecimal	Description
StartOfMessage	`B0 E3`	Start of message bytes
MessageLength	`0A 00`	10 bytes
MessageType	`02 00`	`Logout Request`
MatchingUnit	`00`	Must be zero
Reserved	`00`	Must be zero
SequenceNumber	`00 00 00 00`	Must be zero

3.1.3   Client Heartbeat

See 'Section 2.4 - Heartbeats' for more information about heartbeat and the session level protocol.

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	`B0 E3` (58288)
MessageLength	2	2	Binary	`0A 00` (10)
MessageType	4	2	Binary	`03 00` (3)
MatchingUnit	6	1	Binary	Must be zero
Reserved	7	1	Binary	Must be zero
SequenceNumber	8	4	Binary	Must be zero

3.1.3.1   *Example Client Heartbeat Message*

Field Name	Hexadecimal	Description
StartOfMessage	`B0 E3`	Start of message bytes
MessageLength	`0A 00`	10 bytes
MessageType	`03 00`	`Client Heartbeat`
MatchingUnit	`00`	Must be zero
Reserved	`00`	Must be zero

SequenceNumber	00 00 00 00	Must be zero

3.2 Cboe to Member

3.2.1 Login Response

A `Login Response` message is sent in response to a `Login Request` 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.

Note that the repeating group starting with field *UnitNumber* provides the highest available Cboe to member sequence number for the specified unit. For unitized ports, only the unit of the port will populate this group (i.e. *NumberOfUnits* will be 1).

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	`B0 E3` (58288)
MessageLength	2	2	Binary	(76 + *NumberOfUnits**5)
MessageType	4	2	Binary	`F5 01` (501)
MatchingUnit	6	1	Binary	Will be zero
Reserved	7	1	Binary	Unspecified
SequenceNumber	8	4	Binary	Will be zero
LoginResponseStatus	12	1	Text	Accepted, or the reason for the rejection. A = Accepted B = Session In Use D = Disabled I = Invalid Unit M = Invalid Message N = Not Authorized Q = Sequence Ahead R = Replay too Deep S = Invalid Session X = Invalid replay instruction
LoginResponseText	13	60	Text	Human-readable text with additional information about the reason for rejection. ASCII NUL (0x00) filled on the right, if necessary.
ClientSequence	73	4	Binary	Last inbound (member to Cboe) message sequence number processed by Cboe on this port.
NumberOfUnits	77	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 logins having *LoginResponseStatus* other than "A", "Q", or "R", this will be 0.
→*UnitNumber*	78	1	Binary	A unit number
→*UnitSequence*	79	4	Binary	Highest available Cboe to member sequence number for the unit.

3.2.1.1 *Example Login Response Message*

Field Name	Hexadecimal	Description
StartOfMessage	B0 E3	Start of message bytes
MessageLength	51 00	81 bytes
MessageType	F5 01	Login Response
MatchingUnit	00	Always zero
Reserved	00	
SequenceNumber	00 00 00 00	Always zero
LoginResponseStatus	41	"A" (Accepted)
LoginResponseText	54 45 53 54 49 4E 47 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 00 00 00	"TESTING"
ClientSequence	01 00 00 00	1
NumberOfUnits	01	1 unit
→*UnitNumber*	02	Unit 2
→*UnitSequence*	3F 15 00 00	5,439

3.2.2 Replay Complete

See 'Section 2.2 - Login, Replay, and Sequencing' for more information about heartbeats and the session level protocol.

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	B0 E3 (58288)
MessageLength	2	2	Binary	0A (10)
MessageType	4	2	Binary	F6 01 (502)
MatchingUnit	6	1	Binary	Will be zero
Reserved	7	1	Binary	Unspecified
SequenceNumber	8	4	Binary	Will be zero

3.2.2.1 *Example Replay Complete Message*

Field Name	Hexadecimal	Description
StartOfMessage	B0 E3	Start of message bytes
MessageLength	0A 00	10 bytes
MessageType	F6 01	Replay Complete
MatchingUnit	00	Always zero
Reserved	00	
SequenceNumber	00 00 00 00	Always zero

3.2.3   Logout Response

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

A Logout Response message is also sent for any ports that are connected when the Cboe Options Exchanges shut down. The shut down time for Cboe Options Exchanges is variable each day but is scheduled to occur at 17:30 ET. The message is sent without first receiving a logout request from the Member. The message contains LogoutReason = 'E' for End of Day.

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	B0 E3 (58288)
MessageLength	2	2	Binary	47 00 (71)
MessageType	4	2	Binary	F7 01 (503)
MatchingUnit	6	1	Binary	Will be zero
Reserved	7	1	Binary	Unspecified
SequenceNumber	8	4	Binary	Will be zero
LogoutReason	12	1	Text	Reason for the logout. U = User Requested E = End Of Day A = Administrative ! = Protocol Violation
LogoutReasonText	13	60	Text	Human-readable text with additional information about the reason for logout.

3.2.3.1   *Example Logout Response Message*

Field Name	Hexadecimal	Description
StartOfMessage	B0 E3	Start of message bytesd
MessageLength	47 00	71 bytes
MessageType	F7 01	Logout Response
MatchingUnit	00	Always zero
Reserved	00	
SequenceNumber	00 00 00 00	Always zero
LogoutReason	55	"U" (User Requested)
LogoutReasonText	54 45 53 54 49 4E 47 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 00 00 00	"TESTING"

3.2.4   Server Heartbeat

See 'Section 2.4 - Heartbeats' for more information about heartbeats and the session level protocol.

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	B0 E3 (58288)
MessageLength	2	2	Binary	0A (10)
MessageType	4	2	Binary	F8 01 (504)
MatchingUnit	6	1	Binary	Will be zero
Reserved	7	1	Binary	Unspecified
SequenceNumber	8	4	Binary	Will be zero

3.2.4.1   *Example Server Heartbeat Message*

Field Name	Hexadecimal	Description
StartOfMessage	B0 E3	Start of message bytes
MessageLength	0A 00	10 bytes
MessageType	F8 01	Server Heartbeat
MatchingUnit	00	Always zero
Reserved	00	
SequenceNumber	00 00 00 00	Always zero

4 Application Messages

4.1 Member to Cboe

Note that for sequenced messages from Member to Cboe, a sequence number of "0" will always be accepted and is treated as if it were the next expected sequence number.

4.1.1 New Order

Submission of a new simple (single leg) order to Cboe.

4.1.1.1 *NewOrderUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07D1 (2001)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
ClOrdID	12	20	Text	
Side	32	1	Text	
OrderQty	33	4	Binary	
ClearingFirm	37	4	Alpha	
ClearingAccount	41	4	Text	
Price	45	8	BinaryPrice	
ExecInst	53	1	Text	
OrdType	54	1	Text	
TimeInForce	55	1	Text	
MinQty	56	4	Binary	
MaxFloor	60	4	Binary	
Symbol	64	8	Alphanumeric	
Capacity	72	1	Text	
RoutingInst	73	4	Text	
Account	77	16	Text	
DisplayIndicator	93	1	Text	
PreventMatch	94	3	Text	
ExpireTime	97	8	DateTime	

MaturityDate	105	4	Date	
StrikePrice	109	8	BinaryPrice	
PutOrCall	117	1	Text	
OpenClose	118	1	Text	
CMTANumber	119	4	Binary	
TargetPartyID	123	4	Alpha	
SessionEligibility	127	1	Text	
AttributedQuote	128	1	Text	
DisplayRange	129	4	Binary	
StopPx	133	8	BinaryPrice	
RoutStrategy	141	6	Text	
RouteDeliveryMethod	147	3	Text	
ExDestination	150	1	Text	
AuctionID	151	8	Binary	
RoutingFirmID	159	4	Alpha	
CustomGroupID	163	2	Binary	
ClearingOptionalData	165	16	Text	
ClientIDAttr	181	4	Text	
FrequentTraderID	185	6	Alphanumeric	
Compression	191	1	Text	
FloorDestination	192	4	Text	
FloorRoutingInst	196	1	Text	
OrderOrigin	197	3	Alphanumeric	
OrderRouterSubsidy	200	1	Text	
PriceType	201	1	Text	
Held	202	1	Text	
ScratchPad	203	2	Binary	

4.1.1.2   *NewOrderShortUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07D2 (2002)

MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
ClOrdID	12	20	Text	
Side	32	1	Text	
OrderQty	33	4	Binary	
ClearingFirm	37	4	Alpha	
ClearingAccount	41	4	Text	
Price	45	8	BinaryPrice	
ExecInst	53	1	Text	
OrdType	54	1	Text	
TimeInForce	55	1	Text	
MinQty	56	4	Binary	
MaxFloor	60	4	Binary	
Symbol	64	8	Alphanumeric	
Capacity	72	1	Text	
RoutingInst	73	4	Text	
Account	77	16	Text	
DisplayIndicator	93	1	Text	
PreventMatch	94	3	Text	
OpenClose	97	1	Text	
CMTANumber	98	4	Binary	
SessionEligibility	102	1	Text	
AttributedQuote	103	1	Text	
RoutStrategy	104	6	Text	
ExDestination	110	1	Text	
AuctionID	111	8	Binary	
CustomGroupID	119	2	Binary	
FrequentTraderID	121	6	Alphanumeric	
ScratchPad	127	2	Binary	

4.1.2 New Order Cross (C1 and EDGX Only)

> Note: The New Order Cross message is not yet accepted. The layout of this message is not fully determined and is likely to change before being accepted. Submitting a message of this type will cause Cboe to disconnect.

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

Required Order Attributes:

- 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*

4.1.2.1 *NewOrderCrossUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07D3 (2003)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
CrossID	12	20	Text	
CrossType	32	1	Text	
CrossPrioritization	33	1	Text	
Price	34	8	BinaryPrice	
OrderQty	42	4	Binary	
Symbol	46	8	Alphanumeric	
MaturityDate	54	4	Date	
StrikePrice	58	8	BinaryPrice	
PutOrCall	66	1	Text	
ExecInst	67	1	Text	
AttributedQuote	68	1	Text	
TargetPartyID	69	4	Alpha	

PreventMatch	73	3	Text	
AutoMatch	76	1	Text	
AutoMatchPrice	77	8	BinaryPrice	
LastPriority	85	1	Text	
RoutingFirmID	86	4	Alpha	
ClientIDAttr	90	4	Text	
EquityTradePrice	94	8	BinaryPrice	
EquityTradeSize	102	4	Binary	
EquityTradeVenue	106	1	Text	
EquityTransactTime	107	8	DateTime	
EquityBuyClearingFirm	115	4	Alpha	
EquitySellClearingFirm	119	4	Alpha	
Compression	123	1	Text	
OrderRouterSubsidy	124	1	Text	
ScratchPad	125	2	Binary	
AllocCnt	127	1	Binary	
→ *Side*	128	1	Text	(Group repeats *AllocCnt* times)
→ *AllocQty*	129	4	Binary	(Group repeats *AllocCnt* times)
→ *ClOrdID*	133	20	Text	(Group repeats *AllocCnt* times)
→ *Capacity*	153	1	Text	(Group repeats *AllocCnt* times)
→ *OpenClose*	154	1	Text	(Group repeats *AllocCnt* times)
→ *GiveUpFirmID*	155	4	Alpha	(Group repeats *AllocCnt* times)
→ *Account*	159	16	Text	(Group repeats *AllocCnt* times)
→ *CMTANumber*	175	4	Binary	(Group repeats *AllocCnt* times)
→ *ClearingAccount*	179	4	Text	(Group repeats *AllocCnt* times)
→ *ClearingOptionalData*	183	16	Text	(Group repeats *AllocCnt* times)
→ *FrequentTraderID*	199	6	Alphanumeric	(Group repeats *AllocCnt* times)

4.1.3   New Complex Instrument (C1, C2, and EDGX Only)

> Note: The New Complex Instrument message is not yet accepted. The layout of this message is not fully determined and is likely to change before being accepted. Submitting a message of this type will cause Cboe to disconnect.

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. All legs must have the same underlying product which can be different OSI Roots (i.e. XYZ and XYZ1).

A *ClearingFirm* must be sent on each `New Complex Instrument` message unless a Default Executing Firm ID is set at the port-level.

4.1.3.1 *NewComplexInstrumentUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07D5 (2005)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
ClOrdID	12	20	Text	ID of the creation request
ClearingFirm	32	4	Alpha	EFID requesting the complex instrument
ScratchPad	36	2	Binary	
LegCnt	38	1	Binary	
→ *Symbol*	37	8	Alphanumeric	(Group repeats *LegCnt* times)
→ *MaturityDate*	39	4	Date	(Group repeats *LegCnt* times)
→ *StrikePrice*	47	8	BinaryPrice	(Group repeats *LegCnt* times)
→ *CFICode*	51	2	Alphanumeric	(Group repeats *LegCnt* times)
→ *RatioQty*	59	4	Binary	(Group repeats *LegCnt* times)
→ *Side*	61	1	Text	(Group repeats *LegCnt* times)

4.1.4   New Complex Order (C1, EDGX, and C2 Only)

> Note: The New Complex Order message is not yet accepted. The layout of this message is not fully determined and is likely to change before being accepted. Submitting a message of this type will cause Cboe to disconnect.

A `New Complex Order` message contains the details required to enter an order on a complex instrument 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 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 (ie SPX/SPXW, IWM/RUT, DIA/DJX, VIX/VXX, and MNX/NDX) where the products do not operate on the same matching unit cannot leg into the simple book.

4.1.4.1 *NewComplexOrderUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07D6 (2006)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
ClOrdID	12	20	Text	
Side	32	1	Text	
OrderQty	33	4	Binary	
ClearingFirm	37	4	Alpha	
ClearingAccount	41	4	Text	
Price	45	8	BinaryPrice	
ExecInst	53	1	Text	
OrdType	54	1	Text	
TimeInForce	55	1	Text	
Symbol	56	8	Alphanumeric	
Capacity	64	1	Text	
RoutingInst	65	4	Text	
Account	69	16	Text	
PreventMatch	85	3	Text	
ExpireTime	88	8	DateTime	
CMTANumber	96	4	Binary	
TargetPartyID	100	4	Alpha	
AttributedQuote	104	1	Text	
AuctionID	105	8	Binary	
RoutingFirmID	113	4	Alpha	
DrillThruProtection	117	8	BinaryPrice	
CustomGroupID	125	2	Binary	
EquityPartyId	127	4	Alpha	
ClearingOptionalData	131	16	Text	

ClientIDAttr	147	4	Text	
FrequentTraderID	151	6	Alphanumeric	
SessionEligibility	157	1	Text	
MaxFloor	158	4	Binary	
DisplayRange	162	4	Binary	
ComboOrder	166	1	Text	
Compression	167	1	Text	
EquityExDestination	168	1	Text	
EquityLegShortSell	169	1	Text	
FloorDestination	170	4	Text	
FloorRoutingInst	174	1	Text	
OrderOrigin	175	3	Alphanumeric	
OrderRouterSubsidy	178	1	Text	
PriceType	179	1	Text	
StrategyID	180	1	Text	
TiedHedge	181	1	Text	
Held	182	1	Text	
ScratchPad	183	2	Binary	
LegCnt	185	1	Binary	LegCnt=0 (no LegPositionEffect provided) will cause all legs to have a LegPositionEffect of N (none).
→ LegPositionEffect	186	1	Text	(Group repeats LegCnt times)

4.1.4.2 NewComplexOrderShortUSOptionsV1

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07D7 (2007)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
ClOrdID	12	20	Text	
Side	32	1	Text	
OrderQty	33	4	Binary	

ClearingFirm	37	4	Alpha	
ClearingAccount	41	4	Text	
Price	45	8	BinaryPrice	
ExecInst	53	1	Text	
OrdType	54	1	Text	
TimeInForce	55	1	Text	
Symbol	56	8	Alphanumeric	
Capacity	64	1	Text	
RoutingInst	65	4	Text	
Account	69	16	Text	
PreventMatch	85	3	Text	
CMTANumber	88	4	Binary	
TargetPartyID	92	4	Alpha	
AuctionID	96	8	Binary	
RoutingFirmID	104	4	Alpha	
CustomGroupID	108	2	Binary	
EquityPartyId	110	4	Alpha	
FrequentTraderID	114	6	Alphanumeric	
SessionEligibility	120	1	Text	
MaxFloor	121	4	Binary	
FloorDestination	125	4	Text	
FloorRoutingInst	129	1	Text	
ScratchPad	130	2	Binary	
LegCnt	132	1	Binary	
→ LegPositionEffect	133	1	Text	(Group repeats LegCnt times)

4.1.5 New Order Cross Multileg (C1 and EDGX Only)

Note: The New Order Cross Multileg message is not yet accepted. The layout of this message is not fully determined and is likely to change before being accepted. Submitting a message of this type will cause Cboe to disconnect.

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). A maximum of 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.

Required Order Attributes:

- 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*

4.1.5.1   *NewOrderCrossMultilegUSOptionsV1Block*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07D8 (2008)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
CrossID	12	20	Text	
CrossType	32	1	Text	
CrossPrioritization	33	1	Text	
Price	34	8	BinaryPrice	
OrderQty	42	4	Binary	
Symbol	46	8	Alphanumeric	
ExecInst	54	1	Text	
AttributedQuote	55	1	Text	
TargetPartyID	56	4	Alpha	
PreventMatch	60	3	Text	
AutoMatch	63	1	Text	
AutoMatchPrice	64	8	BinaryPrice	
LastPriority	72	1	Text	
RoutingFirmID	73	4	Alpha	
ClientIDAttr	77	4	Text	
EquityTradePrice	81	8	BinaryPrice	
EquityTradeSize	89	4	Binary	
EquityTradeVenue	93	1	Text	
EquityTransactTime	94	8	DateTime	

EquityBuyClearingFirm	102	4	Alpha	
EquitySellClearingFirm	106	4	Alpha	
DrillThruProtection	110	8	BinaryPrice	
EquityExDestination	118	1	Text	
Compression	119	1	Text	
OrderRouterSubsidy	120	1	Text	
CrossInitiator	121	4	Alpha	
ScratchPad	125	2	Binary	
AllocCnt	127	1	Binary	
AllocLegCnt	128	1	Binary	
→ *Side*	129	1	Text	(Group repeats *AllocCnt* times)
→ *AllocQty*	130	4	Binary	(Group repeats *AllocCnt* times)
→ *ClOrdID*	134	20	Text	(Group repeats *AllocCnt* times)
→ *Capacity*	154	1	Text	(Group repeats *AllocCnt* times)
→ *GiveUpFirmID*	155	4	Alpha	(Group repeats *AllocCnt* times)
→ *Account*	159	16	Text	(Group repeats *AllocCnt* times)
→ *CMTANumber*	175	4	Binary	(Group repeats *AllocCnt* times)
→ *ClearingAccount*	179	4	Text	(Group repeats *AllocCnt* times)
→ *ClearingOptionalData*	183	16	Text	(Group repeats *AllocCnt* times)
→ *EquityPartyId*	199	4	Alpha	(Group repeats *AllocCnt* times)
→ *EquityLegShortSell*	203	1	Text	(Group repeats *AllocCnt* times)
→ *FrequentTraderID*	204	6	Alphanumeric	(Group repeats *AllocCnt* times)
→ *LegPositionEffect*	210	1	Text	(Group repeats *AllocLegCnt* times)

4.1.6   Cancel Order

Request to cancel a single order.

A single order cancellation references the *ClOrdID* from a previous order (*OrigClOrdID* field). A Cancel Order message cannot be used to cancel a single quote: referencing a previous *OrderID* from a quote will be rejected.

`Cancel Order` messages for GTC and GTD orders may continue to be issued anytime after the trading session ends. All other order message types received after the market closes will be rejected. See 'Cancellation of Carried Orders Between Trading Sessions' for more details on when orders are allowed to be cancelled following the close of trading.

4.1.6.1   *CancelOrderUSOptionsV1*

Field Name	Offset	Length	Data Type	Description

StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07DA (2010)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
OrigClOrdID	12	20	Text	
ClearingFirm	32	4	Alpha	
RoutingFirmID	36	4	Alpha	
ScratchPad	40	2	Binary	

4.1.7 Mass Cancel Order

Request a mass cancellation of a group of orders. Note that this does not apply to open orders across multiple sessions.

`Mass Cancel Order` messages for GTC and GTD orders may continue to be issued anytime after the trading session ends. All other order message types received after the market closes will be rejected. See 'Cancellation of Carried Orders Between Trading Sessions' for more details on when orders are allowed to be cancelled following the close of trading.

- If the Clearing Firm Filter is set to "F", the *ClearingFirm* field must not be blank or the Cancel Order request will be rejected.
- If the Acknowledgement Style is set to "S" or "B", or in combination with "M", the *MassCancelId* must not be blank or the `Mass Cancel Order` request will be rejected.
- If the *RiskRoot* field is not blank then only orders for instruments associated with the product (e.g., "SPX") are cancelled.
- If Lockout Instruction is set to "L" and the *ProductName* field blank, a *Firm-level* Risk Reset is required to clear the Lockout condition. If Lockout Instruction is set to "L" and the *RiskRoot* field is not blank, a Product level reset is required.
- Lockout will apply to all `New Order` and `Modify Order` messages for the *ClearingFirm* (and *ProductName* if specified), regardless of other filtering in the cancel order request message.

When specifying the *RiskRoot* field, using the underlying symbol is strongly recommended. Mass cancellations are always performed at the risk root (underlying) level.

The system limits the rate at which identical Mass Cancel requests can be submitted to the system. Requests are restricted to 10 messages per second per port. An identical Mass Cancel message is defined as a message having all of the same *CustomGroupID*, *Symbol*, *Clearing Firm*, *Lockout Instruction*, *Instrument Type Filter* and *GTC Order Filter* field values, as a previously received message.

4.1.7.1 *MassCancelOrderUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3

MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07DF (2015)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
MassCancelID	12	20	Text	
ClearingFirm	32	4	Alpha	
RoutingFirmID	36	4	Alpha	
RiskRoot	40	6	Text	
MassCancelInst	46	8	Text	
SendTime	54	8	DateTime	
ScratchPad	62	2	Binary	

4.1.8   Modify Order

Request to modify an order. *Price, OrderQty, OrdType, MaxFloor* (BZX, C1, and C2 only), and *StopPx* may be adjusted. *OrdType* may be adjusted from Limit to Market (market and stop/stop limit orders are not supported during GTH or Curb sessions).

- Time priority will be maintained on an order modification in the following cases:
  - A decrease in *OrderQty* with no other changes
  - An update to *StopPx* on an unelected stop order with no other changes
  - An update to *MaxFloor* with no other changes
- An order modification combining two or more of the specific items above will not lose priority.
- An order modification involving one of the items above and changes to any other attribute will lose priority.
- An order modification with no change to any attribute will lose priority.

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 Member in total control of the share exposure of the order.

A `Modify Order` should not be issued until the `Order Acknowledgement` for the previous `New Order` or `Order Modified` message for the previous `Modify Order` has been received. The BOE handler will reject a new `Modify Order` if it has not been accepted or it has not seen the result of the prior modification from the Matching Engine. However, `Modify Order` 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.

A maximum of 1,679,615 `Modify Order` requests may be made to a single order each trading day. Once the 1,679,615[th] modification is made, then the next user-generated message on the order should be a `Cancel Order` request.

> **BOEv2 → BOEv3 Migration Note**
> The BOEv3 `Modify Order` message must specify all values to apply to the update. This is unlike BOEv2, wherein the absence of optional fields implied that the values would be carried forward from the version of the order being modified (blank fields in BOEv3 will have port defaults applied when available).

4.1.8.1 *ModifyOrderUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07DB (2011)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
ClOrdID	12	20	Text	
OrigClOrdID	32	20	Text	
ClearingFirm	52	4	Alpha	
RoutingFirmID	56	4	Alpha	
OrderQty	60	4	Binary	
Price	64	8	BinaryPrice	
OrdType	72	1	Text	
MaxFloor	73	4	Binary	
StopPx	77	8	BinaryPrice	
CancelOrigOnReject	85	1	Text	
Reserved	86	41	Binary	must be null-filled (0x00)
ScratchPad	127	2	Binary	

4.1.9 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. The system will only accept Quote Update requests entered via a BOE Bulk Quoting port that are marked with the *Capacity* value = 'M' (Market Maker). A valid registered Market-Maker account value must be

provided in the *ClearingAccount* field or the system will respond with the `QuoteUpdateRejected` message containing the *QuoteRejectReason* value of 'C = InvalidClearing'.

All options in a single `Quote Update` must trade under a single risk root. Requests which include options trading under multiple risk roots will be rejected in their entirety.

A quote is unique per port, EFID, and side. You may quote multiple price levels of depth using either multiple EFIDs on a single port or with the same EFID 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 only; complex options quotes may not be submitted.

By default quotes are valid for a given trading date, which may span multiple calendar dates in the event of a holiday. Quotes may be cancelled at the end of a given trading segment rather than carried forward to the next segment by updating the Multi-Segment Holiday Day Order Handling Port attribute.

Quotes may be marked post only. Quotes that <u>cross</u> the NBBO or displayed Cboe book will be accepted if within a configurable buffer range through the NBBO or displayed Cboe book. The buffer is set to 5% with a minimum of $0.05 and a maximum of $1.00. If a quote would be displayed at a price that locks the NBBO, it will be accepted/slid or rejected based on the *PostingInstruction* on the quote. Quotes can be opted out of the price-sliding functionality by specifying Book Only, No Slide or Post Only, No Slide in the *PostingInstruction* field on the quote message.

On BZX Options only, quote prices at non-displayable increments are permitted. Prices will be adjusted to the most aggressive non-locking price. Quotes may work (but not display) to lock an away market. Once posted, quotes act as a Display Price Sliding order. C2 and EDGX quotes act as Price Adjust orders.

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.

`Quote Update` requests sent without any changes to the currently resting quote ("no change quotes") will result in a loss of priority and will be reported back with a *QuoteResult* value of 'L' (Modified; loss of priority) in the `Quote Update Acknowledgement` message.

- Time priority will be maintained on a quote modification if there is a decrease in *OrderQty* with no other changes.
- A quote modification decreasing size and changes to any other attribute will lose priority.
- A quote modification with no change to any attribute will lose priority.

4.1.9.1 *QuoteUpdateUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)

MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07DC (2012)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
QuoteUpdateID	12	16	Text	
ClearingFirm	28	4	Alpha	
ClearingAccount	32	4	Text	
CMTANumber	36	4	Binary	
Account	40	16	Text	
CustomGroupID	56	2	Binary	
SendTime	58	8	DateTime	
PostingInstruction	66	1	Alpha	
SessionEligibility	67	1	Text	
SizeModifier	68	1	Text	
ScratchPad	69	2	Binary	
QuoteCnt	71	1	Binary	
→ *QuoteSymbol*	72	6	Alphanumeric	(Group repeats *QuoteCnt* times)
→ *Side*	78	1	Text	(Group repeats *QuoteCnt* times)
→ *OpenClose*	79	1	Text	(Group repeats *QuoteCnt* times)
→ *Price*	80	8	BinaryPrice	(Group repeats *QuoteCnt* times)
→ *OrderQty*	88	4	Binary	(Group repeats *QuoteCnt* times)
→ *ScratchPad*	92	2	Binary	(Group repeats *QuoteCnt* times)

4.1.10 Quote Update (Short)

A shorter version of `Quote Update` which restricts the information which can be presented. Uses less bandwidth than the `Quote Update` message but messages presented to the Matching Engine are identical between both `Quote Update` and `Quote Update (Short)` messages. The system will only accept Quote Update requests entered via a BOE Bulk Quoting port that are marked with the *Capacity* value = 'M' (Market Maker).

`Quote Update (Short)` does not allow sending *Account* but a default for this field may be set at the port level. *CMTANumber* may never be included on a `Quote Update (Short)` message.

This message uses a smaller format *Price* and *OrderQty* on each quote update.

All other comments concerning `Quote Update` in the previous section apply to `Quote Update (Short)` equally.

4.1.10.1 *QuoteUpdateShortUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07DD (2013)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
QuoteUpdateID	12	16	Text	
ClearingFirm	28	4	Alpha	
ClearingAccount	32	4	Text	
CustomGroupID	36	2	Binary	
SendTime	38	8	DateTime	
PostingInstruction	46	1	Alpha	
SessionEligibility	47	1	Text	
SizeModifier	48	1	Text	
ScratchPad	49	2	Binary	
QuoteCnt	51	1	Binary	
→ *QuoteSymbol*	52	6	Alphanumeric	(Group repeats *QuoteCnt* times)
→ *Side*	58	1	Text	(Group repeats *QuoteCnt* times)
→ *OpenClose*	59	1	Text	(Group repeats *QuoteCnt* times)
→ *Price*	60	4	ShortBinaryPrice	(Group repeats *QuoteCnt* times)
→ *OrderQty*	64	2	Binary	(Group repeats *QuoteCnt* times)
→ *ScratchPad*	66	2	Binary	(Group repeats *QuoteCnt* times)

4.1.11 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 `Mass Cancel Order` message as the purge is applied across all of the firm's sessions, not just the session on which the message was received.

`Purge Orders` requires the MassCancelInst field to be populated. The ClearingFirm (EFID) is also required if a list of configured/allowed EFIDS has not been configured on the session. If a list of configured EFIDs is present, sending a blank (0x00) ClearingFirm value will result in the purge applying to all configured EFIDs. In addition, a firm may choose to further filter the purge to target specific orders using either the *CustomGroupID* or *RiskRoot* fields. If both *RiskRoot* and a list of *CustomGroupID* values are specified, the `Purge Orders` request will be rejected. The items below should also be considered.

- Users must specify the *MassCancelId* if the Acknowledgement Style is set to 'S' or 'B'.

- Users may Initiate a self-imposed, risk lockout using the *MassCancelInst* field.

- EFID values specified in the *ClearingFirm* field that are not allowed to clear for the firm will be rejected.

- Purge messages are available only on a unitized purge port. **Note that this may result in self-imposed, risk lockouts occurring on the selected units while other units are still trading.**

When specifying the *RiskRoot* field, using the underlying symbol is strongly recommended. Mass cancellations are always performed at the risk root (underlying) level.

All Members that send purges **must** include the *SendTime* field. This is required to ensure that a valid cancellation send time is captured and reported to CAT.

The system limits the rate at which identical `Purge Orders` requests can be submitted to the system. Requests are restricted to 10 messages per second per port.

An identical purge message is defined as a message having all of the same *CustomGroupID*, *Symbol*, *Clearing Firm*, *Lockout Instruction*, *Instrument Type Filter* and *GTC Order Filter* field values, as a previously received message.

4.1.11.1 *PurgeOrdersUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	`B0 E3` (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07E0 (2016)
MatchingUnit	6	1	Binary	Must be zero or correct unit
Reserved	7	1	Binary	Must be zero
SequenceNumber	8	4	Binary	next sequence number (or zero)
MassCancelID	12	20	Text	
ClearingFirm	32	4	Alpha	
RoutingFirmID	36	4	Alpha	
RiskRoot	40	6	Text	
MassCancelInst	46	8	Text	
SendTime	54	8	DateTime	
ScratchPad	62	2	Binary	
CustomGroupIDCnt	64	1	Binary	
→ *CustomGroupID*	65	2	Binary	(Repeats *CustomGroupIDCnt* times)

4.1.12 Reset Risk

Reset or release Firm, Risk Root, or Custom Group ID level lockout conditions resulting from risk profile trips or self-imposed lockouts issued via `Cancel Order` or `Purge Orders` messages.

When specifying the *RiskRoot* field, using the underlying symbol is strongly recommended. Risk Resets are always performed at the risk root (underlying) level.

Only one unique risk reset of a given type (EFID Group, EFID, Risk Root, CustomGroupID) is allowed per 100 milliseconds per port. 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 100 milliseconds has elapsed. This restriction is designed to safeguard the trading platform from excessive risk messaging. On C1 only, If a risk limit is tripped or manually locked out at the end of the RTH session, the trip/lockout will persist into the Curb session.

Using *RiskRoot* and *TargetMatchingUnit* at the same time will result in a reject with *RiskResetResult* = M, even if *TargetMatchingUnit* is otherwise correct for the given *RiskRoot*. Either *RiskRoot* should be empty (NUL filled) or *TargetMathchingUnit* should be zero.

4.1.12.1 *ResetRiskUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x07DE (2014)
MatchingUnit	6	1	Binary	Zero - from member message
Reserved	7	1	Binary	MUST be zero from member
SequenceNumber	8	4	Binary	next sequence number (or zero)
RiskStatusID	12	16	Text	
RiskReset	28	8	Text	
ClearingFirm	36	4	Alpha	Risk will be reset for this EFID. Resets a self-imposed EFID-level lockout initiated using a mass cancel or purge request. Required on all resets.
RiskRoot	40	6	Text	
TargetMatchingUnit	46	1	Binary	
CustomGroupID	47	2	Binary	
ScratchPad	49	2	Binary	

4.1.13 Add Floor Trade (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

4.1.14 Floor Trade Confirmation (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

4.1.15 Delete Floor Trade (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

4.2 Cboe to Member

4.2.1 Order Acknowledgment

`Order Acknowledgment` messages are sent in response to `New Order` and `New Complex Order` messages. The message corresponds to a FIX Execution Report with *ExecType* (150) = 0 (New).

4.2.1.1 *OrderAcknowledgementUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09C5 (2501)
MatchingUnit	6	1	Binary	Unit number which accepted the order
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
OrderID	42	8	Binary	
Side	50	1	Text	
Price	51	8	BinaryPrice	
Symbol	59	8	Alphanumeric	
ClearingFirm	67	4	Alpha	
LeavesQty	71	4	Binary	
DisplayPrice	75	8	BinaryPrice	
WorkingPrice	83	8	BinaryPrice	
BaseLiquidityIndicator	91	1	Text	
SubLiquidityIndicator	92	1	Text	
RoutingFirmID	93	4	Alpha	
RequestReceivedTime	97	8	DateTime	

(New fields may be introduced at the end of this message. Consequently, members must treat any additional bytes present as undefined values.)

4.2.2 Cross Order Acknowledgment (C1 and EDGX Only)

`Cross Order Acknowledgment` messages are sent in response to `New Order Cross` and `New Order Cross Multileg` messages. 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.

4.2.2.1 *CrossOrderAcknowledgmentUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09C6 (2502)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
CrossID	22	20	Text	
AuctionID	42	8	Binary	
Price	50	8	BinaryPrice	
Symbol	58	8	Alphanumeric	
OrderQty	66	4	Binary	
RoutingFirmID	70	4	Alpha	
RequestReceivedTime	74	8	DateTime	
AllocCnt	82	1	Binary	
→ *ClOrdID*	83	20	Text	
→ *OrderID*	103	8	Binary	
→ *Side*	111	1	Text	
→ *AllocQty*	112	4	Binary	
→ *GiveUpFirmID*	116	4	Alpha	

(New fields may be introduced at the end of this message. Consequently, members must treat any additional bytes present as undefined values.)

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:

1. 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.

2. 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 EFID.

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`.

4.2.3.1 *QuoteUpdateAcknowledgementUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D5 (2517)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
QuoteUpdateID	22	16	Text	
RequestReceivedTime	38	8	DateTime	
QuoteCnt	46	1	Binary	
→ *OrderID*	47	8	Binary	(Group repeats *QuoteCnt* times)
→ *QuoteResult*	55	1	Text	(Group repeats *QuoteCnt* times)
→ *SubLiquidityIndicator*	56	1	Text	(Group repeats *QuoteCnt* times)
→ *QuoteRejectSubReason*	57	1	Text	(Group repeats *QuoteCnt* times)

4.2.4 Order Rejected

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

4.2.4.1 *OrderRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09C7 (2503)
MatchingUnit	6	1	Binary	

Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
ClearingFirm	42	4	Alpha	
RoutingFirmID	46	4	Alpha	
OrderRejectReason	50	1	Text	
Text	51	60	Text	

4.2.5   Cross Order Rejected (C1 and EDGX Only)

`Cross Order Rejected` messages are sent in response to a `New Order Cross` and `New Order Cross Multileg` which must be rejected. This message corresponds to a FIX Execution Report with *ExecType* (150) = 8 (Rejected). `Order Rejected` messages are unsequenced.

4.2.5.1   *CrossOrderRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09C8 (2504)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
CrossID	22	20	Text	
RoutingFirmID	42	4	Alpha	
OrderRejectReason	46	1	Text	
Text	47	60	Text	

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.

4.2.6.1 *QuoteUpdateRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D6 (2518)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
QuoteUpdateID	22	16	Text	
QuoteRejectReason	38	1	Text	

4.2.7 Order Modified

`Order Modified` messages are sent in response to a `Modify Request` to indicate that the order has been successfully modified.

In some cases, the last message to be received on an order's lifecycle will be an `Order Modified` 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.

4.2.7.1 *OrderModifiedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09CB (2507)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
OrigClOrdID	42	20	Text	
OrderID	62	8	Binary	
ClearingFirm	70	4	Alpha	
RoutingFirmID	74	4	Alpha	

Symbol	78	8	Alphanumeric	
OrderQty	86	4	Binary	
Price	90	8	BinaryPrice	
OrdType	98	1	Text	
MaxFloor	99	4	Binary	
StopPx	103	8	BinaryPrice	
LeavesQty	111	4	Binary	
DisplayPrice	115	8	BinaryPrice	
WorkingPrice	123	8	BinaryPrice	
BaseLiquidityIndicator	131	1	Text	
SecondaryOrderID	132	8	Binary	
RequestReceivedTime	140	8	DateTime	

4.2.8   Order Restated

`Order Restated` messages are sent to inform the Member that an order has been asynchronously modified
for some reason without an explicit `Modify Order` request having been sent. Some example (non-exhaustive) reasons for `Order Restated` messages being sent:

- A reserve (iceberg) order has been reloaded (BZX , C1, and C2 Only).
- An order's remaining quantity was decremented because of a prevented wash trade.
- An order is represented on the Cboe Options Trading Floor (C1 Only).
- A routed order has returned to rest on the book after matching liquidity on another market.

Members should be prepared to accept and apply `Order Restated` messages for any reason.

In some cases, the last message to be received on an order's lifecycle will be an `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 *PreventMatch* being set to d.

4.2.8.1   *OrderRestatedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09CD (2509)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	

TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
OrderID	42	8	Binary	
ClearingFirm	50	4	Alpha	
RoutingFirmID	54	4	Alpha	
Symbol	58	8	Alphanumeric	
OrderRestatementReason	66	1	Text	
OrderQty	67	4	Binary	
Price	71	8	BinaryPrice	
LeavesQty	79	4	Binary	
DisplayPrice	83	8	BinaryPrice	
WorkingPrice	91	8	BinaryPrice	
BaseLiquidityIndicator	99	1	Text	
SecondaryOrderID	100	8	Binary	
LastShares	108	4	Binary	
LastPx	112	8	BinaryPrice	

4.2.9 Quote Restated

`Quote Restated` messages are sent to inform the Member that an order has been asynchronously modified for some reason by the Exchange. For quotes, this could happen if the MTP decrement method has been used by an inbound order against a resting quote. On BZX Options, if a hidden working price is covered by an inbound post only order or quote, a restatement will also occur. Additional reasons may be added in the future.

4.2.9.1   *QuoteRestatedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D9 (2521)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
QuoteUpdateID	22	16	Text	

OrderID	38	8	Binary	
LeavesQty	46	4	Binary	
WorkingPrice	50	8	BinaryPrice	
QuoteSymbol	58	6	Alphanumeric	
Side	64	1	Text	
RestatementReason	65	1	Text	

4.2.10 Modify Rejected

`User Modify Rejected` messages are sent in response to a `Modify Order` for an order which cannot be modified. `User Modify Rejected` 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).

4.2.10.1 *ModifyRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09CC (2508)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
ClearingFirm	42	4	Alpha	
RoutingFirmID	46	4	Alpha	
OrigClOrdID	50	20	Text	
ModifyRejectReason	70	1	Text	
Text	71	60	Text	

4.2.11 Order Cancelled

This message indicates An order has been cancelled. The cancellation may be solicited or unsolicited. A solicited cancellation is in response to a `Cancel Order`, `Mass Cancel Orders`, or a `Purge Orders` message.

4.2.11.1 *OrderCancelledUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D0 (2512)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
CancelReason	42	1	Text	
CancelSubReason	43	1	Text	
ClearingFirm	44	4	Alpha	
RoutingFirmID	48	4	Alpha	
Symbol	52	8	Alphanumeric	
RequestReceivedTime	60	8	DateTime	

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 MTP with an inbound order or quotes are being cancelled due to a risk trip.

4.2.12.1 *QuoteCancelledUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D7 (2519)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
QuoteUpdateID	22	16	Text	
OrderID	38	8	Binary	

QuoteSymbol	46	6	Alphanumeric	
Side	52	1	Text	
CancelReason	53	1	Text	
CancelSubReason	54	1	Text	

4.2.13 Cross Order Cancelled (C1 and EDGX Only)

A `New Order Cross` has been cancelled. Individual order allocations from the original `New Order Cross` and `New Order Cross Multileg` message will be echoed back in the repeating groups.

4.2.13.1 *CrossOrderCancelledUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D1 (2513)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
CrossID	22	20	Text	
RoutingFirmID	42	4	Alpha	
CancelReason	46	1	Text	
AllocCnt	47	1	Binary	
→ ClOrdID	48	20	Text	(Group repeats *AllocCnt* times)
→ GiveUpFirmID	68	4	Alpha	(Group repeats *AllocCnt* times)

4.2.14 Cancel Rejected

A `Cancel Rejected` message is sent in response to a `Cancel Order` message to indicate that the cancellation cannot occur. `Cancel Rejected` messages are unsequenced.

4.2.14.1 *CancelRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D2 (2514)

MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
ClearingFirm	42	4	Alpha	
RoutingFirmID	46	4	Alpha	
CancelRejectReason	50	1	Text	
Text	51	60	Text	

4.2.15 Order Execution

An `Order Execution` 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 (C1, C2, and EDGX only), an `Order Execution` message will be generated for the complex order, with *MultilegReportingType* = 3, followed by `Order Execution` messages for each leg, with *MultilegReportingType* = 2. If both sides of a complex/spread trade are on the same order entry session, Cboe does not guarantee that the leg executions will not be interleaved between sides.

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

4.2.15.1 *OrderExecutionUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D3 (2515)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
ExecID	42	8	Binary	
LastShares	50	4	Binary	
LastPx	54	8	BinaryPrice	

LeavesQty	62	4	Binary	
BaseLiquidityIndicator	66	1	Text	
SubLiquidityIndicator	67	1	Text	
ContraBroker	68	4	Alphanumeric	
Side	72	1	Text	
Symbol	73	8	Alphanumeric	
ContraTrader	81	4	Alphanumeric	
ClearingFirm	85	4	Alpha	
ContraCapacity	89	1	Text	
FeeCode	90	2	Alphanumeric	
MarketingFeeCode	92	2	Alphanumeric	
RoutingFirmID	94	4	Alpha	
CrossExclusion Indicator	98	1	Text	
TradeDate	99	4	Date	
MultilegReportingType	103	1	Text	
SecondaryExecID	104	8	Binary	
PriceType	112	1	Text	
TradeThroughAlertType	113	1	Text	
SenderLocationID	114	1	Text	
FloorTraderAcronym	115	3	Alpha	
FloorTradeTime	118	8	DateTime	
ExDestination	126	1	Alphanumeric	
EquityExDestination	127	1	Alphanumeric	

4.2.16 Quote Execution

A `Quote Execution` message is used to indicate an execution has occurred on a resting quote.

4.2.16.1 *QuoteExecutionUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D8 (2520)
MatchingUnit	6	1	Binary	

Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
QuoteUpdateID	22	16	Text	
OrderID	38	8	Binary	
ExecID	46	8	Binary	
QuoteSymbol	54	6	Alphanumeric	
ClearingFirm	60	4	Alpha	
LastShares	64	4	Binary	
LastPx	68	8	BinaryPrice	
LeavesQty	76	4	Binary	
ContraTrader	80	4	Alphanumeric	
ContraCapacity	84	1	Text	
Side	85	1	Text	
BaseLiquidityIndicator	86	1	Text	
SubLiquidityIndicator	87	1	Text	
FeeCode	88	2	Alphanumeric	
MarketingFeeCode	90	2	Alphanumeric	
TradeDate	92	4	Date	

4.2.17 Trade Cancel or Correct

Used to relay a trade which has been cancelled (busted) or corrected (price or size change only). The *CorrectedPrice* and *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 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.

4.2.17.1 *TradeCancelCorrectUSOptionsV1Block*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09D4 (2516)
MatchingUnit	6	1	Binary	

Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
OrderID	42	8	Binary	
ExecRefID	50	8	Binary	
Side	58	1	Text	
BaseLiquidityIndicator	59	1	Text	
SubLiquidityIndicator	60	1	Text	
ClearingFirm	61	4	Alpha	
ClearingAccount	65	4	Text	
LastShares	69	4	Binary	
LastPx	73	8	BinaryPrice	
CorrectedPrice	81	8	BinaryPrice	
CorrectedSize	89	4	Binary	
OrigTime	93	8	DateTime	
Symbol	101	8	Alphanumeric	
MaturityDate	109	4	Date	
StrikePrice	113	8	BinaryPrice	
PutOrCall	121	1	Text	
Capacity	122	1	Text	
OpenClose	123	1	Text	
MarketingFeeCode	124	2	Alphanumeric	
TargetPartyID	126	4	Alpha	
CMTANumber	130	4	Binary	

4.2.18 Purge Rejected

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

4.2.18.1 *PurgeRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	

MessageType	4	2	Binary	0x09DE (2526)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
MassCancelID	22	20	Text	
PurgeRejectReason	42	1	Text	
Text	43	60	Text	

4.2.19 Reset Risk Acknowledgment

Response to a `Reset Risk` request.

4.2.19.1 *ResetRiskAcknowledgementUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09DA (2522)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
RiskStatusID	14	16	Text	
RiskResetResult	30	1	Text	
RequestReceivedTime	31	8	DateTime	

4.2.20 Mass Cancel Acknowledgment

A `Mass Cancel Acknowledgment` is an unsequenced message sent when a `Mass Cancel Order` message requesting a mass cancellation has completed cancelling all individual orders.

4.2.20.1 *MassCancelAcknowledgementUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09DB (2523)
MatchingUnit	6	1	Binary	

Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
MassCancelID	22	20	Text	
CancelledOrderCount	42	4	Binary	
RequestReceivedTime	46	8	DateTime	

4.2.21 Mass Cancel Rejected

A `Mass Cancel Rejected` message is sent in response to a `Mass Cancel` message to indicate that the mass cancellation cannot occur. `Mass Cancel Rejected` messages are unsequenced.

4.2.21.1 *MassCancelRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09DC (2524)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
MassCancelID	22	20	Text	
MassCancelRejectReason	42	1	Text	
Text	43	60	Text	

4.2.22 Purge Acknowledgement

A `Purge Acknowledgment` is an unsequenced message sent when a `Purge Orders` message requesting an order purge has completed cancelling all individual orders.

Multiple `Purge Acknowledgment` messages will be sent in response to `Purge Order` requests for multi-unit orders (MassCancelInst, 2nd character = 'I'). An acknowledgement message will be sent for each matching unit followed by a final acknowledgement containing the total number of orders cancelled due to the purge request across all matching units. This final acknowledgment will have a SourceMatchingUnit value of '0'.

4.2.22.1 *PurgeAcknowledgementUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09DD (2525)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
MassCancelID	22	20	Text	
CancelledOrderCount	42	4	Binary	
SourceMatchingUnit	46	1	Binary	
RequestReceivedTime	47	8	DateTime	

4.2.23 Purge Notification

A `Purge Notification` is an unsequenced message sent when the Acknowledgement Style of a Purge Request is 'A'. One `Pure Notification` message is sent for each matching unit that cancelled orders for that order entry port.

4.2.23.1 *PurgeNotificationUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09DF (2527)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
MassCancelID	22	20	Text	
CancelledOrderCount	42	4	Binary	
SourceMatchingUnit	46	1	Binary	
ClearingFirm	47	4	Alpha	
RiskRoot	51	6	Text	

Field Name	Offset	Length	Data Type	Description
MassCancelLockout	57	1	Text	

4.2.24 New Complex Instrument Accepted (C1, C2, and EDGX Only)

The `New Complex Instrument Accepted` is used to indicate acceptance of a complex strategy. The leg order sent back may differ from the originating request.

4.2.24.1 *NewComplexInstrumentAcceptedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09C9 (2505)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
Symbol	42	8	Alphanumeric	
NoOfSecurities	50	4	Binary	
LegCnt	54	1	Binary	
→ *Symbol*	55	8	Alphanumeric	(Group repeated *LegCnt* times)
→ *MaturityDate*	63	4	Date	
→ *StrikePrice*	67	8	BinaryPrice	
→ *CFICode*	75	2	Alphanumeric	
→ *RatioQty*	77	4	Binary	(Group repeated *LegCnt* times)
→ *Side*	81	1	Text	(Group repeated *LegCnt* times)

4.2.25 New Complex Instrument Rejected (C1, C2, and EDGX Only)

The `New Complex Instrument Rejected` message is used to indicate that a requested complex strategy has been rejected. `Complex Instrument Rejected` messages are unsequenced.

4.2.25.1 *NewComplexInstrumentRejectedUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	

MessageType	4	2	Binary	0x09CA (2506)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
NoOfSecurities	42	4	Binary	
OrderRejectReason	46	1	Text	
Text	47	60	Text	

4.2.26 Carried Restatement

The `Carried Restatement` message is used to indicate the restoration of a multi-day GTC or GTD order at the start of a new business day.

4.2.26.1 *CarriedRestatementUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09CE (2510)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
OrderID	42	8	Binary	
Side	50	1	Text	
Price	51	8	BinaryPrice	
ExecInst	59	1	Text	
OrdType	60	1	Text	
TimeInForce	61	1	Text	
MinQty	62	4	Binary	
Symbol	66	8	Alphanumeric	

Capacity	74	1	Text	
Account	75	16	Text	
ClearingFirm	91	4	Alpha	
ClearingAccount	95	4	Text	
DisplayIndicator	99	1	Text	
MaxFloor	100	4	Binary	
OrderQty	104	4	Binary	
PreventMatch	108	3	Text	
MaturityDate	111	4	Date	
StrikePrice	115	8	Binary Price	
PutOrCall	123	1	Alphanumeric	
OpenClose	124	1	Text	
LeavesQty	125	4	Binary	
DisplayPrice	129	8	BinaryPrice	
WorkingPrice	137	8	BinaryPrice	
ExpireTime	145	8	DateTime	
AttributedQuote	153	1	Text	
StopPx	154	8	BinaryPrice	
RoutingInst	162	4	Text	
RoutStrategy	166	6	Text	
RouteDeliveryMethod	172	3	Text	
ExDestination	175	1	Text	
TargetPartyID	176	4	Alpha	
AuctionID	180	8	Binary	
CMTANumber	188	4	Binary	
RoutingFirmID	192	4	Alpha	
ClearingOptionalData	196	16	Text	
CumQty	212	4	Binary	
DrillThruProtection	216	8	BinaryPrice	
EquityPartyId	224	4	Alpha	
ClientIDAttr	228	4	Text	
FrequentTraderID	232	6	Alphanumeric	
SessionEligibility	238	1	Text	

ComboOrder	239	1	Text	
Compression	240	1	Text	
FloorDestination	241	4	Text	
FloorRoutingInst	245	1	Text	
OrderOrigin	246	3	Alphanumeric	
PriceType	249	1	Text	
StrategyID	250	1	Text	
Held	251	1	Text	

4.2.27 Done For Day

The `Done For Day` messages represent orders persisted during the current day session to carry over to the next session. `Done For Day` messages will be sent after the end of trading for the associated product and before system recycle.

4.2.27.1 *DoneForDayUSOptionsV1*

Field Name	Offset	Length	Data Type	Description
StartOfMessage	0	2	Binary	0xB0 0xE3 (58288)
MessageLength	2	2	Binary	
MessageType	4	2	Binary	0x09CF (2511)
MatchingUnit	6	1	Binary	
Reserved	7	1	Binary	Value sent to member not specified
SequenceNumber	8	4	Binary	Zero - unsequenced application message
InFlight	12	2	Binary	
TransactionTime	14	8	DateTime	
ClOrdID	22	20	Text	
ClearingFirm	42	4	Alpha	
RoutingFirmID	46	4	Alpha	
Symbol	50	8	Alphanumeric	

4.2.28 Floor Trade Notification (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

4.2.29 Add Floor Trade Rejected (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

4.2.30 Floor Trade Confirmation Rejected (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

4.2.31 Delete Floor Trade Rejected (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

4.2.32 Delete Floor Trade Acknowledgement (C1 Only)

(To be provided at a future date for BOE Version 3 Migration to C1.)

5 List of Message Fields

The following are descriptions of 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 and also passed through to the OCC in the Optional Data field (16 characters) and Customer ID field (max 10 characters). May be made available in the Member's clearing file. A maximum of 10 characters will be passed through to the OCC Customer ID Field but up to 16 characters will be maintain internally. Allowed characters are alphanumeric and colon.
			Account (1) will only be mapped to the OCC via the Customer ID field (max 10 characters) and the new *ClearingOptionalData* (9324) field will be mapped to the OCC via the Optional Data field (16 characters).
AllocCnt	1	Binary	Number of allocation party repeating groups in the message.
AllocQty (C1 and EDGX only)	4	Binary	Corresponds to *AllocQty* (80) in Cboe FIX. Number of contracts for this party.
AllocLegCnt	1	Binary	Total number of leg details in the message: *AllocCnt* * #legs, or 0. All leg data for the first allocation should preceed all leg data for the second allocation, etc.
AttributedQuote	1	Alphanumeric	Optional. Allows for an order to be attributed to a firm's Executing Broker ID in Cboe market data feeds. The order may also be included with attributed summary information displays related to quote/trade information on the Cboe website. Must opt-in to support through the Cboe Trade Desk.
			On a `New Order Cross` and `New Order Cross Multileg` this field is only applicable to the Agency order.
			N = Do not attribute firm Executing Broker ID to this order (Default)
			Y = Attribute firm Executing Broker ID to this order
			C = Attribute *ClientID* only.
			Z = Attribute both *ClearingFirm* (EFID) and *ClientID*.
AuctionID (C1, C2, and EDGX only)	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.

Field	Length	Data Type	Description
AutoMatch (C1 and EDGX only)	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 (C1 and EDGX only)	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. Format is the same as *Price*. **AutoMatchPrice is from the perspective of the Contra Side.** Net Auction Price of the Strategy. Buy Orders: Positive Value, Debit Negative Value, Credit Even Order - 0 (Zero) Sell Orders: Positive Value, Credit Negative Value, Debit Even Order - 0 (Zero)
BaseLiquidityIndicator	1	Alphanumeric	Indicates whether the trade added or removed liquidity. A = Added Liquidity R = Removed Liquidity X = Routed to Another Market C = Auction/Uncrossing
CancelledOrderCount	4	Binary	Number of orders cancelled by the mass cancel or purge operation.
CancelOrigOnReject	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
CancelReason	1	Text	Single character code for the cancellation reason. (See "6 Reason Codes")
CancelRejectReason	1	Text	Single character code for the cancel rejection reason. (See "6 Reason Codes")
CancelSubReason	1	Text	Single character code for the cancellation sub-reason. (See "6.3 Order and Quote Subreason Codes")

Field	Length	Data Type	Description
Capacity	1	Alpha	Corresponds to *OrderCapacity* (47) in Cboe FIX.
			The capacity of the order.
			C = Customer M = Market Maker (this must be used for all `Quote Update` messages) F = Firm U = Professional Customer N = Away Market Maker B = Broker-Dealer J = Joint Back Office L = Non-Trading Permit Holder Affiliate (C1 and C2 only)
CFICode	2	Alphanumeric	CFI Code for leg.
			O = Options E = Equity (C1 and EDGX only)
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 feeds.
			When *Capacity* is set to 'M' or 'N' for Market Maker, this field should be filled with the desired market maker ID.
			When *Capacity* is set to 'M' for Market-Maker, any unregistered Market-Maker accounts in this field will cause an order to be rejected with a reason code of 'A' and sub-reason code 'L' and a quote to be rejected with a reason code of 'C'.
			When using CMTA, this value is the Market Maker ID for the CMTA member instead of the Cboe member executing the trade. This field will be sent to the OCC.
			If *Capacity* is set to something besides Market Maker, this field can be blank or filled out with an optional string that is passed through to the OCC.
ClearingFirm	4	Alpha	Corresponds to *OnBehalfOfCompID* (115) Cboe FIX.
			EFID that will clear the trade. **Port attribute value of 'Default EFID' is used if not provided.**
ClearingOptionalData	16	Text	Corresponds to *ClearingOptionalData* (9324) in Cboe FIX.
			This field will be reflected back on execution reports , FIX DROP ports and it will be passed through to the OCC in the Optional Data field.
ClOrdID	20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX.
			ID chosen by the client. Characters in the ASCII range 33-126 are allowed, except for comma, semicolon, pipe, the 'at' symbol (@) and double quotes. Additionally, the ClOrdID cannot begin with a "~" since this is reserved for Cboe-generated ClOrdID values.

Field	Length	Data Type	Description
			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, which includes long-lived, persisting GTC/GTD orders. However, we strongly recommend that you keep your *ClOrdID* values unique.
ClientIDAttr	4	Text	Corresponds to *ClientID* (109) Cboe FIX.
			User defined identifier for quote attribution.
CMTANumber	4	Binary	Corresponds to *ClearingFirm* (439) in Cboe FIX.
			CMTA Number of the firm that will clear the trade. Must be specified for CMTA orders and left unspecified for non-CMTA orders.
ComboOrder (C1 only)	1	Alpha	Corresponds to *ComboOrder* (22005) in Cboe FIX.
			Declare the order as a Combo (for regulatory relief if trading SPX on the floor).
			N = (Default) No Y = Yes
Compression (C1 only)	1	Alpha	Corresponds to *Compression* (22006) in Cboe FIX.
			Order is a compression trade.
			N = (Default) No Y = Yes
			When *CrossType (549)* = '4' this field should not be specified.
ContraBroker	4	Alphanumeric	Corresponds to *ContraBroker* (375) in Cboe FIX.
			Simple Instrument Fills Internally matched simple executions will identify the OCC clearing number of the contra on the execution. This includes leg fill reports (*MultilegReportingType*=2) that are sent as a result of a complex trade.
			Executions matched on the C1 trading floor will contain a value of 'FBKR' for *ContraBroker* for the first reporter of a Broker to Broker floor trade otherwise, this will identify the OCC clearing number of the contra (C1 only).
			Complex Package Fills *ContraBroker* will be sent and populated on electronic, complex package fills (*MultilegReportingType*=3) when the contra side is also a complex order. When legging in to the simple books *ContraBroker* will be blank.
			ContraBroker will be blank on complex package fills (*MultilegReportingType*=3) executed on the Cboe Options trading floor (C1 only).

Field	Length	Data Type	Description
			Routed Fills All externally matched (routed, *BaseLiquidityIndicator*=X) executions will identify the away exchange with the following possible values. AMEX = Routed to NYSE American ARCA = Routed to NYSE Arca BATS = Routed to Cboe BZX Options BOX = Routed to BOX CBOE = Routed to Cboe Options CTWO = Routed to C2 Options EDGX = Routed to Cboe EDGX Options EMLD = Routed to MIAX Emerald GMNI = Routed to Nasdaq GEMX ISE = Routed to Nasdaq ISE MEMX = Routed to MEMX MERC = Routed to Nasdaq MRX MIAX = Routed to MIAX Options Exchange NOMX = Routed to Nasdaq NOBX = Routed to Nasdaq BX PERL = Routed to MIAX PEARL PHLX = Routed to Nasdaq PHLX SPHR = Routed to MIAX Sapphire
ContraCapacity	1	Alphanumeric	Capacity of the contra for this execution. See *Capacity* for allowed values.
ContraTrader	4	Alphanumeric	Corresponds to *ContraTrader* (337) in Cboe FIX. Only present on local book trades, not present on routed trades. **Simple Instrument Fills** Displays the EFID (Contra *ClearingFirm*) of the contra side firm. This includes leg fill reports (*MultilegReportingType*=2) that are sent as a result of a complex trade. For Cboe Options floor trades, displays the Contra Floor Acronym (C1 only). **Complex Package Fills** *ContraTrader* will be sent and populated on electronic, complex package fills (*MultilegReportingType*=3) when the contra side is also a complex order. When legging in to the simple books *ContraTrader* will be blank. *ContraTrader* will also be blank on complex package fills executed on the Cboe Options trading floor (C1 only).
CorrectedPrice	8	Binary	Corresponds to *CorrectedPrice*(9620) in Cboe FIX. Price of the trade after adjustment.
CorrectedSize	4	Binary	Corresponds to *CorrectedSize* (6655) in Cboe FIX. Number of shares after trade adjustment.

Field	Length	Data Type	Description
CrossExclusion Indicator (C1 and EDGX only)	1	Alpha	Corresponds to *CrossExclusionIndicator* (6438) in Cboe FIX. N = Contracts were executed in auction against Contra party or against a resting order when auction was initiated Y = Contracts were executed in auction against another party.
CrossID (C1 and EDGX only)	20	Text	Corresponds to *CrossID* (548) in Cboe FIX. Day-unique identier for the cross order chosen by the member. Characters in the ASCII range 33-126 are allowed, except for comma, semicolon,pipe, the 'at' symbol and double quotes. Additionally, the ClOrdID cannot begin with a "~" since this is reserved for Cboe-generated ClOrdID values.
CrossInitiator (C1 and EDGX only)	4	Alpha	Corresponds to *CrossInitiator* (22026) in Cboe FIX. MPID field required on cross orders routed to destinations via NYSE Chicago using *EquityExDestination* (22016). Should be populated with the originator or routing broker MPID. May or may not be the same as the agency/contra MPID. Note that Broker Choice will be allowed on any stock/option order including FLEX or Non-FLEX orders of any ratio.
CrossPrioritization (C1 and EDGX only)	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
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 Mechamism ("AIM") 2 = Qualified Contingent Cross ("QCC") 3 = Solicitation Cross ("SAM") (C1 and EDGX only) 4 = Position Compression Cross ("PCC") (C1 Only)
CumQty	4	Binary	The total quantity traded by the order.
CustomGroupID	2	Binary	Corresponds to *CustomGroupID* (7699) in Cboe FIX for `New Order` and `Purge Orders` messages. Used to group orders for use in `Purge Orders` where multiple orders can be cancelled by specifying a list of *CustomGroupIDs*.
CustomGroupIDCnt	1	Binary	Number of CustomGroupID fields in the message.

Field	Length	Data Type	Description
DisplayIndicator	1	Alphanumeric	Corresponds to DisplayIndicator (9479) in Cboe FIX. V = Default. As determined by port level setting (default to S) S = Display Price Sliding (this is to override a opt-out of Display Price Sliding at the port level (BZX only) L = Display Price Sliding, but reject if order crosses NBBO on entry (BZX only) M = Multiple Display Price Sliding (BZX only) P = Price Adjust m = Multiple Price Adjust R = Reject the order if it cannot be booked and displayed without adjustment. N = NoRescrapeAtLimit (BZX only) See 'Display Indicator Features' for more details on sliding options.
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.
DisplayRange	4	Binary	Corresponds to DisplayRange (8020) in Cboe FIX. Used for random replenishment of reserve orders. Random replenishment establishes a range of possible values for the order quantity that is to be displayed. For example, if MaxFloor = 2,000, and DisplayRange = 200, the displayed quantity will be selected from one of the following values: 1,800, 1,900, 2,000, 2,100, or 2,200. Must be specified in round lots.
DrillThruProtection (C1, C2, and EDGX only)	8	Binary Price	Corresponds to DrillThruProtection (6253) in Cboe FIX. Amount sender is willing to trade through the SNBBO. A zero price provides full SNBBO protection. The price should be entered as a non-negative value. Exchange default values are 5% of the opposite of the SNBBO, with a minimum value of $0.02, a maximum value of $2.00 for SPX/SPXW, and a maximum value of $0.25 for non-SPX/SPXW. Values provided on a New Complex Order message do not have a minimum or maximum.
EquityBuyClearingFirm (C1 and EDGX only)	4	Text	Corresponds to EquityBuyClearingFirm (22014) in Cboe FIX. Clearing firm on buy side of the equity trade associated with a QCC trade. Valid when CrossType = '2'.
EquityExDestination (C1 and EDGX only)	1	Alphanumeric	Corresponds to EquityExDestination (22016) in Cboe FIX. Valid when an equity symbol is present in the complex instrument.

Field	Length	Data Type	Description
			Exchange venue to which equity leg matching will be submitted. Supported values are: C = Cowen (default) P = Penserra via NYSE Chicago F = FOG Equities via NYSE Chicago L = Libucki & Co. via NYSE Chicago S = SRT Securities via NYSE Chicago If buyer and seller do not provide matching venues, then the equity match will be reported to Cowen ('C').
EquityLegShortSell (C1 and EDGX only)	1	Alphanumeric	Corresponds to *EquityLegShortSell* (22624) in Cboe FIX. 5 = Sell Short (for stock leg) 6 = Sell Short Exempt (for stock leg)
EquityPartyId (C1 and EDGX only)	4	Alpha	Corresponds to *EquityPartyId* (22008) in Cboe FIX. MPID used to clear the equity leg being cleared via the Exchange.
EquitySellClearingFirm (C1 and EDGX only)	4	Text	Corresponds to *EquitySellClearingFirm* (22015) in Cboe FIX. Clearing firm on sell side of the equity trade associated with a QCC trade. Valid when *CrossType* = '2'.
EquityTradePrice (C1 and EDGX only)	8	Binary Price	Corresponds to *EquityTradePrice* (22011) in Cboe FIX. Price at which the equity associated with a QCC trade. Valid when *CrossType* = '2'.
EquityTradeSize (C1 and EDGX only)	4	Binary	Corresponds to *EquityTradeSize* (22012) in Cboe FIX. Number of shares executed in the equity associated with a QCC trade. Valid when *CrossType* = '2'.
EquityTradeVenue (C1 and EDGX only)	1	Text	Corresponds to *EquityTradeVenue* (22013) in Cboe FIX. Exchange venue where equity associated with a QCC traded. Valid when CrossType (549) = '2. A = NYSE American B = Nasdaq BX C = NYSE National I = Investors Exchange J = Cboe EDGA Exchange K = Cboe EDGX Exchange M = CHX N = NYSE P = NYSE Arca Q = Nasdaq X = Nasdaq PSX Y = Cboe BYX Exchange Z = Cboe BZX Exchange

Field	Length	Data Type	Description
EquityTransactTime (C1 and EDGX only)	8	DateTime	Corresponds to *EquityTransactTime* (22060) in Cboe FIX. Time of equity trade associated with a QCC trade. Valid when *CrossType* = '2'.
ExDestination	1	Text	Corresponds to *ExDestination* (100) in Cboe FIX. Used to specify the designated away venue for RoutStrategy = DIRC. A = NYSE ARCA E = NASDAQ ISE F = MIAX P = MIAX PEARL D = MIAX Emerald G = EDGX Options H = C2 K = BOX M = MEMX N = NASDAQ S = NASDAQ BX U = NYSE AMERICAN W = Cboe Options (C1) X = Nasdaq PHLX Z = BZX Options g = Nasdaq GEMX m = Nasdaq MRX w = MIAX Sapphire
ExecID	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 FIXDROP ports as nine character, base 36 ASCII. Leading zeros should be added if the converted base 36 value is shorter than nine characters. Example conversion:

Decimal	Base 36
28294005440239	A1234B567
76335905726621	R248BC23H
728557228187	09AP05V2Z

Field	Length	Data Type	Description
ExecRefID	8	Binary	Corresponds to *ExecRefID* (19) in Cboe FIX. Refers to the *ExecID* of the fill being cancelled or corrected.
ExecInst	1	Text	Corresponds to *ExecInst* (18) in Cboe FIX. 1 = Not held. Must be routed to the floor. (C1 only) f = Intermarket Sweep (Directed or Cboe) r = Settlement Liquidity[1] (C1 only) G = All or None (AON) (C1 and EDGX only) s = Sweep[2] (C1 and EDGX only) ASCII NULL (0x00) = no special handling [1]Requires *TimeInForce* = 2 and *Price*.

Field	Length	Data Type	Description
			[2]Used for `New Order Cross` and `New Order Cross Multileg` only. Requires *CrossType* = 1 (AIM).
ExpireTime	8	DateTime	Corresponds to *ExpireTime* (126) in Cboe FIX. Required for *TimeInForce* = 6 orders, specifies the date-time (in UTC) that the order expires.
FeeCode	2	Alphanumeric	Corresponds to *FeeCode* (9882) in Cboe FIX. Indicates fee associated with an execution. Fee codes are published in the pricing schedule. New fee codes may be sent with little or no notice. Members are encouraged to code their systems to accept unknown fee codes.
FloorDestination (C1 only)	4	Text	Corresponds to *FloorDestination* (22100) in Cboe FIX. Specifies a default PAR workstation (ex. W001) to route to on the floor (or 'PARO' to route to the Floor PAR Official of the underlying symbol) if not specified on inbound messages.
FloorRoutingInst (C1 only)	1	Alphanumeric	Corresponds to *FloorRoutingInst* (22303) in Cboe FIX. D = Direct (do not attempt to process electronically)[1] E = Electronic only X = Route to floor if unable to process electronically[1] `<blank>` = Port level default The default value for any given port can be changed by requesting an update to the "Default FloorRoutingInst" port attribute. [1]When *FloorRoutingInst* is 'D' or 'X', *RoutingInst* must be set to 'B' or 'R' for simple orders; or 'B' for complex instruments.
FloorTraderAcronym (C1 only)	3	Alpha	Floor Acronym of member submitting trade.
FloorTradeTime (C1 only)	8	DateTime	Trade time reported by the trading floor.
FrequentTraderID (C1 only)	6	Text	Corresponds to *FrequentTraderId* (21097) in Cboe FIX. Identifies the frequent trader program in which the order is participating.
GiveUpFirmID (C1 and EDGX only)	4	Alpha	Corresponds to *GiveupFirmID* (9946) in Cboe FIX. For the Agency Side, this field must equal the value of *ClearingFirm* (EFID). Each Contra allocation will use this field instead of *ClearingFirm* for clearing information.

Field	Length	Data Type	Description
Held (C1 only)	1	Alpha	Corresponds to *Held* (20012) in Cboe FIX. Indicates if order should be designated as 'Held' upon order entry. N = Mark order as Not Held Y = Mark order as Held Default value is 'N' if the order is direct routed to a Non-PAR Official on the floor.
InFlight	2	Binary	Total number of messages "in-flight" from the port (total number of messages sent/queued to matching engine which have not yet been acknowledged by the matching engine). See "1.5.1 Architecture and Message in Flight Settings".
LastPriority (C1 and EDGX only)	1	Alphanumeric	Corresponds to *LastPriority* (9849) in Cboe FIX. When enabled, allocation will go to other members' 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.
LastShares	4	Binary	Corresponds to *LastShares* (32) in Cboe FIX. Executed share quantity.
LeavesQty	4	Binary	Corresponds to *LeavesQty* (151) in Cboe FIX. Quantity still open for further execution. If zero, the order is complete.
LegCnt	1	Binary	Number of leg repeating groups in the message.
LegPositionEffect	1	Text	Corresponds to *OpenClose* (77) in Cboe FIX, as applied to the leg of a complex order. Indicates status of member position in the option leg of a complex order. O = Open C = Close N = None Equity legs must use 'N'. *(See **OpenClose** message field for detail regarding limitations of the use of values 'O','C','N'.)*
MarketingFeeCode (C1 and EDGX only)	2	Alphanumeric	Corresponds to *MarketingFeeCode* (5937) in Cboe FIX. P = Penny Pilot N = Non-Penny Pilot X = Not Eligible for Marketing Fees
MassCancelID	20	Text	Corresponds to *MassCancelID* (7695) in Cboe FIX.

Field	Length	Data Type	Description
			If the populated value ends in a space the message will be rejected. Mass cancel requests containing a currently outstanding *MassCancelID* will be rejected.
			This field will be echoed back in the resulting response message when the single acknoweldgement style is selected.
MassCancelInst	8	Text	Corresponds to *MassCancelInst* (7700) in Cboe FIX. Used for specification of `Purge Orders` functionality and optionally used for specification of Mass Cancel functionality associated with the `Mass Cancel Order` message.
			At least one character must be provided (Clearing Firm Filter). Contiguous characters must be specified up to total length. Truncated/unspecified characters will default to values indicated (D) below.
			EFID values specified in *OnBehalfOfCompId* that are not allowed to clear for the firm will be rejected.
			1st Character: Clearing Firm Filter A = No filtering by clearing firm relationship is performed. F = All orders that were sent under the clearing relationship specified in *ClearingFirm* field. If 'F' specified and the ClearingFirm field is provided but is blank (NULL), the `Mass Cancel` or `Purge Orders` will be treated like 'A', and no filtering by clearing firm relationship is performed.
			2nd Character: Acknowledgement Style M = (D) `Order Cancelled` messages are sent for each cancelled order. If 'M' is set and the *MassCancelID* field is not blank (NULL), then the `Mass Cancel` will be rejected. For a `Purge Orders` message 'M' will be accepted with a non-blank *MassCancelID* value. S = A single `Mass Cancel Acknowledgement` or `Purge Acknowledgement` message is sent once all cancels have been processed. The *MassCancelID* field must be non-blank or the `Mass Cancel` or `Purge Orders` will be rejected. B = Both individual `Order Cancelled` and `Mass Cancel Acknowledgement` (or `Purge Acknowledgement`) messages will be sent. Also requires *MassCancelID* field to be non-blank or the `Mass Cancel` or `Purge Orders` will be rejected. A = A single `Purge Acknowledgement` message is sent to the purge port and one `Purge Notification` message for each matching unit with cancelled orders is sent to the order entry ports that originated those orders. The message type must be `Purge Orders`; `Mass Cancel` messages specifying this style will be rejected. The *CancelledOrderCount* field of the purge port message will contain a count of all cancelled orders. The same field of the order entry port messages will contain a count of all cancelled orders from the specified matching unit that originate from

Field	Length	Data Type	Description
			the port. The *MassCancelID* field must be specified or the Purge Orders will be rejected. I = A single `Purge Acknowledgement` message is sent for each matching unit impacted in a multi-unit cancel. The message type must be `Purge Orders`; `Mass Cancel` messages specifying this style will be rejected. A final acknowledgement is sent when the last matching unit has completed all requested cancellations. *MassCancelId* (7695) must be non-blank, or the Purge Order will be rejected . ***3rd Character: Lockout Instruction*** N = (D) No lockout L = Lockout until corresponding a risk reset is received. Lockout can be used only with Clearing Firm Filter set to 'F', otherwise the `Mass Cancel` or `Purge Orders` will be rejected. Lockout will apply to all new orders for the *ClearingFirm* (and *ProductName* or *CustomGroupIDs*, if specified), regardless of other filtering in the `Mass Cancel` or `Purge Orders` message. ***4th Character: Instrument Type Filter (C1, C2, and EDGX Only) Value will be ignored on BZX Options.*** B = (D) Cancel both single leg and complex orders S = Cancel single leg orders only C = Cancel complex orders only ***5th Character: GTC Order Filter*** C = (D) Cancel GTC and GTD orders P = Don't cancel (preserve) GTC and GTD orders If the *RiskRoot* optional field is specified, it must contain a valid symbol (e.g., 'MSFT'), in which case only orders associated with the specified *RiskRoot* will be cancelled. A self-imposed lockout can be released by sending a `Reset Risk` message. If *RiskRoot* field is specified, a symbol level reset is required, otherwise a EFID level reset is required to release a lockout. For more information, refer to the 'Cboe Risk Management Specification'. If a risk limit is tripped or manually locked out at the end of the RTH session, the trip/lockout will persist into the Curb session (C1 only).
MassCancelLockout	1	Text	Corresponds to *Lockout*(7697) in Cboe FIX. Reports the status of the mass cancel lockout Y = Lockout N = No Lockout
MassCancelRejectReason	1	Text	Single character code for the rejection of a purge request. (See "6.1 Order Reason Codes")
MaturityDate	4	Date	Corresponds to *MaturityMonth* (200) and *MaturityDay* (205) in Cboe FIX.

Field	Length	Data Type	Description
MaxFloor	4	Binary	Corresponds to *MaxFloor* (111) in Cboe FIX.
			Portion of *OrderQty* to display. The balance is reserve. Zero 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
			An order with a *MaxFloor* greater than 0 will be rejected for Cboe proprietary classes (such as DJX, RUT, SPX, XSP, and VIX).
MinQty	4	Binary	Corresponds to *MinQty* (110) in Cboe FIX.
			Minimum fill quantity for IOC orders which only interact with liquidity on the target book. Ignored for other orders.
ModifyRejectReason	1	Text	Single character code for the rejection of a modify.
			(See "6.1 Order Reason Codes", below)
MultilegReportingType (C1, EDGX and C2 only)	1	Alphanumeric	Corresponds to *MultilegReportingType* (442) in Cboe FIX
			Indicates the type of `Order Execution` message.
			1 = Single-leg instrument 2 = Individual leg of multi-leg instrument 3 = Entire multi-leg instrument package 4 = Last individual leg of multi-leg instrument
NoOfSecurities (C1, C2, and EDGX only)	4	Binary	Corresponds to *NoOfSecurities* (8641) in Cboe FIX.
			Indicates the number of securities created by the member in this trading session.
OpenClose	1	Alphanumeric	Corresponds to *OpenClose* (77) in Cboe FIX.
			Indicates status of member position in the option.
			O = Open C = Close N = None*
			*Orders with *Capacity* = 'M' or 'N' will not be required to specify *OpenClose* on their orders. A value of 'N' may optionally be specified unless the series is limited to closing only.
			If the series is limited to closing only transactions, only *Capacity* = 'M' will be permitted to submit *OpenClose* = 'O' if the order has *TimeInForce* = '3' (IOC) and *RoutingInst* = 'B', or the order has a *RoutingInst* = 'P'.
			An Open position cannot trade with an Open position for series limited to Closing Only transactions, even if the inbound IOC from the aggressing market maker is sent with that combination of tags.
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.

Field	Length	Data Type	Description
OrderOrigin (C1 only)	3	Alphanumeric	Corresponds to *OrderOrigin* (9465) in Cboe FIX. Floor acronym of Market Maker on whose behalf this order is being entered by a floor broker.
OrderQty	2|4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 contracts.
OrderRejectReason	1	Text	Single character code for the rejection of an order. (See "6.1 Order Reason Codes", below)
OrderRestatementReason	1	Text	The reason for this Order Restated message. E = Reduction of OrdQty due to Equity Leg Reject (C1 only) F = Represented on Floor (C1 only) L = Reload P = Price Sliding Reprice Q = Liquidity Updated R = Reroute S = Ship and Post (SWP) W = Wash f = Unsolicited Floor Action (C1 only) Cboe reserves the right to add new values as necessary without prior notice.
OrderRouterSubsidy (C1 only)	1	Alpha	Corresponds to *ORS* (22003) in Cboe FIX. Order router subsidy eligibility (used for billing purposes). N = (Default) No Y = Yes
OrdType	1	Alphanumeric	Corresponds to *OrdType* (40) in Cboe FIX. 1 = Market 2 = Limit (default) 3 = Stop 4 = Stop Limit Market implies *TimeInForce* of IOC (3). Stop/Stop Limit orders must be set to *TimeInForce* = '0' (DAY), '1' (GTC), or '6' (GTD). Note market and stop/stop limit orders are not supported during GTH or Curb sessions.
OrigClOrdID	20	Text	Corresponds to *OrigClOrdID* (41) in Cboe FIX. On a CancelOrder message the *OrigClOrdId* should be the *ClOrdId* sent on the most recent modify (or new order if no modifies have been sent), even if the corresponding response has not yet been seen.
OrigTime	8	DateTime	Time of the original transaction.
PostingInstruction	1	Alpha	P = Post Only (do not remove liquidity) B = Book Only (allow removal of liquidity, available for Market Makers only) N = Book Only, No Slide R = Post Only, No Slide (do not remove liquidity) I = Book Only IOC

Field	Length	Data Type	Description
PreventMatch	3	Alpha	Corresponds to *PreventMatch* (7928) in Cboe FIX.
			Three characters:
			1st character - MTP Modifier: N = Cancel Newest O = Cancel Oldest B = Cancel Both S = Cancel Smallest D = Decrement larger / Cancel Smaller d = Same as D above, but only decrement LeavesQty. Do not restate OrderQty.
			2nd character - Unique ID Level: F = Prevent Match at Firm(Member) Level M = Prevent Match at EFID Level
			3rd character - 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 MTP Modifier (character 1) of the inbound order will be honored, except that if the inbound order specifies Decrement and the resting order does not, and the resting order is larger, then both orders will be cancelled. This exception is to protect the order entry software for the resting order from receiving an unexpected restatement message.
			If order entry software is prepared to handle unexpected restatement messages, this exception may be override at the port level by requesting "Allow MTP Decrement Override" functionality.
			Uses of MTP Modifier 'D' or 'd' and users of "Allow MTP Decrement Override" functionality must be prepared to receive an `Order Restated` message that decrements *LeavesQty* (and, for method 'D', *OrdQty* as well).
			On a `New Order Cross`, only 'N' and 'O' are supported for the MTP modifier. MTP instructions on AIM orders will be used to prevent executions against AIM responses only; they will permit executions against resting or unrelated orders. Responses may only employ N (Cancel Newest) in which case the response will be cancelled and the auction order will continue.
			On a `New Order Cross`, this field is only applicable to the Agency order.

Field	Length	Data Type	Description
Price	4|8	Short Binary Price | Binary Price	Corresponds to *Price* (44) in Cboe FIX. Limit price. Required for limit orders (*OrdType* = 2). If specified on market orders (*OrdType* = 1), the order will be rejected. This field is also used to specify an optional cap price for pegged orders. Price may be of type Binary Price (8 bytes) or Short Binary Price (4 bytes), as specified in the message definitions. For complex orders, net pricing of the strategy. Four implied decimal places. (EDGX and C2 only) *Buy orders:* • Positive value, Debit • Negative value, Credit • Even order, 0 (Zero) *Sell orders:* • Positive value, Credit • Negative value, Debit • Even order, 0 (Zero)
PriceType (C1 only)	1	Alphanumeric	Corresponds to *PriceType* (423) in Cboe FIX. 0 = Fixed cabinet trade price 2 = (Default) Price per unit (contract) 3 = Fixed amount (cash spread pricing) – only for complex orders routed to the floor
PurgeRejectReason	1	Text	Single character code for the rejection of a purge request. (See "6.1 Order Reason Codes")
PutOrCall	1	Alphanumeric	Corresponds to *PutOrCall* (201) in Cboe FIX. 0 = Put 1 = Call
QuoteCnt	1	Binary	Number of quotes in the message. Maximum is 20.
QuoteRejectReason	1	Text	Single character code for the rejection of an order. (See "6.2 Quote Reason Codes")
QuoteRejectSubReason	1	Text	Single character sub-reason code for the rejection of a quote. (See "6.3 Order and Quote Subreason Codes")
QuoteResult	1	Text	Result of the quote request. *Acceptance:* A = New Quote I = IOC Quote Accepted L = Modified; loss of priority R = Modified; retains priority (size reduction) N = No change, matches existing quote

Field	Length	Data Type	Description
			D = New Quote, but may remove liquidity d = Modified, but may remove liquidity V = No change, existing constituent series quote modify attempt after cutoff time (C1 only) *Cancellation:* U = User cancelled (zero size/price requested) *Rejection:* a = Admin O = Rejected, doesn't match a known quote P = Rejected, can't 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 risk root level u = Rejected, other reason + = Risk management EFID Group level c = Rejected, closing only series v = Rejected, attempt to add constituent series quote after cutoff time (C1 only) Additional reasons indicating a reject may be added in the future with no notice.
QuoteSymbol	1	Alphanumeric	Corresponds to *Symbol* (55) in Cboe FIX. Entire Cboe format symbol for a quote update.
QuoteUpdateID	16	Text	ID chosen by the member. Characters in the ASCII range 33-126 are allowed, except for comma, semicolon, 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 strongly recommends that *QuoteUpdateID* be kept unique for a trading day, and CAT reporting requirements mandate that *QuoteUpdateID* is unique for each Quote Update message sent to the Exchange.
RatioQty	4	Binary	Integer ratio of a complex leg with respect to the other legs of a complex instrument.
RequestReceivedTime	8	DateTime	The earliest timestamp, populated with nanosecond precision, recorded by the exchange of the corresponding inbound message being acknowledged. Populated with zero in event of failover to Port B or Port C.

Field	Length	Data Type	Description
Reserved	*	Reserved	Reserved field. Must be null-filled (0x00) when sent by clients to Cboe. Any value may be present when sent by Cboe. Length is defined on a per-instance basis.
RestatementReason	1	Text	The reason for this Quote Restated message. K = Price sliding reprice (BZX only) Q = Liquidity W = Wash
RevisedLegs (C1, C2, and EDGX only)	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 *OpenClose* fields on a `New Complex Order` must be the order returned by the exchange, not the order from the original request. 1 = Legs were not reordered 2 = Legs were reordered
RiskResetResult	1	Text	`<space>` = Ignored; exceeds 1 reset per 100 milliseconds C = Rejected; exceeds Custom Group ID limit D = Rejected; automatic risk resets are disabled E = Rejected; empty *ResetRisk* field F = Rejected; exceeds firm reset limit I = Rejected; incorrect data center M = Rejected; invalid matching unit S = Rejected; exceeds risk root reset limit U = Rejected; invalid *RiskRoot* Y = Success c = Rejected; invalid EFID/*ClearingFirm* y = Rejected; in replay Additional reject values may be added in the future with no notice.
RiskRoot	6	Text	Corresponds to *Symbol* (55) in Cboe FIX. The underlying symbol.
RiskReset	8	Text	Corresponds to *RiskReset* (7692) in Cboe FIX. For use by customers using Cboe's Risk Management tools to reset or release EFID Group, EFID, Risk Root, or Custom Group ID level lockout conditions resulting from risk profile trips or self-imposed lockouts issued via `Cancel Order` or `Purge Orders` messages. **Single Character Values – with counter reset:** S = Risk Root level risk/lockout reset F = EFID level risk/lockout reset C = CustomGroupID lockout reset G = EFID Group level risk/lockout reset **Single Character Values – without counter reset:** T = Risk Root-level self-imposed lockout reset E = EFID self-imposed lockout reset

Field	Length	Data Type	Description
			Values may be combined together to allow for resets of multiple risk trips or self-imposed lockouts in a single message. For example, 'GS', '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 without 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 counters to zero.
			When a resting or inbound order is executed and a Risk Root level risk profile limit is reached, resting orders on the associated Risk Root will be cancelled and inbound orders on the Risk Root 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 Risk Root. All active Risk Root level rules in the risk profile are reset at this time. Individual rules cannot be reset on their own.
			If an EFID-level rule is tripped, this tag can be filled with the value 'F' to reset all EFID-level rules. While this will reset EFID-level rules, it is possible that both EFID and Risk Root level rules are currently tripped. Setting this field to 'F' will not clear Risk Root-level rules and the order may still be rejected. To clear both Risk Root and EFID-level rules, set this field to 'SF' to reset all associated Risk Root and EFID-level lockouts.
			If orders have been locked out at the *CustomGroupID* level, inbound orders for the locked *CustomGroupID* will be rejected until this field is filled with a 'C' value on a `New Order` or `New Complex` order that uses the locked *CustomGroupID*.
			EFID and EFID Group resets are not allowed by default. Customers should contact the Cboe Trade Desk to reset these limits or request a change to the "EFID Risk Reset" port setting using the Logical Port Request form.
			If a risk limit is tripped or manually locked out at the end of the RTH session, the trip/lockout will persist into the Curb session (C1 only).
			For more information, refer to the 'Cboe US Options Risk Management Specification'.
RiskStatusID	16	Text	User defined identifier of a Reset Risk message. Used to identify the
RouteDeliveryMethod	3	Text	Corresponds to *RouteDeliveryMethod* (9350) in Cboe FIX. RTI = Route to improve (default if not specified). Ability to receive price improvement will take priority over speed of execution. RTF = Route to Fill. Speed of execution will take priority over potential price improvement. Only applicable to *RoutStrategy* = ROUT

Field	Length	Data Type	Description
RoutingFirmID	4	Alpha	Corresponds to *RoutingFirmID* (7933) in Cboe FIX.
			Used to optionally convey the routing firm of the order. If supplied, value must be a valid member EFID.
			May be combined with *MassCancelInst* with Firm Filter set to 'F' in a mass cancel request.
RoutingInst	4	Text	Corresponds to *RoutingInst* (9303) in Cboe FIX.
			Simple Instruments
			1st character: B = Book Only (not routable, will remove from local book)
			P = Post Only (not routable) [1] R = Routable S = Super Aggressive – Cross or Lock (order will be removed from the book and routed to any quote that is locking or crossing the order) X = Aggressive – Cross Only (order will be removed from the book and routed to any quote that is crossing the order)
			2nd character **(C1 and EDGX only)**: L = Do Not Expose order via Step-Up Mechanism (SUM) S = Expose order via Step Up Mechanism (SUM)[2]
			Complex Instruments (C1, C2, and EDGX only)
			1st character: B = Book Only (will remove from local book), allowed to interact with both single-leg and other complex orders. D = Complex Book Only, allowed to interact with other complex orders only[3]. P = Post Only (adds liquidity only)
			2nd character: L = Do Not Expose order via Complex Options Auction (COA) S = Expose order via Complex Options Auction (COA)[4]

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[1] Post Only orders on EDGX with DisplayIndicator (Fix Tag 9479) = R will be cancelled back even if they would be immediately executable with price improvement (C1, C2, and EDGX Only).

[2] Routable Orders identified with *RoutingInst* = R, RS, S, SS, X or XS, and *RoutStrategy* = ROUT, and *AuctionId* not supplied, or Non-Routable Orders identified with *RoutingInst* = BS and *ExecInst* not f and *TimeInForce* not 4 and *MinQty* not supplied will participate in the Step-Up Mechanism (SUM) before routing, booking, or cancelling back.

[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 Complex Options Auction (COA) unless otherwise specified.

Field	Length	Data Type	Description
RoutStrategy	6	Text	Corresponds to *RoutStrategy* (9400) in Cboe FIX. ***All exchanges:*** ROUT = Book + Street DIRC[5] = Book + Directed IOC or Directed ISO if ExecInst = f SWPA = (default) Book + Sweep Street
ScratchPad	2	Binary	Field ignored by Cboe (any value is accepted).
SecondaryExecID (C1, C2, and EDGX only)	8	Binary	Indicates whether a fill or partial fill is a complex instrument fill or a single leg fill that comprises a complex execution. • If *SecondaryExecID* (527) is not present, the fill is a single leg fill only. • If *SecondaryExecID* is present and is the same as the *ExecID* (17), the fill represents a complex execution for which associated single leg fills will follow. • Single leg fills associated with a complex execution will contain a *SecondaryExecID* 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.
SendTime	8	DateTime	GMT timestamp when the mass cancel or purge was sent by the Market Maker to the Exchange. This timestamp is required to be at least in millisecond granularity but the CAT NMS Plan requires Industry Members to report the *SendTime* with the finest increment supported by the Industry Member. This is required to be populated whenever a mass cancel or purge message is expected to cancel one or more Market Maker (*capacity*=M) quotes that were submitted using the `Quote Update` message so that the appropriate timestamp can be captured and sent to the CAT. This field must be populated on all Cancel Order and `Purge Order` messages.
SenderLocationID (C1 only)	1	Alphanumeric	Corresponds to *SenderLocationID* (142) in Cboe FIX. F = Floor `<blank>` = (or not present) for electronic execution.

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[5] Field *ExDestination* must be populated with *RoutStrategy* = DIRC. Must be specified when sending non-book only ISO, otherwise the order will be rejected.

Field	Length	Data Type	Description
SessionEligibility (C1 only)	1	Alpha	Corresponds to *SessionEligibility* (22017) in Cboe FIX. R = (default) Order participates in Regular Trading Hours A = Order participates in both Global and Regular Trading Hours. Also allows for participation in Curb Trading Session. B = Order participates in both RTH and Curb Session.
Side	1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1 = Buy 2 = Sell 5 = Sell Short (stock leg only) (C1 and EDGX only) 6 = Sell Short Exempt (stock leg only) (C1 and EDGX only)
SizeModifier	1	Text	Controls the behavior of the quote OrderQty field. Using "R" allows for a member to ensure that in-flight fills or cancels do not result in unwanted additional size exposure. NULL (0x00) = New quote size will be set to value of OrderQty. R = Reduce outstanding size of quote by the OrderQty provided. When using "R", if the resulting size is zero or negative, then the quote is cancelled. Members are expected to track the remaining quantity of each quote as resulting size is not included on the Quote Update Acknowledgement message.
SourceMatchingUnit	1	Binary	Matching unit originating the message
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. Stop/Stop Limit orders will only elect based off of RTH quotes and trades.
StrategyID (C1 only)	1	Alphanumeric	Corresponds to *StrategyID* (22002) in Cboe FIX. Used to declare when a strategy is used. C = Conversion R = Reversal M = Merger S = Short stock interest J = Jelly roll
StrikePrice	8	Binary Price	Corresponds to *StrikePrice* (202) in Cboe FIX. Strike Price for option, 0 – 999,999.99

Field	Length	Data Type	Description
SubLiquidityIndicator	1	Alphanumeric	Additional information about an execution. **Cboe may add additional values without notice. Members must gracefully ignore unknown values.** ASCII NUL (0x00) = No Additional Information S = Execution from order that set the NBBO B = Step Up Mechanism (C1 and EDGX Only) U = Market Turner (C1 Only) b = AIM (C1 and EDGX Only) C = Carried D = Done For Day Q = QCC (C1 and EDGX Only) s = SAM (C1 and EDGX Only)
Symbol	8	Alphanumeric	Corresponds to *Symbol* (55) in Cboe FIX. Entire Cboe format symbol
TargetMatchingUnit	1	Binary	Matching unit to which the message is to be directed.
TargetPartyID (C1 and EDGX only)	4	Alpha	Corresponds to *TargetPartyID* (1462) in Cboe FIX. A valid Parent ID of the Directed Market Maker (EDGX only) or Preferred Market Maker (C1 only). Required for directed orders. On a New Order Cross, this field is only applicable to the Agency order.
Text	60	Text	Printable ASCII text, null (0x00) terminated. See section "6 Reason Codes" for details.
TiedHedge (C1 only)	1	Alpha	Corresponds to *TiedHedge* (22018) in Cboe FIX. Order is a tied hedge. N = (Default) No Y = Yes
TimeInForce	1	Alphanumeric	Corresponds to *TimeInForce* (59) in Cboe FIX. 0 = Day - (Default) Expires at end of market day. 1 = GTC* - Remains in system until executed, cancelled or option expires. 2 = At the Open - Will remain queued and only interact in the 'Cboe Opening Process' (BZX, C2, and EDGX only) or the Cboe Opening Auction (C1 only). 3 = IOC - Portion not filled immediately is cancelled. Market orders are implicitly IOC for non-complex orders. 4 = FOK - An IOC where the entire size must be filled, else the order will be cancelled back. Not compatible with Step-Up Mechanism (SUM). 6 = GTD* - Expires at specified *ExpireTime* for a specified day. 7 = At the Close - Orders held for execution until 180 seconds before series is scheduled to close. *Bulk Quoting Ports will only support TimeInForce values of Day or GTD with a same day expiration on C1, C2, and EDGX.*
TradeDate	4	Date	Corresponds to *TradeDate* (75) in Cboe FIX.

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Field	Length	Data Type	Description
TradeThroughAlertType (C1 only)	1	Alphanumeric	Corresponds to *TradeThroughAlertType* (21098) in Cboe FIX. Indication of a type of trade through. 0 = No trade through 1 = NBBO 2 = BBO (local best bid or offer) 3 = SBBO (market quote of complex derived by legs) 4 = Book trade through (trade through customer size) 5 = Due Dilligence trade through
TransactionTime	8	DateTime	The exchange timestamp of the transaction. Reject messages will have a *TransactionTime* of the order gateway.
WorkingPrice	8	Binary Price	Corresponds to *WorkingPrice* (9690) in Cboe FIX. Only present if an order is fully or partially booked. If price had to be adjusted to a less aggressive value for some reason, the adjusted price will be reported here, otherwise equals price.

6 Reason Codes

6.1 Order Reason Codes

The following is a list of all order related reason codes used by Cboe. These reason codes are used in a variety of contexts (order cancellations and order rejections). 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.

A = Admin

D = Duplicate identifier (e.g., ClOrdID)

F = Could not reflect to consolidated quote (OPRA)

H = Halted

I = Incorrect data center

J = Too late to cancel

K = Order rate threshold exceeded

L = Order would lock or Cross NBBO

M = Order size exceeded

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

R = Routing Unavailable

T = Fill would trade through the NBBO

U = User requested

V = Would wash

W = Add liquidity only order would remove

X = Order expired

Y = Symbol not supported

Z = Unforeseen reason

c = Only Close transactions accepted

f = Risk management EFID or Custom Group ID level

m = Market access risk limit exceeded

o = Max open orders count exceeded

r = Reserve reload

s = Risk management risk root level

w = Would remove on unslide

x = Crossed market

y = Order received by Cboe during replay

z = Session End

+ = Risk management EFID Group level

6.2   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 EFID (*ClearingFirm*)

D = Invalid *WashId*

E = Invalid *SessionEligibility*

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 = Risk root does not match across quotes

S = Symbol not found

U = Message unable to be sent to Matching Engine

W = Invalid *WashPreventType*

a = Admin

c = Invalid *Capacity*

d = Close only

f = Risk management EFID or Custom Group ID level

m = Invalid *WashMethod*

n = Exceedes max notional value per order

o = Invalid Open/Close

p = Risk management risk root level

r = Invalid Remove

s = Invalid *Side*

t = Invalid *SendTime*

u = Symbol range unreachable

x = Exceeds max size per order

y = Quote received by Cboe during replay

6.3   Order and Quote Subreason Codes

The following is a list of subreason codes used to indicate additional detail for order rejections or cancellations. The 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 or cancel reason. Cboe may add additional values without notice. Users must gracefully ignore unknown values.

A = Purge/mass cancel EFID level by user

B = Purge/mass cancel Symbol level by user

C = Purge/mass cancel Custom Group ID level by user

E = EFID level lockout by Cboe Trade Desk admin

J = Firm disconnect

K = ME disconnect

L = Unregistered MM Account

S = Minimum size requirement not met

T = Cboe Trade Desk admin

f = Risk management EFID level by rule

s = Risk management Symbol level by rule

+ = Risk management EFID Group level by rule

7   List of Message Types

7.1   Member to Cboe

Message Name	Level	Type	Sequenced*
ClientHeartbeat	Session	0x0003	No
LoginRequest	Session	0x0001	No
LogoutRequest	Session	0x0002	No
CancelOrderUSOptionsV1	Application	0x07DA	Yes
MassCancelOrderUSOptionsV1	Application	0x07DF	Yes
ModifyOrderUSOptionsV1	Application	0x07DB	Yes
NewComplexInstrumentUSOptionsV1	Application	0x07D5	Yes
NewComplexOrderShortUSOptionsV1	Application	0x07D7	Yes
NewComplexOrderUSOptionsV1	Application	0x07D6	Yes
NewOrderCrossMultilegUSOptionsV1	Application	0x07D8	Yes
NewOrderCrossShortUSOptionsV1	Application	0x07D4	Yes
NewOrderCrossUSOptionsV1	Application	0x07D3	Yes
NewOrderUSOptionsV1	Application	0x07D1	Yes
NewOrderShortUSOptionsV1	Application	0x07D2	Yes
PurgeOrdersUSOptionsV1	Application	0x07E0	Yes
QuoteUpdateShortUSOptionsV1	Application	0x07DD	Yes
QuoteUpdateUSOptionsV1	Application	0x07DC	Yes
ResetRiskUSOptionsV1	Application	0x07DE	Yes

*For sequenced messages from Member to Cboe, a sequence number of "0" will always be accepted and is treated as if it were the next expected sequence number.

7.2   Cboe to Member

Message Name	Level	Type	Sequenced
LoginResponse	Session	0x01F5	No
LogoutResponse	Session	0x01F7	No
ReplayComplete	Session	0x01F6	No
ServerHeartbeat	Session	0x01F8	No
CancelRejectedUSOptionsV1	Application	0x09D2	No
CarriedRestatementUSOptionsV1	Application	0x09CE	Yes
CrossOrderAcknowledgementUSOptionsV1	Application	0x09C6	Yes
CrossOrderCancelledUSOptionsV1	Application	0x09D1	Yes
CrossOrderRejectedUSOptionsV1	Application	0x09C8	No
DoneForDayUSOptionsV1	Application	0x09CF	Yes
MassCancelAcknowledgementUSOptionsV1	Application	0x09DB	No
MassCancelRejectedUSOptionsV1	Application	0x09DC	No
ModifyRejectedUSOptionsV1	Application	0x09CC	No
NewComplexInstrumentAcceptedUSOptionsV1	Application	0x09C9	Yes
NewComplexInstrumentRejectedUSOptionsV1	Application	0x09CA	No
OrderAcknowledgementUSOptionsV1	Application	0x09C5	Yes
OrderCancelledUSOptionsV1	Application	0x09D0	Yes
OrderExecutionUSOptionsV1	Application	0x09D3	Yes
OrderModifiedUSOptionsV1	Application	0x09CB	Yes
OrderRejectedUSOptionsV1	Application	0x09C7	No

OrderRestatedUSOptionsV1	Application	0x09CD	Yes
PurgeAcknowledgementUSOptionsV1	Application	0x09DD	No
PurgeNotificationUSOptionsV1	Application	0x09DF	No
PurgeRejectedUSOptionsV1	Application	0x09DE	No
QuoteCancelledUSOptionsV1	Application	0x09D7	No
QuoteExecutionUSOptionsV1	Application	0x09D8	Yes
QuoteRestatedUSOptionsV1	Application	0x09D9	Yes
QuoteUpdateAcknowledgementUSOptionsV1	Application	0x09D5	No
QuoteUpdateRejectedUSOptionsV1	Application	0x09D6	No
ResetRiskAcknowledgementUSOptionsV1	Application	0x09DA	No
TradeCancelCorrectUSOptionsV1	Application	0x09D4	Yes

8 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. Port Attribute changes made intra-day by the Cboe Trade Desk will not affect existing quotes or orders. In order for the desired intra-day port attribute to be applied to existing quotes or orders, you must first cancel or send a quote with zero price and size and then re-enter the order or quote.

Attribute	Default	Description
Allow Directed ISO*	Yes	Allow or disallow ISO orders directed to other market centers.
Allow ISO*	Yes	Allow or disallow ISO orders.
Allow MTP Decrement Override*^	No	Overrides the exception that requires both the resting and inbound order to be marked as "Decrement".
Allow Sponsored Member MTP Control*^	No	Allow Sponsored Member to override port default for match trade prevention by using *PreventMatch* on the order level.
Allow Test Symbols Only	Disabled	Allow or disallow orders in non-test symbols
Allowed Clearing Executing Firm ID(s)*	All EFIDS	Executing Firm ID(s) allowed for trading on the port.
Cancel on Disconnect	All	Cancels open orders upon order handler session disconnect; both graceful and ungraceful. If Cancel On Disconnect is set, open orders in Symbols not in Closed state at the time of the disconnect are cancelled. All = Cancel Day and GTC/GTD orders Day = Cancel only Day orders None = Disabled BOE Quoting ports require Cancel on Disconnect set to All or Day. Default will be used if not specified.
Cancel on ME Disconnect	All	Controls whether orders are cancelled or preserved on a Matching Unit failover and provides for the ability to preserve GTC/GTD orders. For BZX, C2, and EDGX, in any event, if a failover takes longer than 5 minutes, all orders are cancelled (including GTC/GTD Orders). For C1 if a failover takes longer than 15 minutes, all orders are cancelled (including GTC/GTD Orders). All = Cancel Day and GTC/GTD orders Day = Cancel only Day orders None = Disabled BOE Bulk Quoting ports require Cancel on ME Disconnect set to All or Day. Default will be used if not specified.

Attribute	Default	Description
Cancel on Regulatory Halt	All (BZX and EDGX Only) None (C1 and C2 Only)	Cancels open orders upon receipt of a Regulatory Halt. All = Cancel Day and GTC/GTD orders Day = Cancel only Day orders None = Disabled
Cancel on Reject[+]	No	Cancels an order upon a modify reject.
Cancel Open Orders on DROP Port Disconnect*	None	Only applicable if "Reject Orders on DROP Port Disconnect" has been enabled. When the last Standard FIX DROP port associated with an order handler session has disconnected, open orders, associated with the session are cancelled. All = Cancel Day and GTC/GTD orders Day = Cancel only Day orders None = Disabled Note this parameter applies to Standard FIX DROP ports and not Order-By-Order DROP ports (ODROP).
Crossed Market Cancel / Reject[$]	No	Reject new orders when the NBBO in the security is crossed. Routable orders will have any remaining quantity cancelled back when the order returns to the book. Order modifications causing a loss in priority will result in a cancel of the original order if the NBBO is crossed upon receipt of the modify request. Quotes are always accepted, even in a crossed market.
Default *Account*	None	Default *Account* to be used if none is sent on inbound messages. Allows 16 characters or less (ASCII 33-126) but a max of 10 characters will be passed through to the OCC Customer ID Field.
Default Attributed Quote*[+]	X	Default value for *AttributedQuote*. May override at order level. C[†] = Attribute *ClientIDAttr* only (C1 only) N = Don't Attribute (may override at order level) Y = Attribute EFID only Z = Attribute EFID and *ClientIDAttr* X* = (Default) Never Attribute (may not 108efinitionden at order level) *On EDGX and BZX, this setting may only be changed after executing Attribution Addendum to Exchange User Agreement.
Default *ClearingOptionalData*	None	Default *ClearingOptionalData* to be used if none is sent on inbound messages. Allows 16 characters or less (ASCII 33-126).
Default *ClientIDAttr*	None	Default *ClientIDAttr* to be used if none is specified on inbound messages.
Default *EquityExDestination*	None	Default *EquityExDestination* to be used if it is blank on inbound messages.
Default *EquityPartyID* *(C1 and EDGX only)*	None	Default *EquityPartyID* to be used if none is specified on inbound messages.

Attribute	Default	Description
Default *ExecutingFirmID*	None	Default Executing Firm ID to use if none is sent on a `New Order` or `New Complex Order`.
Default *FloorDestination* (C1 only)	None	Specifies a default PAR workstation (ex. W001) to route to on the floor (or 'PARO' to route to the Floor PAR Official of the underlying symbol) if not specified on inbound messages. 4 characters or less (ASCII 33-126).
Default *FloorRoutingInst** (C1 only)	E	D = Direct. Do not attempt to process electronically E = Electronic only X = Route to floor if unable to process electronically. *When *FloorRoutingInst* = 'D' or 'X', *RoutingInst* (9303) must be set to 'B' or 'R' for simple orders; for complex instruments *RoutingInst* (9303) must be set to 'B'.
Default MTP Value*^+	None	Specifies default value for *PreventMatch*.
Default Price Sliding	BZX = S EDGX/C2 = P	Default price sliding behavior. See *DisplayIndicator* for details.
Default Routing Instruction+	9303=RS 9350=RTI 9400=SWPA	Specifies a default value for routing. Fields can be overridden at the order level. The defaults are *RoutingInst* = RS, *RouteDeliveryMethod* = RTI, and *RoutStrategy* = SWPA.
Duplicative Order Protection Action$	1	Action taken when Duplicative Order Protection criteria is met: 1 = Not enabled. 2 = Reject any offending orders. 3 = Disable port for *ClearingFirm*. Must call Cboe Trade Desk to reenable.
Duplicative Order Protection Order Count Threshold$	None	Number of <u>consecutive</u> orders with the same *ClearingFirm, Price, OrdQty*, and *Symbol* that must be seen to initiate Duplicative Order Protection Action.
EFID Filter for Purge Ports	None	Specify up to 10 EFIDs per purge port for which purges will be permitted. If a purge request specifies an EFID not included in the list of configured EFIDs, the purge request will be rejected. If a purge port is configured with multiple EFIDs and a purge request is sent without any EFIDs specified, the purge will be applied only to the list of configured EFIDs.
EFID Risk Reset	Disabled	Configures how risk may be reset after a risk trip. Disabled = (Default). Will require manually resetting all EFID Group and EFID-Level Risk trips by contacting the Trade Desk. Enabled = Will allow EFID Group and EFID-level Risk resets using *RiskReset* of 'F' or 'G'.
Enable Market Maker Floor Trade Notifications (C1 only)	No	Enables Market Maker Floor Trade Notifications for specific Market Maker acronyms on a port.

Attribute	Default	Description
Fat Finger Protection*$	BZX/EDGX = None C2 = See Web Portal Port Controls Specification for defaults	Orders entered through the NBBO by a specified percentage or dollar based limit price tolerance will be rejected. Limits may be different for different price ranges and price ranges may vary across markets. Please see the 'Web Portal Port Controls Specification' for complete details.
Forced Open Cancel Instruction	DoNotCancel	Specifies order handling during a forced opening. DoNotCancel = Preserve Orders (Default) CancelMarket = Cancel Open Market Orders Only (preserve Limit Orders) CancelAll = Cancel All Open Orders
Market Maker Floor Trade Notification Symbology *(C1 only)*	Cboe	Specifies the symbology used on Market Maker Floor Trade Notifications. Cboe = Six character Cboe Symbol ID OSI = OSI Symbology (*PutOrCall*, *StrikePrice*, and *MaturityDate* will be returned)
Market Maker Reject if Cancel on Disconnect disabled	No	Rejection of Market Maker or Away-Market Maker orders if Cancel on Disconnect is not enabled. Non-Market Maker capacity order swill be unaffected with this confuration.
Maximum Order Dollar Value*	Unlimited	Maximum dollar value per order.
Maximum Order Size*	25,000	Maximum order quantity.
Multi-Segment Holiday Day Order Handling (C1 only)	None	Controls whether Day (*TimeInForce* (59) = 0) orders are cancelled or preserved across holiday trading segments comprising a single business date. None = All Day orders on the book are carried between trading segments Cancel = All Day orders on the book at the conclusion of the current trading segment are cancelled back.
Port Order Rate Threshold	5,000 msgs/s 1 msg/sec for test products.	The maximum allowed message rate on the session. When the first non-session level message is received, a one second window begins, during which no more than 4,999 additional non-session level messages are allowed. If the rate is exceeded, all new orders in the time window are rejected, modifies are treated as cancels, and cancels are processed. Maximum value is 5,000 msgs/sec. For Bulk Quoting ports, the default threshold is unlimited. Note: Order handler burst rates towards each matching unit may be limited as described in 'Section 1.6.1 – Architecture'.

Attribute	Default	Description
Reject Orders on DROP Port Disconnect*	No	If all Standard FIX DROP ports associated with an order entry session experience disconnection, new orders will be rejected until at least one Standard FIX DROP port session is reestablished. Note this parameter does not apply to Order-By-Order drop ports (ODROP).
Reject Orders on DROP Port Timeout (seconds)*	30 seconds	Only applicable if "Reject Orders on DROP Port Disconnect" is enabled. When the last Standard FIX DROP port associated with an order entry session has disconnected, begin rejecting orders on the order entry session if a Standard FIX DROP session has not been reestablished within this timeout. Minimum value allowed is 0 seconds.
Send Trade Breaks^	No	Enables sending of `Trade Cancel or Correct` messages.
Symbol Order Rate Threshold	5,000 msgs/s	Functions the same as the Port Order Rate Threshold, but is calculated at the symbol level. It is capped by the Port Order Rate Threshold. Maximum value is 5,000 msgs/sec. For Bulk Quoting ports, the default threshold is unlimited. Note: Order handler burst rates towards each matching unit may be limited as described in 'Section 1.6.1 – Architecture'.

*Sponsored Members 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.

$Not supported for quotes.

9 Support

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

10 Appendix A: Example Application Messages

10.1   Member to Cboe

10.1.1 NewOrderUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	cb 00	203
MessageType	d1 07	NewOrderUSOptionsV1 (2001, 0x07d1)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b0 01 00 00	432
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
Side	32	Sell (50, 0x32, '2')
OrderQty	dc 05 00 00	1500
ClearingFirm	00 00 00 00	
ClearingAccount	00 00 00 00	
Price	58 86 03 00 00 00 00 00	23.10
ExecInst	00	NotSet (0, 0x00)
OrdType	32	Limit (50, 0x32, '2')
TimeInForce	36	GTD (54, 0x36, '6')
MinQty	00 00 00 00	0
MaxFloor	00 00 00 00	0
Symbol	34 33 32 31 00 00 00 00	4321
Capacity	41	Agency (65, 0x41, 'A')
RoutingInst	00 00 00 00	
Account	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
DisplayIndicator	00	NotSet (0, 0x00)
PreventMatch	00 00 00	
ExpireTime	28 18 14 cf 13 84 32 17	2022-12-20 13:40:32.321321
MaturityDate	00 00 00 00	0000-00-00
StrikePrice	00 00 00 00 00 00 00 00	0.00
PutOrCall	00	NotSet (0, 0x00)
OpenClose	00	NotSet (0, 0x00)
CMTANumber	00 00 00 00	0
TargetPartyID	00 00 00 00	
SessionEligibility	00	NotSet (0, 0x00)
AttributedQuote	00	NotSet (0, 0x00)
DisplayRange	00 00 00 00	0
StopPx	00 00 00 00 00 00 00 00	0.00
RoutStrategy	00 00 00 00 00 00	
RouteDeliveryMethod	00 00 00	
ExDestination	00	
AuctionID	00 00 00 00 00 00 00 00	000000000000
RoutingFirmID	00 00 00 00	
CustomGroupID	12 00	18
ClearingOptionalData	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
ClientIDAttr	00 00 00 00	
FrequentTraderID	00 00 00 00 00 00	
Compression	00	NotSet (0, 0x00)

Field	Hexadecimal	Description
FloorDestination	00 00 00 00	
FloorRoutingInst	00	NotSet (0, 0x00)
OrderOrigin	00 00 00	
OrderRouterSubsidy	00	NotSet (0, 0x00)
PriceType	00	NotSet (0, 0x00)
Held	00	NotSet (0, 0x00)
Scratchpad	00 00	0

10.1.2 NewOrderShortUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	7f 00	127
MessageType	d2 07	NewOrderShortUSOptionsV1 (2002, 0x07d2)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b1 01 00 00	433
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
Side	32	Sell (50, 0x32, '2')
OrderQty	dc 05 00 00	1500
ClearingFirm	00 00 00 00	
ClearingAccount	00 00 00 00	
Price	58 86 03 00 00 00 00 00	23.10
ExecInst	00	NotSet (0, 0x00)
OrdType	32	Limit (50, 0x32, '2')
TimeInForce	36	GTD (54, 0x36, '6')
MinQty	00 00 00 00	0
MaxFloor	00 00 00 00	0
Symbol	34 33 32 31 00 00 00 00	4321
Capacity	41	Agency (65, 0x41, 'A')
RoutingInst	00 00 00 00	
Account	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
DisplayIndicator	00	NotSet (0, 0x00)
PreventMatch	00 00 00	
OpenClose	00	NotSet (0, 0x00)
CMTANumber	00 00 00 00	0
SessionEligibility	00	NotSet (0, 0x00)
AttributedQuote	00	NotSet (0, 0x00)
RoutStrategy	00 00 00 00 00 00	
ExDestination	00	
AuctionID	00 00 00 00 00 00 00 00	000000000000
CustomGroupID	12 00	18
FrequentTraderID	00 00 00 00 00 00	
Scratchpad	00 00	0

10.1.3 NewOrderCrossUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	18 01	280
MessageType	d3 07	NewOrderCrossUSOptionsV1 (2003, 0x07d3)
MatchingUnit	00	0

Field	Hexadecimal	Description
Reserved	00	0
SequenceNumber	b2 01 00 00	434
CrossID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
	00 00 00 00	
CrossType	00	NotSet (0, 0x00)
CrossPrioritization	00	NotSet (0, 0x00)
Price	58 86 03 00 00 00 00 00	23.10
OrderQty	dc 05 00 00	1500
Symbol	34 33 32 31 00 00 00 00	4321
MaturityDate	00 00 00 00	0000-00-00
StrikePrice	00 00 00 00 00 00 00 00	0.00
PutOrCall	00	NotSet (0, 0x00)
ExecInst	00	NotSet (0, 0x00)
AttributedQuote	00	NotSet (0, 0x00)
TargetPartyID	00 00 00 00	
PreventMatch	00 00 00	
AutoMatch	00	NotSet (0, 0x00)
AutoMatchPrice	00 00 00 00 00 00 00 00	0.00
LastPriority	00	NotSet (0, 0x00)
RoutingFirmID	00 00 00 00	
ClientIDAttr	00 00 00 00	
EquityTradePrice	00 00 00 00 00 00 00 00	0.00
EquityTradeSize	00 00 00 00	0
EquityTradeVenue	00	NotSet (0, 0x00)
EquityTransactTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
EquityBuyClearingFirm	00 00 00 00	
EquitySellClearingFirm	00 00 00 00	
Compression	00	NotSet (0, 0x00)
OrderRouterSubsidy	00	NotSet (0, 0x00)
Scratchpad	00 00	0
AllocCnt	02	2
allocs.Side[1/2]	32	Sell (50, 0x32, '2')
allocs.AllocQty[1/2]	00 00 00 00	0
allocs.ClOrdID[1/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
allocs.Capacity[1/2]	41	Agency (65, 0x41, 'A')
allocs.OpenClose[1/2]	00	NotSet (0, 0x00)
allocs.GiveUpFirmID[1/2]	00 00 00 00	
allocs.Account[1/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
allocs.CMTANumber[1/2]	00 00 00 00	0
allocs.ClearingAccount[1/2]	00 00 00 00	
allocs.ClearingOptionalData[1/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
allocs.FrequentTraderID[1/2]	00 00 00 00 00 00	
allocs.Side[2/2]	32	Sell (50, 0x32, '2')
allocs.AllocQty[2/2]	00 00 00 00	0
allocs.ClOrdID[2/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
allocs.Capacity[2/2]	41	Agency (65, 0x41, 'A')
allocs.OpenClose[2/2]	00	NotSet (0, 0x00)
allocs.GiveUpFirmID[2/2]	00 00 00 00	

Field	Hexadecimal	Description
allocs.Account[2/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
allocs.CMTANumber[2/2]	00 00 00 00	0
allocs.ClearingAccount[2/2]	00 00 00 00	
allocs.ClearingOptionalData[2/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
allocs.FrequentTraderID[2/2]	00 00 00 00 00 00	

10.1.4 NewComplexInstrumentUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	5b 00	91
MessageType	d5 07	NewComplexInstrumentUSOptionsV1 (2005, 0x07d5)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b3 01 00 00	435
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
Scratchpad	00 00	0
LegCnt	02	2
legs.Symbol[1/2]	34 33 32 31 00 00 00 00	4321
legs.MaturityDate[1/2]	00 00 00 00	0000-00-00
legs.StrikePrice[1/2]	00 00 00 00 00 00 00 00	0.00
legs.CFICode[1/2]	00 00	
legs.RatioQty[1/2]	00 00 00 00	0
legs.Side[1/2]	32	Sell (50, 0x32, '2')
legs.Symbol[2/2]	34 33 32 31 00 00 00 00	4321
legs.MaturityDate[2/2]	00 00 00 00	0000-00-00
legs.StrikePrice[2/2]	00 00 00 00 00 00 00 00	0.00
legs.CFICode[2/2]	00 00	
legs.RatioQty[2/2]	00 00 00 00	0
legs.Side[2/2]	32	Sell (50, 0x32, '2')

10.1.5 NewComplexOrderUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	ba 00	186
MessageType	d6 07	NewComplexOrderUSOptionsV1 (2006, 0x07d6)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b4 01 00 00	436
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
Side	32	Sell (50, 0x32, '2')
OrderQty	dc 05 00 00	1500
ClearingFirm	00 00 00 00	
ClearingAccount	00 00 00 00	
Price	58 86 03 00 00 00 00 00	23.10
ExecInst	00	NotSet (0, 0x00)
OrdType	32	Limit (50, 0x32, '2')

Field	Hexadecimal	Description
TimeInForce	36	GTD (54, 0x36, '6')
Symbol	34 33 32 31 00 00 00 00	4321
Capacity	41	Agency (65, 0x41, 'A')
RoutingInst	00 00 00 00	
Account	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
PreventMatch	00 00 00	
ExpireTime	28 18 14 cf 13 84 32 17	2022-12-20 13:40:32.321321
CMTANumber	00 00 00 00	0
TargetPartyID	00 00 00 00	
AttributedQuote	00	NotSet (0, 0x00)
AuctionID	00 00 00 00 00 00 00 00	000000000000
RoutingFirmID	00 00 00 00	
DrillThroughProtection	00 00 00 00 00 00 00 00	0.00
CustomGroupID	12 00	18
EquityPartyId	00 00 00 00	
ClearingOptionalData	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
ClientIDAttr	00 00 00 00	
FrequentTraderID	00 00 00 00 00 00	
SessionEligibility	00	NotSet (0, 0x00)
MaxFloor	00 00 00 00	0
DisplayRange	00 00 00 00	0
ComboOrder	00	NotSet (0, 0x00)
Compression	00	NotSet (0, 0x00)
EquityExDestination	00	NotSet (0, 0x00)
EquityLegShortSell	00	NotSet (0, 0x00)
FloorDestination	00 00 00 00	
FloorRoutingInst	00	NotSet (0, 0x00)
OrderOrigin	00 00 00	
OrderRouterSubsidy	00	NotSet (0, 0x00)
PriceType	00	NotSet (0, 0x00)
StrategyID	00	NotSet (0, 0x00)
TiedHedge	00	NotSet (0, 0x00)
Held	00	NotSet (0, 0x00)
Scratchpad	00 00	0
LegCnt	02	2
legs.LegPositionEffect[1/2]	00	NotSet (0, 0x00)
legs.LegPositionEffect[2/2]	00	NotSet (0, 0x00)

10.1.6 NewComplexOrderShortUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	85 00	133
MessageType	d7 07	NewComplexOrderShortUSOptionsV1 (2007, 0x07d7)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b5 01 00 00	437
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
Side	32	Sell (50, 0x32, '2')
OrderQty	dc 05 00 00	1500
ClearingFirm	00 00 00 00	

Field	Hexadecimal	Description
ClearingAccount	00 00 00 00	
Price	58 86 03 00 00 00 00 00	23.10
ExecInst	00	NotSet (0, 0x00)
OrdType	32	Limit (50, 0x32, '2')
TimeInForce	36	GTD (54, 0x36, '6')
Symbol	34 33 32 31 00 00 00 00	4321
Capacity	41	Agency (65, 0x41, 'A')
RoutingInst	00 00 00 00	
Account	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	
PreventMatch	00 00 00	
CMTANumber	00 00 00 00	0
TargetPartyID	00 00 00 00	
AuctionID	00 00 00 00 00 00 00 00	000000000000
RoutingFirmID	00 00 00 00	
CustomGroupID	12 00	18
EquityPartyId	00 00 00 00	
FrequentTraderID	00 00 00 00 00 00	
SessionEligibility	00	NotSet (0, 0x00)
MaxFloor	00 00 00 00	0
FloorDestination	00 00 00 00	
FloorRoutingInst	00	NotSet (0, 0x00)
Scratchpad	00 00	0
LegCnt	02	2
legs.LegPositionEffect[1/2]	00	NotSet (0, 0x00)
legs.LegPositionEffect[2/2]	00	NotSet (0, 0x00)

10.1.7 NewOrderCrossMultilegUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	23 01	291
MessageType	d8 07	NewOrderCrossMultilegUSOptionsV1 (2008, 0x07d8)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b6 01 00 00	438
CrossID	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	
CrossType	00	NotSet (0, 0x00)
CrossPrioritization	00	NotSet (0, 0x00)
Price	58 86 03 00 00 00 00 00	23.10
OrderQty	dc 05 00 00	1500
Symbol	34 33 32 31 00 00 00 00	4321
ExecInst	00	NotSet (0, 0x00)
AttributedQuote	00	NotSet (0, 0x00)
TargetPartyID	00 00 00 00	
PreventMatch	00 00 00	
AutoMatch	00	NotSet (0, 0x00)
AutoMatchPrice	00 00 00 00 00 00 00 00	0.00
LastPriority	00	NotSet (0, 0x00)
RoutingFirmID	00 00 00 00	
ClientIDAttr	00 00 00 00	
EquityTradePrice	00 00 00 00 00 00 00 00	0.00
EquityTradeSize	00 00 00 00	0

Field	Hexadecimal	Description
EquityTradeVenue	00	NotSet (0, 0x00)
EquityTransactTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
EquityBuyClearingFirm	00 00 00 00	
EquitySellClearingFirm	00 00 00 00	
DrillThroughProtection	00 00 00 00 00 00 00 00	0.00
EquityExDestination	00	NotSet (0, 0x00)
Compression	00	NotSet (0, 0x00)
OrderRouterSubsidy	00	NotSet (0, 0x00)
CrossInitiator	00 00 00 00	
Scratchpad	00 00	0
AllocCnt	02	2
AllocLegCnt	02	2
alloc.Side[1/2]	32	Sell (50, 0x32, '2')
alloc.AllocQty[1/2]	00 00 00 00	0
alloc.ClOrdID[1/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
alloc.Capacity[1/2]	41	Agency (65, 0x41, 'A')
alloc.GiveUpFirmID[1/2]	00 00 00 00	
alloc.Account[1/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
alloc.CMTANumber[1/2]	00 00 00 00	0
alloc.ClearingAccount[1/2]	00 00 00 00	
alloc.ClearingOptionalData[1/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
alloc.EquityPartyId[1/2]	00 00 00 00	
alloc.EquityLegShortSell[1/2]	00	NotSet (0, 0x00)
alloc.FrequentTraderID[1/2]	00 00 00 00 00 00	
alloc.Side[2/2]	32	Sell (50, 0x32, '2')
alloc.AllocQty[2/2]	00 00 00 00	0
alloc.ClOrdID[2/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
alloc.Capacity[2/2]	41	Agency (65, 0x41, 'A')
alloc.GiveUpFirmID[2/2]	00 00 00 00	
alloc.Account[2/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
alloc.CMTANumber[2/2]	00 00 00 00	0
alloc.ClearingAccount[2/2]	00 00 00 00	
alloc.ClearingOptionalData[2/2]	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
alloc.EquityPartyId[2/2]	00 00 00 00	
alloc.EquityLegShortSell[2/2]	00	NotSet (0, 0x00)
alloc.FrequentTraderID[2/2]	00 00 00 00 00 00	
allocLegs.LegPositionEffect[1/2]	00	NotSet (0, 0x00)
allocLegs.LegPositionEffect[2/2]	00	NotSet (0, 0x00)

10.1.8 CancelOrderUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	28 00	40
MessageType	da 07	CancelOrderUSOptionsV1 (2010, 0x07da)
MatchingUnit	00	0
Reserved	00	0

Field	Hexadecimal	Description
SequenceNumber	b7 01 00 00	439
OrigClOrdID	5a 5a 2d 34 33 32 32 20	ZZ-4322 aaaa
	61 61 61 61 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
Scratchpad	00 00	0

10.1.9 ModifyOrderUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	7f 00	127
MessageType	db 07	ModifyOrderUSOptionsV1 (2011, 0x07db)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b8 01 00 00	440
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
OrigClOrdID	5a 5a 2d 34 33 32 32 20	ZZ-4322 aaaa
	61 61 61 61 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
OrderQty	dc 05 00 00	1500
Price	58 86 03 00 00 00 00 00	23.10
OrdType	32	Limit (50, 0x32, '2')
MaxFloor	00 00 00 00	0
StopPx	00 00 00 00 00 00 00 00	0.00
CancelOrigOnReject	59	Yes (89, 0x59, 'Y')
Reserved	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	
Scratchpad	00 00	0

10.1.10   QuoteUpdateUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	72 00	114
MessageType	dc 07	QuoteUpdateUSOptionsV1 (2012, 0x07dc)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	b9 01 00 00	441
QuoteUpdateID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
ClearingFirm	00 00 00 00	
ClearingAccount	00 00 00 00	
CMTANumber	00 00 00 00	0
Account	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
CustomGroupID	12 00	18

Field	Hexadecimal	Description
SendTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
PostingInstruction	50	P
SessionEligibility	00	NotSet (0, 0x00)
SizeModifier	00	NotSet (0, 0x00)
Scratchpad	00 00	0
QuoteCnt	02	2
quotes.QuoteSymbol[1/2]	00 00 00 00 00 00	
quotes.Side[1/2]	32	Sell (50, 0x32, '2')
quotes.OpenClose[1/2]	00	NotSet (0, 0x00)
quotes.Price[1/2]	58 86 03 00 00 00 00 00	23.10
quotes.OrderQty[1/2]	dc 05 00 00	1500
quotes.Scratchpad[1/2]	00 00	0
quotes.QuoteSymbol[2/2]	00 00 00 00 00 00	
quotes.Side[2/2]	32	Sell (50, 0x32, '2')
quotes.OpenClose[2/2]	00	NotSet (0, 0x00)
quotes.Price[2/2]	58 86 03 00 00 00 00 00	23.10
quotes.OrderQty[2/2]	dc 05 00 00	1500
quotes.Scratchpad[2/2]	00 00	0

10.1.11 QuoteUpdateShortUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	52 00	82
MessageType	dd 07	QuoteUpdateShortUSOptionsV1 (2013, 0x07dd)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	ba 01 00 00	442
QuoteUpdateID	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	
ClearingFirm	00 00 00 00	
ClearingAccount	00 00 00 00	
CustomGroupID	12 00	18
SendTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
PostingInstruction	50	P
SessionEligibility	00	NotSet (0, 0x00)
SizeModifier	00	NotSet (0, 0x00)
Scratchpad	00 00	0
QuoteCnt	02	2
quotes.QuoteSymbol[1/2]	00 00 00 00 00 00	
quotes.Side[1/2]	32	Sell (50, 0x32, '2')
quotes.OpenClose[1/2]	00	NotSet (0, 0x00)
quotes.Price[1/2]	00 00 00 00	0.00
quotes.OrderQty[1/2]	00 00	0
quotes.Scratchpad[1/2]	00 00	0
quotes.QuoteSymbol[2/2]	00 00 00 00 00 00	
quotes.Side[2/2]	32	Sell (50, 0x32, '2')
quotes.OpenClose[2/2]	00	NotSet (0, 0x00)
quotes.Price[2/2]	00 00 00 00	0.00
quotes.OrderQty[2/2]	00 00	0
quotes.Scratchpad[2/2]	00 00	0

10.1.12   ResetRiskUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	31 00	49
MessageType	de 07	ResetRiskUSOptionsV1 (2014, 0x07de)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	bb 01 00 00	443
RiskStatusID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
RiskReset	00 00 00 00 00 00 00 00	
ClearingFirm	00 00 00 00	
RiskRoot	00 00 00 00 00 00	
TargetMatchingUnit	00	0
CustomGroupID	12 00	18
Scratchpad	00 00	0

10.1.13   MassCancelOrderUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	3e 00	62
MessageType	df 07	MassCancelOrderUSOptionsV1 (2015, 0x07df)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	bc 01 00 00	444
MassCancelID	6d 61 73 73 63 78 6c 2d	masscxl-5544
	35 35 34 34 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
RiskRoot	00 00 00 00 00 00	
MassCancelInst	00 00 00 00 00 00 00 00	
SendTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
Scratchpad	00 00	0

10.1.14   PurgeOrdersUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	43 00	67
MessageType	e0 07	PurgeOrdersUSOptionsV1 (2016, 0x07e0)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	bd 01 00 00	445
MassCancelID	6d 61 73 73 63 78 6c 2d	masscxl-5544
	35 35 34 34 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
RiskRoot	00 00 00 00 00 00	
MassCancelInst	00 00 00 00 00 00 00 00	
SendTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
Scratchpad	00 00	0
CustomGroupIDCnt	02	2

Field	Hexadecimal	Description
customGroups.CustomGroupID[1/2]	12 00	18
customGroups.CustomGroupID[2/2]	1e 01	286

10.2   Cboe to Member

10.2.1 OrderAcknowledgementUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	67 00	103
MessageType	c5 09	OrderAcknowledgementUSOptionsV1 (2501, 0x09c5)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f1 fb 09 00	654321
InFlight	00 00	0
TransactionTime	28 a8 4a 1c 88 83 32 17	2022-12-20 13:30:32.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
Side	32	Sell (50, 0x32, '2')
Price	58 86 03 00 00 00 00 00	23.10
Symbol	34 33 32 31 00 00 00 00	4321
ClearingFirm	00 00 00 00	
LeavesQty	f4 01 00 00	500
DisplayPrice	00 00 00 00 00 00 00 00	0.00
WorkingPrice	00 00 00 00 00 00 00 00	0.00
BaseLiquidityIndicator	41	Added (65, 0x41, 'A')
SubLiquidityIndicator	00	NotSet (0, 0x00)
RoutingFirmID	00 00 00 00	
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000

10.2.2 CrossOrderAcknowledgementUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	9b 00	155
MessageType	c6 09	CrossOrderAcknowledgementUSOptionsV1 (2502, 0x09c6)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f2 fb 09 00	654322
InFlight	00 00	0
TransactionTime	28 72 e5 57 88 83 32 17	2022-12-20 13:30:33.321321
CrossID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
	00 00 00 00	
AuctionID	00 00 00 00 00 00 00 00	000000000000
Price	58 86 03 00 00 00 00 00	23.10
Symbol	34 33 32 31 00 00 00 00	4321
OrderQty	dc 05 00 00	1500
RoutingFirmID	00 00 00 00	
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000
AllocCnt	02	2
allocs.ClOrdID[1/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd

Field	Hexadecimal	Description
	61 62 63 64 00 00 00 00	
	00 00 00 00	
allocs.OrderID[1/2]	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
allocs.Side[1/2]	32	Sell (50, 0x32, '2')
allocs.AllocQty[1/2]	00 00 00 00	0
allocs.GiveUpFirmID[1/2]	00 00 00 00	
allocs.ClOrdID[2/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
allocs.OrderID[2/2]	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
allocs.Side[2/2]	32	Sell (50, 0x32, '2')
allocs.AllocQty[2/2]	00 00 00 00	0
allocs.GiveUpFirmID[2/2]	00 00 00 00	

10.2.3 OrderRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	6d 00	109
MessageType	c7 09	OrderRejectedUSOptionsV1 (2503, 0x09c7)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 3c 80 93 88 83 32 17	2022-12-20 13:30:34.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
OrderRejectReason	41	A
Text	45 78 61 6d 70 6c 65 20	Example text field.
	74 65 78 74 20 66 69 65	
	6c 64 2e 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	

10.2.4 CrossOrderRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	69 00	105
MessageType	c8 09	CrossOrderRejectedUSOptionsV1 (2504, 0x09c8)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 06 1b cf 88 83 32 17	2022-12-20 13:30:35.321321
CrossID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
	00 00 00 00	
RoutingFirmID	00 00 00 00	
OrderRejectReason	41	A

Field	Hexadecimal	Description
Text	45 78 61 6d 70 6c 65 20	Example text field.
	74 65 78 74 20 66 69 65	
	6c 64 2e 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 04	

10.2.5 NewComplexInstrumentAcceptedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	6b 00	107
MessageType	c9 09	NewComplexInstrumentAcceptedUSOptionsV1 (2505, 0x09c9)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f3 fb 09 00	654323
InFlight	00 00	0
TransactionTime	28 d0 b5 0a 89 83 32 17	2022-12-20 13:30:36.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
Symbol	34 33 32 31 00 00 00 00	4321
NoOfSecurities	00 00 00 00	0
LegCnt	02	2
legs.Symbol[1/2]	34 33 32 31 00 00 00 00	4321
legs.MaturityDate[1/2]	00 00 00 00	0000-00-00
legs.StrikePrice[1/2]	00 00 00 00 00 00 00 00	0.00
legs.CFICode[1/2]	00 00	
legs.RatioQty[1/2]	00 00 00 00	0
legs.Side[1/2]	32	Sell (50, 0x32, '2')
legs.Symbol[2/2]	34 33 32 31 00 00 00 00	4321
legs.MaturityDate[2/2]	00 00 00 00	0000-00-00
legs.StrikePrice[2/2]	00 00 00 00 00 00 00 00	0.00
legs.CFICode[2/2]	00 00	
legs.RatioQty[2/2]	00 00 00 00	0
legs.Side[2/2]	32	Sell (50, 0x32, '2')

10.2.6 NewComplexInstrumentRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	69 00	105
MessageType	ca 09	NewComplexInstrumentRejectedUSOptionsV1 (2506, 0x09ca)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 9a 50 46 89 83 32 17	2022-12-20 13:30:37.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
NoOfSecurities	00 00 00 00	0
OrderRejectReason	41	A
Text	45 78 61 6d 70 6c 65 20	Example text field.

Field	Hexadecimal	Description
	74 65 78 74 20 66 69 65	
	6c 64 2e 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	

10.2.7 OrderModifiedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	92 00	146
MessageType	cb 09	OrderModifiedUSOptionsV1 (2507, 0x09cb)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f4 fb 09 00	654324
InFlight	00 00	0
TransactionTime	28 64 eb 81 89 83 32 17	2022-12-20 13:30:38.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
OrigClOrdID	5a 5a 2d 34 33 32 32 20	ZZ-4322 aaaa
	61 61 61 61 00 00 00 00	
	00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
Symbol	34 33 32 31 00 00 00 00	4321
OrderQty	dc 05 00 00	1500
Price	58 86 03 00 00 00 00 00	23.10
OrdType	32	Limit (50, 0x32, '2')
MaxFloor	00 00 00 00	0
StopPx	00 00 00 00 00 00 00 00	0.00
LeavesQty	f4 01 00 00	500
DisplayPrice	00 00 00 00 00 00 00 00	0.00
WorkingPrice	00 00 00 00 00 00 00 00	0.00
BaseLiquidityIndicator	41	Added (65, 0x41, 'A')
SecondaryOrderID	e6 9c 83 13 ee 0e 34 02	17FANZAAGTT2
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000

10.2.8 ModifyRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	81 00	129
MessageType	cc 09	ModifyRejectedUSOptionsV1 (2508, 0x09cc)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 2e 86 bd 89 83 32 17	2022-12-20 13:30:39.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	

Field	Hexadecimal	Description
RoutingFirmID	00 00 00 00	
OrigClOrdID	5a 5a 2d 34 33 32 32 20	ZZ-4322 aaaa
	61 61 61 61 00 00 00 00	
	00 00 00 00	
ModifyRejectReason	41	A
Text	45 78 61 6d 70 6c 65 20	Example text field.
	74 65 78 74 20 66 69 65	
	6c 64 2e 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	

10.2.9 OrderRestatedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	76 00	118
MessageType	cd 09	OrderRestatedUSOptionsV1 (2509, 0x09cd)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f5 fb 09 00	654325
InFlight	00 00	0
TransactionTime	28 f8 20 f9 89 83 32 17	2022-12-20 13:30:40.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
Symbol	34 33 32 31 00 00 00 00	4321
OrderRestatementReason	00	UNKNOWN (0, 0x00)
OrderQty	dc 05 00 00	1500
Price	58 86 03 00 00 00 00 00	23.10
LeavesQty	f4 01 00 00	500
DisplayPrice	00 00 00 00 00 00 00 00	0.00
WorkingPrice	00 00 00 00 00 00 00 00	0.00
BaseLiquidityIndicator	41	Added (65, 0x41, 'A')
SecondaryOrderID	e6 9c 83 13 ee 0e 34 02	17FANZAAGTT2
LastShares	20 03 00 00	800
LastPx	40 8a 03 00 00 00 00 00	23.20

10.2.10   CarriedRestatementUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	fa 00	250
MessageType	ce 09	CarriedRestatementUSOptionsV1 (2510, 0x09ce)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f6 fb 09 00	654326
InFlight	00 00	0
TransactionTime	28 c2 bb 34 8a 83 32 17	2022-12-20 13:30:41.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	

Field	Hexadecimal	Description
	00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
Side	32	Sell (50, 0x32, '2')
Price	58 86 03 00 00 00 00 00	23.10
ExecInst	00	NotSet (0, 0x00)
OrdType	32	Limit (50, 0x32, '2')
TimeInForce	36	GTD (54, 0x36, '6')
MinQty	00 00 00 00	0
Symbol	34 33 32 31 00 00 00 00	4321
Capacity	41	Agency (65, 0x41, 'A')
Account	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
ClearingFirm	00 00 00 00	
ClearingAccount	00 00 00 00	
DisplayIndicator	00	NotSet (0, 0x00)
MaxFloor	00 00 00 00	0
OrderQty	dc 05 00 00	1500
PreventMatch	00 00 00	
MaturityDate	00 00 00 00	0000-00-00
StrikePrice	00 00 00 00 00 00 00 00	0.00
PutOrCall	00	NotSet (0, 0x00)
OpenClose	00	NotSet (0, 0x00)
LeavesQty	f4 01 00 00	500
DisplayPrice	00 00 00 00 00 00 00 00	0.00
WorkingPrice	00 00 00 00 00 00 00 00	0.00
ExpireTime	28 fc 1f 23 16 84 32 17	2022-12-20 13:40:42.321321
AttributedQuote	00	NotSet (0, 0x00)
StopPx	00 00 00 00 00 00 00 00	0.00
RoutingInst	00 00 00 00	
RoutStrategy	00 00 00 00 00 00	
RouteDeliveryMethod	00 00 00	
ExDestination	00	
TargetPartyID	00 00 00 00	
AuctionID	00 00 00 00 00 00 00 00	000000000000
CMTANumber	00 00 00 00	0
RoutingFirmID	00 00 00 00	
ClearingOptionalData	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
CumQty	00 00 00 00	0
DrillThroughProtection	00 00 00 00 00 00 00 00	0.00
EquityPartyId	00 00 00 00	
ClientIDAttr	00 00 00 00	
FrequentTraderID	00 00 00 00 00 00	
SessionEligibility	00	NotSet (0, 0x00)
ComboOrder	00	NotSet (0, 0x00)
Compression	00	NotSet (0, 0x00)
FloorDestination	00 00 00 00	
FloorRoutingInst	00	NotSet (0, 0x00)
OrderOrigin	00 00 00	
PriceType	00	NotSet (0, 0x00)
StrategyID	00	NotSet (0, 0x00)
Held	00	NotSet (0, 0x00)

10.2.11 DoneForDayUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	38 00	56
MessageType	cf 09	DoneForDayUSOptionsV1 (2511, 0x09cf)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f7 fb 09 00	654327
InFlight	00 00	0
TransactionTime	28 8c 56 70 8a 83 32 17	2022-12-20 13:30:42.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
Symbol	34 33 32 31 00 00 00 00	4321

10.2.12 OrderCancelledUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	42 00	66
MessageType	d0 09	OrderCancelledUSOptionsV1 (2512, 0x09d0)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f8 fb 09 00	654328
InFlight	00 00	0
TransactionTime	28 56 f1 ab 8a 83 32 17	2022-12-20 13:30:43.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
CancelReason	41	A
CancelSubReason	00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
Symbol	34 33 32 31 00 00 00 00	4321
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000

10.2.13 CrossOrderCancelledUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	5e 00	94
MessageType	d1 09	CrossOrderCancelledUSOptionsV1 (2513, 0x09d1)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	f9 fb 09 00	654329
InFlight	00 00	0
TransactionTime	28 20 8c e7 8a 83 32 17	2022-12-20 13:30:44.321321
CrossID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
	00 00 00 00	
RoutingFirmID	00 00 00 00	
CancelReason	41	A
AllocCnt	02	2

Field	Hexadecimal	Description
allocs.ClOrdID[1/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
allocs.GiveUpFirmID[1/2]	00 00 00 00	
allocs.ClOrdID[2/2]	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
allocs.GiveUpFirmID[2/2]	00 00 00 00	

10.2.14 CancelRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	6d 00	109
MessageType	d2 09	CancelRejectedUSOptionsV1 (2514, 0x09d2)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 ea 26 23 8b 83 32 17	2022-12-20 13:30:45.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
ClearingFirm	00 00 00 00	
RoutingFirmID	00 00 00 00	
CancelRejectReason	41	A
Text	45 78 61 6d 70 6c 65 20	Example text field.
	74 65 78 74 20 66 69 65	
	6c 64 2e 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	

10.2.15 OrderExecutionUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	7e 00	126
MessageType	d3 09	OrderExecutionUSOptionsV1 (2515, 0x09d3)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	fa fb 09 00	654330
InFlight	00 00	0
TransactionTime	28 b4 c1 5e 8b 83 32 17	2022-12-20 13:30:46.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
ExecID	79 57 de 3e 12 00 00 00	0100004MX
LastShares	20 03 00 00	800
LastPx	40 8a 03 00 00 00 00 00	23.20
LeavesQty	f4 01 00 00	500
BaseLiquidityIndicator	41	Added (65, 0x41, 'A')
SubLiquidityIndicator	00	NotSet (0, 0x00)
ContraBroker	00 00 00 00	

Field	Hexadecimal	Description
Side	32	Sell (50, 0x32, '2')
Symbol	34 33 32 31 00 00 00 00	4321
ContraTrader	00 00 00 00	
ClearingFirm	00 00 00 00	
ContraCapacity	00	NotSet (0, 0x00)
FeeCode	00 00	
MarketingFeeCode	00 00	
RoutingFirmID	00 00 00 00	
CrossExclusionIndicator	00	NotSet (0, 0x00)
TradeDate	00 00 00 00	0000-00-00
MultilegReportingType	00	UNKNOWN (0, 0x00)
SecondaryExecID	00 00 00 00 00 00 00 00	000000000
PriceType	00	NotSet (0, 0x00)
TradethroughAlertType	00	NotSet (0, 0x00)
SenderLocationId	00	NotSet (0, 0x00)
FloorTraderAcronym	00 00 00	
FloorTradeTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
ExDestination	00	
EquityExDestination	00	NotSet (0, 0x00)

10.2.16   TradeCancelCorrectUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	84 00	132
MessageType	d4 09	TradeCancelCorrectUSOptionsV1 (2516, 0x09d4)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	fb fb 09 00	654331
InFlight	00 00	0
TransactionTime	28 7e 5c 9a 8b 83 32 17	2022-12-20 13:30:47.321321
ClOrdID	5a 5a 2d 34 33 32 31 20	ZZ-4321 abcd
	61 62 63 64 00 00 00 00	
	00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
ExecRefID	79 57 de 3e 12 00 00 00	0100004MX
Side	32	Sell (50, 0x32, '2')
BaseLiquidityIndicator	41	Added (65, 0x41, 'A')
SubLiquidityIndicator	00	NotSet (0, 0x00)
ClearingFirm	00 00 00 00	
ClearingAccount	00 00 00 00	
LastShares	20 03 00 00	800
LastPx	40 8a 03 00 00 00 00 00	23.20
CorrectedPrice	00 00 00 00 00 00 00 00	0.00
CorrectedSize	00 00 00 00	0
OrigTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000
Symbol	34 33 32 31 00 00 00 00	4321
MaturityDate	00 00 00 00	0000-00-00
StrikePrice	00 00 00 00 00 00 00 00	0.00
PutOrCall	00	NotSet (0, 0x00)
Capacity	41	Agency (65, 0x41, 'A')
OpenClose	00	NotSet (0, 0x00)
MarketingFeeCode	00 00	
TargetPartyID	00 00 00 00	
CMTANumber	00 00 00 00	0

10.2.17 QuoteUpdateAcknowledgementUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	43 00	67
MessageType	d5 09	QuoteUpdateAcknowledgementUSOptionsV1 (2517, 0x09d5)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 48 f7 d5 8b 83 32 17	2022-12-20 13:30:48.321321
QuoteUpdateID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000
QuoteCnt	02	2
quotes.OrderID[1/2]	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
quotes.QuoteResult[1/2]	00	
quotes.SubLiquidityIndicator[1/2]	00	NotSet (0, 0x00)
quotes.QuoteRejectSubReason[1/2]	00	
quotes.OrderID[2/2]	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
quotes.QuoteResult[2/2]	00	
quotes.SubLiquidityIndicator[2/2]	00	NotSet (0, 0x00)
quotes.QuoteRejectSubReason[2/2]	00	

10.2.18 QuoteUpdateRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	25 00	37
MessageType	d6 09	QuoteUpdateRejectedUSOptionsV1 (2518, 0x09d6)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 12 92 11 8c 83 32 17	2022-12-20 13:30:49.321321
QuoteUpdateID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
QuoteRejectReason	00	UNKNOWN (0, 0x00)

10.2.19 QuoteCancelledUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	35 00	53
MessageType	d7 09	QuoteCancelledUSOptionsV1 (2519, 0x09d7)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 dc 2c 4d 8c 83 32 17	2022-12-20 13:30:50.321321
QuoteUpdateID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
QuoteSymbol	00 00 00 00 00 00	
Side	32	Sell (50, 0x32, '2')
CancelReason	41	A

Field	Hexadecimal	Description
CancelSubReason	00	

10.2.20   QuoteExecutionUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	5e 00	94
MessageType	d8 09	QuoteExecutionUSOptionsV1 (2520, 0x09d8)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	fc fb 09 00	654332
InFlight	00 00	0
TransactionTime	28 a6 c7 88 8c 83 32 17	2022-12-20 13:30:51.321321
QuoteUpdateID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
ExecID	79 57 de 3e 12 00 00 00	0100004MX
QuoteSymbol	00 00 00 00 00 00	
ClearingFirm	00 00 00 00	
LastShares	20 03 00 00	800
LastPx	40 8a 03 00 00 00 00 00	23.20
LeavesQty	f4 01 00 00	500
ContraTrader	00 00 00 00	
ContraCapacity	00	NotSet (0, 0x00)
Side	32	Sell (50, 0x32, '2')
BaseLiquidityIndicator	41	Added (65, 0x41, 'A')
SubLiquidityIndicator	00	NotSet (0, 0x00)
FeeCode	00 00	
MarketingFeeCode	00 00	
TradeDate	00 00 00 00	0000-00-00

10.2.21   QuoteRestatedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	40 00	64
MessageType	d9 09	QuoteRestatedUSOptionsV1 (2521, 0x09d9)
MatchingUnit	01	1
Reserved	00	0
SequenceNumber	fd fb 09 00	654333
InFlight	00 00	0
TransactionTime	28 70 62 c4 8c 83 32 17	2022-12-20 13:30:52.321321
QuoteUpdateID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
OrderID	3d 07 7a 13 ee 0e 34 02	17FANZAA3D4T
LeavesQty	f4 01 00 00	500
WorkingPrice	00 00 00 00 00 00 00 00	0.00
QuoteSymbol	00 00 00 00 00 00	
Side	32	Sell (50, 0x32, '2')
RestatementReason	57	Wash (87, 0x57, 'W')

10.2.22   ResetRiskAcknowledgementUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)

Field	Hexadecimal	Description
MessageLength	25 00	37
MessageType	da 09	ResetRiskAcknowledgementUSOptionsV1 (2522, 0x09da)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
RiskStatusID	00 00 00 00 00 00 00 00	
	00 00 00 00 00 00 00 00	
RiskResetResult	00	
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000

10.2.23 MassCancelAcknowledgementUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	34 00	52
MessageType	db 09	MassCancelAcknowledgementUSOptionsV1 (2523, 0x09db)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 3a fd ff 8c 83 32 17	2022-12-20 13:30:53.321321
MassCancelID	6d 61 73 73 63 78 6c 2d	masscxl-5544
	35 35 34 34 00 00 00 00	
	00 00 00 00	
CancelledOrderCount	00 00 00 00	0
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000

10.2.24 MassCancelRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	65 00	101
MessageType	dc 09	MassCancelRejectedUSOptionsV1 (2524, 0x09dc)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 04 98 3b 8d 83 32 17	2022-12-20 13:30:54.321321
MassCancelID	6d 61 73 73 63 78 6c 2d	masscxl-5544
	35 35 34 34 00 00 00 00	
	00 00 00 00	
MassCancelRejectReason	00	
Text	45 78 61 6d 70 6c 65 20	Example text field.
	74 65 78 74 20 66 69 65	
	6c 64 2e 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	

10.2.25 PurgeAcknowledgementUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	35 00	53
MessageType	dd 09	PurgeAcknowledgementUSOptionsV1 (2525, 0x09dd)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 ce 32 77 8d 83 32 17	2022-12-20 13:30:55.321321
MassCancelID	6d 61 73 73 63 78 6c 2d	masscxl-5544
	35 35 34 34 00 00 00 00	
	00 00 00 00	
CancelledOrderCount	00 00 00 00	0
SourceMatchingUnit	00	0
RequestReceivedTime	00 00 00 00 00 00 00 00	1970-01-01 00:00:00.000000000

10.2.26 PurgeRejectedUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	65 00	101
MessageType	de 09	PurgeRejectedUSOptionsV1 (2526, 0x09de)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 98 cd b2 8d 83 32 17	2022-12-20 13:30:56.321321
MassCancelID	6d 61 73 73 63 78 6c 2d	masscxl-5544
	35 35 34 34 00 00 00 00	
	00 00 00 00	
PurgeRejectReason	41	A
Text	45 78 61 6d 70 6c 65 20	Example text field.
	74 65 78 74 20 66 69 65	
	6c 64 2e 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	

10.2.27 PurgeNotificationUSOptionsV1

Field	Hexadecimal	Description
StartOfMessage	b0 e3	BOE3 (58288, 0xe3b0)
MessageLength	38 00	56
MessageType	df 09	PurgeNotificationUSOptionsV1 (2527, 0x09df)
MatchingUnit	00	0
Reserved	00	0
SequenceNumber	00 00 00 00	0
InFlight	00 00	0
TransactionTime	28 62 68 ee 8d 83 32 17	2022-12-20 13:30:57.321321
MassCancelID	6d 61 73 73 63 78 6c 2d	masscxl-5544
	35 35 34 34 00 00 00 00	
	00 00 00 00	
CancelledOrderCount	00 00 00 00	0

Field	Hexadecimal	Description
SourceMatchingUnit	00	0
ClearingFirm	00 00 00 00	
RiskRoot	00 00 00 00 00 00	
MassCancelLockout	00	UNKNOWN (0, 0x00)

11 Appendix B – Architectural Diagram

Simple architectural diagram of the BOEv3u port deployment. Note that members using BOEv3u ports interact directly with the BOEv3u process, however a separate TCP connection is required for each unit.
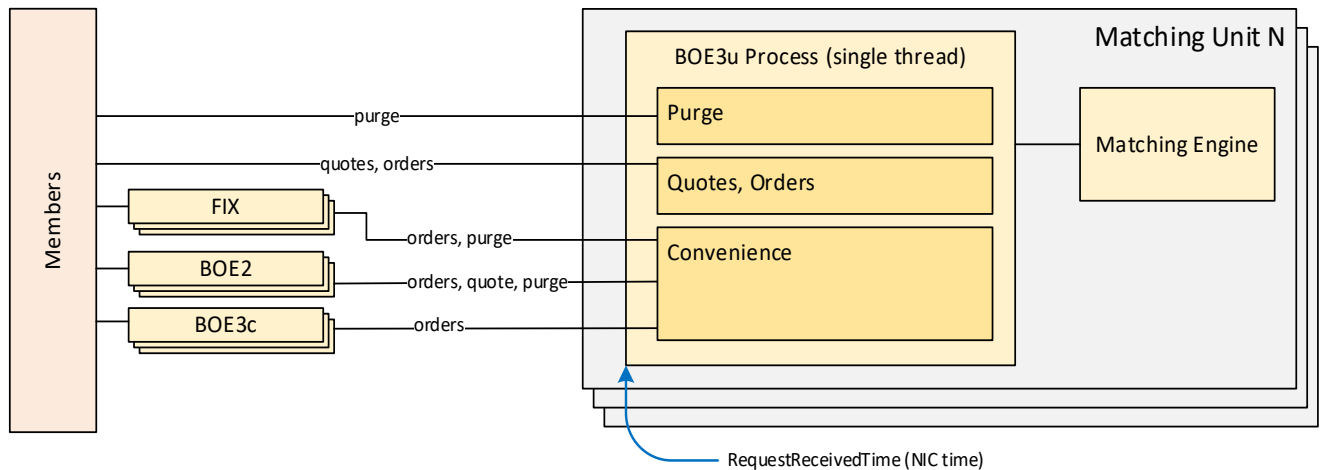
BOEv3u Ports provide an expedited processing path to the Matching Engine over that of other inbound paths on a best effort basis. Under routine circumstances, the System will process pending purge messages from BOEv3u ports before processing other inbound paths. Exceptions to this approach exist with regard to various flow control and rate limiters that are incorporated into the mechanism.

Example of the Processing under routine circumstances:
1) Process pending purge messages from BOEv3u ports within a bounded network window
2) Process all other pending messages from BOE3u ports, not to exceed bounded network window from step 1
3) Process pending messages from Convenience ports, not to exceed bounded network window from step 1

12 Appendix C – Login Playbook

Please note that for brevity these examples assume an exchange having 4 matching units. The actual number per options exchange will vary, typically in the range of 31-35 units.

12.1   Login Message Flow

On a successful login, the following is the sequence of messages to expect. Note that after sending a `Login Request`, members should wait for both a `Login Response` of "Accepted" as well as a `Replay Complete` message before sending new application messages.

Direction	Message
Member → Cboe	Login Request
Member ← Cboe	Login Response (A = Accepted)
Member ← Cboe	For each matching unit, all messages for the member having sequence number greater than the seq # in the login request for that unit. Possibly no such messages are transmitted, for instance on the first login of the day.
Member ← Cboe	Replay Complete
Member ←→ Cboe	(Begin normal flow: Order traffic, or Heartbeats at 1/sec)

12.2   Recommended Login – Convenience Port

"Request replay of everything that you missed"

The login protocol supports a variety of options for how a member may want to approach reconciling sequence numbers and messages after a disconnection. For most members, the following Login strategy is the simplest approach to support a robust, lossless login experience. Note that unlike unitized ports, a convenience port is capable of replaying all of the messages for the business day on that port.

Field Name	Value	Comment
StartOfMessage	BO E3	
MessageLength	2F 00	47
MessageType	01 00	1 (login request)
MatchingUnit	00	
Reserved	00	
SequenceNumber	00	(unsequenced)
SessionId	41 42 43 44	(ex. "ABCD") - Session Id as supplied by Cboe
SessionSubId	30 30 30 31	(ex. "0001") Session Sub Id as supplied by Cboe
Password	61 62 63 64 65 66 67 68 69 6A	(ex. "abcdefghij") Password

ReplayInstruction	52	"R" - Replay unknown units.
NumberOfUnits	04	There are 4 rows in the array below, representing the 4 system matching units (a Cboe US Options deployment will have > 30).
→UnitNumber	01	Matching unit #1
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchingUnit=1. Zero if member has not received anything for MatchingUnit=1, for instance as the first login of the day.
→UnitNumber	02	Matching unit #2
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchingUnit=2. Zero if member has not received anything for MatchingUnit=2, for instance as the first login of the day.
→UnitNumber	03	Matching unit #3
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchingUnit=3. Zero if member has not received anything for MatchingUnit=3, for instance as the first login of the day.
→UnitNumber	04	Matching unit #4
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchingUnit=4. Zero if member has not received anything for MatchingUnit=4, for instance as the first login of the day.

12.3   Recommended Login – Unitized Port

"Request replay of everything that you missed"

The login protocol supports a variety of options for how a member may want to approach reconciling sequence numbers and messages after a disconnection. For most members, the following Login strategy is the simplest approach to support a robust, lossless login experience.

Unlike convenience ports, a unitized port is capable of replaying a limited "window" of messages for the port. If the number of messages needed exceeds the available window, the login will be rejected with *LoginResponseStatus*="R" (replay too deep). In such cases, members may either elect skip undelivered messages (see "12.5.1 No Replay", below) or use a deep replay strategy (see "12.4 Deep Replay - Unitized", below).

Field Name	Value	Comment
StartOfMessage	BO E3	
MessageLength	20 00	32
MessageType	01 00	1 (login request)
MatchingUnit	00	
Reserved	00	

SequenceNumber	00	(unsequenced)
SessionId	41 42 43 44	(ex. "ABCD") - Session Id as supplied by Cboe
SessionSubId	30 30 30 31	(ex. "0001") Session Sub Id as supplied by Cboe
Password	61 62 63 64 65 66 67 68 69 6A	(ex. "abcdefghij") Password
ReplayInstruction	52	"R" - Replay unknown units.
NumberOfUnits	01	The single unit for the unitized port is specified
→UnitNumber	03	Matching unit #3
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchingUnit=3. Zero if member has not received anything for MatchingUnit=3, for instance as the first login of the day.

12.4   Deep Replay - Unitized

If the sequence gap on login is greater than 1,000 messages, the login request will be rejected by Cboe with a reason of 'R' (replay too deep). To recover the messages from the exchange, firms may login to an inactive (typically secondary or DR) BOE3 port and request a "deep replay" to recover the missing messages. See "1.1.4 Failover and Disaster Recovery (DR)" for additional details.

For a fully lossless experience, the login sequence would include a recovery path to secondary/DR port on a login failure due to "replay too deep":

Direction	Message
Member → Cboe (primary A)	Login Request (to primary connection A)
Member ← Cboe (primary A)	Login Response is rejected (R = "replay too Deep")
Member → Cboe (DR C)	Login Request (ReplayInstruction=D "deep replay")
Member ← Cboe (DR C)	Login Response (A=accepted)
Member ← Cboe (DR C)	(Replay of messages)
Member ← Cboe (DR C)	Replay Complete
Member ← Cboe (DR C)	Logout Response (LogoutReason=A (Admin)); an unsolicited logout
Member → Cboe (primary A)	Login Request (to primary connection A), using the updated sequence #.
Member ← Cboe (primary A)	Login Response is accepted (A = Accepted)
Member ← Cboe (primary A)	For each matching unit, all messages for the member having sequence number greater than the seq # in the login request for that unit. Possibly no such messages are transmitted.
Member ← Cboe (primary A)	Replay Complete
Member ←→ Cboe (primary A)	(Begin normal flow: Order traffic, or Heartbeats at 1/sec)

Deep Replay Login Request

Field Name	Value	Comment
StartOfMessage	BO E3	
MessageLength	20 00	32
MessageType	01 00	1 (login request)
MatchingUnit	00	
Reserved	00	
SequenceNumber	00	(unsequenced)
SessionId	41 42 43 44	(ex. "ABCD") - Session Id as supplied by Cboe
SessionSubId	30 30 30 31	(ex. "0001") Session Sub Id as supplied by Cboe
Password	61 62 63 64 65 66 67 68 69 6A	(ex. "abcdefghij") Password
ReplayInstruction	**52**	**"D" – Deep replay request.**
NumberOfUnits	01	The single unit for the unitized port is specified
→UnitNumber	02	Matching unit #2
→UnitSequence	52 0D 67 00	Last SequenceNumber that member received with MatchUnit=2. Zero if member has not received anything for MatchUnit=2, for instance as the first login of the day.

12.5   Other Login Strategies

12.5.1 No Replay

"Just start with the next live event"

If the member is confident that they are disinterested in any missed messages, they may elect to Skip (S) unspecified units and specify no units. This can be used as an initial login. Differences from the recommended login are in **Bold**.

Field Name	Value	Comment
StartOfMessage	BO E3	
MessageLength	1B 00	27
MessageType	01 00	1 (login request)
MatchingUnit	00	
Reserved	00	
SequenceNumber	00	(unsequenced)
SessionId	41 42 43 44	(ex. "ABCD") - Session Id as supplied by Cboe

SessionSubId	30 30 30 31	(ex. "0001") Session Sub Id as supplied by Cboe
Password	61 62 63 64 65 66 67 68 69 6A	(ex. "abcdefghij") Password
ReplayInstruction	**53**	**"S" – Skip replay of unspecified units.**
NumberOfUnits	**00**	**There are no rows in the array below.**

12.5.2 Fail Login if any units are unspecified

A minor variation on the "Recommended Login", this strategy will fail the login if not all known units are specified. This would provide some protection against a misconfiguration, or the unexpected introduction of additional matching units at Cboe (although Cboe would provide extensive notice and planning before introducing additional units). Differences from the recommended login are in **Bold**.

Field Name	Value	Comment
StartOfMessage	BO E3	
MessageLength	2F 00	47
MessageType	01 00	1 (login request)
MatchingUnit	00	
Reserved	00	
SequenceNumber	00	(unsequenced)
SessionId	41 42 43 44	(ex. "ABCD") - Session Id as supplied by Cboe
SessionSubId	30 30 30 31	(ex. "0001") Session Sub Id as supplied by Cboe
Password	61 62 63 64 65 66 67 68 69 6A	(ex. "abcdefghij") Password
ReplayInstruction	**46**	**"F" – Fail unknown units.**
NumberOfUnits	04	There are 4 rows in the array below, representing the 4 system matching units.
→UnitNumber	01	Matching unit #1
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchUnit=1. Zero if member has not received anything for MatchUnit=1, for instance as the first login of the day.
→UnitNumber	02	Matching unit #2
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchUnit=2. Zero if member has not received anything for MatchUnit=2, for instance as the first login of the day.
→UnitNumber	03	Matching unit #3

→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchUnit=3. Zero if member has not received anything for MatchUnit=3, for instance as the first login of the day.
→UnitNumber	04	Matching unit #4
→UnitSequence	00 00 00 00	Last SequenceNumber that member received with MatchUnit=3. Zero if member has not received anything for MatchUnit=4, for instance as the first login of the day.

Revision History

Date	Description
02/09/24	*Version 1.0.0* Initial version for publication.
04/03/24	*Version 1.0.1* Added ShortBinaryPrice type to "1.4 Data Types". Added ScratchPad field to ModifyOrder and CancelOrder. Added Symbol field to OrderModified, OrderCancelled, OrderRestated, DoneForDay. Added InFlight field to MassCancelRejected. Updated description of LegCnt in New Complex Order regarding the treatment of an empty leg position effect array. Added Reserved field to ModifyOrder and to "5. List Of Message Fields". Corrected field label from OpenClose to OrderID at offset 42 in New Order Acknowledgment. Added TradeDate to QuoteExecution. Updated size of MassCancelInst from 16 to 8 bytes. Updated OrderQty and Price to smaller lengths (2 and 4, respectively) in QuoteUpdateShort. Updated examples for affected messages. Clarified the *CrossInitiator* (C1 and EDGX only) description to indicate that the MPID field is required on cross orders routed to destinations via NYSE Chicago using EquityExDestination (22016).
04/25/24	*Version 1.0.2* Updated the diagram in "Appendix B – Architectural Diagram". Updated text of CrossInitiator field in "5 List of Message Fields".
05/01/24	*Version 1.0.3* Updated descriptive text in "Appendix B – Architectural Diagram".
05/08/24	*Version 1.0.4* Updated descriptive text in "Appendix B – Architectural Diagram".
05/23/24	*Version 1.0.5* Clarified the *InFlight* description to indicate the total number of messages "in-flight" from the port can includes messages queued to send as well messages already sent. Updated the *QuoteCnt* description to indicate the maximum number of quotes in the message is 20.
06/11/24	*Version 1.0.6* Updated Login Request Session message Type value.

07/01/24	*Version 1.0.7*
	Added *LogoutReason* value 'E' for End of Day to the `Logout Response` message.
	Clarified that there is no longer a systematically enforced limit on the number of open orders or quotes a firm may have entered on the exchange from a unitized port.
	Clarified that *RiskResetResult* value '<space> = Ignored; exceeds 1 reset per 100 milliseconds'.
	Clarified that `Done For Day` messages represent orders persisted during the current day session to carry over to the next session.
	Added *ExDestination* (100) = 'w' (MIAX Sapphire) and *ContraBroker* (375) = 'SPHR'.
	Clarified that using *RiskRoot* and *TargetMatchingUnit* at the same time will result in a reject with *RiskResetResult* = M, even if *TargetMatchingUnit* is otherwise correct for the given *RiskRoot*.
07/11/24	*Version 1.0.8*
	Updated diagram and descriptive text in "Appendix B – Architectural Diagram".
07/31/24	*Version 1.0.9*
	Added new Section 1.2 - Certification Requirement.
	Added *RestatementReason* value 'K' for price sliding reprice (BZX only).
	Updated *OrderRestatedUSOptionsV1* message *RestatementReason* field to *OrderRestatementReason*.
	Updated the Done for Day Restatements and Carried Order Restatements sections and removed Carried Order Restatements and Done for Day Restatements port attributes.
	Updated `Purge Orders, Mass Cancel Acknowledgment,` and `Purge Acknowledgement` messages descriptions and the *MassCancelInst* field description to correctly identify the usage of the request and response message types.
	Updated 'Note' for message types not yet accepted to indicate that they are subject to change (`New Order Cross, New Complex Instrument, New Complex Order, New Order Cross Multileg`).
	Corrected length of *MassCancelInst* in "List of Message Fields" from 16 to 8.
08/12/24	*Version 1.0.10*
	Added NewOrderUSOptionsV1 to Message Type List for Member to Cboe.
	Updated *MassCancelInst* to indicate that a self-imposed lockout can be release by sending a `Reset Risk` message.